

# Growth of California Ports: Opportunities & Challenges

## A Report to the California State Legislature

April 2007





May 1, 2007

Senator Alan Lowenthal, Chair  
Senate Transportation Sub-Committee on California Ports & Goods Movement  
Room 2038 State Capitol  
Sacramento, CA 95814

Dear Senator Lowenthal:

The California Marine and Intermodal Transportation System Advisory Council (CALMITSAC) hereby submits to you the report you requested in your 2004 legislation, AB 2043.

The document **“Growth of California Ports: Opportunities and Challenges”** reflects the substantive gathering and synthesizing of much data on all aspects of California’s marine transportation system (MTS), including growth forecasts, economic and environmental impacts of port operations, productivity, infrastructure needs, education, port security, and funding. The report, which includes a series of recommendations on these important topics, draws from the extensive experience of CALMITSAC’s wide membership. We are confident that the report will serve as the basis for productive discourse and collaboration among the California state legislature, the administration and its agencies, and all interested stakeholders.

It is recommended that all MTS stakeholders carefully review the contents of this report. CALMITSAC intends to make available to the state legislators a yearly supplement to this document.

We welcome a dialogue with Senate and Assembly leadership. It is certain this document will provide policymakers with a deeper understanding of the opportunities and challenges facing California’s MTS.

Sincerely,

A handwritten signature in cursive script that reads "Gill V. Hicks".

Gill V. Hicks, Chair  
California Marine and Intermodal Transportation System Advisory Council.

GVH/nfk

# **Growth of California Ports: Opportunities and Challenges**

**A Report to the California State Legislature**



**Submitted by**

**California Marine and Intermodal Transportation System Advisory Council  
(CALMITSAC)**

**Chair: Gill V. Hicks, Gill V. Hicks and Associates, Inc.**

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**April 2007**





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# **Growth of California Ports: Opportunities and Challenges**

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## **EXECUTIVE SUMMARY**

Recognizing a growing crisis in port-related goods movement in California, Assembly Member Alan Lowenthal (now Senator) introduced AB 2043 on February 17, 2004. Governor Schwarzenegger signed the bill into law on September 29, 2004 creating the Maritime Port Strategic Master Plan Task Force Act. The Act requests the California Marine and Intermodal Transportation System Advisory Council (CALMITSAC) to address the projected growth and congestion of the ports, impacts of port growth on the state's transportation system, air pollution caused by the ports and proposed mitigations, and port security. This report attempts to summarize the best thinking from around the state on the importance of the ports to California and the United States. This report puts forth strategies for improving the efficiency, reliability, velocity, capacity and security of the Marine Transportation System (MTS), while at the same time addressing the public health concerns associated with freight transportation, particularly the effects of diesel emissions.

This report recognizes that while there are localized concerns, there is statewide urgency to identify solutions. The presentation of problems, issues and proposed strategies is built upon the following assumptions:

- Growth in freight-related activity will continue for the foreseeable future.
- The State as a whole, along with various subregions, will continue to encourage trade-related growth while working toward mitigating the negative impacts of that growth.
- Impacts of trade, both positive and negative, will be felt by different parts of the State in different ways.
- Identifying needs will be easier than identifying funding sources and assigning priorities.

- Developing consensus means effectively communicating the needs of the State to elected officials and other decision makers in Washington and at the local level.
- Finally, CALMITSAC recognizes that strategies and recommendations must respond to changing circumstances. As a result, this report is designed to be a blueprint for future action, not the final word on goods movement in California. Where answers are not yet available, further study – and not action – is called for.

California ports are major economic powerhouses and are the gateways to the rest of America. The economic benefits of goods movement are being threatened, however, by valid concerns over congestion, productivity (efficiency of use of existing transportation assets), air pollution, community impact, limited capacities of highways and railways, and inadequate funding levels. The inherent trade advantages enjoyed by California, and by extension the United States, could be negated if there is not a concerted statewide effort to maintain, enhance, modernize and expand the base of port facilities and services at California's public ports in Oakland, San Francisco, Stockton, Sacramento, Richmond, Redwood City, Humboldt, Los Angeles, Long Beach, Hueneme, and San Diego. Each of these ports plays a specialized role in support of the wide variety of goods shipped. They work cooperatively and systematically to move California's and the nation's goods. CALMITSAC is seeking opportunities to reduce environmental and negative public health impacts while allowing these ports to facilitate the movement of goods to and through the State.

California's ports and the Waterfront Coalition have proposed a comprehensive program of infrastructure improvements and operational enhancements to improve efficiency and productivity and to increase capacity, reliability, and velocity of cargo shipments. These include improvements to or replacement of port bridges, upgrades to port access roadways, expansion of on- and off-dock rail yards, grade separations, improvements to railroad main lines, channel dredging projects, and wharf upgrades. In total, the recommended capital projects are estimated to cost \$20.36 billion.

At the San Pedro Bay Ports the highest priority project is the I-710/Gerald Desmond Bridge Gateway Program, which involves replacement of the aging Gerald Desmond Bridge and construction of two additional mixed-flow lanes and four truck-only lanes on I-710. The San Pedro Bay Ports have also identified proposed infrastructure improvements to accommodate the growing use of on-dock rail. Current constraints at the Port of Long Beach include the lack of 8,000-foot arrival and departure tracks, and lack of adequate storage tracks for intermodal equipment. The proposed expansion of the port's Pier B Street Rail Yard would help correct these deficiencies. The Port of Los Angeles plans to provide a new on-dock yard at the Trans Pacific (TRAPAC) Container terminal.

In addition, railroad main lines east of downtown Los Angeles need to be double or triple tracked to accommodate growth in freight and passenger trains, and the Colton rail-to-rail grade crossing needs to be separated. Priority must be given to establishing roadway and rail grade separations on all main line tracks running from downtown Los Angeles east

and in adjoining metropolitan areas east of the City. The triple tracking of the Cajon Pass between San Bernardino and Barstow needs to be completed.

The Port of Oakland has proposed the 7<sup>th</sup> Street Grade Separation and Roadway Improvement, the Outer Harbor Intermodal Terminal (OHIT), and improvements to the Joint Intermodal Terminal (JIT). The Port of Oakland and local agencies are supporting improvements to the I-80/I-680/SR-12 interchange and an eastbound truck-climbing lane on I-580. The port is also promoting the California Interregional Rail Intermodal System (CIRIS), a short-haul rail system serving California's Central Valley to shift container trips from truck to rail.

California's smaller ports have proposed a variety of projects, including land acquisition to expand operations, grade separations to reduce traffic conflicts, roadway upgrades to improve access to port facilities, dredging projects to accommodate larger vessels, wharf upgrades to facilitate cargo handling, regional short sea services and rail improvements to improve access and to reach new markets.

In addition to providing new infrastructure, it is critical that ports strive to measure productivity and labor availability, identify sources of inefficiency and delay, and develop specific programs to make better use of existing transportation assets. Recommended management and operational enhancements include:

- Identify sources of inefficiency and delay
- Measure the growing shortage of truck drivers
- Expand extended hours of operation and shorten free time
- Establish benchmarking standards and best practices to maximize the use of existing infrastructure and capacity
- Develop an inventory of land uses, including industrial uses to facilitate planning

Efforts to expand port area infrastructure must be accompanied by environmental enhancements. Substantial effort has been made in identifying goods movement environmental mitigation strategies.

CALMITSAC believes that the following broad emission-reduction strategies must be pursued:

- cleaner fuels, hybrids, scrubbers, after-treatment, and internal engine modifications for marine vessel main engines
- clean fuels or add-on controls for vessel auxiliary engines
- clean diesel and alternative fueled switcher locomotives and cargo handling equipment at rail yards and docks
- lower emission line-haul locomotives
- truck modernization and fleet turnover programs

Our port-related infrastructure must also be secure. Securing maritime transportation involves cooperation among the ports and industry participants, supported by local, regional, national and international government agencies. Security relies on a “layered” approach with multiple lines of verification from the origin to the final destination of a shipment. It is critical that the various agencies involved with port and maritime security work together to avoid overlap, duplication of effort and conflicting regulations. There also needs to be greater sharing of intelligence information among federal, state and local agencies. CALMITSAC believes that technology will play a major role in improving port security.

Balancing capacity, environmental and security concerns will take a significant amount of capital investment. The largest source of existing grants and loans is the federal government. However, the federal government will not be able to provide all the funds required to keep the goods flowing efficiently. Existing state funds are extremely limited. The State Transportation Improvement Program (STIP) and Interregional Transportation Improvement Program (ITIP) are generally oversubscribed.

California voters have indicated a willingness to help fill the funding gap. In November 2006, the California electorate approved the Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006 (Proposition 1B). This bond initiative, the single largest in California history, authorized \$19.9 billion in expenditures on the State’s roads, bridges and transit systems. Included in the bond authorization is \$2.1 billion for goods movement infrastructure and port security projects and \$1 billion for goods movement air quality projects.

The bond initiative alone won’t solve California’s goods movement problems however. Other solutions are needed. The shipping industry strongly opposes legislatively imposed container fees and Customs carve-outs. CALMITSAC opposes both in this report. This does not mean that industry arbitrarily opposes all user fees; but there should be a clear distinction between a legislatively imposed fee and a negotiated fee for projects that benefit the industry. Project-specific revenue streams for focused, well-managed projects can be protected for the benefit of bondholders and users alike. Specific plans of finance must be developed around a limited set of high-priority projects; i.e., future success stories, that all stakeholders agree are absolutely essential, as opposed to mandating user fees through legislation.

CALMITSAC believes the correct approach is to negotiate public-private funding arrangements for high-priority infrastructure projects. Goods movement stakeholders must be given an opportunity to negotiate funding agreements. They cannot do this if they have to put all their time and energy into fighting legislation that they believe is unworkable. Worse yet would be a drawn-out legal battle between shippers/maritime industry lawyers and those advocating a legislated fee. This could substantially limit progress made on the important infrastructure projects and environmental programs so badly needed in California.

First, a consensus on the priority projects and programs must be developed. Second, funding shares must be negotiated. It has been said that shippers will “pay for value” measured in terms of reduced delay, or increased velocity or reliability. The only way to foster true public-private partnerships is to first demonstrate real value to the various stakeholders, and then negotiate shared funding responsibility. CALMITSAC encourages transportation agencies to seriously consider the option of private ownership and operation, particularly for toll roads such as proposed truck-only lanes.

Whatever the method, the time for action is now. It is not possible to do everything for everyone, but California needs a series of success stories and a willingness to fund them. Collaboration is essential, which means the turf battles must end through a pledge by all stakeholders to work together. Coalition building across the State and successful fund raising depends on commitment, coordination, collaboration, consensus and compromise. CALMITSAC has pursued this spirit of collaboration in developing the following specific recommendations:

### **A. Economic Growth**

1. Recognize that growing the economy and protecting the environment and public health are cornerstone objectives. These tasks must be done concurrently.
2. Reject proposals for slow growth, no growth or moratoria on port growth. These proposals would negatively impact the state and national economies, hurt opportunities for upward mobility for blue-collar workers, reduce tax revenue, and result in other negative social impacts.

### **B. Environment**

1. Aggressively seek reductions in diesel emissions. Recognize that diesel engine emissions have serious health effects and are therefore the “Achilles Heel” of port and goods movement development. Use environmental enhancements listed in Appendices C and D of the CALMITSAC report as a guide. Without substantial reductions in diesel emissions, goods movement infrastructure projects are in jeopardy. CALMITSAC believes that reducing truck traffic and accelerating the replacement and upgrading of the truck fleet engines can bring immediate reductions in diesel emissions. Thus, programs like the Gateway Cities truck replacement program should receive significant supplemental funding as is called for in the San Pedro Bay Ports Clean Air Action Plan. Truck replacement should emphasize the newest and cleanest trucks where appropriate, and with data made available from environmental or security analysis.
2. Consider many of the other alternatives such as hybrid vehicles, plug-in hybrids, electric vehicles and clean diesel converted from natural gas.
3. Give serious consideration to market-based approaches to emissions reduction, such as those recommended by the Maritime Goods Movement Coalition, incorporating input from community stakeholders.
4. Continue to implement the San Pedro Bay Ports/ACTA truck trip reduction program.

5. Strongly encourage EPA to rapidly finalize stringent rulemaking for the control of emissions of air pollution from vehicles involved in goods movement.
6. Expand state and federal grants, bond moneys or programs to specifically address the replacement of older locomotives, including short line locomotives, operating in the port areas.
7. To the extent that it is feasible and cost effective, use green construction equipment in developing new goods movement infrastructure.
8. Incorporate specific project mitigation cost into total infrastructure project development costs.
9. Advocate for federal money to supplement state and local government and private funds to reduce diesel engine emissions.
10. Develop collaborative processes involving all stakeholders, such as the statewide LNG Taskforce, to facilitate EIR/EIS review and adoption.
11. Advocate for local development plans and policies that preserve access to ports.

### **C. Project Priorities, Funding, and Public-Private Partnerships**

1. Recognizing that available funding is limited, encourage policy makers and funding agencies to consider the selection criteria in the State Goods Movement Action Plan (GMAP) when establishing priorities for major infrastructure projects, operational improvements, and environmental mitigations, using projects lists in Appendices A-D of the CALMITSAC report as a guide.
2. Consult shippers, ports, terminals, vessel operators, trucking companies, railroads, freight forwarders, labor and the environmental community in the selection, and of high-priority infrastructure projects.
3. Concentrate on those projects that are ready to go and clearly of high priority. The Governor's leadership is essential in developing policy that is consistent with the GMAP and with CALMITSAC's Growth of California's Ports: Opportunities and Challenges.
4. Quantify public and private benefits and costs.
5. Continue and strengthen efforts to secure federal funding for critical projects particularly with respect to federal transportation reauthorization.
6. Where appropriate, negotiate joint public-private funding arrangements for high-priority projects. Develop detailed plans of finance, including negotiated shares from federal, state, and local sources and the private sector. Establish appropriate "fire walls" to prevent specifically identified project funds from being diverted to other projects or programs. Ensure that fees correlate to project timelines. Project-based fees should sunset when a project is paid for.
7. Given the limitations of federal and state funding, recognize that "self-help" strategies may be the primary way to complete the financing for high-priority projects. Recognize that projects that have successfully negotiated shared public-private funding arrangements are more likely to receive scarce public funds.
8. Abandon efforts to secure a "Customs carve-out," including proposals to capture an "increment of growth" in customs duties.



9. Establish institutional arrangements for implementation, emphasizing single-purpose entities with a clearly defined mission, decision-making authority, responsibility and accountability. Implementing agencies must have a strong track record in cost and schedule control.
10. Structure project implementation (including institutional arrangements) with the same rigor and transparency required for obtaining “investment grade” revenue bond ratings.

#### **D. Intermodal Trucking Availability and Terminal Productivity**

1. Identify sources of inefficiency and delay, and develop specific programs to make better use of existing transportation assets.
2. Measure the severity of the looming shortage in truck drivers.
3. Establish, where feasible, common chassis pools to improve productivity and turn times within the supply chain. Identify Best Practices for chassis pools.
4. Quantify performance measures for reasonable turn times for trucks at port and railroad facilities. Establish benchmarking standards and best practices to maximize the use of existing infrastructure and capacity.
5. Develop strategies for both near-dock and on-dock rail facilities for short and long-term goods movement solutions.
6. Explore the use of federal anti-trust exemption for motor carriers to work together to improve productivity.
7. Develop an inventory of land uses, including industrial uses to facilitate planning.

#### **E. Legislation**

1. Extend design-build authority to ports, transportation joint powers authorities, county and city public works departments, and local and regional transportation agencies that adopt performance and accountability measures, and benchmarking standards.
2. Allow port authorities and transportation joint powers authorities to enter into agreements with private entities for owning or operating surface transportation infrastructure.
3. In developing guidelines for the distribution of funds to transportation and air quality programs, give serious consideration to geographic equity based in part on the relative volumes of international cargo flowing through various regions of the State.
4. In lieu of legislatively mandated fees, industry, government and other stakeholders should negotiate joint public-private structures to fund a defined list of freight mobility and environmental mitigation projects.
5. Urge Congress to develop and pass legislation that would implement a national goods movement policy supportive of California goods movement efforts, data collection, modeling and simulation, and performance and effectiveness metrics infrastructure development and air quality improvement efforts
6. Develop a California consensus position on goods movement development, then work closely with the entire California congressional delegation, the West Coast Corridor Coalition, the Waterfront Coalition and other stakeholders to develop a unified

approach to lobbying for additional federal support for goods movement related projects, port security and environmental programs.

7. Identify a continuing collaborative role for CALMITSAC to play as liaison to the California Business, Transportation and Housing Agency. Legislation authorizing CALMITSAC to act in an advisory capacity to the Administration, State Legislature and the California Transportation Commission may be modeled on the role that MTSNAC plays vis-à-vis the Secretary of the U.S. Department of Transportation.
8. The State should further examine land use policies that would encourage reduction of conflicts between goods movement activities and local communities.

## **F. MTS Security**

1. Encourage ports and terminal operators to keep business recovery plans current, including off-site storage of important records including financial records, engineering drawings, “as-built” drawings, etc.
2. Encourage the various agencies involved with port and maritime security, preparedness, response and interoperability to work together to avoid overlap, duplication of effort and conflicting regulations.
3. Encourage sharing of intelligence information among federal, state and local agencies. Identify the barriers to intelligence sharing, such as state government.
4. Closely monitor the implementation and impact of the Transportation Worker Identification Credential (TWIC) and any comparable state program.
5. Urge rapid installation of the Automated Secure Vessel Tracking System (ASVTS) by the U.S. Coast Guard District Eleven Command, which covers all California ports, as a component supporting attainment of a common operating picture for safety and security within the MTS.
6. Urge adoption of a global radio-frequency standard for e-seals for use on marine containers.
7. Establish one or more National Port Security Research Centers in California, and encourage the Department of Homeland Security to request, and the Congress to appropriate, funds from the Department of Homeland Security annual appropriations to implement this initiative to improve port security on a national scale.
8. Recommend the California Transportation Commission support the efforts of California Maritime Academy to seek funding support on behalf of PISCES from the proceeds of Proposition 1B approved by the voters in November, 2006 eligible for port security grants.
9. CALMITSAC adopts and reaffirms the recommendations of the Goods Movement Action Plan concerning the California Green Freight Corridor Network concept, supports the efforts of the Strategic Mobility 21 program toward this goal, and recommends that the California Transportation Commission provide additional matching funds from the proceeds of the Proposition 1B initiative to implement and deploy a statewide Green Freight Network of corridors including Los Angeles Long Beach, the Inland Empire, San Francisco Bay Area, San Diego Border, and Central Valley subject to ongoing evaluation.

10. CALMITSAC urges the State of California to add its voice for accelerated resolution and adoption of RFID controls, and encourage the federal DHS to fully support the resolution of the frequency standard debate. With a globally agreed upon radio-frequency standard, the industry will likely adopt e-seals and RFID technology on its own.
11. Recognize the California Maritime Security Council's role to enact statutory language to implement a multi-jurisdictional port security taskforce as recommended in the Goods Movement Action Plan.
12. Recommend that CA legislature enact permanent statutory authority establishing the Governor's Office of Homeland Security with Statewide interagency port security policy coordination responsibility subject to appropriate legislative oversight.

## **G. Education**

1. Identify research opportunities as part of the SAFETEA-LU funded "National Cooperative Freight Transportation Research Program" that contribute to our understanding of goods movement in California.
2. Encourage industry leaders to identify skill sets needed for workers at all levels of employment, including entry level. Encourage academic leaders to review curricula within planning, business and engineering programs to ensure that adequate training opportunities exist to produce supply chain management professionals with those various skill sets.
3. Review state directed research programs and priorities to ensure that they emphasize goods movement and trade and transportation issues. Available funding, grants, and training opportunities will encourage faculty who already have an interest in these topics and develop new educators in the trade and transportation disciplines.
4. Encourage state agencies to apply training and continuing education funds toward professional development in the area of goods movement, logistics, maritime, supply chain management and trade and transportation.



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**Submitted by**

**California Marine and Intermodal Transportation System Advisory Council  
(CALMITSAC)**

**April, 2007**

## **1. Background and Introduction**

Recognizing a growing crisis in port-related goods movement in California, Assembly Member Alan Lowenthal (now Senator) introduced Assembly Bill (AB) 2043 on February 17, 2004. Governor Arnold Schwarzenegger signed the bill into law on September 29, 2004 creating the Maritime Port Strategic Master Plan Task Force Act. The Act requests the California Marine and Intermodal Transportation System Advisory Council (CALMITSAC) to address the many challenges associated with the growth of California's ports. CALMITSAC is a regional subunit of the Marine Transportation System National Advisory Council (MTSNAC), chartered in 2006 by U.S. Secretary of Transportation Norman Mineta under the Federal Advisory Council Act (P.L. 92-463). Its members reflect public, private and academic interests and include, among others, the U.S. Maritime Administration, U.S. Coast Guard, California Senate Sub-Committee on California Ports and Goods Movement, Senate Office of Research, California Department of Transportation, California State Lands Commission, California Association of Port Authorities, Pacific Merchant Shipping Association, Pacific Maritime Association, California Maritime Infrastructure Authority, and the State's Marine Exchanges.

The tasks outlined in AB 2043 are directly related to CALMITSAC's mission, which is:

To foster development of a Marine Transportation System (MTS) in California that is safe, secure, efficient, environmentally sound, and capable of expanding to meet the demands of the global economy.

Specifically, the Act asks CALMITSAC to address the projected growth and congestion of the ports, impacts of port growth on the state's transportation system, air pollution caused by the ports and proposed mitigations, and port security. This report attempts to summarize the best thinking from around the State on the importance of the ports to the State and U.S. economies, putting forth strategies for improving the efficiency, reliability, velocity, capacity and security of the MTS, while at the same time addressing the

growing public health problems associated with freight, particularly the effects of diesel emissions.

The broadly defined strategies and specific projects recommended for implementation in this report have taken on added significance in the wake of the November 2006 elections. At that time 61% of the California electorate approved the Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006. This bond initiative, the single largest in California history, authorized \$19.9 billion in expenditures on the State's roads, bridges and transit systems. \$3.1 billion of that total funds projects tied to our ports and the road and rail networks carrying goods, as well as projects that improve port security and mitigate the air quality impacts of freight-related activity.

The transportation bond initiative was part of a broader \$37 billion public works package, also the largest of its kind placed on the ballot, which enjoyed bi-partisan support. Despite the price tag, California voters indicated their willingness to pay for improvements to the State's infrastructure. In addition to the bonds, voters in five California counties approved half-cent sales tax measures to fund transportation-related improvements over the next several decades. These counties reflect the geographic diversity of the State: rapidly urbanizing Orange County, less urbanized counties Madera and Tulare, and rapidly growing Fresno and San Joaquin counties in the Central Valley. Despite their diversity, they share a common concern with the state of their local infrastructure.

This report reflects the fact that there are both localized concerns unique to specific areas of the State as well as problems shared by different regions. As a result, the presentation of problems, issues and proposed strategies is built upon the following assumptions:

- Growth in freight-related activity will continue for the foreseeable future. Global trade patterns will continue to underscore the role of the Pacific Rim as a global gateway for goods originating in Asia. Furthermore, the ever increasing purchasing power of developing nations will mean that trade will be flowing in both directions. In 2005, for the first time, the combined output of emerging economies surpassed that of the developed countries and accounted for more than half of global GDP, measured in purchasing-power parity<sup>1</sup>. China and India, in particular, will become key consumers of U.S. goods and services. This trend is reflected in the fact that the rate of growth in U.S. exports outpaced the rate of growth in U.S. imports in 2005, a trend that is expected to continue through at least 2008. Because of its proximity to Asia, the west coast of the U.S. in general, and California in particular, are well positioned to benefit from this two-way trade.

The State as a whole, along with various subregions, will continue to encourage trade-related growth while working toward mitigating the negative impacts of that growth. Concerns over congestion and pollution did not prevent the Mayor of Los

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<sup>1</sup> "Hot Topic: Emergent Purchasing Power," PIERS Intelligence@Work 4(4), Nov. 2006. (<http://www.piers.com/newsroom/#intelligence>)

Angeles from making a widely publicized trip to Asia in October of 2006 to boost commerce and solidify the City's role as principal maritime and air gateway to the U.S. Long Beach is seeking to annex 642 acres of port-serving industrial uses in the Rancho Dominguez area and include them in an enterprise zone. The City of Carson is interested in the land as well.<sup>2</sup> A \$600 million expansion and modernization plan at the Port of Oakland will better allow the Bay Area to compete with Southern California.<sup>3</sup> The actions of local leaders are driven not only by competition within the State but from other parts of the Country as well. Texas has pursued the development of logistics parks anchored by intermodal operations; and the Dallas-Fort Worth area has the nation's fastest growing air cargo facility.<sup>4</sup> North Texas in general advertises itself as an advantageous intermodal location because it is directly east of the Southern CA ports. However, community concerns and the increasing number of studies demonstrating the health-related impacts of trade will require officials to address environmental impacts. In the absence of such efforts, the public will not support continued growth.

- Impacts of trade, both positive and negative, will be felt by different parts of the State in different ways. A recent report by the Reason Foundation determined that California needs 13,100 new lane miles of infrastructure to address both population growth and to relieve existing traffic congestion.<sup>5</sup> However, infrastructure plans must be guided by the needs and priorities of the individual region with an understanding of the impacts of local decision making on other regions and the State as a whole. The unique nature of the CALMITSAC membership ensures that individual regions and smaller ports have their say while at the same time discouraging the turf wars that have marked previous discussions surrounding trade-related growth.
- Identifying needs will be easier than identifying funding sources and assigning priorities. The American Society of Civil Engineers recently gave the State's overall infrastructure a grade of C-minus (transportation infrastructure was graded a D-plus) and determined that it would take almost \$18 billion a year for ten years to bring the state's transportation system up to a B grade.<sup>6</sup> The bond initiative and protection of gasoline sales tax revenues are important starts, but other funding sources must be identified and dollars must be spent wisely. Projects around which consensus has already developed and which can be implemented most quickly should receive priority. This "low hanging fruit" approach will result in recognizable benefits for the community and help to develop more broad-based

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<sup>2</sup> K. Hanson, "L.B. seeks to annex industrial land," Long Beach Press Telegram (web version), Nov. 9, 2006.

<sup>3</sup> A. F. Hamm, "Ports Compete for Valley Traffic." Silicon Valley/San Jose Business Journal (web version), Jan. 28, 2005.

<sup>4</sup> A. Jares, "Metroplex becoming Import Hub," Fort Worth Star-Telegram (web version), Sep. 18, 2006.

<sup>5</sup> T. Balaker, A.T. Moore, G. Passantino, R.W. Poole, Jr., A. Summers, and L. Wang, Addressing California's Transportation Needs: Problems with Proposition 1B and Alternative Approaches. Reason Policy Study 341, Sep. 2006 ([http://reason.org/californiaballot/ps341\\_transportation.pdf](http://reason.org/californiaballot/ps341_transportation.pdf))

<sup>6</sup> Harrison Sheppard, "Engineers say \$42 billion not enough," MediaNews, October 2, 2006.

support for future efforts. A broader consensus will translate into reduced costs and time needed to direct projects through the review process. Technology and capital improvements are part of the solution, but the range of options also includes changes in operations that result in system-wide efficiencies.

- Developing consensus means effectively communicating the needs of the State to elected officials and other decision makers in Washington and at the local level as well. The infrastructure crisis in California has opened a window of opportunity. The USDOT, in the run-up to a 2009 transportation reauthorization bill, has convened a blue-ribbon commission to study future financing and transportation infrastructure needs. CALMITSAC hosted the Commission on its visit to Southern California in February 2007. A Freight Transportation Industry Roundtable, under the auspices of the Transportation Research Board, is making policy recommendations that should guide the administration and Congress in addressing needs at the national level. Well-developed strategies at the state level will put California in a favorable position to influence the direction taken by the federal government.
- Finally, CALMITSAC recognizes that strategies and recommendations must respond to changing circumstances. As a result, this report is designed to be a blueprint for future action, not the final word on goods movement in California. Where answers are not yet available, further study – and not action – is called for.

A great deal is at stake: air quality, public health, quality of life, efficiency of goods movement, congestion relief, jobs, income, profits, and tax revenue. CALMITSAC believes that growing the economy and protecting the environment and public health are cornerstone objectives. CALMITSAC's approach is consistent with State policy<sup>7</sup> on goods movement, which is to improve and expand California's goods movement industry and infrastructure in a manner that will:

- Generate jobs
- Increase mobility and relieve traffic congestion
- Improve air quality and protect public health
- Enhance public and port safety
- Improve California's quality of life

CALMITSAC is pursuing opportunities for environmental and industry stakeholders to find common ground and to develop goods movement solutions that create more and better jobs while advancing California's economic future and quality of life.

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<sup>7</sup> California Business, Transportation & Housing Agency, California Environmental Protection Agency, "Policy Statement on Goods Movement in California," January 27, 2005. (<http://www.arb.ca.gov/gmp/policy.pdf>)



## 2. Economic Imperative: Improving Job Opportunities

The “economy” is not an abstract concept. Rather, the economy is supporting your family, putting food on the table, guaranteeing access to health care, helping you afford to send your children to college, and maybe allowing you to take a vacation every now and then. In short, a strong economy means a good quality of life. It has been said, “Quality of life begins with a job.”<sup>8</sup> A recent study by the Public Policy Institute of California (PPIC) found that improving jobs and the economy is the highest priority of Californians across all regions of the State.<sup>9</sup> There is a particular concern over the loss of entry-level employment opportunities in manufacturing. Between 1992 and 2003, one of the two sectors with the largest net employment losses due to relocation was manufacturing.<sup>10</sup>

A recent study for the Southern California Association of Governments (SCAG) by Dr. John Husing demonstrates that the logistics sector is a very important employer, particularly for blue-collar workers.<sup>11</sup> In 2003, the logistics sector in Southern California included 38,706 firms with 548,278 workers. The average wage for logistics sector workers in 2003 was \$45,314 per year, which is higher than in manufacturing<sup>12</sup> (\$43,871) and construction (\$40,439). Husing is concerned about *economic justice* as well as environmental justice. His report asserts that the logistics sector can help replace lost manufacturing jobs and offer upward mobility for blue-collar workers. This is critical to the region’s future since nearly 45% of the adults in Southern California have no college experience<sup>13</sup>.

Dr. Husing is not alone in his views on the importance of logistics. The California Workforce Investment Board (CWIB) believes that the logistics sector is worthy of infrastructure investment and focused job training that better matches workforce education with workplace demand.

The State of California and its regions need to understand the opportunity presented by the growth of logistics as part of globally competitive manufacturing value chains and invest in the workforce and infrastructure required to meet increasing demand. Public and private investments in the logistics workforce training partnerships and infrastructure create “triple bottom line” benefits for the economy through increased jobs and

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<sup>8</sup> P. M. Hoyos, Watson Land Company, testimony to hearing of Business, Transportation and Housing Agency and California EPA, Los Angeles, March 24, 2005.

<sup>9</sup> Public Policy Institute of California. CA 2025: Californians and the Future. Sep. 2006. ([www.ppic.org](http://www.ppic.org))

<sup>10</sup> Public Policy Institute of California. Just the Facts: Business Relocation and Employment Change in California. June 2006. ([www.ppic.org](http://www.ppic.org))

<sup>11</sup> J.E. Husing, Ph.D., Logistics & Distribution: An Answer to Regional Upward Social Mobility, June 9, 2004.

<sup>12</sup> The share of employment in manufacturing in the State is expected to decline from 10% to 8% by 2025 according to a Sep. 2006 study by the Public Policy Institute of California. See CA 2025: California’s Future Economy ([www.ppic.org](http://www.ppic.org)).

<sup>13</sup> J. Husing. Goods Movement in Southern California: The Challenge, the Opportunity, and the Solution. Report prepared for the Southern California Association of Governments, Sep. 2005. ([www.scag.ca.gov/goodsmove/pdf/GoodsmovePaper0905.pdf](http://www.scag.ca.gov/goodsmove/pdf/GoodsmovePaper0905.pdf))

productivity; equity benefits through higher wages and opportunities for career progression; and the environment through reduced bottlenecks, waste and pollution.<sup>14</sup>

There needs to be a balanced commitment to environmental quality and economic vitality. The occasional suggestions calling for a moratorium on port growth or on the goods movement industry are not viable options. They would be detrimental to the U.S. economy where transportation represents 11% of U.S. GDP, the California economy (the 8<sup>th</sup> largest in the world) where one in every seven jobs is tied to international trade, and could have other negative social impacts.

California ports are major economic powerhouses and are the gateways to the rest of America (Table 1). In 2005, containerized waterborne commerce through California's ports accounted for nearly 40% of the national total – up from 32.5% in 1994 and 28.5% in 1984.<sup>15</sup>

**Table 1: California Container Traffic as Share of U.S. Total**

	<b>2004</b>	<b>% of U.S.</b>	<b>2005</b>	<b>% of U.S.</b>
	<b>TEUs</b>		<b>TEUs</b>	
<b>CA Port</b>				
Long Beach	5,779,852	15.0%	6,709,818	16.0%
Los Angeles	7,321,440	18.9%	7,484,624	17.8%
Oakland	2,043,122	5.3%	2,272,525	5.4%
San Diego	92,834	0.2%	101,509	0.2%
San Francisco	32,045	0.1%	-	0.0%
Hueneme	19,463	0.1%	29,114	0.1%
<b>Total CA</b>	<b>15,288,756</b>	<b>39.6%</b>	<b>16,597,590</b>	<b>39.6%</b>
<b>Total U.S.</b>	<b>38,654,658</b>	<b>100.0%</b>	<b>41,963,742</b>	<b>100.0%</b>

Source: American Association of Port Authorities  
[http://aapa.files.cms-plus.com/Statistics/CONTAINER\\_TRAFFIC\\_CANADA\\_US.xls](http://aapa.files.cms-plus.com/Statistics/CONTAINER_TRAFFIC_CANADA_US.xls)

<sup>14</sup> Collaborative Economics, Inc., Logistics and Manufacturing Value Chains: Meeting the Workforce and Infrastructure Demands of a “Real Time” Economy, July 2005. This paper was prepared for the California Regional Economies Project, a joint effort of the California Workforce Investment Board and the California Economic Strategy Panel.

<sup>15</sup> Figures available at American Association of Port Authorities website ([www.aapa-ports.org](http://www.aapa-ports.org)).

As shown in the table below, three of the four largest container ports in the country are located in California (Los Angeles, Long Beach, and Oakland). Combined, Los Angeles and Long Beach represent the fifth largest port complex in the world (Table 2).

**Table 2: 2005 Top Ports in Twenty-Foot Equivalent Units (000)**

Top North American Ports		Top World Ports	
1. Los Angeles	7,480	1. Singapore	23,190
2. Long Beach	6,710	2. Hong Kong	22,600
3. NY/NJ	4,790	3. Shanghai	18,080
4. Oakland	2,270	4. Shenzhen	16,200
5. Seattle	2,090	LA/LB COMBINED	14,190
6. Tacoma	2,070	5. Busan	11,840
7. Charleston	1,990	6. Kaohsiung	9,470
8. Hampton Roads	1,980	7. Rotterdam	9,290
9. Savannah	1,900	8. Hamburg	8,090
10. Vancouver	1,770	9. Dubai	7,620
11. San Juan	1,730	10. Los Angeles	7,480
12. Houston	1,580	11. Long Beach	6,710
13. Montreal	1,250	12. Antwerp	6,480

Source: Journal of Commerce and American Association of Port Authorities

As a result of trade and manufacturing trends, both the largest ports as well as the fastest growing ports are in Asia (Table 3). The top five fastest growing ports alone are in China, which is Southern California's top trading partner. Not surprisingly then, California ports in general, and Southern California ports in particular, are benefiting from this trade and enjoying rapid growth in cargo volume.

**Table 3: World's Fastest Growing Ports, 2004-2005**

% increase in TEUs (2004-2005)	
1. Guangzhou	40.7
2. Ningbo-Zhoushan	30.0
3. Tianjin	25.8
4. Shanghai	18.6
5. Qingdao	22.7
6. Santos (Brazil)	20.5
7. Dalian	20.0
8. Ho Chi Minh	19.4
9. Shenzhen	18.6
10. Dubai	18.5
11. Seattle	17.6
12. Jeddah	16.9
13. Xiamen	16.4
14. Long Beach	16.1

Source: Journal of Commerce

The combined value of exports and imports at the Los Angeles, San Francisco and San Diego Customs Districts in 2004 was estimated at \$400 billion and was projected to grow to nearly \$513 billion in 2006.<sup>16</sup> Southern California is the primary portal for goods both entering and leaving the U.S. In 2004, 43% of the 15.8 million import containers entering the U.S. did so through this region. Almost 30% of the 7.8 million export containers also passed through Southern California.<sup>17</sup> The region is central to the logistics strategies of many major shippers. The ability to successfully manage inventories through the ports and nearby freight-related services can reduce total costs by 18-20%.<sup>18</sup>

Companies associated with the ports and the supply chain employ half a million people and pay \$7 billion a year in taxes<sup>19</sup>. Nationwide, over 2 million jobs are linked to the two ports. About 27% of those jobs are located in California and about 22% in the five-county Los Angeles region (Figure 1).<sup>20</sup>

San Diego has become increasingly important as a gateway for fresh fruit, construction equipment, alternative energy equipment imports, and automobiles. In 2006, freight volumes rose 28% over 2005 figures; total cargo has increased 95% in only 3 years.<sup>21</sup> Five hundred thousand vehicles now move through San Diego each year, up from only 30,000 in 1990<sup>22</sup>; and the port's annual revenue now surpasses \$9 billion. Its 38,000 employees make an average of \$50,000 per year.<sup>23</sup>

Port Hueneme has also become an important center for the transshipment of fruit and autos. Through the first half of 2006, the Port moved 9% more metric tons of cargo than it did during the previous 12 months.<sup>24</sup>

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<sup>16</sup> Los Angeles County Economic Development Corporation, 2005-2006 Economic Forecast & Industry Outlook for the Los Angeles Five-County Area, January 2005. ([www.laedc.org](http://www.laedc.org))

<sup>17</sup> J. Husing, Goods Movement in Southern California: The Challenge, the Opportunity, and the Solution. Report prepared for the Southern California Association of Governments, Sep. 2005. ([www.scag.ca.gov/goodsmove/pdf/GoodsmovePaper0905.pdf](http://www.scag.ca.gov/goodsmove/pdf/GoodsmovePaper0905.pdf))

<sup>18</sup> R. Leachman, Port and Modal Elasticity Study, Report prepared for the Southern California Association of Governments, Sep. 2005. ([www.scag.ca.gov](http://www.scag.ca.gov))

<sup>19</sup> R.D. White, "Huge Month Says Volumes about Changes at L.A. Port." Los Angeles Times, November 21, 2006, p. C1.

<sup>20</sup> Percentages from Port of Long Beach, Economic Impacts: Contributing to the Local, State & National Economies, 2005.

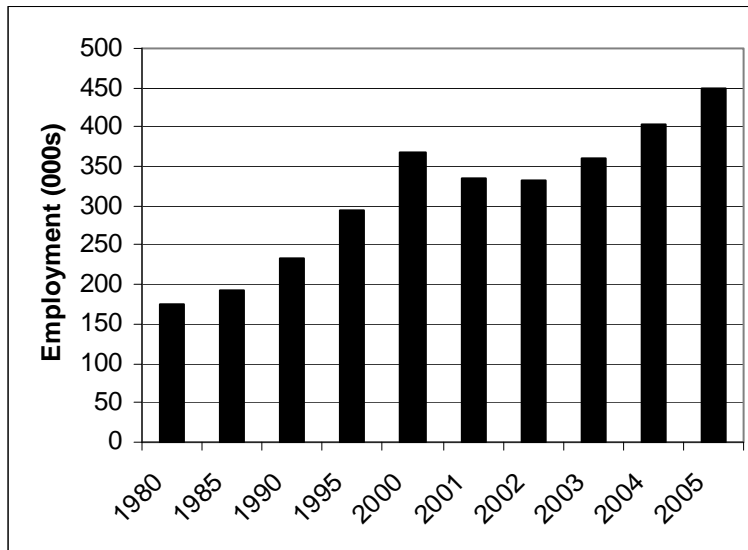
<sup>21</sup> R.D. White "Small Ports also Benefit as Global Trade Swells." Los Angeles Times. December 22, 2006.

<sup>22</sup> R.D. White "Small Ports also Benefit as Global Trade Swells." Los Angeles Times. December 22, 2006.

<sup>23</sup> D. Downey, "A Seaport in Transition: Officials eye Bond Money as International Trade remakes Port of San Diego," NC Times (web version), October 2, 2006.

<sup>24</sup> R.D. White "Small Ports also Benefit as Global Trade Swells." Los Angeles Times. December 22, 2006.

**Figure 1: International Trade Employment (Direct), L.A. Five-County Area**



Source: Los Angeles Economic Development Corporation

The lockout of West Coast ports in September and October of 2002 dramatically illustrated the importance of maritime commerce. The combined 10-day lockout and 23-day backlog are estimated to have disrupted trade valued at \$6.28 billion just at the Ports of Long Beach and Los Angeles. Severe terminal, highway or railway capacity constraints can have the same economic effects as the lockout of 2002. Transport delays will impact the cost of doing business, the environment, and our nation's ability to compete internationally.

Failure to invest in goods movement infrastructure could mean significant losses of future state tax revenues. The Los Angeles County Economic Development Corporation (LAEDC) estimates that the state could forego a cumulative \$17.2 billion in state income and sales taxes through 2035:

The cumulative impact on the state's revenues over three decades [2005-2035] is enormous: \$12.7 billion in lost state income taxes and \$4.5 billion of sales taxes for the state. The total sales tax revenues missed would be higher still, since hundreds of millions in sales taxes that are returned to local jurisdictions is not included here.<sup>25</sup>

Conversely, by building the infrastructure to accommodate growth, the Southern California Association of Governments estimates that almost 1.4

<sup>25</sup> Los Angeles County Economic Development Corporation, The West Coast National Freight Gateway (WCNFG): A Trade Congestion Reduction Program, 2005. Figures shown are for a specific investment scenario. ([http://www.laedc.org/data/pdf/LAEDC\\_2005-WCNFGProgram-FullReport.pdf](http://www.laedc.org/data/pdf/LAEDC_2005-WCNFGProgram-FullReport.pdf))

million jobs could be created, 325,000 of which would be in the logistics field.<sup>26</sup>

The economic benefits of goods movement are being threatened, however, by valid concerns over congestion, productivity (efficiency of use of existing transportation assets), air pollution, community impact, limited capacities of highways and railways, and inadequate funding levels. The inherent trade advantages enjoyed by California - and by extension the United States - could be negated if there is not a concerted statewide effort to maintain, enhance, modernize and expand the base of port facilities and services at California's public ports in Oakland, San Francisco, Stockton, Sacramento, Richmond, Redwood City, Humboldt, Los Angeles, Long Beach, Hueneme, and San Diego (Figure 2). Each of these ports plays a specialized role in support of the wide variety of goods shipped. They work cooperatively and systematically to move California's and the nation's goods.

**Figure 2: California's Public Ports**



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<sup>26</sup> J. Husing. Goods Movement in Southern California: The Challenge, the Opportunity, and the Solution. Report prepared for the Southern California Association of Governments, Sep. 2005. ([www.scag.ca.gov/goodsmove/pdf/GoodsmovePaper0905.pdf](http://www.scag.ca.gov/goodsmove/pdf/GoodsmovePaper0905.pdf))

### **3. Public Health Imperative: Reducing Port-Related Air Pollution**

Port operations are a significant source of diesel particulate matter (diesel PM) and oxides of nitrogen (NOx). The California Air Resources Board has identified ocean-going vessels as the largest source of diesel emissions from ports. The enormous diesel engines that power container vessels are not equipped with emission control devices. Based on California Air Resources Board (CARB) surveys, ships visiting California ports run on fuel containing an average of 2.5% sulfur fuel (25,000 parts per million). In contrast, on and off-road sources in the country are currently required to use fuel with fifteen parts per million sulfur.<sup>27</sup>

Ocean-going vessels emit about 50 tons of both NOx and PM per day in the South Coast Air Basin. Collectively, ocean-going marine vessels emit more NOx on a daily basis than all the power plants, refineries and 330 other largest stationary sources in the basin.<sup>28</sup> The large majority of these vessels fly foreign flags making regulatory oversight difficult. The International Maritime Organization (IMO) regulates emissions from vessels. There are also no state or local emission standards applicable to marine vessel engines. The U.S. Environmental Protection Agency (EPA) issued regulations mirroring, but not tightening, the IMO standards in 2003.

Cargo handling equipment, trucks and trains are other important sources of diesel exhaust. The South Coast Air Quality Management District (AQMD) estimates that the ports are responsible for more NOx than the daily emissions of 11 million passenger cars, the approximate number in operation in Southern California. Like marine vessels, these other emission sources are subject to varying degrees of regulatory authority. In some cases, e.g. locomotives, the federal government enjoys the right of preemption. Collectively, all of these sources along with ships emit a quarter of all diesel PM emissions in the South Coast Air Basin. While locomotives and marine vessels contribute the largest amount of both PM and NOx, port trucks in Los Angeles and Long Beach emit more than 6,000 tons of NOx and 300 tons of PM annually according to CARB.

Unless substantial emission controls are applied, these impacts will become even worse as cargo throughput increases. Emissions from marine vessels are expected to actually increase in coming years. This is in contrast to virtually every other source category in the South Coast Air Quality Management District inventory, including trucks and cargo-handling equipment, which have emissions that are projected to decline. However, the problem with emissions from older vehicles must be addressed by accelerating the turnover of the truck fleet.

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<sup>27</sup> California Air Resources Board, Emission Reduction Plan for Ports and Goods Movement in California, April 20, 2006.

<sup>28</sup> P. Greenwald, Senior Policy Advisor for the South Coast Air Quality Management District, presentation to Senate Subcommittee on California Ports and Goods Movement, Oakland, CA, November 15, 2005.

Recent health risk studies have generated more and more concern about goods movement related air pollution, including the impacts on those who work in the industry.<sup>29</sup> In 1998, the California Air Resources Board identified diesel PM as a toxic air contaminant based on its potential to cause cancer. Diesel PM includes carbon particles or “soot” that can be seen in exhaust streams, and particles too small to be seen by the naked eye.<sup>30</sup> The number of premature deaths statewide attributable to PM now equals the number from second-hand smoke and traffic accidents.

On April 20, 2006, CARB adopted an emission reduction plan for ports and goods movement in California. According to CARB staff, the health impacts of pollutants commonly associated with emissions from goods movement include premature death, cancer risk (according to CARB, about 70% of the potential cancer risk from toxic air contaminants in California is due to diesel PM), respiratory illnesses, and increased risk of heart and blood vessel diseases. CARB staff estimated that emissions from current (2005) goods movement activities in the state would result in approximately 2,400 premature deaths per year. Measures already in place are expected to reduce this amount about 30% by 2020 despite growth. With implementation of the plan, an additional 820 premature deaths would be avoided by 2020.<sup>31</sup>

To put that number in perspective, CARB staff estimated that the total statewide deaths associated with particulate exposure were approximately 9,000 per year based on 1999 to 2003 data. For areas in close proximity to major diesel sources, such as ports, rail yards and along major transportation corridors, the increase in cancer risk from these sources alone can exceed 500 per million in some locations, according to the study. Since the concentration of diesel PM in the air declines with distance from the sources, risk decreases the farther one moves away from goods movement activity centers. However, even several miles away, the associated cancer risk can exceed 10 per million.

CARB estimates that 50% of premature deaths associated with goods movement are in the South Coast Air Basin, which has more emissions and more people than other regions. San Diego, San Francisco, and the San Joaquin Valley air basins collectively account for 27%, with the remaining distributed primarily among a few other urban areas. Other quantifiable health impacts identified by CARB staff include air pollution-related hospitalizations, asthma attacks and missed work/school days. CARB attributes about one million school absences every year and 360,000 missed workdays to cargo-related pollution. Particulate matter, primarily from diesel engines (e.g., diesel exhaust), and pollutants (e.g., NOx) that form ozone and particulate matter in the atmosphere are key pollutants associated with these health effects.

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<sup>29</sup> E. Garshick, F. Laden, JE Hart, B. Rosner, TJ Smith, DW Dockery (2004) “Lung Cancer in Railroad Workers Exposed to Diesel Exhaust.” *Environmental Health Perspectives* 112: 1539-1543.

<sup>30</sup> California Air Resources Board, Fact Sheet on Maritime Ports and Air Quality (<http://www.arb.ca.gov/msprog/offroad/marinevess/documents/portfs111804.pdf> )

<sup>31</sup> California Air Resources Board, Emission Reduction Plan for Ports and Goods Movement in California, April 20, 2006.



CARB also released a health risk assessment for exposure to diesel PM emissions from areas near the Ports of Long Beach and Los Angeles.<sup>31</sup> Another involving locomotives at Union Pacific's Roseville rail yard in Northern California was completed in 2004.<sup>32</sup> The first study estimated that about 50,000 people living closest to the port are exposed to cancer risks of up to, and in some cases over, 500 new cancer cases per million people – just from diesel PM sources within the boundaries of the ports. Marine engines in isolation accounted for 300 potential cancer cases per million. The second study found a 100-to-500-per-million risk from locomotives alone.

Risk is expressed as the number of persons in a population of a million people who might be expected to get cancer over a 70-year lifetime. For the 50,000 people closest to the ports, that means an estimated 25 new cancer cases above the expected rate of cancer in the population. The expected rate of cancer for all causes including smoking is about 200,000 to 250,000 chances in a million, or one in four to five people. That means that of the 50,000 people living nearest the ports, between 10,000 and 12,500 people would be expected to get cancer over their lifetimes. Twenty-five additional cases translate into an increase of 0.2% to 0.25% over the expected number of incidents. This is an unacceptable level from a public health standpoint. Another study of cancer concentrations in Los Angeles County supports the CARB findings. It found elevated rates of certain cancers in residents living near ports.<sup>33</sup> In February 2006, a Seattle Times study using USEPA data found that the deadliest air in the State of Washington is clustered around its ports.<sup>34</sup>

Further from the port, the risk decreases but the number of people exposed increases. CARB estimated that nearly 60% of the 2 million people that live in the area around the ports have predicted cancer risks exceeding 100 in a million.<sup>35</sup> That translates to 120 new cases above the expected number of cancer cases.

There are also concerns about impacts on communities in places like San Bernardino and Riverside Counties, which are adjacent to the roads, freeways and rail systems that carry goods away from the ports. A major study sponsored by the National Institute of Environmental Health Sciences, CARB, USEPA and the South Coast Air Quality Management District among others determined that young children who live in pollution corridors near a major road (in the vicinity of 650 feet) are significantly more likely to have asthma than children who live blocks away.<sup>36</sup> The California legislature has passed a law prohibiting new schools closer than 500 feet from a freeway; however the authors note that air pollution regulations typically focus on regional, and not localized, impacts.

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<sup>31</sup> California Air Resources Board. Diesel Particulate Matter Exposure Assessment Study for the Ports of Los Angeles and Long Beach. April 2006.

<sup>32</sup> California Air Resources Board, Roseville Rail Yard Study, October, 2004.

<sup>33</sup> T. Mack, 2004. Cancers in the Urban Environment. San Diego: Elsevier Press

<sup>34</sup> D. Beeman. "Big Ships are Big Polluters." Long Beach Press Telegram (online version), November 11, 2006.

<sup>35</sup> California Air Resources Board. Diesel Particulate Matter Exposure Assessment Study for the Ports of Los Angeles and Long Beach, April 2006.

<sup>36</sup> R. McConnell, K. Berhane, L. Yao, M. Jerrett, F. Lurmann, F. Gilliland, N. Kunzli, J. Gauderman, E. Avol, D. Thomas, J. Peters (2006) "Traffic, Susceptibility, and Childhood Asthma. Environmental Health Perspectives 114: 766-772.

A University of Southern California (USC) School of Medicine epidemiological study found that children growing up in areas of the South Coast Air Basin with relatively high particulate pollution have higher rates of reduced lung function. Study areas included the city of Upland in San Bernardino County. This reduced lung function may be permanent; it was found in children at ages when their lungs largely stopped developing. Reduced lung function is a risk factor for numerous serious ailments and mortality.<sup>37</sup>

For the 15-year period between 2005 and 2020, CARB estimated that the economic valuation of these health effects is approximately \$200 billion in present value dollars. This assumes a value of \$8.6 million (in 2020) per life ended prematurely.

The South Coast Air Quality Management District, the local regulatory agency responsible for achieving stationary air pollution emission reductions in Los Angeles, Orange, Riverside, and San Bernardino Counties, makes the following observations:<sup>38</sup>

- Air quality in the South Coast Air Basin is still the worst in the nation.
- Sources in goods movement are key contributors to our air pollution problem (some 20% of the LA Basin's PM pollution is attributed to ship and truck emissions).
- Stationary sources like factories and power plants have been controlled to well over 90%.
- The majority of emissions are from mobile sources. This means that clean air cannot be achieved without significant reductions in emissions from sources in goods movement.
- Many sources in goods movement are relatively uncontrolled; and absent application of new control strategies, more cargo means more pollution.
- Air quality must be a primary consideration in any goods movement plan.

CALMITSAC is seeking opportunities to reduce environmental and negative public health impacts while allowing the economy to grow at the same time.

#### **4. Cargo Growth and Competition from Other Trade Gateways**

The increase in cargo volumes in Southern California, the impact of this growth on congestion at the ports and on rail and road networks, and the costs of environmental mitigation in the State have led to speculation that cargo might be diverted to other ports. The likely beneficiaries most often mentioned are in the San Francisco Bay Area, the Pacific northwest (Seattle, Tacoma, Vancouver) and on the east coast (New York/New Jersey, Charleston). There are also port development plans under way in Mexico. These other plans are discussed below. For these other ports to succeed in taking business from California, they must address their own capacity and environmental issues.

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<sup>37</sup> W. J. Gauderman et al, "The Effect of Air Pollution on Lung Development from 10 to 18 Years of Age," *The New England Journal of Medicine*, September 9, 2004

<sup>39</sup> P. Greenwald, Senior Policy Advisor for the South Coast Air Quality Management District, presentation to Senate Subcommittee on California Ports and Goods Movement, Oakland, CA, November 15, 2005.

## 4.1 California Ports

Growth in international trade continues to stress the rail and highway systems serving the State's ports. In 2006 the ports of Los Angeles and Long Beach handled a total of 15.8 million Twenty-foot Equivalent Units (TEUs) of containerized cargo (Table 4). This is projected to nearly triple by 2030 to almost 42.5 million TEUs.

The Port of Oakland is the fourth busiest port in the U.S., trailing only Los Angeles, Long Beach and the Port of New York/New Jersey. Part of its ability to grow is fueled by available capacity. The port currently operates at 60% capacity and is expanding in anticipation of new business.<sup>39</sup> The Port of Oakland handled 2.4 million TEUs in 2006; total cargo valued some \$30 billion. Demand is projected to reach 6.5 million TEUs by 2030. Efforts to accommodate growth through infrastructure improvements and operational enhancements are discussed in Section 5. They include dredging ship channels to 50 feet and developing the former Oakland navy base as a rail facility.

**Table 4: Containerized Cargo Forecasts to 2030 for San Pedro Bay Ports and Port of Oakland (Millions of Twenty-foot Equivalent Units)**

	San Pedro Bay Ports	Port of Oakland
2006 actual	15.8	2.4
2010	19.7	3.0
2020	36.0	6.0
2030	42.5	6.5

Sources: Port of Los Angeles, Port of Long Beach, and Port of Oakland

In recent years, San Francisco has become more of a cruise ship destination than a center for international trade; yet this port has also seen an increase in trade-related traffic. The Port of San Francisco moved 260,000 metric tons of primarily construction-related materials in 2006, a 165% increase since 2003. The Port is building on-dock rail facilities to facilitate this growth. In Sacramento, the Port has entered into an agreement with a terminal operator to run the facility and identified two new tenants expected to move 2.8 million metric tons of cement and concrete through the port.

Rapidly increasing trade with China is fueling much of this growth. The U.S. trade deficit with China reached \$201.5 billion in 2005 – more than twice what it was in 2001. Through September of 2006, the trade deficit with China was \$166.2 billion, well ahead of the 2005 pace. By the end of the third quarter of that year, the deficit was 146.4 billion.<sup>40</sup> With 1.3 billion people<sup>41</sup> China has an almost inexhaustible supply of low-cost labor. In 2002, the manufacturing worker in China made an average of 57 cents per

<sup>39</sup> C. Jones. "Cash-strapped city trolling for a new port." *San Francisco Chronicle* (web version), Sep. 19, 2006.

<sup>40</sup> <http://www.census.gov/foreign-trade/balance/c5700.html#2005>

<sup>41</sup> July 2005 estimate (<http://www.odci.gov/cia/publications/factbook/geos/ch.html#People> )

hour.<sup>42</sup> Wal-Mart bought approximately \$18 billion in merchandise from China in 2004, and 70% of the products sold at Wal-Mart stores are made in China.<sup>43</sup> China is also an emerging market for goods produced elsewhere. China has consistently been the LA Custom District's top import partner, but in 2005 China replaced Japan as its top export destination as well.<sup>44</sup>

Given the pressures on the ports of Los Angeles, Long Beach and Oakland to manage rapid growth, the smaller ports in California will no doubt play a larger role in the future. Their service to the state in handling dry bulk, liquid bulk, break bulk and roll-on/roll-off and specialized cargo, including automobiles, is often overlooked. Unfortunately, these smaller ports are not equipped to handle significant volumes of containerized cargo, so even if they were to attract some traffic from California's top three ports, the diversion would not significantly lessen the highway and railway infrastructure requirements for the Los Angeles/Long Beach and Oakland ports. In addition, less volume does not automatically translate into support from environmental and community-based groups. The Richmond City Council in the early fall of 2006 authorized a feasibility study for a new container port on a wetland site owned by Chevron. Currently, 90% of the Port of Richmond's cargo is crude oil destined for a Chevron refinery.<sup>45</sup> The project faced stiff opposition because it would require dredging a 50-foot channel and removing existing marshland. Investors backed out of the plan in October 2006 and future expansion plans are not likely to include the wetlands.

## **4.2 US Pacific Northwest Ports**

Seattle and Tacoma have excellent intermodal rail connections. The Port of Seattle is pursuing a new intermodal rail facility as part of an agreement with King County. The agreement would also allow the Port to acquire title to property on Harbor Island in an attempt to consolidate the Port's holdings there. In early 2007, Seattle Port Commissioners approved the construction of a new 70-acre container complex which involves the relocation of a cruise terminal.

The Port of Tacoma pioneered on-dock intermodal rail yards in the early 1980s, and has positioned itself as an intermodal gateway ever since. The Port has been a partner in the development of software for a "plug-and-play" intermodal yard capacity planning system. The software also is unique in its ability to determine train length.

In 2005, over 70% of the port's 2.1 million TEUs of containerized cargo moved via on-dock rail for shipment to points inland. Since 2001 the Port of Tacoma has invested an average of \$32 million per year in capital funds to expand and maintain its intermodal networks and facilities; and it is currently undertaking its largest capital improvement

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<sup>42</sup> J. Banister, Manufacturing Employment and Compensation in China, prepared for U.S. Department of Labor, Bureau of Labor Statistics, November 2005, Table 8, p. 76. (<http://www.bls.gov/fls/chinareport.pdf>)

<sup>43</sup> [http://www.chinadaily.com.cn/english/doc/2004-11/29/content\\_395728.htm](http://www.chinadaily.com.cn/english/doc/2004-11/29/content_395728.htm)

<sup>44</sup> Los Angeles County Economic Development Corporation (2006) International Trade Trends & Impacts: The Southern California Region, 2005 Results and 2006 Outlook. ([www.laedc.org](http://www.laedc.org))

<sup>45</sup> C. Jones. "Cash-strapped city trolling for a new port." San Francisco Chronicle (web version), Sep. 19, 2006.

program ever, investing more than \$214 million in terminal, rail and waterway improvements. Tacoma recently opened its largest terminal, the Pierce County Terminal. The project included increasing the width of Blair Waterway to accommodate larger ships. The port also opened a new auto handling facility.

The first regional Freight Action Strategy (FAST) project was constructed at Tacoma in 2001, a grade separation eliminating a key rail-vehicle conflict at Port of Tacoma Road and SR-509. The Port of Tacoma invested over \$8 million in this project, and since has invested an additional \$6 million in FAST projects from Everett to Sumner to improve freight mobility throughout the region.

The Port of Tacoma has estimated growth of 133% in intermodal lifts between 2004 and 2009. Recently the port completed the Comprehensive Tidelands Traffic Study, a long-term strategic plan for managing surface transportation corridor growth and expansion, and the Rail System Alternatives Analysis (RSAA), which builds upon a 1996 long-range rail expansion study. The RSAA recommended six priority projects that would allow the port to more than double its intermodal rail traffic by 2008. Construction was completed in late 2006 on the first two of these priority projects: Bullfrog Junction third track and Chilcote Junction Expansion. The remaining projects are under design. In November 2005, the Port of Tacoma initiated the Off-Tidelands Infrastructure Study and Modeling (OTIS-M), which will analyze specific infrastructure opportunities to support port customers throughout the region and an action plan to implement those options.

The Port of Portland has excess capacity, and has seen an increase in the number of carriers currently calling there. The port has excellent on-dock rail capabilities and ample land for terminal expansion. The port's existing container terminal and intermodal yard can accommodate 400,000 TEUs annually. Because container ships typically require a deeper draft, Portland's 40-foot navigation channel reduces the port's ability to compete with other West Coast ports for containerized freight. Begun in June of 2005, the \$150 million Columbia River Navigation Channel Improvement (CRNCI) project will deepen the Columbia River's 103.5-mile channel from 40 to 43 feet. To date, 27 miles of the channel have been deepened.

Additional infrastructure improvements at the Port of Portland include:

- Delivery of the Port's third Post-Panamax crane in April of 2006. A fourth crane is expected to be delivered in 2008.
- Construction of a third rail line into the T-6 container terminal which will be dedicated to intermodal rail traffic. The project includes a 1.4-mile rail connection from the terminal to the UP and BNSF mainline tracks. Project completion is estimated in July of 2007.
- Recent completion of the Lombard St. overpass project, which removed two at-grade rail crossings from the entrance to the T-6 intermodal rail yard.
- Construction of the Ramsey Rail Yard to expedite rail access to the Port's bulk, auto and container terminals as well as the Rivergate Industrial District which is adjacent to port terminals.

### 4.3 Mexican and Canadian Ports

In Mexico there are proposals to expand ports to attract some cargo that would normally flow through Los Angeles and Long Beach. One proposal at Punta Colonet, 80 miles south of Ensenada, calls for a new container port with an initial capacity of about 1 million TEUs per year with an ultimate capacity of 8.3 million TEUs per year. At Punta Colonet, land is plentiful and inexpensive and there is no apparent restriction on growth. The developer, Hutchison Port Holdings of Hong Kong, has agreed to build a city to house 60-100,000 people. There is also a Memorandum of Understanding with the Union Pacific Railroad (UPRR) to build a rail link to the U.S. This port could have rapid access to U.S. interior markets and key intermodal centers like Houston, and could also serve the California market via the Carrizo Gorge Railway as a link between the UPRR to the east and the Burlington Northern Santa Fe Railway (BNSF) to the west.

Another proposal at the Port of Lazaro Cardenas on the coast of Michoacan state envisions a new container terminal and intermodal rail terminal. Hutchison Port Holdings is involved in this project as well, and has begun a \$200 million expansion to raise the port's container capacity from 100,000 TEUs to 700,000 TEUs by the end of 2007. The goal is to reach an effective capacity of 2 million TEUs. The Lazaro Cardenas terminal would allow the shipment of Asian cargo to the U.S. via the Kansas City Southern-owned Texas Mexican Railway, which crosses the U.S. border at two points: Laredo and Brownsville, Texas. Kansas City Southern has already committed \$600 million in railway infrastructure improvements, and BNSF plans on building a \$1 billion intermodal facility in Gardner, Kansas. Hutchison is reportedly speaking with several Mexican port cities as well as with Yuma, Tucson, Dallas and Houston. In addition, officials from Kansas City and Lazaro Cardenas have signed a cooperative agreement for a trans-Pacific trade corridor, including a joint marketing campaign and the development of security tracking systems along the U.S.-Mexico border.

Mexico has also proposed a dry canal, the Transistmico, running 186 miles between the Pacific and Atlantic. Tucson, AZ is promoting an inland port known as "Puerto Nuevo." This project could accept cargo from California ports as well as from Ports in Mexico, such as Guaymas, Mazatlan, Topolobampo, and Manzanillo.<sup>46</sup>

These various efforts reflect a growing interest in cross-border traffic spurred in part by the North American Free Trade Agreement (NAFTA). NAFTA, signed in 1993, opened the U.S.' northern and southern borders to Canadian and Mexican trucks. Since that time, trade between the U.S. and Mexico has quadrupled.<sup>47</sup> The U.S. Department of Transportation plans on implementing a pilot project to allow about 100 Mexican truckers to go beyond the existing border zone. Cross-border traffic has been delayed up to now by concerns over lax safety and regulatory standards in Mexico. The Federal Motor Carrier Safety Administration now has inspectors at all U.S.-Mexico commercial

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<sup>46</sup> <http://www.puertonuevotucson.com/>

<sup>47</sup> "Alliance Proposes Improvements to Cross-border Trade." *Journal of Commerce Online*. November 10, 2006.

truck crossings and works with State inspectors as well. Congress is also requiring that Mexican trucking companies allow safety inspections at their place of business. The pilot project will begin once these outstanding matters have been resolved, which could take several years.<sup>48</sup>

The expected increase in cross-border traffic will require more efficient entry procedures. The Border Trade Alliance, a border trade advocacy group, has presented recommendations to the U.S. Government regarding prototypes for new border facilities, means of reporting transit times, and congestion assessments.

NAFTA has also generated cross-border trade with Canada. In December 2006, the Port of Vancouver gave final approval for construction of a third container berth at Deltaport. The project, when completed in 2009, will allow the terminal to move an additional 430,000 TEUs per year for a total capacity of 1.3 million TEUs. This is an amount equal to the capacity of all of Vancouver's other terminals combined. The port is also undertaking up to \$26 million worth of environmental mitigation projects. The Vancouver area ports, which include Vancouver, Fraser River and North Fraser, announced in November 2006 their decision to integrate into a single port authority. The purpose is to facilitate port planning, development and marketing; and is part of a region-wide Pacific Gateway strategy

At Prince Rupert, British Columbia, 500 miles north of Vancouver, there are plans for a 160-acre terminal that could handle an estimated 2 million TEUs per year. The first phase of the development, which will accommodate 500,000 TEUs, recently opened. A \$233.5 million "Asia-Pacific Gateway and Corridor Transportation Infrastructure Fund" is intended to improve rail and road connections. China is Canada's number two trading partner and the rail link that is in place will provide access for these goods to the Chicago and eastern U.S. markets. Prince Rupert enjoys deep water harbors and is a day closer to Asia than other west coast ports, but the new container terminal development is not expected to diminish infrastructure requirements at California ports.

Beyond NAFTA, it is expected that north-south trade will increase with the United States-Central America-Dominican Republic Free Trade Agreement (CAFTA-DR). This agreement eliminates tariffs on more than 80% of U.S. exports. In the first nine months of 2006, U.S. exports to the region increased by almost 17%. Imports increased by more than 3%.<sup>49</sup>

#### **4.4 The Panama and Nicaragua Canals**

The Panama Canal handles 5% of the world's shipping trade.<sup>50</sup> In 2005, more than 14,000 vessels passed through the Panama Canal. This equaled 93% of its effective

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<sup>48</sup> A. G. Keane. "Cracking Open the Border: DOT Outlines Program to Allow Mexican Trucks on US Highways." *Journal of Commerce*, October 23, 2006, pp. 34-35.

<sup>49</sup> A. Field. "CAFTA to Spur U.S. Exports: Study." *Journal of Commerce Online*, November 29, 2006.

<sup>50</sup> L. Lozano. "Pipe Dream: Nicaragua's Proposal for a second Canal across Central America is considered a Long Shot." *Journal of Commerce*, October 23, 2006, pp. 30-33.

capacity. It is anticipated that full capacity will be reached in 2012.<sup>51</sup> On October 22, 2006 the voters of Panama overwhelmingly approved a \$5.25 billion expansion of the Panama Canal. The proposed expansion, the value of which is 1/3 of the Panamanian GDP, includes building a third set of locks to accommodate 12,000 TEU ships and 50 feet of draft. The Canal's locks are presently 110 feet wide and 1,000 feet long and are only able to handle 4,500 TEU ships and 39.5 feet of draft. Many new ships exceed 150,000 tons. The Canal's current design can accommodate 65,000-ton ships.<sup>52</sup> The targeted completion date is 2014 but could well be later. Partial excavation already occurred for a project started just prior to World War II.

It is hoped that the additional capacity will eliminate delays. It is not uncommon to have a backlog of up to 100 vessels if a lane is out of service.<sup>53</sup> Transit time should normally be just nine hours, but current wait time can make the trip last a full 24 hours.

The Panama Canal Authority is required by law to finance the costs of the expansion. This will likely be done through a combination of existing reserves, increased tolls and loans. The toll increases are expected to start in 2007 and then increase 3.5% per year between 2009 and 2025. At that point, tolls would be double the current rate, which can be as much as \$200,000 per ship. There are concerns about the impact of such an increase on cargo traffic. Shippers seeking to avoid the new rates might still rely upon west coast ports as a cheaper gateway to the East coast of the U.S.<sup>54</sup> Almost 90% of traffic using the Panama Canal involves U.S.-Asia trade<sup>55</sup> but only seven of every 100 boats arriving in the Americas use the Canal.<sup>56</sup>

Estimates suggest that East Coast ports could capture an additional 2% of the total trans-Pacific trade with the opening of the expanded Canal and increase that amount by another 1.5% the following year. A study by Drewry Shipping Consultants argues that much of the growth will come from an increase in traffic in feeder ships that carry cargo off-loaded by mega-vessels in the Caribbean.<sup>57</sup> Ports on the East Coast would have a difficult time accommodating the 12,000 TEU ships themselves. East Coast ports do not have adequate channel depth.<sup>58</sup> Currently, only New York-New Jersey, Miami, Norfolk and Houston can accommodate post-Panamax vessels. East Coast ports are also lacking in

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<sup>51</sup> Los Angeles County Economic Development Corporation. 2006 WCTA International Trade Report.

<sup>52</sup> K. Hanson. "Panama May Expand Aging Canal." Long Beach Press Telegram (online version), October 7, 2006.

<sup>53</sup> P. Tirschwell. "Straight Talk on the Panama Canal." Journal of Commerce, October 30, 2006, p. 78.

<sup>54</sup> P.T. Leach. "Hope and Fear: Shipping Industry Supports Panama Canal Expansion but Worries about Toll Increase." Journal of Commerce October 30, 2006, p. 16.

<sup>55</sup> K. Hanson. "Panama May Expand Aging Canal." Long Beach Press Telegram (online version), October 7, 2006.

<sup>56</sup> L. Lozano. "Pipe Dream: Nicaragua's Proposal for a second Canal across Central America is considered a Long Shot." Journal of Commerce, October 23, 2006, pp. 30-33.

<sup>57</sup> P.T. Leach, "Revenge of the East Coast Ports." Journal of Commerce, November 20, 2006, pp. 12-15.

<sup>58</sup> Drewry Shipping Consulting Ltd., Panama Canal Study, prepared for APL Ltd., November 2005, p. 4. Currently the physical limits on vessel dimensions through the Canal are a draft of 12m, a length of 294m, and a beam of 32.3m. The proposed new locks would increase these limits to 15+m draft, 427m length, and 54.9m beam.



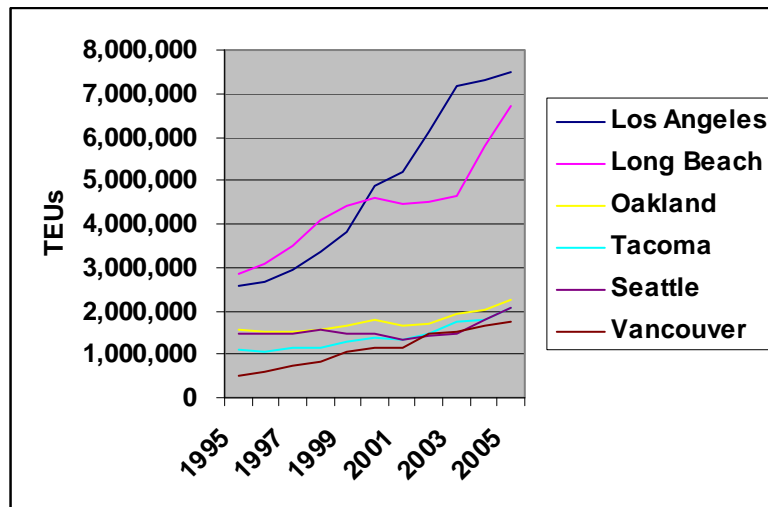
port and intermodal infrastructure to support the bigger ships. There is a reason that Southern California captures almost 60% of U.S. imports from China.

Another proposal to facilitate U.S.-Asia trade is the Grand Inter-Oceanic Nicaragua Canal, a proposed above-sea level canal that would be both deeper and wider than the Panama expansion. This project would cost approximately \$20 billion and cover 177 miles. Nicaragua is betting that its Canal would attract traffic because it offers a route that is 500 miles shorter than the east-west trip via Panama. Nicaragua has also proposed an intermodal land bridge. Both projects are considered long shots because of cost. With the Panamanian voters approving their Canal's expansion, it is even less likely that they will be developed.

#### 4.5 Cargo Growth and Diversion

Because of the San Pedro Port congestion of 2004, approximately 356,000 TEUs of containerized cargo diverted to the Ports of Seattle, Tacoma and Oakland between August 2004 and July 2005. This represented a 4.1% loss of Asian import market share for the San Pedro Bay Ports. The share of U.S. West Coast imports from Asian ports captured by the Ports of Seattle, Tacoma, and Oakland grew from 19.8% in 2003/2004 to 23.9% in 2004/2005.<sup>59</sup> Seattle experienced the single largest rate of increase of any North American port between 2004 and 2005, 17.6% (Figure 3).

**Figure 3: Growth in West Coast Container Traffic**



Source: American Association of Port Authorities

<sup>59</sup> Alameda Corridor Transportation Authority, based on Asian import data for the top 10 U.S. West Coast ports from *The Journal of Commerce*, October 17, 2005, p 12. The Port of Long Beach actually gained share in this time period (+2.9%) while the Port of Los Angeles lost share (-7.0%), for a combined San Pedro Bay loss of -4.1%. Even though the POLB's market share grew, it probably would have grown even more had it not been for the 2004 congestion. It would not be accurate to conclude that all San Pedro Bay diversion was from the POLA only.

The question remains whether these diversions to other ports in the U.S. and elsewhere represent a long-term trend. Recent figures suggest that shippers have made adjustments and that the Southern California ports have already begun to recapture some of the lost cargo. In October of 2006, the Port of Los Angeles moved more than 800,000 containers; and it moved 700,000 containers in each of the months between June and September. No other U.S. port has ever moved more than 700,000 boxes in a single month.<sup>60</sup> 2006 represents the 12<sup>th</sup> straight year of cargo gains for Los Angeles. Long Beach moved more than 650,000 in October.

These figures represent a 13% increase from October 2005 for Los Angeles and a 9% increase for Long Beach. More important, the amount of time needed to clear cargo at the two ports has been reduced. Oakland has experienced growth in the 7% range, but some of the other big winners from the race to capture diverted cargo have had less success in 2006. Seattle for example has experienced its own congestion as a result of demand to move both containers and coal.<sup>61</sup> Portland experienced a reduction in service from some carriers. LA-Long Beach handled 15.8 million TEUs in 2006, an 11% increase over 2005 figures.<sup>62</sup>

The ability to process containers efficiently will play a key role in the ability of any west coast port to compete. The weekly capacity of the shipping fleet servicing Asia-North America trade lanes has increased 280% since 1990. The increase has come about as a result of both an increased number of service calls and larger ships.<sup>63</sup> Post-Panamax container ships that carry more than 7,500 TEUs represent 32% of the vessel capacity on order and nearly 40% of the capacity of all ships delivered in 2006.<sup>64</sup> Fourteen-thousand TEU ships, currently deployed on Asia-Europe trade lanes, can require more than three days to load and unload. Ports will be required to not only accommodate the ships themselves but make available the cranes and labor needed to avoid backlogs.

A recent report by the Washington-based Mercator Group<sup>65</sup> underscores how trends in ship size and trade patterns favor Southern California ports.

- No fewer than 10 ports in Asia currently have or are developing facilities to handle 10-12,000 TEU ships, creating demand for similar channel depth and terminal space on this side of the Pacific.

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<sup>60</sup> R.D. White, "Huge Month Says Volumes about Changes at L.A. Port." Los Angeles Times, November 21, 2006, p. C1.

<sup>61</sup> R.D. White, "Huge Month Says Volumes about Changes at L.A. Port." Los Angeles Times, November 21, 2006, p. C1.

<sup>62</sup> Ports of Los Angeles and Long Beach

<sup>63</sup> Mercator Transport Group. Forecast of Container Vessel Specifications and Port Calls Within San Pedro Bay: Final Report. Report dated Feb. 22, 2005. ([http://www.portoflosangeles.org/DOC/REPORT\\_SPB\\_Vessel\\_Forecast.pdf](http://www.portoflosangeles.org/DOC/REPORT_SPB_Vessel_Forecast.pdf))

<sup>64</sup> P.T. Leach. "Down to the Sea in (Big) Ships." Joint Logistics Special Report. Commonwealth Business Media 2006.

<sup>65</sup> Mercator Transport Group. Forecast of Container Vessel Specifications and Port Calls Within San Pedro Bay: Final Report. Report dated Feb. 22, 2005. ([http://www.portoflosangeles.org/DOC/REPORT\\_SPB\\_Vessel\\_Forecast.pdf](http://www.portoflosangeles.org/DOC/REPORT_SPB_Vessel_Forecast.pdf))

- An 8,000 TEU vessel servicing Asia-West Coast trade reduces vessel-related costs by \$99 per TEU when compared to a 4,500 TEU ship. Savings are an additional \$52/TEU for a 10,000 TEU ship. Ships up to 18,000 TEU show some incremental cost savings (although the time needed to unload ships of this size may preclude their widespread use in the shorter term).
- Twenty-two new weekly services are expected to service Los Angeles and Long Beach by 2020 with vessel sizes between 8,000 and 10,000 TEUs. The expansion of the Panama Canal will likely have minimal impact on total vessel calls at Los Angeles and Long Beach.

While Prince Rupert, Vancouver, Seattle, Tacoma and Lazaro Cardenas have sufficient channel depth to accommodate new Post-Panamax vessels, they do not compare favorably to Los Angeles and Long Beach with regard to other ancillary services needed to move the goods out of the ports and on to their final destination. With cargo traffic expected to triple in the next twenty years, rail networks, intermodal facilities, warehouses and distribution centers will play critical roles in the supply chain. California in general, and Southern California in particular, offer value added services to the shipper that argue against broad-based diversion to other regions. Warehouse, distribution and intermodal facilities already occupy more than 1.5 billion square feet of building space in Southern California (not including San Diego). This equals 15% of the U.S. market for these services and 60% of the same on the west coast. Currently another 32 million square feet are in development.<sup>66</sup> John Husing has argued that shippers use the vast network of Southern California distribution and consolidation facilities to reduce safety inventories at multiple hub locations and guard against supply chain disruptions.<sup>67</sup>

It is clear then that diversion of cargo is not a viable solution to the state's congestion problems. In a recent report the Waterfront Coalition said, "Regardless of efforts to develop alternative West Coast gateways, Los Angeles and Long Beach will remain the primary entry points for eastbound imports into the United States."<sup>68</sup> Ron Widdows, CEO of APL Ltd., said recently, "It shows that the No. 1 priority for developing our port and rail infrastructure has to be in Southern California. We have to expand the capacity of those ports and improve the productivity of the capacity that is already there, and we'll have to improve the country's intermodal connectors to handle what the canal can't."<sup>69</sup>

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<sup>66</sup> Wilbur Smith Associates. Multi-County Goods Movement Action Plan: Final Technical Memorandum 3: Existing Conditions and Constraints. October 6, 2006.  
(<http://www.mta.net/images/Final%20TM3%20100606.pdf>)

<sup>67</sup> J. Husing. Goods Movement in Southern California: The Challenge, the Opportunity, and the Solution. Report prepared for the Southern California Association of Governments, Sep. 2005  
([www.scag.ca.gov/goodsmove/pdf/GoodsmovePaper0905.pdf](http://www.scag.ca.gov/goodsmove/pdf/GoodsmovePaper0905.pdf)).

<sup>68</sup> The Waterfront Coalition, National Marine Container Transportation System, May 2005, p. 19.

<sup>69</sup> Ron Widdows, APL Ltd., The Journal of Commerce, November 21, 2005, p. 16.

## **5. Responding to Capacity Constraints: Infrastructure Improvements, Operational and Productivity Enhancements**

The Ports of California and the Waterfront Coalition have proposed a comprehensive program of infrastructure improvements and operational enhancements to improve efficiency and productivity and to increase capacity, reliability, and velocity of cargo shipments. These projects and programs are summarized below and listed in detail in Appendix A and Appendix B. In total, the capital projects are estimated to cost \$20.36 billion.

### **5.1 San Pedro Bay Ports**

At the San Pedro Bay Ports the highest priority project is the I-710/Gerald Desmond Bridge Gateway Program. The I-710 project includes ten mixed flow lanes (five in each direction) and four exclusive truck lanes (two in each direction). The freeway component of the project is expected to cost \$7 billion.

A related high-priority program is the proposed improvement or replacement of the three bridges to Terminal Island: the Gerald Desmond Bridge (on the east), the Commodore Heim Bridge (on the north), and the Vincent Thomas Bridge (on the west). The Port of Long Beach plans to replace the existing 5-lane Gerald Desmond Bridge, which is 155 feet high. The new bridge would have six lanes to meet projected traffic demand and a height of 200 feet to accommodate the newest generation of vessels. The new Gerald Desmond Bridge is expected to cost \$800 million. The Port received \$100 million for the new bridge in the Safe Accountable Flexible Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU), which President Bush signed into law on August 10, 2005.

The Alameda Corridor Transportation Authority (ACTA) is preparing designs for an improved Heim Bridge as part of the \$557 million SR-47 Port Access Expressway. A major concern is that the existing bridge is seismically substandard.

The Port of Los Angeles plans to study options for improving or replacing the 4-lane Vincent Thomas Bridge. The Port received \$1.6 million in SAFETEA-LU for the bridge study. The ultimate project has not yet been defined. Tolling is one of the funding options for these bridge projects.

The Port of Los Angeles I-110 Connectors program includes several projects to improve roadway access to the port. This \$134 million program focuses on connectors to the I-110 and SR-47 from C Street/Harry Bridges Boulevard on the north to Harbor Boulevard/Front Street on the south. The following specific projects are included: I-110/SR-47 interchange improvements, I-110/“C” Street interchange improvement, Harry Bridges Boulevard widening, and the Fries Avenue grade separation. The port has also proposed the Navy Way connector to westbound Seaside Avenue.

The Ports of Los Angeles and Long Beach possess major on-dock rail facilities. In 2004, both ports combined handled over 1.3 million marine containers (or approximately 2.4 million TEUs) via on-dock rail, or 18.6% of total port container throughput. This percentage grew to 21% in 2005 and to 24% in 2006. One reason for the recent increase in on-dock rail activity is that BNSF imposed quotas at Hobart Yard near downtown Los Angeles, eliminated free time, and imposed a \$150 per day demurrage fee.

The San Pedro Bay Ports have recently completed a revision of the Rail Master Plan (RMP). It includes over \$1.1 billion of proposed infrastructure improvements to accommodate the growing use of on-dock rail. Current constraints at the Port of Long Beach include the lack of 8,000-foot arrival and departure tracks, and lack of adequate storage tracks for intermodal equipment. The proposed expansion of the port's Pier B Street Rail Yard would help correct these deficiencies. The Port of Los Angeles plans to provide a new on-dock yard at the Trans Pacific (TRAPAC) Container terminal.

With the aid of computer simulation, the two ports evaluated the need for additional track and signal improvements to alleviate potential bottlenecks in the port-area rail system through 2030. The entire port-related rail network is simulated, connecting all tracks at the Ports with the UP and BNSF main lines via the Alameda Corridor. The RMP shows that by 2030 there would be a shortfall of 2.23 million TEUs in lift capacity for port-related rail traffic unless new near dock facilities are provided.

To facilitate the use of on-dock rail, serious efforts are being made to improve communication among railroads, terminals, shipping lines, and labor. Demonstrating a strong commitment to improved productivity and efficiency, the on-dock rail improvement program includes a series of meetings between terminals and railroads to facilitate this communication and promote better planning. This is a team effort, with the goal of reducing truck traffic and reducing emissions by increasing the use of existing on-dock facilities.

There is also a growing shortage in intermodal lift capacity – the ability to transfer cargo containers from trucks to trains and vice versa. The proposed Southern California International Gateway (SCIG), a new near dock rail yard proposed by the BNSF, would greatly alleviate this shortfall and at the same time eliminate about 1 million truck trips per year to the more distant Hobart Yard, which is 20 miles north of the ports. The SCIG is estimated to cost \$200 million.

At a cost of approximately \$300 million, the UPRR has proposed modernizing its existing Intermodal Container Transfer Facility (ICTF) located immediately north of the proposed SCIG. Residents in Wilmington and west Long Beach are concerned about the truck traffic generated by these near-dock facilities. These issues need to be resolved in a manner that will facilitate the needed development of near-dock rail capacity while addressing the concerns of local residents.

Railroad mainlines east of downtown Los Angeles need to be double or triple tracked to accommodate growth in freight and passenger trains, and the Colton rail-to-rail grade

crossing needs to be separated. The Cajon Pass between San Bernardino and Barstow needs to be triple tracked. The BNSF has already completed ten-miles of triple track along the Cajon line from San Bernardino to Verdemon.

There are also many highway-rail grade separations that need to be funded and built. Communities along these mainlines are clearly losing their patience when it comes to delays at grade crossings. One hundred and thirty-one grade separations are needed in the Alameda Corridor-East area including Los Angeles, Orange, San Bernardino and Riverside Counties. Lack of funding for grade separations is a critical issue.

The Ports of Los Angeles and Long Beach and the Alameda Corridor Transportation Authority are working on operational strategies as well as capital improvements to manage cargo growth and to minimize environmental impacts. These three entities recently completed an analysis of the impact of six specific strategies to reduce truck traffic and increase rail traffic. The strategies are:

- Increased use of on-dock rail
- New near dock rail facilities
- Local shuttle trains
- Extended gate hours (PierPASS)
- SR-47 viaduct
- Virtual Container Yard (VCY)

ACTA has developed plans to implement a shuttle train pilot project to haul local import containers to Colton rail yard, and then to truck them to warehouses in the Inland Empire. ACTA has been negotiating with the Union Pacific Railroad for this service. The UPRR has declined to participate because of concerns over main line rail service levels.

Although the SR-47 Expressway, estimated to cost at least \$557 million, would not eliminate or shorten trips, it would provide an alternate route for trucks, leading to an estimated 6% reduction in truck volumes on the southern end of I-710.

PierPass' OffPeak program has been successful in moving truck volumes to off-peak hours, including the night shift (6:00 p.m. to 3:00 a.m.) and to a Saturday day shift.<sup>70</sup> PierPASS has spread the volume of cargo over more hours and more days and has given cargo owners more time to retrieve their containers before free time expires. Prior to PierPASS, off-peak moves (night and weekend) at the Port of Long Beach accounted for less than 15% of the weekly volume. The share of container moves shifted to the off-peak reached 39% in mid February 2007.

A "virtual" container yard (VCY) is an Internet-based matching service for empty containers. An import container load is transported to a warehouse or distribution center. Once that container is unloaded it is typically hauled back empty to the port terminal. If that empty container met the needs of an exporter in the region, the container could be

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<sup>70</sup> [www.PierPass.org](http://www.PierPass.org).

transported from the importer to the export location and then sent back loaded to the port. This would avoid the necessity of dispatching a bobtail to the port to pick up an empty container to take to the exporter. A successful match and interchange is known as a “street turn.”

The Port of Long Beach has signed a contract with eModal.com, LLC and International Asset Systems Limited, Inc. to implement the VCY. The work involves developing a web-based container-matching program so that truckers and steamship lines can see the availability of empty containers by type and location allowing a reduction in empty moves. Funding for the project has come from the Port of Long Beach, the Port of Los Angeles, and ACTA. The VCY for San Pedro Bay became operational in the fall of 2006 with one ocean carrier and more than 60 motor carriers involved. A major upgrade to the system is being launched in March 2007. A VCY is already in operation in the San Francisco Bay Area.

The preliminary figures in Table 5 show the impacts of all of the strategies combined on the I-710 relative to the baseline or “do-nothing” scenario. These figures assume that containerized cargo through both ports combined would reach 19.7 million and 44.7 million Twenty-foot Equivalent Units (TEUs) in 2010 and 2030, respectively.

**Table 5: Impact of Operational Strategies on I-710 Truck Traffic**

<b>Scenario</b>	<b>I-710 Truck Trips (24 hrs.)</b>	<b>% Change from 2005 Base</b>
Base 2005	22,704	
Base 2010	27,009	+19.0%
Combined Scenario 2010	20,337	- 10.4%
Base 2030	65,238	+187.3%
Combined Scenario 2030	44,847	97.5%

Source: Port of Long Beach, Port of Los Angeles, Alameda Corridor Transportation Authority, study of methods to reduce truck traffic to/from the ports, 2005.

Without the implementation of the six strategies, truck traffic on I-710 is likely to triple by 2030, along with the projected tripling of cargo. With full implementation of the strategies, growth in truck traffic on I-710 could be kept to a doubling. The truck reduction strategies will help manage traffic congestion, but they will not obviate the need for freeway improvements. It is therefore critical that the planned widening of I-710, including the addition of two dedicated truck lanes in each direction, move forward as rapidly as possible.

In addition to these truck trip management strategies, an “agile port” involving short haul rail service for military cargo has also been proposed. A consortium of California State University campuses led by California State University, Long Beach with Department of Defense financial support will conduct a series of agile port advanced logistics experiments. This will include a regional short-haul rail network demonstration between the Ports of Los Angeles-Long Beach and the site of the former George Air Force Base in

Victorville, CA in cooperation with the Southern California Logistics Airport (SCLA). The multi-year applied research program is called Strategic Mobility 21 and is further discussed in Section 7.4.

Reduction of free time is also helping to smooth out cargo flows. Effective July 1, 2005, the Ports of Los Angeles and Long Beach amended their tariffs to reduce free time from five days to four days for import containers and from seven days to six for export containers.<sup>71</sup> The Ports also amended the way free time is calculated. The clock used to start after the entire ship had been fully discharged. Now free time is calculated beginning on the day after the container is unloaded from the vessel.

More and more 8,000+ TEU vessels are now entering service, and these mega-ships may take four days to fully unload, essentially giving some containers more free time under the old rules. This exacerbated the space problem leading to increased congestion within the terminal. Terminal operators are virtually unanimous in the opinion that free time reduction improves terminal efficiencies and is essential in the face of continuous volume growth and different terminal operating characteristics caused by larger vessels. If a container stays at the terminal for more than the free time allotted, the terminal is obligated under the port tariff to collect demurrage from the shipper or its agent.

The Long Beach Container Terminal (LBCT), in a letter to the Port of Long Beach dated June 13, 2005, said:

The benefits of reduced free time are many. It is no mystery that the speed in which cargo transfers through a facility is what ultimately drives its capacity... We estimate that [the proposed reduction in free time] may potentially be enough for Long Beach Container Terminal to grow its business by another 25%.... The extended gate hour initiative to be launched in July will further complement the free time tariff change by giving the shipping industry more gate operating hours to move their cargo.

With PierPASS now in operation, shippers have nine shifts on weekdays (five day shifts and four night shifts) in which to pick up or deliver cargo, plus a Saturday day shift. This speeds cargo flows and reduces the incidence of demurrage charges.

In late 2005 a comprehensive goods movement planning effort began in the SCAG region known as the Multi-County Goods Movement Action Plan (MCGMAP). The project will

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<sup>71</sup> The Port of Long Beach Board of Harbor Commissioners allowed for two exceptions, in response to concerns expressed by the Los Angeles Customs Brokers & Freight Forwarders Association. Any container placed on hold specifically for a non-intrusive inspection (VACIS exam) or for a USDA bug inspection will have its free time commence when it is released. Only containers for those holds would receive the exception; all other Customs holds for any other reason would not enjoy this benefit. The Harbor Commission's resolution stated that the port may review at a later date whether the terminals are in fact collecting demurrage that is due from either the consignees or the steamship lines. If these audits reveal that the terminal operator is not collecting the demurrage from steamship lines stiff penalties could be imposed on the terminals. The California Association of Port Authorities (CAPA) would most likely review the proposal for penalties before Long Beach would independently act.



include a thorough evaluation of logistics trends, goods movement demand and capacity, and potential infrastructure/operational solutions and financing mechanisms. Scheduled for completion by the spring of 2007, the MCGMAP represents a joint effort of SCAG, Caltrans, the Counties of Los Angeles, Orange, Riverside, and San Bernardino. The study has been expanded to include San Diego County. The administrative lead for the project is the Los Angeles County Metropolitan Transportation Authority (LACMTA).

## 5.2 Port of Oakland

At the Port of Oakland, intermodal container volume is projected to reach 1.7 million lifts per year but the port's intermodal rail facilities and rail access infrastructure only allow for port intermodal operations to reach 1 million lifts per year.<sup>72</sup> Rail capacity is the Port of Oakland's primary constraint to growth. To address these concerns, the Port of Oakland has proposed:

- Improved rail access, both in the port area and outward to the rest of the country.
- Development of interregional rail serving California's Central Valley to shift container trips from truck to rail. These projects will relieve highway congestion and improve air quality. The port is developing the California Interregional Rail Intermodal System (CIRIS) in partnership with Caltrans, the San Joaquin Council of Governments, and the Port of Stockton. CIRIS is intended to serve one or more points in the Central Valley, possibly including Sacramento, Stockton, Lathrop, Modesto, Fresno and Bakersfield. The City of Shafter in Kern County is taking the lead on another project to start a container shuttle train between the Port of Oakland and a logistics center development there. Shafter is building an intermodal rail facility at this site. Any short-haul rail demonstration is currently stalled however until the Union Pacific or BNSF agree to run the demonstration on its system.
- Cooperative port relationships with other California ports (Sacramento, Humboldt, Richmond, Stockton, etc.) to more fully take advantage of the State's maritime resources and to create transportation economies.

The Port of Oakland is promoting the following major infrastructure projects:

- 7<sup>th</sup> Street Grade Separation and Roadway Improvement. This is a critical junction at the heart of the port. The rail bridges at this location are too narrow and too low over the roadway and the roadway itself needs to be widened. An at-grade crossing at the site is often gridlocked, so the project calls for a grade separation. The cost of the project is estimated at \$250 million. This project needs to move forward in order for the Port of Oakland's other access enhancement projects to be effective.

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<sup>72</sup> Jerry Bridges, former Executive Director, Port of Oakland, testimony before Senate Subcommittee on California Ports and Goods Movement, Oakland, CA, November 15, 2005.

- Outer Harbor Intermodal Terminal (OHIT). This addition to the port’s intermodal rail facilities at the site of the former Oakland Army Base and improvements to the Joint Intermodal Terminal (JIT) will allow the port to increase intermodal container movements to projected levels. It is envisioned to be a green facility utilizing electric locomotives and yard equipment. The cost estimate is \$450 million.

Beyond the Port of Oakland, the Metropolitan Transportation Commission (MTC) has proposed improvements to the I-80/I-680/SR-12 interchange at a cost of \$706 million and an eastbound truck-climbing lane on I-580 for \$75 million.

As explained by Jerry Bridges, former Executive Director of the Port of Oakland:

We’ve expanded our terminals and we’ve developed a major joint intermodal terminal for near dock rail access. However, we can’t just look at port-specific rail enhancements and assume that others are going to deal with meeting the demand for rail capacity beyond our boundaries. We have to begin looking at the entire system over which our cargo moves. We need to work with our transportation partners to ensure that there is adequate capacity throughout the region, the state and beyond. I would warn that if we only focus on increasing immediate port capacity, we are only going to see the bottlenecks move downstream. If that is allowed to happen, then goods will at some point stop moving.<sup>73</sup>

The Port of Oakland has concluded that there are numerous opportunities to take advantage of California’s statewide system of ports. For example, the Port is developing a long-term strategic alliance with the Port of Sacramento. As part of a three-phase strategy, Sacramento is expected to grant Oakland an exclusive eight-year terminal operations franchise. This would ensure the continued viability of an important maritime asset. It could also provide Northern California with the option of developing short-haul barge or rail service between Sacramento and Oakland as economics become favorable. Oakland also has discussed with the Port of Humboldt Bay the option of moving forest products from the North Coast region to the Port of Oakland via barge or rail.

A feasibility report on the Oakland-to-Sacramento barge service found that two barges, 630 feet long and 105 feet wide, could float in water as shallow as 15 feet and carry 200 containers each. The barges would need to travel fully loaded for the project to succeed economically. The implementation of this short sea shipping service would require the construction of the vessels and retrofitting of the ports involved with estimated costs of \$74 million.<sup>74</sup> The development of several inter-agency agreements would also be required for the project to succeed. A complete list of projects and associated costs can be found in the Statewide Goods Movement Action Plan (GMAP).

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<sup>73</sup> Jerry Bridges, Executive Director, Port of Oakland, testimony before Senate Subcommittee on California Ports and Goods Movement, Oakland, CA, November 15, 2005.

<sup>74</sup> “Barges-to-Sacramento Plan Contains Promise.” [insidebayarea.com](http://insidebayarea.com), November 14, 2006.

### 5.3 California's Smaller Ports

The State's smaller ports are also facing significant constraints to future growth. The Port of Hueneme is the only deep-water harbor between Los Angeles and the San Francisco Bay area and is the U.S. Port of Entry for California's central coast region. It serves international businesses and ocean carriers from the Pacific Rim and Europe.

The niche markets that Hueneme serves include the import and export of automobiles, fresh fruit and produce, and forest products. The Port of Hueneme is the top seaport in the United States for citrus export and ranks among the top ten ports in the country for automobile and banana imports. Its position near the Santa Barbara Channel has also made the Port of Hueneme the primary support facility for the offshore oil industry in California's Central Coast area.

The biggest constraint facing the Port of Hueneme is land. With their "Strategic Commercial Development Plan," the Port hopes to acquire 677 acres of Navy land (out of a total 1,600 acres) to accommodate growing demand, particularly for automobile imports and automobile processing. The Port asserts this can be done without jeopardizing the Navy's mission and without impacting Navy-related civilian and military employment. To realize the Port of Hueneme's full potential this expansion should be allowed.

On August 9th, 2006, the California Coastal Commission approved the City of Port Hueneme's application to change the zoning of the Hueneme Road/Surfside Drive property from light industrial to residential. This action permits the development of 150 homes in Port Hueneme on a major truck route to the port. This action conflicts with a 1986 SCAG study on Port of Hueneme access.

The Ventura County Transportation Commission (VCTC) and the Port of Hueneme are promoting the development of the Santa Paula Branch rail line as a feeder service across the high desert. The VCTC-owned Santa Paula Branch is a 32-mile rail line with limited rail service, including excursion trains. The County is planning track improvements to the line, including a reconnection to the rail line in Santa Clarita, and has studied the feasibility of installing fiber optic communication lines along the right-of-way.

At the Port of San Diego, cargo volume reached 2,957,006 metric tons in FY 2005, up 12.5% from the previous year and up 30% from FY 2001. With growing cargo volume, the port has seen a rise in community complaints about truck traffic on residential streets. In response, the Port of San Diego formed a Marine Terminal Community Committee to improve community relations while continuing to meet increased cargo demands. Two infrastructure projects emerged that meet these objectives: the Harbor Drive/Cesar E. Chavez Parkway grade separation (a \$25 million project), and the Harbor Drive/32<sup>nd</sup> Street grade separation (a \$75 million project). SAFETEA-LU included \$400,000 for the Cesar Chavez project and \$800,000 for the 32<sup>nd</sup> Street project. These projects will maximize cargo throughput by eliminating at-grade rail/truck crossings, increase I-5

mobility and reliability with trucks avoiding the downtown “S” curve, maximize the use of Harbor Drive to reduce I-5 congestion into South Bay, and mitigate community impacts by keeping trucks off residential streets. Residents and tenants support the projects.

The Port of Humboldt Bay has proposed a “short-sea” barge shuttle service to the Port of Oakland. This would require modernization of the Redwood Dock Marine Terminal. The Port has also proposed the reestablishment of freight rail service on the state-owned North Coast Railroad Authority (NCRA). Funding this project would reopen the entire 300-mile line from the community of Fairhaven on the Port of Humboldt Bay south to Lombard where the line connects with the national rail system. Other projects of importance to the Port of Humboldt Bay are listed in Appendix A.

Santa Maria Shipping has proposed a short-sea-shipping service that would ferry containers between the ports of Oakland and Stockton on 300-TEU ships. One ship would take 150 trucks off the freeway each way. It is not yet known whether this service could compete with rail or trucking.<sup>75</sup>

In 2004, the Port of Stockton handled 2,596,852 metric tons of cargo – 2,025,336 metric tons of inbound cargo and 571,517 metric tons outbound cargo. Inbound commodities include cement, fertilizer, molasses, anhydrous ammonia, steel products, and other products. Outbound commodities include sulfur, rice, wheat, scrap steel, and other commodities. The port recently completed a \$15 million upgrade to Daggett Road to improve access to Rough and Ready Island. The port received \$7.2 million for this project from SAFETEA-LU.

The Port of Richmond, also in the Bay Area, handles a wide variety of products. The primary cargo is liquid petroleum products that are handled at the Chevron Long Wharf and at several smaller liquid bulk terminals in the Inner Harbor.

Additional private terminals in the Inner Harbor handle dry bulk commodities such as petroleum coke, scrap steel, metallurgical ores, gypsum, cement and aggregates. Levin-Richmond Terminal owns and operates the Richmond Pacific Railroad to support its dry-bulk terminal operation. Plans call for dredging to 41 feet Mean Lower Low Water (MLLW) at the entrance to the Inner Harbor and alongside the Terminal’s Berth A and Berth B, as well as the construction of a new ship-loader conveyor and dockside coke barn for a cleaner, more environmentally-appropriate operation. Additional rail capacity will need to be added to accommodate the projected growth of export bulk products arriving by rail. Cemex is planning a mechanical ship-unloader, conveyor, and storage domes for the import and distribution of cement. Polaris Aggregates has broken ground on a new conveyor system to feed aggregates from self-discharging vessels into a storage facility for local distribution. All of these terminals provide crucial access for bulk materials to deep-water vessels, an important but often overlooked aspect of maritime transportation in Northern California.

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<sup>75</sup> The Cunningham Report, November 21, 2005

The city-owned Port of Richmond concentrates its effort on vehicles, involving both imported and domestic traffic to Hawaii. Traffic has grown dramatically since 2003.

Issues facing all port facilities include pressures to redevelop the neighboring light industry neighborhoods with high-density housing. A grade separation to carry Marina Bay Parkway over the Richmond Pacific tracks (shared by BNSF's double stack container trains moving to/from the Port of Oakland) is needed to eliminate a major source of congestion, delays, and general acrimony towards port activities supported by the railroads. Further encroachment of in-fill housing in the buffer zone will only lead to conflicts harmful to the port activities. Bike trails, Indian casinos, ferry services, high-rise condos and charter schools have all been proposed for the buffer zone separating the Inner Harbor industries from the existing Marina Bay residences. Preservation of the vacant buffer zone lands for port-related activities will ensure the future of these vital marine terminal operations into the future.

The Port of Sacramento has proposed a \$20 million channel deepening project, and other supporting projects including warehousing and deferred maintenance. Cargo types handled by the Port of Sacramento include rice, safflower seed, wood chips, news print, sand, aggregate and decorative rock, logs, lumber, fiberboard, clay, fertilizer, wheat, and project cargo.

The Port of Redwood City, in the South San Francisco Bay, provides berths for bulk, liquid bulk and project cargoes. The port is working with the Redwood City Dredging Coalition, which succeeded in obtaining nearly \$5 million in dredge funds for the port. Maintenance dredging has been authorized 30. The Coalition is seeking additional funds to deepen the channel to 35 feet. The port's goal is to complete the dredging project within four years. The port also intends to revamp its Wharves 1 and 2 in order to modernize and make more efficient the area used by two major tenants. The port hopes to double its tonnage throughput from two million to four million tons by the year 2020. The port is also investigating possibilities for short sea shipping to reduce highway and rail congestion as well as to diversify the port's sources of revenue. The Port of Redwood City is also promoting construction of a new Woodside Road/Seaport Boulevard interchange at U.S. Highway 101, a critical bottleneck named in nearly all environmental studies regarding new projects at the Port of Redwood City.

In 2004, the Port of San Francisco handled over 225,000 tons of break bulk cargo, 1.49 million tons of bulk sand and aggregate, as well as 133,000 metric tons of liquid bulk. As of January 1, 2005, the Port of San Francisco no longer handles container cargo. The port can only handle the smaller carriers as its water depth can only be dredged to a maximum of 39 to 40 feet MLLW; its cranes are only sufficient for the smaller-sized vessels. Additionally, railroad tunnels leading into San Francisco are not able to clear double stack container cars. The port is seeking approximately \$50 million to enlarge the railroad tunnels for double stack clearance, to dredge to at least 45 feet MLLW, and to add new cranes.

The Port of Benicia, located at the head of San Francisco Bay, is a privately operated port with a concentration on automobile imports.

#### **5.4 Intermodal Trucking and Terminal Productivity**

It has been said that you can't manage what you can't measure. Thus, it is critical that ports strive to measure productivity and labor availability, identify sources of inefficiency and delay, and develop specific programs to make better use of existing transportation assets.

For example, it will be important to gain a better understanding of the severity of the looming shortage in truck drivers. Many short haul truckers have left the business.

No one knows exactly how many drivers have stopped working the ports. An informal survey by the Marine Exchange of Southern California, which tracks ship movements at the ports, found that hundreds had thrown in the towel during the worst of the congestion in 2004...Bob Curry, president of California Cartage Co. of Wilmington, said that he employed two full-time employees who do nothing but recruit drivers to maintain a pool large enough to keep cargo rolling, something he would never have dreamed of having to do just a few years ago. More disturbing, Curry said, is that the drivers he managed to find all come from other trucking companies. "No one is going out and buying a truck with the idea of working at the ports," Curry said.<sup>76</sup>

In a white paper published in May 2005, the Waterfront Coalition recognized the problem of driver supply, and recommended that harbor trucking be made a profitable business:

Harbor trucking relies on "owner-operators" who own their own tractors and who contract with trucking companies. These independents are usually paid by the trip. Consequently, road and terminal congestion, rising fuel costs, government regulation of hours of service, and air pollution emissions have all conspired to make harbor trucking increasingly non-economic.

Much attention has been focused on the difficulties truckers face within marine terminals. When marine terminal "turn times" average as much as an hour or more, this has an immediate impact on trucker economics and must be addressed.

Marine terminal wait times, however, are only part of the problem. When truckers have to deal with congested roads and highways, it takes a toll.

The inability of small, owner operator truckers to make a sufficient number of "turns" (to the port and back to a warehouse or container yard) is one of the

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<sup>76</sup> Los Angeles Times, November 21, 2005, p. B-1.

principal reasons that short-haul truckers – who get paid by the trip – are leaving the industry in large numbers.<sup>77</sup>

With respect to longshore labor, the vessel and terminal congestion in the Los Angeles and Long Beach harbors in 2004 was avoided in 2005. Causes of the 2004 congestion included:

- The Pacific Maritime Association (PMA) underestimated and did not anticipate the impact that shortages in rail capacity and truck drivers would have on handling the increased container volume growth.
- There was a 24% increase in container throughput from 2003 to 2004 at the Port of Long Beach (1% at the Port of Los Angeles).
- There were rail labor and equipment shortages causing a backup at the ports.
- There was a 64% increase in on-dock rail volume at the Port of Long Beach from 2003 to 2004 (1% at the Port of Los Angeles).
- Labor was allocated to terminal and rail operations before vessels.
- Long turn times for trucks at marine terminals

Remedies to the vessel and terminal congestion have included:

- The PMA and the International Longshore and Warehouse Union (ILWU) have added labor, including 5,000 new identified casuals, and they have elevated 1,750 casuals to registered status.
- The PMA has improved their projections and monitoring of labor needs.
- Progress is being made in installing new technology to smooth traffic flow, such as Optical Character Recognition (OCR) and Radio Frequency Identification (RFID) at gates and on cranes.
- Long-stay containers take up space. As discussed earlier, the Ports of Long Beach and Los Angeles have 1) reduced the amount of “free time” that containers can be stored in port terminals without incurring demurrage and storage charges, and 2) started free time on the day that each container is unloaded and not on the day that the entire ship finishes discharging. These changes have helped to even out the flow of cargo at terminals, reducing the bunching of trucks. This is particularly important for managing the containers discharged from larger vessels.
- PierPASS has spread the volume of cargo over more hours and more days and has given cargo owners more time to retrieve their containers before free time expires.
- Railroads have added labor and equipment. Delays to intermodal rail shipments outside of the harbor area, however, have been reported.

Productivity at container terminals is often measured in terms of TEUs per acre per year. For example, the average productivity at the Port of Long Beach is 5,174 TEUS per acre per year, based on 6,644,009 TEUs in federal fiscal year 2005, and 1,284 gross acres for its container terminals. For any one terminal the capacity is the lesser of berth capacity

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<sup>77</sup> The Waterfront Coalition, National Marine Container Transportation System: A Call to Action, May 2005, p. 7.

and backland capacity. The Port of Long Beach has predicted that by 2020, terminal capacity will reach 20,665,000 TEUs per year with 1,882 gross acres, resulting in a maximum productivity of 10,980 TEUs per acre per year.<sup>78</sup> Capacity is a function of many variables including berth length, vessel size mix, backland acreage, dwell times for containers, stack height (number of containers stacked), acreage devoted to wheeled (as opposed to grounded) operations, and mix of cargo types (import, export, local, intermodal), and other factors. It is also a function of labor availability and the rate at which truckers are processed through the terminal gates. Generic inputs to the terminal capacity modeling for 2020 are shown in Table 6.

**Table 6: Inputs to Terminal Capacity Modeling (2020)**

Container Type	Mix	Mean Dwell Time (Days)	Percent Wheeled	Mean Stack Height
Import Local Load	29%	4.0	10%	3.5
Import On-Dock Intermodal Load	15%	2.0	10%	3.5
Import Off-Dock Intermodal Load	10%	1.5	10%	3.5
Export Local Load	10%	6.0	5%	3.5
Export On-Dock Intermodal Load	6%	6.0	0%	3.5
Export Off-Dock Intermodal Load	3%	6.0	10%	3.5
Import Empty	0%	n/a	n/a	5.5
Export Empty	27%	7.0	5%	5.5

Source: Port of Long Beach

One possible strategy that could increase productivity is to study the feasibility of a universal port-wide truck appointment system. If appointments were uniformly applied, it would go a long way to smooth out traffic flow over the day.

An appointment system will only be viable if it is developed with consistency on a port-wide basis and truckers have the ability to book appointments at any terminal facility operating at any given port complex. In the past, terminal operators have viewed appointment systems as a competitive issue, with the result that there is no single portal for trucker appointments at any U.S. port....The Waterfront Coalition calls on terminal operators to...explore the use of federal anti-trust immunity to cooperate in developing port-wide appointment systems.<sup>79</sup>

Appointment systems were used with varying effectiveness by terminals at the Ports of Los Angeles and Long Beach after the implementation of Assembly Bill 2650 in 2002.<sup>80</sup>

<sup>78</sup> Port of Long Beach Planning Department, based on terminal capacity protocols developed by Moffatt & Nichol, Engineers, and JWD Group, 2005.

<sup>79</sup> The Waterfront Coalition, National Marine Container Transportation System, May 2005, p. 11.

<sup>80</sup> G. Giuliano, S. Hayden, P. Dell'Aquila, T. O'Brien (2006) Evaluation of the Terminal Gate Appointment System at the Los Angeles/Long Beach Ports. METRANS Transportation Center Report No. 04-06. ([http://www.metrans.org/research/final/04-06\\_Final.pdf](http://www.metrans.org/research/final/04-06_Final.pdf))



This bill allowed terminal operators to adopt gate appointments as a means of complying with regulations designed to limit truck queuing and idling outside of terminal gates. The adoption of PierPASS extended gates seems to have removed incentives for all but a few terminals to offer appointments.

Chassis pools could also improve turn times within terminals and contribute to better overall supply chain productivity. When a trucker has to drop off a container belonging to shipping line “A” but has to pick up another container belonging to shipping line “B,” the trucker has to change chassis, a process known as “flipping.” With multiple shipping lines, the driver may also have to flip the empty container. With a “gray” chassis pool, chassis flipping is unnecessary because all of the chassis are under common management, although questions of liability may still remain.

Chassis pools can reduce the number of chassis required and thus reduce the amount of land needed for storage. Chassis pools can also allow standardized maintenance and repair procedures, leading to improved chassis quality and safety. The Waterfront Coalition has called for port-wide or region-wide chassis pools, leading ultimately to a nationwide chassis pool.<sup>81</sup> However, some shipping lines have invested in Global Positioning System (GPS) tags for chassis, giving them a potential competitive advantage. These lines could be opposed to a chassis pool.

Chassis pools are currently in operation at the Virginia Port Authority and at Maher Terminal in Port Elizabeth, NJ. It is not yet certain however if these successes can be replicated in a larger port complex with multiple terminals and shipping lines.

Another operational strategy proposed by the Waterfront Coalition is to spread out vessel sailings and arrivals in the trans-Pacific trade to make maximum use of terminal capacity. Currently, there is a clear bias toward eastbound weekend sailings. This means that vessels are likely to arrive at West Coast ports on Thursday, Friday or Saturday. This bunching of arrivals causes congestion for terminals, trucking companies and railroads. Shippers would have to make changes in production schedules, but the outcome could be significantly faster transit times.<sup>82</sup> Before endorsing this recommendation, CALMITSAC would like to verify actual daily vessel arrival counts and be certain that any adjustments do not interrupt the the flow of goods at other points along the supply chain.

Other strategies have been proposed by other groups including the U.S. Committee on the Marine Transportation System. There is also a National Freight Policy Framework being developed by the USDOT Office of the Secretary. CALMITSAC recognizes that some potential strategies to resolve terminal productivity issues will be the subject of discussions between the ILWU and the PMA. We encourage all parties to consider the impact of these strategies, both positive and negative, on the ability of the ports to move cargo safely and efficiently.

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<sup>81</sup> The Waterfront Coalition, National Marine Container Transportation System: A Call to Action. May 2005.

<sup>82</sup> The Waterfront Coalition, National Marine Container Transportation System: A Call to Action. May 2005.

## 5.5 Short Line Railroads

California's short line railroads come in many forms, from principally port-related terminal operations like Pacific Harbor Line (PHL) and Richmond Pacific Railroad, to agricultural-based operations like California Northern Railroad and Sierra Northern to tourist-oriented operations like Napa Valley Railroad and Santa Cruz, Big Trees and Pacific. All share the basic short line attributes:

- Local, hands-on management
- Customer-driven service
- High degree of community involvement
- Relatively low cost structures as compared to the Class 1 railroads

The typical short line railroad provides local switching and branch line services to the Class 1 railroads Union Pacific and BNSF Railway, while most marketing, sales, and other commercial functions are handled in a collaborative manner with the Class 1's themselves. Short lines and their local, hands-on approach tend to result in growth of rail traffic that the centrally-organized Class 1 railroads may not enjoy on their own. Two rather dramatic examples are Pacific Harbor Line and Central California Traction, whose traffic grew sizably in the first few years after taking over most rail-related operations at the ports in Los Angeles/Long Beach and Stockton respectively.

Short line railroads play a vitally important role in the movement of international trade in California. The California Short Line Railroad Association includes eighteen short line railroads of various sizes and geographic locales. Of these, five serve port facilities directly: Pacific Harbor Line at the San Pedro Bay ports, Ventura County Railway at Port Hueneme, Richmond Pacific Railroad at Richmond, Central California Traction Company at Stockton, and Sierra Northern Railway at Sacramento.

Pacific Harbor Line<sup>83</sup> provides rail transportation, maintenance and dispatching services to the Ports of Long Beach and Los Angeles. The Class 1's can serve the port facilities directly, but often hand the trains off to PHL for final delivery. In addition to switching over 40,000 units of carload freight annually, PHL provides rail-switching services for nine on-dock intermodal terminals and provides dispatching services for about sixty-five intermodal or unit trains per day. PHL handles everything from international container traffic and automobiles to liquid and dry bulk products for both the domestic and foreign trades.

Ventura County Railway<sup>84</sup> is a division of RailAmerica, operating between Port Hueneme and a connection with Union Pacific at Oxnard. Imported automobiles are the principle commodity handled, although military cargo is a mainstay as well.

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<sup>83</sup> <http://www.anacostia.com/phl/phl.html>

<sup>84</sup> <http://www.railamerica.com/railmaps/VCCR.htm>

Richmond Pacific Railroad<sup>85</sup> is a privately-held company, providing local rail service to sixteen customers in the Richmond Inner Harbor. The focus is on dry-bulk and liquid-bulk commodities. Principle commodities handled include mineral ores, petroleum coke, scrap steel, food-grade vegetable oils, and petroleum-related products such as paraffin wax, lube oil, gasoline, and ethanol. The primary port customer is Levin-Richmond Terminal, a private bulk marine terminal capable of handling Panamax-size vessels. Richmond provides the most diverse bulk cargo-handling facility in California with deep drafts of greater than 39 feet. Richmond Pacific has the ability to interchange unit trains of bulk cargo with both BNSF and UP, with a bottom-dump hopper unloading system at the port. Principle commodities handled include petroleum coke, scrap steel, metallurgical ores, cement, blast furnace slag, and metallurgical coke.

Richmond Pacific is working with UP to develop two major exports of bulk cargo for Asia: iron ore from Utah and petroleum coke from Martinez. Negotiations are also underway with BNSF to obtain access to additional customers in the Richmond Inner Harbor area.

Central California Traction Company<sup>86</sup> is jointly owned by Union Pacific and BNSF, but operated as an independent, neutral short line railroad. The railroad's historic function was to provide local service on a branch line between Stockton and Sacramento. In 1998 the railroad entered into an agreement to provide local service to the Port of Stockton for both Class 1 railroads. The port-related traffic has grown dramatically in the intervening years, from 1200 carloads per year in 1998 to over 18,000 carloads in 2005.

Stockton has become a primary destination for international bulk products moving to/from the Central Valley. Principle commodities handled include dry bulk products like coal, cement, coke, corn, rice, plastics, flour, starch and sugar as well as liquid bulk products fertilizer, feed supplements, liquids and ethanol. Central California Traction Company handles heavy lift cargo direct from ship to rail, inbound steel products from ship to rail, and has a large outbound movement of cement from ships to rail for the California and domestic western U.S. cement markets. The Port of Stockton has also become the location of over 25 new customers who are in the rail transload business with steel and building products as the main products. The location of these transloaders has helped reduce Valley truck traffic.

The Port of Stockton is working with the Bay area ports on the possible movement of containers by barge or ship to Stockton and transfer to rail. The former Rough and Ready Island Navy complex has over 8,000 feet of dockage and 1,200 acres that can be developed into an intermodal and automotive ship-to-rail transfer point. All trackage at the Port of Stockton is upgraded to accommodate rail cars handling 286,000 lbs.

Sierra Northern Railway<sup>87</sup>, formerly known as Yolo Short Line and also privately held, provides local rail service to the Port of Sacramento, interchanging there with both BNSF

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<sup>85</sup> [http://www.levinterminal.com/index\\_files/Rail.htm](http://www.levinterminal.com/index_files/Rail.htm)

<sup>86</sup> <http://www.cctrailroad.com>

<sup>87</sup> <http://www.sierrarailroad.com/freight.html>

and Union Pacific. Principle commodities handled include dry-bulk products like rice, cement, fertilizers, lumber and special dimensional shipments of items like windmills and steel. The Port of Sacramento has entered into an agreement with the Port of Oakland for short-sea shipping of containers, possibly adding another new dimension to Sierra Northern's business at West Sacramento.

The importance of California's short line railroads will only increase as the movement of cargo through California's ports continues to grow. The long-term viability of short line railroads is not assured, however, and several issues must be addressed if short line railroads are to succeed into the future:

- Track upgrades. Much of California's secondary railroad tracks (branch lines and industrial tracks in urban areas) were constructed back in the early part of the 20<sup>th</sup> century. Trains were smaller and lighter and the track was built accordingly. Much of the short line trackage dates back more than 80 years, and is inadequate to handle today's generation of heavier cars and locomotives. Recent advances in freight car technology have resulted in a maximum gross weight for rail cars of 286,000 lbs. To attain this standard, many short lines must upgrade their track with new ties heavier rail, and new bridges. The upgrades tend to be very expensive and tend to be out of the range of the average short line budget.
- Locomotive upgrades. Heavier trains require more horsepower for movement. The typical short line locomotive is more than 40 years old and puts out low horsepower. A new fleet of short line locomotives will be needed to replace the aging fleet as traffic continues to grow.
- Emissions. Diesel particulate matter emitted by railroad locomotives has been identified as contributing to an overall health hazard in concentrated urban environments, particularly near port activities. Most short line locomotives, however, are exempt from EPA and CARB regulations due to the age of the locomotives and the difficulty in replacing them. Concurrent with the need for locomotive fleet replacement is a need for more environmentally-friendly locomotives. Several advances have been made in the way of hybrid or straight electric locomotives; and Carl Moyer funds are available to railroads on a limited basis. More monies will be needed, however, to address in advance the replacement of exempted locomotives.

The handling of local rail service by short line railroads allows the Class 1 railroads to free-up vital assets such as locomotives and crews, and allows them to concentrate on what they do best – haul great tonnages over long distances. If California is to continue growing its international trade through the ports, the Class 1 railroads must be able to provide the additional capacity. Short line railroads will help facilitate this capacity by providing more efficient and responsive service at the ports, and by allowing the Class 1 railroads to focus on the long-haul, interstate operations.

## 6. Environmental Enhancements

In addition to mitigating air emissions and the impacts on habitats and fisheries associated with existing goods movement operations, substantial environmental mitigation efforts must also be made as port area infrastructure is developed. Considerable effort has been made in identifying goods movement-related environmental mitigation strategies. A detailed list of emission reduction strategies is shown in Appendices C and D.

The following broad emission-reduction strategies must be pursued:

- cleaner fuels, scrubbers, after-treatment, and internal engine modifications for marine vessel main engines
- clean fuels, cold ironing or add-on controls for vessel auxiliary engines
- clean diesel and alternative fueled switcher locomotives and cargo handling equipment at rail yards and docks
- lower emission line-haul locomotives
- truck modernization and fleet turnover programs.

These issues must be addressed not only at the ports but in other impacted areas as well. In late September, leaders from the Inland Empire expressed their desire to tackle the problems resulting from the growth of goods movement activities in Riverside and San Bernardino Counties.

The ports are committed to reducing emissions and should be recognized for the significant progress they have already made in combating pollution. The Port of Oakland's Clean Air Program includes initiatives to reduce emissions, including a truck re-powering program providing cash incentives to truckers for replacing engines with newer cleaner engines. The Port of Long Beach adopted an aggressive and comprehensive Green Port Policy dedicated to reducing the harmful effects of port-related operations. In Los Angeles, the No Net Increase (NNI) Task Force compiled a list of 68 measures to reduce emissions. These various efforts have had a visible impact. As an example, the number of birds in the San Pedro harbor has more than doubled since the 1970s.<sup>88</sup>

Both ports jointly adopted a Clean Air Action Plan in November 2006. The historic plan is a comprehensive approach to mitigating the impacts of goods movement activities. It recognizes that solutions must be addressed by both ports jointly and must include public and private sector partners. These partners include the California Air Resources Board, U.S. Environmental Protection Agency and the South Coast Air Quality Management District, the steamship lines, railroads and shippers.

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<sup>88</sup> Port of Long Beach [report](#) Fall 2006, p. 2.

Momentum is building for greener ports for two key reasons. First, environmental and community groups demand it. Ships emit some 23 tons of sulfur oxides on a daily basis in Southern California and are responsible for almost 60% of the port's diesel emissions;<sup>89</sup> and the ports as a whole are responsible for some 48 tons of NOx on a daily basis.<sup>90</sup> The ports' contribution to PM-related pollution in the region is expected to jump from 25% to 42% by 2020.<sup>91</sup> These levels are unacceptable from a public health standpoint.

Another reason for the momentum toward building greener ports is that industry has learned that "going green" is good for business. A survey by the American Chamber of Commerce in Hong Kong found that poor air quality there may be driving away both existing businesses and potential investment.<sup>92</sup> Industry is responding to both these pressures and regulatory challenges. On January 1, 2007 vessels near or berthed at California ports were required to use cleaner burning fuel in their auxiliary engines. Maersk announced in October of 2006 that it had made the switch to low-sulfur fuel for all of its 35 ships calling at California ports. In December of 2006, APL announced that 23 of its 100 ships (those that make regular calls in California) will run auxiliary engines on low sulfur fuel.

APL is also taking part in a three-year pilot project to test the feasibility of, among other technologies, water-in-fuel emulsification. This is a water and fuel mixture that may reduce nitrogen oxides by 20%. The \$1.3 million test is being conducted by the ocean carrier in conjunction with the CARB, the USEPA, the ports and local agencies. It is the first such test of an emulsification system on the main engine of a cargo ship.<sup>93</sup>

The railroads are also making changes. As a result of 1998 and 2005 agreements with the CARB, the railroads are using cleaner locomotives and are conducting their operations in a cleaner fashion. In the South Coast, they are accelerating the purchase of cleaner locomotives – 30 to 40 years in advance of what otherwise be required – to reduce their NOx emissions by over 65% by 2010. Statewide, they are accelerating the use of low-sulfur diesel fuel, installing advanced anti-idling devices, and training their personnel in cleaner operating practices.

Industry will be a willing partner in efforts to make goods movement a cleaner business if the federal, state and local regulatory agencies as well as international treaties recognize the importance of establishing a level playing field for all parties. One area of concern is cold ironing. The Ports of Los Angeles and Long Beach plan to outfit 25 berths with shoreside power so that ships can plug into it. The cost of retrofitting vessels may

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<sup>89</sup> K. Hanson. "Ports pass Clean Air Plan." Long Beach Press Telegram (online version), November 20, 2006.

<sup>90</sup> K. Hanson "Emissions Act Cleaned Up." Long Beach Press Telegram (online version) November 6, 2006.

<sup>91</sup> K. Hanson "Pollution may Hurt Business at Ports." Long Beach Press Telegram (online version) November 17, 2006.

<sup>92</sup> K. Hanson "Pollution may Hurt Business at Ports." Long Beach Press Telegram (online version) November 17, 2006.

<sup>93</sup> "Shipper to test system to cut emissions." Los Angeles Times, December 5, 2006.

encourage some carriers to avoid terminals where cold ironing is required. The goal of the various clean air plans should help ensure that stakeholders are not penalized for making needed improvements.

## **6.1 The San Pedro Bay Ports Clean Air Action Plan**

On November 20, 2006 the Los Angeles and Long Beach Harbor Commissions jointly adopted the San Pedro Bay Ports Clean Air Action Plan (CAAP). The \$1.8 billion Plan is noteworthy because it combines the efforts of two competing entities which nevertheless recognize the need to address the environmental impacts of goods movement in a unified fashion. The plan was developed with the cooperation of the South Coast Air Quality Management District, CARB and the USEPA. The ports and the AQMD have committed approximately \$200 million of the needed total.

The five-year Plan, which is to be updated every year, commits to reducing PM emissions by 14% in 2008, leading up to an overall reduction of 52% by 2011 if no growth is assumed. The Plan calls for the reduction of sulfur oxides by more than 38% over the same timeframe. The CAAP also emphasizes the need to reduce truck-related emissions by targeting for replacement and retrofitting the approximately 16,000 trucks regularly servicing the ports.

The Clean Air Action Plan relies upon a combination of measures to meet its goals. Unit-based standards have been established which include:

- a requirement that all trucks involved in port drayage meet EPA 2007 on-road particulate matter emission standards by the end of 2011
- a 10-per-million residential cancer risk threshold for projects
- 100% compliance with vessel speed reduction programs
- the use of less than 0.2% sulfur fuel in engines at berth
- cold ironing (or an equivalent) at all major terminals within five years
- new minimum performance requirements for newly purchased cargo handling equipment and harbor craft
- a requirement that by 2011, all diesel-powered switcher and helper locomotives be 90% controlled for PM and NOx, and that by 2014 all long haul locomotives use 15-minute idle restrictors

A coordinated monitoring system at the two ports has been incorporated into the Action Plan and will be used to measure progress in meeting these goals. The system shows real-time pollution levels at two sites near the port. The website displays data for sulfur dioxides, carbon monoxide and nitrogen oxides and compares these measurements to federal and state standards.

The Clean Air Action Plan also includes a \$15 million Technology Advancement Program to guide the development of new technologies needed for long-term impact. The ports are already taking part in a project to develop a hybrid-powered terminal tractor in

conjunction with USEPA and a Dutch firm<sup>94</sup>. There is also great interest in an emission control system to remove pollutants from the exhaust of ships at berth. The technology used involves a bonnet or sock extending from a dock-based boom which captures emissions. Pollutants are then removed in a cloud chamber scrubber<sup>95</sup>. The technology was recently tested on a rail locomotive in northern California.

The two ports expect that most of the recommended control measures will be brought about through the lease negotiation process or when terminals request modifications and/or expansions which trigger the environmental review process. The ports have had success with this approach. Prior to the adoption of the Clean Air Action Plan, the Port of Long Beach entered into “green leases” with two terminals to upgrade cargo handling equipment and reduce emissions from vessels at berth. In the absence of formal lease agreements, the Clean Air Action Plan relies upon a combination of other strategies including incentive programs, voluntary measures, loan guarantees, and recognition programs. It is also expected that impact fees of some sort will be included.

A key focus of the Clean Air Action Plan is on the 16,000 trucks believed to make more than 80% of the trips in and around the port. An October 2006 single-day air-quality strike force from the California Air Resources Board and CHP cited 20 drivers at the Port of Long Beach for emission and mechanical violations. A total of 128 drivers were stopped<sup>96</sup>.

Utilization of the Annex VI treaty is another strategy promoted by both ports to achieve additional emission reductions from ships. Annex VI of the International Convention for the Prevention of Marine Pollution from ships, 1973, as Modified by the Protocol of 1978 (MARPOL), is the international treaty regulating emissions from ships.<sup>97</sup> A nation must ratify Annex VI before its provisions become effective in that country. The U.S. has yet to ratify the treaty. In May 2006, the Senate gave its advise and consent to the President

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<sup>94</sup> “U.S. West Coast Ports developing hybrid tractor.” Journal of Commerce online October 30, 2006.

<sup>95</sup> T. Duong “Advanced Cleanup Technologies Seeks to Scrub...the Air?” Long Beach Business Journal. October 30, 2006.

<sup>96</sup> K Hanson “Polluting Trucks Cited in L.B.” Long Beach Press Telegram online version. October 25, 2006.

<sup>97</sup> <http://www.imo.org/home.asp>

From President Bush’s message on May 15, 2003 to the U.S. Senate for the advice and consent of the Senate to the ratification of Annex VI (<http://www.whitehouse.gov/news/releases/2003/05/20030515-12.html>): “The MARPOL Convention is the global agreement to control pollution from ships. MARPOL Annex VI regulates the emission into the atmosphere of specified pollutants from ships. It complements the other annexes to the MARPOL Convention, which relate to the transport of oil (Annex I), harmful substances carried in bulk (Annex II), harmful substances in packaged form (Annex III), ship-generated sewage (Annex IV) and garbage (Annex V). The United States is a party to all of these annexes with the exception of Annex VI.

“MARPOL Annex VI regulates the prevention of air pollution from ships by limiting the discharge of nitrogen oxides from large marine diesel engines, governing the sulfur content of marine diesel fuel, prohibiting the emission of ozone-depleting substances, regulating the emission of volatile organic compounds during the transfer of cargoes between tankers and terminals, setting standards for shipboard incinerators and fuel oil quality, and establishing requirements for platforms and drilling rigs at sea.”



in favor of ratification and in July the House Transportation and Infrastructure Committee did the same. California can play an important role in promoting the adoption by the U.S. Senate.

One component of Annex VI allows countries to utilize what is referred to as a Sulfur Emission Control Area (SECA). The SECA would require ships to use 1.5% sulfur fuel (15,000 parts-per-million). Lowering the sulfur content of ship fuel has significant benefits in terms of PM and NOx emissions as well as SOx. A SECA went into effect for the Baltic Sea in May 2006. The SECA will be extended to the North Sea and English Channel in 2007.

To become a SECA, a country or region of a country must submit a request for approval to the International Maritime Organization. For this to occur in the U.S., Annex VI must first be ratified by the U.S., a technical justification must be made to the USEPA, and the USEPA must submit a request for consideration to the IMO. The California Air Resources Board is leading the technical effort to develop a justification to the USEPA for a North America SECA.

The Clean Air Action Plan builds upon the previous efforts taken by each individual port. These plans and task forces have greatly shaped the Action Plan; and growth rate assumptions are consistent with those set forth by Los Angeles' No Net Increase Taskforce as well as CARB's Goods Movement Plan.

Adopted in January 2005, the Port of Long Beach Green Port Policy established the following guidelines for port operations and future development:

- Protect the community from the harmful environmental impacts of port operations
- Distinguish the port as a world leader in environmental stewardship
- Employ the best technology to avoid and reduce environmental impacts
- Promote sustainability in all aspects of port operations and development
- Engage and educate the community about port environmental programs

The Green Port Policy also called for a reduction in emissions per ton of cargo handled.

Many of the programs included in the Green Port Policy and included in the Clean Air Action Plan are in-place and currently generating "green" benefits. This includes the Green Flag Program, which recognizes vessels that voluntarily reduce speed in the harbor. This has the effect of reducing pollution. Ocean carriers can now qualify for reduced dockage rates if 90% or more of their vessels comply with speed limits for a year. Nearly ninety percent of all ships now fly the "Green Flag."

The Port of Long Beach is also developing a fully integrated, resource-loaded master schedule, which will continue to evolve as the number of environmental programs expands. The port provides quarterly progress reports to the Long Beach City Council and the Board of Harbor Commissioners including details on each program's goals/benefits and status of implementation. The port has also identified specific metrics

so that progress can be quantified and tracked over time. In order to ensure that the policy is implemented throughout the terminals, the port's leasing policy will be amended. As stated in the port's White Paper on the Green Port Policy, "Negotiating with tenants requires flexibility; however, the leasing policy must have as a key agenda the 'greening' of the port."<sup>98</sup>

At the Port of Los Angeles, port staff unveiled its own green port proposal at a meeting of the Harbor Commission on November 21, 2005. As reported by The Cunningham Report:

The Port of Los Angeles announced a ... clean-air plan...that would fast-track the phase-out of diesel yard handling equipment, discontinue subsidizing the clean-diesel fuel program, provide terminals with incentives to switch to alternative-fueled equipment, and promote the use of cleaner fuels....

The plan considers the 68 measures identified, but never agreed upon, by the No-Net-Increase Task Force under former Mayor Jim Hahn. Some of the measures were rejected and some new ones added into the port's new clean air plan. The rejected measures had to do with making diesel equipment cleaner and subsidizing clean-burning diesel fuel. The plan relies strongly on switching to alternative fuels such as liquefied natural gas, hydrogen, and biofuels.<sup>99</sup>

## **6.2 The Gateway Cities Clean Air Program**

The strategies called for by the two Harbor Commissions attempt to address not only air quality issues but also some of the underlying structural issues that make port drayage the perceived "weak link" in the supply chain. The Clean Air Action Plan intends to ensure that, by 2012, replacement and retrofitted trucks meet 2007 control standards and are driven by drivers earning the prevailing wage. It also anticipates imposing fees to raise funds to pay for cleaner trucks.

Accordingly, one program that deserves special recognition is the Gateway Cities Council of Governments' Clean Air Program.<sup>100</sup> In operation since September 2002, the Clean Air Program's main focus is to reduce emissions from in-use heavy-duty vehicles (HDVs) in the Gateway Cities sub-region and around the Port of Los Angeles and Port of Long Beach. The Program has received national attention and awards for efficiency in achieving a significant reduction in harmful emissions from in-use heavy-duty diesel vehicles and equipment.

The Clean Air Program has two primary components – The Fleet Modernization Program (FMP) and the Port of Long Beach Diesel Emissions Reduction Program (DERP). The FMP provides an average grant award of \$25,000 to replace 1986 and older diesel HDVs with a 1999 or newer, cleaner burning model. The older trucks are scrapped and never

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<sup>98</sup> Long Beach Harbor Department, Green Port Policy – "White Paper", August 15, 2005.

<sup>99</sup> The Cunningham Report, November 28, 2005

<sup>100</sup> The Gateway Cities Council of Governments comprises 27 cities in southeast Los Angeles County.

used again. The Program's long-term goal is to replace 3,000 existing HDVs, or about a third of the pre-1987 truck fleet in Los Angeles County at an estimated cost of about \$85 million. This would result in NOx and PM reductions of an estimated 1,650 and 360 tons per year, respectively, for each of the five years that are assumed for the lives of the grant awards.

As of March 2007, the program has spent about \$18.5 million to replace 550 trucks, resulting in significant, immediate decreases in both diesel PM and NOx. The Gateway Cities Program has also taken part in a pilot exhaust filter program, providing filters to truckers and then monitoring emissions levels.

The Clean Air Action Plan calls for upgrading another 500 trucks with retrofit technologies as one of its first actions. The Ports will commit \$166 million over five years to the program; the AQMD will provide \$36 million. The AQMD committed an additional \$12 million for fleet modernization earlier in 2006. Some of these funds were dedicated to the conversion of fleets from diesel to liquefied natural gas. Since the plan calls for \$1.8 billion for the program during its five-year period, additional funding will be needed. Parallel truck-related efforts will be taken up by individual cities. Long Beach expects to convene an ad hoc committee on trucking.

The trucking community has expressed its support for many of the proposals outlined in the Clean Air Action Plan but has expressed reservations about others. There are concerns for example about the possibility that port standards will conflict with state and federal standards, creating a confusing regulatory environment in which to operate. Truckers have also expressed skepticism over their ability to recover fees imposed on dirty vehicles intended for the beneficial cargo owner. There are even concerns about the feasibility of the Gateway Cities Program since drivers often find it difficult to make up the difference between the program subsidy and the actual cost of the vehicle.

CALMITSAC believes however that investing in cleaner trucks and working to reduce truck trips are the quickest and most tangible methods to achieve meaningful emissions reductions. One important task for the port community will be to achieve consensus on whether to maintain the emphasis on cleaner diesel trucks, switch to LNG, or use a combination of LNG and cleaner diesel engines.

As part of the Gateway Cities Clean Air Program, the Port of Long Beach has taken a leadership role by facilitating efforts to install new emissions reduction technology on off-road heavy-duty vehicles operated within port boundaries. This Diesel Emissions Reduction Program introduces "clean diesel technology" to port terminal operators by retrofitting their cargo-handling equipment with devices such as diesel oxidation catalysts (DOCs), which replace mufflers and can provide cost-effective emissions reductions. On nearly 200 off-road HDVs, Port of Long Beach tenants are using a DOC and emulsified diesel fuel (a diesel-water blend) combination that has been verified by the California Air Resources Board to provide a 50% reduction in diesel PM emissions and a 20% reduction in NOx emissions. On approximately 400 off-road pieces of cargo-handling equipment, POLB tenants are using a DOC combined with a crankcase emissions filtration system that has been verified by CARB to reduce diesel particulate emissions by 25% (actual

reductions are believed to be higher). Of those, approximately 100 are fueled with an ethanol-blended diesel fuel verified by CARB to further reduce PM emissions by 20%.

The Port of Long Beach's efforts through the Diesel Emission Reduction Program, coupled with the efforts of terminal operators to modernize equipment and transition to cleaner on-road equipment has resulted in total cargo-handling equipment emissions declining. From 2002 to 2005, cargo-handling NOx emissions declined by approximately 570 tons per year and cargo-handling PM emissions by approximately 70 tons per year.

### **6.3 The Port of Oakland Vision 2000 Maritime Development Program**

The Port of Oakland's Vision 2000 Maritime Development Program committed \$85 million to mitigate the impacts of cargo facility development. Nearly \$10 million was designated for an Air Quality Mitigation Program, featuring measures that included re-powering and modifications to all of its terminal operating equipment and re-powering local AC Transit buses for cleaner operations. As part of its Maritime Air Quality Program, the port will allocate up to \$2 million in incentive funding to help owners of heavy-duty trucks that haul shipping containers in the port area. Port officials estimate that there will be approximately 80 qualifying truck owners who will be eligible for up to \$40,000 each in incentive funding to replace their 1990 or older truck with a 1999 or newer truck. As of the fall of 2006, eighteen vehicles have been replaced and \$3 million in funding remains. The Port is looking at expanding the program to include green switcher locomotives.

As part of the Vision 2000 Program, a 40-acre shoreline park has been constructed, designed with extensive community input, and now provides high quality access to San Francisco Bay. The port's dredging program features almost 100% beneficial reuse of clean dredge spoils to create new shallow water habitats on San Francisco Bay. These innovative programs are not free. Once again, a growing revenue stream is essential to maintain these programs and develop new ways to mitigate the impacts of port and related transportation activities.

The Port of Oakland is working with regional government in Northern California to develop alternatives to trucking containers over the highway. These efforts are designed to reduce vehicle emissions and congestion associated with moving containers within the region. In order to provide a rail alternative to trucking, more capacity is needed in both the existing main line rail system and the rail facilities at the port. Programs such as the CIRIS short-haul rail project can have a positive impact on the environment.<sup>101</sup>

The Port of Oakland and the Bay Area Quality Management District are also working together to develop a Port of Oakland Maritime Segment to the Regional Air Quality Improvement Plan. The Plan will serve as a framework for the development of a regional air quality and goods movement strategy.<sup>102</sup> The Port is also partnering with CARB and

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<sup>101</sup> Port of Oakland, Strategic Rail Priorities, July 8, 2005

<sup>102</sup> Port of Oakland, Letter to Stakeholders from J. Bridges and J. Broadbent, August 3, 2006.

the Bay Area Air Quality Management District on a Health Risk Assessment. The assessment includes the development of a port emissions inventory.

#### **6.4 The State Goods Movement Action Plan and the California Air Resources Board Emission Reduction Plan**

Since 2004, the Schwarzenegger Administration's Goods Movement Working Group has been developing a statewide plan for goods movement capacity expansion, environmental and community mitigation, and goods movement-related homeland security and public safety enhancements. Governor Schwarzenegger has stated that improving the movement of goods in California is among his highest priorities. The Working Group, co-chaired by the Agency Secretaries from the Business, Transportation & Housing Agency (BT&H) and the California Environmental Protection Agency (Cal/EPA), was established on the premise that "The state's economy and quality of life depend upon the efficient, safe delivery of goods to and from our ports and borders. At the same time, the environmental impacts from goods movement activities must be reduced to ensure protection of public health."<sup>103</sup>

The Plan has been developed in two phases with a broad cross-section of stakeholders, including industry, environmental and community public health groups, and governmental organizations. Phase 1 of the Plan, entitled Goods Movement Action Plan (GMAP), Phase I: Foundations,<sup>104</sup> was released in September 2005. It identified growth trends, illustrated four "port-to-border" transportation corridors, inventoried infrastructure projects being planned or underway, estimated environmental and community impacts, described general mitigation approaches, and raised key aspects of public safety and homeland security issues.

The Phase II Plan, released on January 11, 2007<sup>105</sup>, addresses capacity expansion, environmental and community mitigation, and goods movement-related homeland security and public safety enhancement. CALMITSAC was represented on an Integrating Working Group. The Plan recommends projects at an estimated cost of \$10.3 billion for consideration for goods movement infrastructure funding under the Trade Corridor Improvement Fund of Proposition 1B.

GMAP development included the input of five supporting working groups and a separate CARB Emission Reduction Plan development effort described below. One of the objectives of the GMAP is to improve air quality and protect public health. The means of doing so are outlined in the Air Resources Board's Emission Reduction Plan for Ports and Goods Movement in California.<sup>106</sup> The Plan was adopted by the ARB on April 20, 2006 and represents a significant component of the GMAP.

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<sup>103</sup> BT&H/Cal/EPA, "Policy Statement on Goods Movement in California," January 27, 2005. (<http://www.arb.ca.gov/gmp/policy.pdf>)

<sup>104</sup> BT&H/Cal/EPA, Goods Movement Action Plan, January 2006.

<sup>105</sup> [www.arb.ca.gov/gmp/gmp.htm](http://www.arb.ca.gov/gmp/gmp.htm).

<sup>106</sup> California Air Resources Board, Emission Reduction Plan for Ports and Goods Movement in California, April 20, 2006.

The Emission Reduction Plan identifies and initiates specific actions necessary to reduce air pollution from both international and domestic goods movement. It quantifies current and future emission of diesel PM, NOx, SOx and reactive organic gases (ROG) and establishes key goals needed to protect public health. They include

- Reducing total statewide international and domestic goods movement emissions to the greatest extent possible and at least back to 2001 levels by 2010
- Reducing statewide diesel PM health risk related to goods movement 85% by 2020
- Reducing NOx emissions in the South Coast Air Basin 30% from projected 2015 levels and 50% from projected 2020 levels
- Reducing localized risk in communities adjacent to goods movement facilities (including ports) as expeditiously as possible

CARB estimates that the cumulative implementation costs of its recommendations could be \$6 to \$10 billion through 2020. CARB is now in the process of designing effective regulations and emission reduction strategies specifically for port trucks, privately owned truck fleets, low sulfur marine propulsion engine fuel, shore power for ships and harbor craft, harbor craft fleets, harbor craft engines and switcher/yard locomotives. Shore power regulations are in development and are expected to be presented to the Air Resources Board in late 2007.

## **7. MTS Security**

After 9/11, CALMITSAC's Southern California affiliate, the Southern California Marine Transportation System Advisory Council (SOCAL-MTSAC), developed port security protocols that were promptly implemented and allowed the ports to stay open and productive. SOCAL-MTSAC drafted the nation's first vessel and marine terminal port security guidelines, which have now been embraced by all U.S. Pacific Ocean ports in California, Oregon, Washington, Hawaii, Alaska, and Guam.

California accounts for 40% of the containerized waterborne commerce in the U.S, but in Round 4 (FY 2004) of federal port security grants, California received only \$5,925,377 or less than 12% of the \$49,429,867 in federal port security grants distributed nationally.<sup>107</sup> In Round 5 (FY 2005) California received \$33,599,417, and doubled its share to about 24% of the national total of \$141,969,968.<sup>108</sup> This represented a significant improvement, as there was a greater attempt in 2005 to set priorities on a more rational basis. Texas received \$54,094,294, or 38% of the port security grant funding in Round 5. Houston, by itself, received \$35,325,116, or 25% of the national total. Overall, California received about 19% of the national total for the first five rounds of port security grants, and the San Pedro Bay Ports received about 11% of the total, including requests by private industry.

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<sup>107</sup> <https://www.portsecuritygrants.dottsa.net/TSAdotnet/default.aspx>

<sup>108</sup> Los Angeles: \$11,447,716.86; Long Beach: \$12,768,629; Oakland: \$2,887,252; San Diego: \$6,495,819.

“A priority for the Port Security Grant (PSG) Program in FY 2005 is a risk-based distribution of funding.... The FY 2005 program will direct all available funds to the nation’s highest risk ports...”<sup>109</sup>

## **7.1 2006 and 2007 Port Security Grants and the SAFE Port Act**

The Department of Homeland Security awarded FY 2006 grants (Round 6) in September 2006. \$168 million was allocated to ports grouped into one of four tiers, with Tier 1 representing the highest risk. The Ports of Long Beach and Los Angeles received a combined \$12 million in this cycle. \$11.6 million went to the Port Authority of New York and New Jersey with Louisiana ports also receiving significant grants. San Francisco and Oakland received no money as part of the 2006 grants; Oakland had requested \$6 million in federal funding. The Port of Richmond received almost \$1.2 million. Florida and Texas among other states have reportedly been successful in coordinating multiple state port security grant applications using a clearinghouse approach, and thereby increasing overall state grant awards. California has no such mechanism.

In January 2007, the Department of Homeland Security invited eight high-risk regions, including Los Angeles/Long Beach and the San Francisco Bay area, to compete for a total of \$120 million in port security grants. Unlike previous years however, available grant dollars have been pre-allocated and ports are allowed to submit grants on a regional basis. Los Angeles/Long Beach is eligible to compete for \$14.7 million; and the San Francisco Bay Area, including the ports of San Francisco, Oakland, Stockton and Richmond is eligible for \$11.2 million. Port Hueneme and San Diego are eligible to compete with Tier III ports around the nation for a pool of \$30.1 million.

Of the San Pedro Bay Ports’ \$12 million obtained in 2006, \$4.6 million earmarked for the Port of Los Angeles will be used to begin implementing the Transportation Worker Identification Credential (TWIC) program at the Port. A secure worker identification card was first authorized in the Aviation and Transportation Security Act of 2001, following the events of 9/11. The development and issuance of biometric security cards was subsequently addressed in 2002 and 2004 as part of marine transportation security legislation. The San Pedro Bay Port complex was one of three sites that tested TWIC technology and procedures. The Department of Homeland Security issued proposed rules for a national worker ID credential.

The TWIC is a proposed “smart” photo ID card with multiple fraud protection measures. It is expected to cover up to 850,000 longshoremen, truckers, merchant mariners and other port workers requiring unescorted access to facilities and vessels across the country. Facility owners, operators and unions will submit information on workers to the Transportation Security Administration. The TSA will check the names against terrorist watch lists and criminal records, and perform citizenship and immigration service checks. The cost of the card will be paid by the worker and is expected to be somewhere in the

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<sup>109</sup> [https://www.portsecuritygrants.dottsa.net/TSAdotnet/TSA4/Documents/PSGP\\_factsheet.pdf](https://www.portsecuritygrants.dottsa.net/TSAdotnet/TSA4/Documents/PSGP_factsheet.pdf)

range of \$100 to \$160. Reduced costs are available to those workers who have already undergone comparable background checks. Cards will be valid for five years. Workers will have until Sep. 25, 2008 to obtain the credential.

TWIC was one of the programs specifically addressed by the Security and Accountability for Every Port (SAFE Port) Act that the President signed in October of 2006. The legislation clarifies the definition of security risk and it establishes an ambitious timeline for TWIC implementation. It calls for the top 10 U.S. ports (including Los Angeles, Long Beach and Oakland) to begin using access cards by July of 2007. Preliminary specifications for a card reader have not yet been developed however.

There has been some resistance to TWIC from ports, marine terminals, and drivers and longshoremen who will be required to obtain the card. From the port and terminal perspective, the concerns primarily have to do with time and money. TWIC regulations require port officials and the Coast Guard to work together to designate secure areas within facilities as well as in and around vessels. They will have to integrate TWIC access technology with existing control systems. Officials have also expressed concerns whether the system will be flexible enough to quickly credential a casual or part-time worker.

Proposed TWIC regulations state that a transport worker can be denied access if (s)he has been convicted of a felony within the past seven years. The SAFE Port Act narrowed the list of offenses to treason, espionage, sedition and terrorism. Union leaders want to be certain that violations that don't necessarily compromise security won't disqualify an applicant. The impact of immigration checks on the port drayage industry is unknown. CALMITSAC supports efforts to secure the ports but in ways that do not unnecessarily impede the flow of cargo.

In addition to the sections pertaining to TWIC, the SAFE Port Act requires that all cargo entering the country's 22 busiest ports be scanned for radiation by the end of 2007. It also targets containers originating outside of the U.S. by mandating that they be screened and, in some cases, scanned before entering the country.

While the SAFE Port Act authorizes \$3.4 billion over five years to implement security programs, including \$400 million for additional port security grants, the legislation is less specific about funding sources for security programs. Rather, it codifies and expands some key security measures previously launched. These include the Container Security Initiative (CSI) which deploys American inspectors at foreign ports. Some 70% of all containers arriving in California do so under provisions of the CSI.

CSI consists of four core elements:

- Using intelligence and automated information to identify and target containers that pose a risk for terrorism
- Pre-screening those containers that pose a risk at the port of departure before they arrive at U.S. ports



- Using detection technology to quickly pre-screen containers that pose a risk
- Using smarter, tamper-evident containers

Under the CSI, CBP pre-screens U.S.-bound containers at selected foreign ports. As of October 2002, information about an ocean shipment must be transmitted electronically to CBP 24 hours before cargo is loaded at a foreign port onto a U.S.-bound vessel. Previously, ocean carriers did not have to submit this information until the ship arrived in the U.S. CBP uses a system known as the Automated Targeting System (ATS) to identify high-risk containers for physical inspection. These are containers that may involve smuggling or pose a potential terrorism threat. The CBP is now requiring more detailed information in order to minimize the need for examination holds in U.S. ports. CBP created the 24-hour rule to allow targeting of “suspicious cargo” and a possible “no load” order at the foreign port of lading. By “extending the borders,” CBP minimizes the risk of a dirty bomb or other device detonating in U.S. ports.

Another existing measure expanded by the SAFE Port Act includes the Customs Trade Partnership Against Terrorism (C-TPAT). C-TPAT was initiated in April of 2002, and offers importers expedited processing of cargo if they comply with CBP guidelines for securing their entire supply chain. To be a partner in C-TPAT, an importer must complete a detailed questionnaire on its security practices, list all the partners in its supply chain, and confirm that these other firms also have security programs in place. If certified by CBP, importers may benefit from a reduced number of cargo inspections.

The U.S. General Accounting Office (GAO) evaluated how the CSI and C-TPAT programs have been implemented and identified a number of problems needing correction.<sup>110</sup> The GAO found that importers participating in C-TPAT were benefiting from reduced scrutiny of their cargo after they had been certified into the program but before CBP had validated that they were in fact carrying out the promised security measures. GAO also found that nearly one-third of the containers that CBP had targeted for inspection at overseas loading ports – including those labeled “high-risk” – were not actually inspected.<sup>111</sup>

## **7.2 CALMITSAC Port Security and Consequence Management Survey**

A recent report by the Public Policy Institute of California determined that shipping containers are a key vulnerability in the supply chain because of the large number of loopholes in global regulations that make the container system an easy target.<sup>112</sup> Given the number of containers that move through California’s ports, the State needs a prioritized list of infrastructure projects and port security projects. Ports also need to conduct contingency planning for recovering from a major incident.

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<sup>110</sup> GAO, Homeland Security: Key Cargo Security Programs Can Be Improved, GAO-05-466T, May 26, 2005. (<http://www.gao.gov/new.items/d05466t.pdf>)

<sup>111</sup> DailyBreeze.com, June 3rd, 2005

<sup>112</sup> J.D. Haveman and H.J. Shatz (editors) 2006. Protecting the Nation’s Seaports: Balancing Security and Cost. Public Policy Institute of California. ([www.ppic.org](http://www.ppic.org))

CALMITSAC has reached out to key homeland security agencies, including the California Office of Homeland Security, the U.S. Coast Guard, Bureau of Customs and Border Protection, and others to solicit their support and participation. CALMITSAC has undertaken a port security and consequence management survey. This is a first ever snapshot view of the current status of port security within the State of California including remaining vulnerabilities, capability gaps, and shared perspectives of those in-the-know on the front lines.

In order to encourage participation, invite candor, and preserve anonymity, the survey was deliberately blind. This dictated the use of some sophisticated questioning techniques learned from Gallup polling to internally validate aggregate results through the use of accepted protocols in question formulation, pattern, repetition, variation, use of related series questions for comparison purposes, sequencing in order to ensure data quality, neutrality, and consistency among the respondent population. Multi-part questions, some adding to 100% and others allowing multiple answers, were used to add variety, choice, diversity and depth to responses. The questions also permit more detailed follow-up correlation and regression analysis in a relational database.

The survey itself is divided into multiple sections totaling approximately 175 questions of which roughly twenty-five permit a narrative response to provide context and examples, and promote individuality of response.

Respondents were self-selected. To date, thirty respondents out of a potential universe of approximately 200 have answered the survey questions. They include corporate/company officer/directors, terminal facility managers, security managers, and emergency preparedness managers. The target population was deliberately ambitious: port authorities (Cities, Counties, Special, Districts), Small Craft Harbor Districts, Marine Terminal facilities, and vessel operators.

The respondent population provides a rich diversity with multiple perspectives for analysis purposes. They encompass every category of port authority and facility operator within the State of California. Equally important, they include representation from every major trade lane: cruise and passenger ferries, containers, dry and liquid bulk, neo-bulk trades in imported automobiles, and refrigerated cargoes such as agricultural products. All regions of the State from the North Coast, Bay Area, Inland river system, Central Coast, to Southern California and the Mexican Border are represented.

Seventy percent of the respondents have a Coast Guard approved port security vulnerability assessment for their port or facility. Fifty-two percent have participated in a USCG Area Security Plan. The same percentage of respondents are required to have a maritime security plan under MTS. Yet 72% of respondents have prepared a port or facility security plan. Sixty-five percent have a USCG approved facility plan, while 20% have not yet submitted a plan for USCG approval.

Only 27% of respondents report a significant increase in port security improvements since 9/11. Thirty-six percent report a marginal increase, 18% no change, and 18% report no data on which to make a determination.

Remarkably, 46% of respondents believe there is a significant increase to the overall threat level since 9/11. Eighteen percent believe there is a marginal decrease, and the same percentage have no data on which to base their opinion.

When queried whether they believed there is port security leadership, guidance and support from Federal, State and local officials, 18% agreed, another 18% believe there is barely adequate support, 27% disagreed, and 27% strongly disagreed. Major areas where improvement is needed include better definition of regulatory requirements, closer cooperation among agencies at all levels, and better training and education support.

By a resounding 56 to 15% margin, the respondents believe the federal government is not doing enough to protect California's ports. Sixty-two percent of the respondents believe there is a concurrent State responsibility for port security. Almost the same percentage (61%) believe there is a State responsibility for port security training and exercises. An even greater majority, 77%, believes that there is a State responsibility for port police and other agencies maintaining an effective counter-terrorism response. In the wake of 9/11, 92% believe there is a State responsibility for seamless communication among first responders, law enforcement and port personnel.

Ninety-three percent believe there should be a statewide port security plan. The same overwhelming percentage believe the goals of the statewide plan should include vulnerability and threat assessment, risk mitigation, prevention and deterrence, emergency preparedness and response, and consequence management and recovery.

Of those reporting vulnerabilities or deficiencies, an overwhelming 80% reported land and water-side perimeter security as significant; 40% reported access control vulnerabilities; and 20% reported a combination of surface surveillance, effective counter-measures, security and non-security personnel training as major deficiencies.

Perhaps even more importantly, of those reporting major deficiencies only 40% documented them, only 20% reported them to regulatory authorities, and 20% reported them to the corporate security officer.

The counterpart of coordination in port security planning is coordination in security training. Sixty-four percent of respondents report training of their employees to observe, detect, and report unusual behavior often associated with terrorist activity. Fifty-three percent report coordination with Federal agencies in port security training. By comparison, only 30% report coordination with State agencies in port security training. Sixty-five percent report coordination with local agencies in port security training. California has only one of two interagency entities known as a Joint Harbor Operations Center (JHOC); the other is located in Charleston, South Carolina. Surprisingly, only 2%

of respondents indicated that they had participated in a JHOC. Thirty-one percent of respondents however participate in Regional Emergency Management Centers.

Lessons learned and after-action reports are the lifeblood of continuous plan improvement. Ninety-two percent of respondents document lessons learned and use them to improve their plans. Forty-six percent of respondents share lessons learned with other agencies. A mere 33% have ongoing discussions concerning their plans among themselves. Among the reasons given for not sharing lessons learned include corporate policy and the lack of a practical and secure method for doing so.

The contents, and particularly the threat scenarios on which plans are based, tend to focus on natural disasters and mass evacuation along with operational coordination with other agencies. Relatively few plans include content on counter-terrorism and WMD response. An alarmingly low 32% report having a continuity of operations/consequence management plan, yet 53% expect to be fully recovered within 1-3 days after an incident. Seventeen percent of respondent reported themselves poorly prepared to respond to a major port security incident.

### **7.3 National Port Security Centers**

Section 808 of the Coast Guard and Maritime Transportation Authorization Act of 2004 (Public Law 108-293) authorizes the formation of one or more National Port Security Centers or consortia of academic institutions of higher learning. These are to be formed in collaboration with other agencies within the Department of Homeland Security (DHS)-Customs and Border Protection, U.S. Coast Guard, Transportation Security Administration – as well as port authorities and other stakeholders.

The measure authorizes up to \$35 million in annual appropriations through 2009 in the form of grants or cooperative agreements. The money is to be used to conduct pilot projects in targeting suspect sea containers, non-intrusive examination technology, detection of weapons of mass destruction, tagging and tracking of containers, vulnerability mitigation, and consequence management.

In direct response to the legislative enactment, five campuses within the California State University system came together as founding members of the Pacific Area Port Security Consortium (PAPSCON) later renamed the Port and Intermodal Systems Center for Enhanced Security (PISCES). The Founding Members of the Consortium include the California Maritime Academy; California Polytechnic State University, San Luis Obispo; California State University, Long Beach; California State University, Los Angeles; California State University, San Bernardino; and San Diego State University. The President of California Maritime Academy is Chair of the consortium.

The Consortium formally came into existence on November 1, 2004 by a unanimous vote of representatives of the Founding Members followed by the execution of a Letter of Intent. In the CALMITSAC Port Security Survey, 90% of the respondents favored participation in joint port security applied research projects with a national port security center.

CALMITSAC supports the establishment of one or more National Port Security Centers in California, complements the founding members of the Port and Intermodal Systems Center for Enhanced Security (PISCES) for their initiative, and encourages the Department of Homeland Security to request, and the Congress to appropriate, funds from the Department of Homeland Security annual appropriations to implement this initiative to improve port security on a national scale.

CALMITSAC also recommends the California Transportation Commission support the efforts of California Maritime Academy to seek funding support on behalf of the consortium from the proceeds of Proposition 1B approved by the voters in November, 2006.

#### **7.4 Strategic Mobility (SM) 21 Program and the California Green Freight Corridor Network**

Strategic Mobility 21 (SM 21) is a Congressionally-funded Joint Logistics Technology Demonstration administered through the office of Naval Research and California State University Long Beach Foundation. Its objective is to develop, demonstrate, and deploy agile port dual-use technologies that improve both Department of Defense rapid deployment and sustainment while at the same time improving goods movement, intermodal freight mobility, congestion management and air quality, and homeland security in Southern California as a national prototype for other regions. Led by Rep Jerry Lewis (R-CA) and Howard “Buck” McKeon (R-CA) of the California Congressional delegation, to date Congress has appropriated \$10 million for this effort over several fiscal years.

Strategic Mobility 21 is developing a suite of modeling and simulation, information technology and sensor capabilities that will assist in maximizing goods movement through the current surface transportation infrastructure. This will be done through information technology integration and business process reengineering and proliferation of commercial best practices, monitoring distribution lane performance using metrics of performance and effectiveness, and forecasting the impact of surface transportation infrastructure on regional throughput. It is developing the software integration and decision support tools to link existing road and rail sensors into a smart secure trade corridor from the ports of Los Angeles-Long Beach to the Inland Empire.

The Green Lane concept is not new. The U.S. Customs national advisory committee has been advocating such a concept for years. C-TPAT certification provides for a level-three capability certification-based technology monitoring of secure supply network as the basis for green lane fast track privileges. On the Southwestern border, Border Anti-Smuggling coalitions (BASC’s) have existed for years providing collective participation in smart secure trade corridors. FAST lanes monitor customs in bond freight across the U.S. and Canadian land border crossings today. Pre-pass smart lanes monitor passenger vehicle crossings of the Mexican border and along major freeways.

Secure origins technology links maquiladoras and U.S. warehouse and distribution facilities along seven Southwest border cities reducing border crossing time dramatically, while providing U.S. and Mexican Customs the opportunity for manual inspection of containers, trailers and rail cars. Across the hinterland, the I-35 corridor, and other Canada to Mexico smart corridors are emerging.

Open architecture, low cost standardized tags, reliable tag readers and fixed and mobile infrastructure are the hallmarks of these systems. Linking these into a national goods movement network of intelligent transportation system corridors is merely a matter of time.

Linking four port-to-border goods movement trade corridors (Los Angeles Long Beach – Inland Empire, San Francisco Bay Area, San Diego Border, and Central Valley) into an integrated California Green Freight trade network as recommended by the Public Safety and Security Committee and incorporated in the Governor’s Goods Movement Action Plan (GMAP) is a novel concept. The GMAP has recommended an “immediate Green Freight Corridor Road and Rail infrastructure evaluation with integrated sensor network for homeland security and public safety applications.”

Strategic Mobility 21 has already embarked on an emerging strategy to develop, test, demonstrate and deploy key capabilities in Southern California toward this ambitious goal. SM 21 will undertake the necessary modeling and simulation, emulation, system architecture, experimentation, software interoperability, business process reengineering, and prototype development to permit such an ongoing evaluation.

SM 21 will soon roll out a first of its kind Southern California Agile Supply Network model to simulate the entire region from a goods movement perspective in partnership with the Southern California Association of Governments. This will be unveiled and demonstrated on a national webcast in April, 2007.

The GMAP recommended a short-term (0-3 years) pilot project for “creating a physical communication grid in the Green Freight corridor.” SM 21 is developing the system architecture for a Green Freight Corridor including a cellular and satellite communication grid as recommended in the plan.

The first step towards developing and deploying this regional capability will be the introduction of a collaborative SM 21-U.S. Department of Transportation Maritime Administration Container Handling Cooperative Project (CHCP) prototype. The prototype involves an open architecture intermodal dray appointment system and virtual shipper free time model to improve the efficiency of terminal operations, cycle and turn times and profitability of intermodal dray operations, and shipper supply network in-transit visibility.

Likewise, the GMAP recommended the short-term development of “a community web portal to provide real, or near real, time information on goods movement and freight mobility conditions across road and rail network within the region.” SM 21 is developing

this capability commonly referred to as a community extranet portal or data fusion platform with the first functional capability expected to be rolled out in April, 2007.

The Green Freight Corridor coalition has been formed with SM 21 acting as public systems integrator in a public-private partnership which will transition and carry on this work.

The GMAP recommended as an Intermediate Term action (4-10 years) “Retrofit(ing) freight vehicles with probes and smart sensors to measure speed, lane departure, cargo location, customs data, container RFID information, and vehicle/frame condition inspection data. SM 21 is working with USDOT and the Department of Defense (DOD) to integrate prognostics sensor data from new and retrofitted vehicles using both hard wire and telematics networks.

### **7.5 Layered Responses: Multiple Lines of Defense**

After 9/11, experts concluded that securing maritime transportation should not rely on a single solution, such as increasing the number of container inspections, but rather on a “layered” approach with multiple lines of defense from the origin to the final destination of a shipment.<sup>113</sup> The ports and terminals are working hard to increase surveillance, fencing, lighting, training, and patrols. The Ports of Long Beach and Los Angeles and the Alameda Corridor Transportation Authority are implementing the Advanced Transportation Management, Information and Security (ATMIS) System which will include closed circuit television surveillance, changeable message signs, and queue detectors to help manage traffic flow and to increase security. The \$15 million program is projected to be operational by November of 2008.

Federal agencies are responsible for other important layers of defense. The following federal agencies have critical roles with respect to port security: the Coast Guard, the Bureau of Customs and Border Protection (CBP), and the Transportation Security Administration (TSA), all of which are housed in the Department of Homeland Security (DHS), and the Maritime Administration (MARAD).

Among its many responsibilities, the Coast Guard evaluates, boards, and inspects commercial ships as they approach U.S. waters. In each port area, the Captain of the Port (COTP) is the Coast Guard officer responsible for the security and safety of vessels and waterways. The Coast Guard has instituted new reporting requirements for ships entering and leaving U.S. ports. The Notice of Arrival (NOA) rule has been extended from 24 hours to 96 hours. The NOA includes detailed data on the crew, passengers, cargo and the vessel itself. The Coast Guard has developed the concept of Maritime Domain Awareness (MDA), which involves a risk-management approach of combining intelligence from a variety of sources to provide a more complete picture of potential maritime security

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<sup>113</sup> Congressional Research Service, Port and Maritime Security: Background and Issues for Congress, updated May 27, 2005. This report provides an excellent overview of port and maritime security, and was the source of much of the information reported here.

threats. As part of the MDA effort, the Coast Guard is expanding the Automatic Identification System (AIS), a vessel tracking system to monitor ship traffic in harbors.

CBP is responsible for inspecting cargoes, including containers, and for examining and inspecting ship crews and cruise ship passengers arriving in U.S. ports from any foreign port. One layer of defense used by CBP is the mobile Vehicle and Cargo Inspection System (VACIS), which consists of a truck-mounted, non-intrusive gamma ray imaging system that produces radiographic images to evaluate the contents of trucks, containers, cargo, and passenger vehicles. VACIS exams help to determine the possible presence of many types of contraband. With VACIS, CBP is able to verify that the goods declared via the Automated Manifest System (AMS) are in fact in the container. In January 2007, CBP published a notice mandating the electronic submission of manifest data by all motor carriers crossing at select U.S. ports of entry.

Another important layer of defense employed by CBP is the Radiation Portal Monitor (RPM). An RPM provides CBP with a passive, non-intrusive means to screen containers for the presence of nuclear and radiological materials. An RPM can detect various types of radiation emanating from nuclear devices, dirty bombs, special nuclear materials, and natural sources and isotopes commonly used in medicine and industry.

The TSA's responsibility was originally limited to aviation security, but now extends to all modes of transportation, both cargo and passenger. Together with the CBP, TSA conducts the Operation Safe Commerce (OSC) pilot project, which began in November 2002. OSC attempts to verify the contents of containers at their point of origin, ensure the physical integrity of the containers in transit, and track their movement from origin to destination over all modes of transportation. The pilot program includes shipments through the three largest U.S. load centers: the ports of Los Angeles/Long Beach, New York/New Jersey, and Seattle/Tacoma.

In its third year, there were federal grants of \$6.7 million to the Ports of Los Angeles/Long Beach, \$5.2 million to the Ports of Seattle/Tacoma, and \$5.2 million to the Port Authority of New York/New Jersey. Prior to these new awards, the three load centers have received a total of \$55 million under Operation Safe Commerce, including a total of \$13.7 million for Los Angeles/Long Beach, \$27.5 million for Seattle/Tacoma, and \$13.8 million for New York/New Jersey.<sup>114</sup>

MARAD is part of the U.S. Department of Transportation and supports the U.S. commercial maritime industry. MARAD publishes Maritime Security reports and a planning guide on security. MARAD is also part of the Container Working Group, which has made classified recommendations on how best to ensure the security of maritime container transportation. MARAD has also developed a curriculum for training maritime security personnel.

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<sup>114</sup> U.S. Department of Homeland Security, press release, April 14, 2005.



There are two international agencies with responsibility for maritime security: the International Maritime Organization (IMO) and the World Customs Organization (WCO).

In December 2002, the IMO adopted a new chapter to the Safety of Life at Sea (SOLAS) Convention entitled the International Ship and Port Security (ISPS) Code. This code largely parallels the requirements of the Maritime Transportation Security Act of 2002. ISPS requires the installation of worldwide satellite tracking equipment; Ship Security Alert Systems (SSAS); line of site Very High Frequency (VHF) radio vessel tracking devices; and Automatic Identification Systems (AIS) on vessels for monitoring vessels' present positions, past port calls and transits.

While vessels have been installing these new communications technologies to provide a worldwide vessel tracking system the equipment and processes required to receive, evaluate and disseminate this surge of information is years off from being fully implemented by governments. The biggest challenges are building and operating the shore based receiving stations around the world to process the vessel information transmitted by vessels' AIS transponders and determining the systems to be used in collecting and sharing this information...

The non-profit Maritime Information Services of North America (MISNA) – comprised of a network of Maritime Exchanges in U.S. and Canada – has developed the capability to bring in both AIS and satellite generated data into a hybrid vessel tracking system called the Automated Secure Vessel Tracking System (ASVTS)... MISNA's vessel tracking system uses existing onboard satellite and VHF communications systems to economically track vessels around the world...MISNA has also built a network of AIS receiving stations around the U.S. which reports a vessel's position every minute when in an AIS covered area. When a vessel is outside an AIS area [beyond about 40 miles], which is 95% of the time, position reports are provided every few hours by the satellite tracking systems...To date, participation in the Long Range Identification and Tracking (LRIT) component of MISNA's secure vessel tracking system is voluntary and is evolving into the "Standard of Care" for responsible ship operators.<sup>115</sup>

CALMITSAC urges rapid installation of MISNA's ASVTS program by the U.S. Coast Guard District Eleven Command that covers all California ports. The system is being considered in District Thirteen, which covers Washington and Oregon, and has already been implemented in District Seventeen in Alaska.

The second international agency with responsibility for maritime security, the World Customs Organization (WCO), works to simplify customs procedures to improve the efficiency of world trade. In May 2005, the WCO issued its Framework of Standards to

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<sup>115</sup> Captain Ed Page, U.S. Coast Guard (Retired), President, Maritime Information Services of North America (MISNA), "The Emerging World of Vessel Tracking", October 2005.

Secure and Facilitate Global Trade. This document sets out principles for advance, electronic reporting of cargo and shipper information, and requires importers to verify security measures taken by its suppliers.

It is critical that the various agencies involved with port and maritime security work together to avoid overlap, duplication of effort and conflicting regulations. There also needs to be greater sharing of intelligence information among federal, state and local agencies. The GAO reported, “In surface transportation, timely information-sharing has been hampered by the lack of standard protocols to exchange information among federal, state, and local government agencies and private entities.”<sup>116</sup>

A barrier to intelligence sharing has been that state and local government and port authority officials do not have the required security clearances. In late 2006, Governor Schwarzenegger signed an executive order creating the California Maritime Security Council. The Council includes representatives of Homeland Security, the U.S. Coast Guard, the U.S. Navy, state agencies and harbor businesses and labor unions. Action items for the council include identifying threats, improving security measures, coordinating information and developing a statewide maritime security strategy.

CALMITSAC believes that technology will play a major role in improving port security. RFID e-seals on containers are a good example. Normal seals simply check for mechanical integrity, but a determined criminal can bypass the seal by removing an entire door with the seal intact. E-seals allow for cost-effective monitoring from origin to destination. E-seals also can contain the container number, potentially making error-prone optical character recognition (OCR) systems obsolete. The container number recorded on the e-seal can be matched to a container number in a secure database to reveal the contents and other information about the cargo.

This is a hefty commercial benefit. Entire supply chains will jump on the wagon, once they know which wagon to board. ...After the U.S. and China resolve their differences on the preferred operating frequency range, the adoption of e-seals will be a slam-dunk....New seals and e-seals are just around the corner. If the Department of Homeland Security wants to accelerate their adoption, it should put its weight behind the resolution of the frequency standard debate....With a global radio-frequency standard, the industry will adopt e-seals on its own. This will allow the industry to take advantage of 21<sup>st</sup>-century security technology and cost savings immediately.<sup>117</sup>

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<sup>116</sup> U.S. General Accounting Office, Transportation Security, Post-September 11<sup>th</sup> Initiatives and Long-term Challenges, April 1, 2003, GAO-03-616T, and GAO, Maritime Security: New Structures Have Improved Information Sharing, but Security Clearance Processing Requires Further Attention, April 2005, GAO-05-394.

<sup>117</sup> Robert Hadow, “E-Seals and RFID,” Journal of Commerce, October 24, 2005, p. 58.

## 8. Funding

Unfortunately, resolving all of the problems discussed above will take a significant amount of capital investment. It is convenient to place funding options into three basic categories:

- Existing grants and loan programs; i.e., State Transportation Improvement Program (STIP) funds, federal transportation reauthorization, port security grants, etc.
- New sources of revenue at the state or federal level, such as new general obligation bonds, a Customs “carve-out”, tax credit bonds, imposed new fees or taxes
- Negotiate user fees paid by private sector for high-priority infrastructure and environmental programs

The maritime community must continue to vigorously lobby for more federal support and encourage Congress to develop a national freight policy. Everyone agrees, however, that the federal government will not be able to provide all the funds required to keep the goods flowing efficiently. SAFETEA-LU (P. L. 109-59) authorized \$286.4 billion in guaranteed spending for highways, rail and transit programs over six years (FY 2004 to FY 2009). This represents a 38% increase over funding levels in the Transportation Equity Act for the 21<sup>st</sup> Century (TEA-21).

SAFETEA-LU, while providing support for several key projects, granted far less funding for goods movement than requested. For example, the Alameda Corridor-East asked for \$900 million but received only \$210.52 million.<sup>118</sup> The experience with SAFETEA-LU should be ample evidence of the federal government’s inability to solve all of the state’s funding problems. Relying exclusively on existing funding sources is problematic because there is not enough grant money available to fund all of critically needed goods movement projects.

Another existing funding source is the Energy Policy Act of 2005, which President Bush signed into law on August 8, 2005. Of the eighteen titles included in the Act Title VII (Vehicles and Fuels) is the most relevant to the Marine Transportation System. In brief, Title VII seeks to:

- Reduce emissions from on-road trucks (\$20 million in FY'06; \$35 million in FY'07; and \$45 million in FY'08), through the Diesel Truck Retrofit and Fleet Modernization Program (similar to the Gateway Cities Clean Air Program)
- Develop and demonstrate railroad locomotive technologies (\$15 million in FY'06; \$20 million in FY'07; \$30 million in FY'08)
- Evaluate generation of mobile source emission reduction credits for use by stationary sources
- Accelerate efforts to improve diesel engines and develop after-treatment devices

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<sup>118</sup> Includes earmarks for projects labeled “Alameda Corridor-East” plus other individual grade separations in Los Angeles, Orange, Riverside and San Bernardino counties.

- Evaluate long-term idling and establish a program for implementing idle reduction technologies on heavy-duty trucks and other vehicles and engines, through the Engine Idling Reduction Program
- Include biodiesel testing in evaluation of advanced diesel engine and fuel system technologies
- Establish a national grant and low-cost revolving loan program to reduce diesel emissions and diesel emission exposures (\$700 million over 5 years, representing 70% of the Diesel Emission Reduction Program)
- Establish a grant and loan program to be administered by the states to reduce diesel emissions (\$300 million over 5 years, representing 30% of the Diesel Emission Reduction Program)

Existing state funds are extremely limited. The State Transportation Improvement Program and Interregional Transportation Improvement Program (ITIP) are generally oversubscribed. The STIP is a five-year capital improvement program, renewed every two years. Projects in the STIP may include projects on state highways, local roads, intercity rail, or public transit systems. The Regional Transportation Planning Agencies (RTPAs) propose 75% of STIP funding for regional transportation projects in their Regional Transportation Improvement Programs (RTIPs). The California Department of Transportation (Caltrans) proposes 25% of STIP funding for interregional transportation projects in the Interregional Transportation Improvement Program.

California voters have indicated a willingness to help fill the funding gap. In November 2006, the California electorate approved the Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006 (Proposition 1B). This bond initiative, the single largest in California history, authorized \$19.9 billion in expenditures on the State's roads, bridges and transit systems:

- Congestion reduction, highway and local road improvements—\$11.3 billion to increase capacity on state highways, local roads and public transit
- Public transportation—\$4 billion to improve local transit services and state intercity rail services; purchase buses and rail cars and improve transit safety
- Goods movement and air quality—\$3.2 billion to improve freight movement through ports, on state highway and rail systems and between California and Mexico; improve air quality by reducing emissions related to freight movement, and replace or retrofit school buses
- Safety and security—\$1.5 billion to increase protection against security threats or improve disaster response on transit systems; improve rail crossing safety, seismically retrofit local bridges, ramps and overpasses; improve security and disaster planning in publicly owned ports, harbors and ferry terminals.

The \$3.1 billion of the total tied to our ports will help finance improvements to the road and rail networks carrying goods, as well as projects that improve port security and mitigate the air quality impacts of freight-related activity.

The California Transportation Commission has the responsibility of allocating the \$2 billion from the Trade Corridor Improvement Fund in a way that:

- Balances the demands of various ports.
- Provides reasonable geographic balance between the State's regions
- Places emphasis on projects that improve trade corridor mobility while reducing emissions of diesel particulate and other pollutant emissions

In addition, the commission is authorized to consider the following when identifying projects to be funded:

- "Velocity," which means the speed by which large cargo would travel from the port through the distribution system.
- "Throughput," which means the volume of cargo that would move from the port through the distribution system
- "Reliability," which means a reasonably consistent and predictable amount of time for cargo to travel from one point to another on any given day or at any given time in California.
- "Congestion reduction," which means the reduction in recurrent daily hours of delay to be achieved.

Port security funds will be allocated by the Governor's Office of Emergency Services.<sup>119</sup> Security projects to be funded include video surveillance equipment, explosives detection technology; cargo scanners; radiation monitors; thermal protective equipment; site identification instruments capable of providing a fingerprint for a broad inventory of chemical agents; other devices capable of detecting weapons of mass destruction using chemical, biological, or other similar substances; and other security equipment to assist in screening and monitoring cargo.

Priority is given to projects that have identified and committed supplemental funding from appropriate local, federal or private sources. Apart from border access improvements, projects require supplemental funding that is at least equal to the bond initiative moneys.

Another proposal for new funding is the Los Angeles County Economic Development Corporation's (LAEDC) West Coast National Freight Gateway Program (WCNFGP). This program entails a three-pronged funding strategy involving a \$100 per TEU (\$200 per FEU) user fee paid by retailers, a 10% Customs carve-out, and tax credit bonds. Part of the fee would be used to pay the principal component of the tax-credit bonds. The state would pay the interest component of the debt. In LAEDC's plan each of these funding sources would provide one-third of the total \$10.5 billion cost of the program. As proposed by LAEDC, all three sources would require either federal or state legislative approval. LAEDC has developed draft legislative language. The funds would be used for

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<sup>119</sup> The \$1 billion in emission reduction funds will be allocated by the Air Resources Board.

a “Five-County Consensus Project List”, including the Gerald Desmond Bridge, truck lanes on I-710 and I-15, other highway improvements on SR-57, SR-91 and SR-78 (Imperial County), Alameda Corridor-East grade separations, the Colton crossing, and railroad mainline capacity enhancements in Southern California.

LAEDC has obtained a legal opinion from the law offices of Orrick, Herrington & Sutcliffe, LLP stating that a legislated fee would pass a Commerce Clause test.<sup>120</sup> The shipping industry disputes this claim, and has threatened litigation if a container-based user fee is imposed through legislation.

With SB 927, Senator Lowenthal took another approach. This was a bill calling for a \$30 per TEU cargo fee (\$60 per FEU) on containerized shipments processed by the ports of Los Angeles and Long Beach. The ports themselves would be responsible for developing a process for collecting the fee. Revenues generated by the bill would have been used only to “fund rail system improvements, pollution mitigation measures, and port security enhancements.” The ports would retain one-third of the funds and remit the remainder to a Port Congestion Relief Trust Fund and a Port Mitigation Relief Trust Fund.

In September 2006, Governor Schwarzenegger vetoed the bill. On February 23, 2007 Senator Lowenthal reintroduced the \$30/TEU bill, but this time added the Port of Oakland and excluded port security. The new bill is SB 974. A major issue has been whether a user fee would divert cargo away from California ports. In an attempt to answer that question, the Southern California Association of Governments (SCAG) contracted with Leachman Associates, LLC to evaluate the potential impact of user fees on cargo diversion. SCAG assumed the fee would be applied to loaded import containers only. SCAG suggests that the fee be developed through negotiations with industry rather than through legislation. SCAG recommends that the funds be used to develop a system of exclusive truck lanes on I-710, SR-60, and I-15 as well as for mainline railroad improvements and grade separations east of downtown Los Angeles.

Major conclusions of the SCAG report include:

- Fees assessed but not used for congestion relief cause loss of volume in the long-run. A fee of \$60 per FEU would result in about a 6% drop in both total and transloaded imports if transit times are not reduced.
- Assuming fees are invested in projects that relieve congestion, San Pedro Bay imports are inelastic (i.e., relatively little change) up to about \$200 per FEU. This

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<sup>120</sup> Article I, Section 8, clauses 1-3 of the U.S. Constitution read as follows: The Congress shall have Power To lay and collect Taxes, Duties, Imposts and Excises, to pay the Debts and provide for the common Defence and general Welfare of the United States; but all Duties, Imposts and Excises shall be uniform throughout the United States; To borrow Money on the credit of the United States; To regulate Commerce with foreign Nations, and among the several States, and with the Indian Tribes.

causes a 4% reduction in total volume, but a 12.5% increase in transloading volume.

- Fees above \$200 per FEU are dangerous even with congestion relief.
- San Pedro Bay port volumes are much more elastic with respect to congestion than modest container fees.<sup>121</sup>

Over the last few years, there have been several congressional efforts to carve-out Customs duties for port security purposes; e.g., Ose (H.R. 2193), Harman (H.R. 1731), Collins (S. 855), Millender-McDonald (H.R. 478), and most recently Murray (S. 2008). In 2002, Congressman Lipinski of Chicago proposed the National Rail Infrastructure Program Act, which would have created a 10% Customs carve-out for railroad infrastructure. Congress has turned down all of these bills.

A study conducted by the U.S. General Accounting Office at the request of former Louisiana Senator John Breaux estimated that between 1999 and 2001 about 78% of Customs duties were collected from marine sources.<sup>122</sup> The shipping industry strongly opposes legislatively imposed fees and Customs carve-outs, including proposals for using an “increment of growth” in Customs duties. Because of the North American Free Trade Agreement (NAFTA), the Dominican Republic-Central America-United States Free Trade Agreement (CAFTA-DR), and other ongoing efforts to reduce barriers to trade, there is no reliable increment of growth in Customs duties.

As shown in Table 7, over the last seven years growth in Customs duties has been relatively flat. In FY 2001 and FY 2002, Customs duties actually declined.

**Table 7: Customs Duties, FY 2000– FY 2006**

(Dollars in thousands)

Year	Duties
FY 2000	\$20,555,901
FY 2001	\$19,813,849
FY 2002	\$19,787,943
FY 2003	\$20,601,425
FY 2004	\$21,279,612
FY 2005	\$23,466,557
FY 2006	\$24,995,986

Source: U.S. Customs and Border Protection, Performance and Annual Report, Fiscal Year 2004, p. 101<sup>123</sup> and Performance and Annual Report Fiscal Year 2006, p. 110.<sup>124</sup>

<sup>121</sup> Leachman & Associates, LLC, Port and Modal Elasticity Study, Final Report, prepared for Southern California Association of Governments, September 7, 2005.

<sup>122</sup> U.S. General Accounting Office, Marine Transportation: Federal Financing and a Framework for Infrastructure Investments, p. 37.

<sup>123</sup> [http://www.customs.gov/linkhandler/cgov/toolbox/publications/admin/cbp\\_annual.ctt/cbp\\_annual.pdf](http://www.customs.gov/linkhandler/cgov/toolbox/publications/admin/cbp_annual.ctt/cbp_annual.pdf)

Customs carve-outs are also opposed by the Office of Management and Budget.

As the second-largest source of general revenue, Customs duties are controlled by the White House Office of Management and Budget. If Congress were to redirect customs revenues to port and maritime infrastructure improvement, OMB would probably fend off the challenge.<sup>125</sup>

U.S. trade negotiators are seeking reductions in tariffs. During the week of November 7, 2005, at the World Trade Organization (WTO) Doha Round of discussions in Geneva, the U.S. asked developed nations to agree to cut tariffs by 55% to 90% and to cap tariff rates at 75%. (A 75% tariff means that the imported price of the goods is 75% greater after the imposition of the tariff). The European Union countered with an offer to cut its tariffs by 35% to 60%.<sup>126</sup>

In the U.S., importers, customs brokers and freight forwarders applaud efforts to reduce tariffs. They want these duties reduced, if not eliminated altogether, and they do not want to create a new constituency for the use of Customs duties. In the passage below, Robin Lanier, Executive Director of The Waterfront Coalition reminds us that U.S. trade policy favors the reduction of trade barriers.

The Doha Round is a multi-lateral negotiation that ... has been underway for more than four years under the auspices of the World Trade Organization (WTO).<sup>127</sup> In this round each WTO member will be negotiating "market access" accords that will call for the mutual elimination or reduction of import tariffs....I would imagine that in the end the round will not fully eliminate tariffs but there will be significant progress made in tariff reductions – especially on the high tariff items like footwear and wearing apparel, which are the items that generate the largest amount of cash at the border. In return for the U.S. removing or reducing tariffs on imports of footwear and apparel, we would expect a similar reduction of tariffs on our food and manufactured exports. Please note that this is not a policy that was pursued by agriculture [because agriculture in the U.S. wants to preserve tariffs on imported agricultural goods and to maintain farm subsidies, which are largely derived from Customs duties]...Open trade depends on reduced tariffs. [Tariffs] are trade distorting and bad for free trade. The shipper interests that I represent –

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<sup>124</sup> [http://nemo.cbp.gov/of/customs\\_report.pdf](http://nemo.cbp.gov/of/customs_report.pdf)

<sup>125</sup> *JoC Week*, October 7-13, 2002

<sup>126</sup> FedEx Trade News, November 10, 2005. <http://www.customsdoc.com/>

<sup>127</sup> The General Agreement on Trade and Tariffs (GATT) completed 8 rounds of multilateral trade negotiations (MTNs). The Uruguay Round (the 8<sup>th</sup> round) concluded with the signing of the Final Act on April 15, 1994, in Marrakesh, and produced the World Trade Agreement and its annexes and established the WTO. The Ministerial Conference is the WTO's highest-level decision-making body. It meets at least once every two years, as required by the Marrakesh Agreement. The Fourth WTO Ministerial Conference was held in Doha, Qatar from November 11-14, 2001. The Sixth WTO Ministerial Conference was held in Hong Kong on December 13-18, 2005. Other meetings were held in Singapore (December 9-13, 1996), Geneva (May 18-20, 1998), Seattle (November 30-December 3, 1999), and Cancun (September 10-14, 2003).



importers of wearing apparel and footwear – are strong supporters of reductions in U.S. import tariffs. U.S. export industries support tariff reductions in the U.S. as a trading chip for reductions of very high foreign tariffs that impede their ability to sell in foreign markets....Calling for a permanent earmark of tariffs is not in the trade's best interests over the long haul.... To create a trust fund out of tariffs would be impossible. First, it runs counter to trade policy; second,... tariffs are likely to decline over time as we continue to negotiate trade agreements; and third, it would be fought...by appropriators, authorizers, and the Bush Administration. While proposals have been offered on the Hill they have been rejected at every turn. They are, in fact, laughed at by the authorizers and appropriators. You can't pass this proposal into law.<sup>128</sup>

In the U.S., Customs duties are deposited into the General Fund, with about 30% remanded to agricultural and food programs (farm subsidies), as dictated by Section 612 of Title 7 of the U.S Code.<sup>129</sup> During the WTO discussions in Geneva during November 2005, the European Union – according to the U.S. – still hadn't offered enough market access for imported foods to meet a U.S. offer to cut farm subsidies by 60% over five years.

About 5,800 delegates of the 149-member WTO attempted to reach an outline deal at the Sixth Ministerial Conference in Hong Kong meeting December 13-18, 2005. The chief point of dispute was agricultural subsidies that the European Union and the United States give to their farmers, which critics charge distort trade and serve to undermine farmers in the developing world.<sup>130</sup> Agriculture tends to dominate the poorest economies of Africa, Latin America and Asia. So much of the WTO negotiations have revolved around proposals for lowering barriers to trade in farm products, and curtailing the subsidies that rich nations pay their farmers to grow cotton, corn and other crops. Such subsidies can lead to gluts and depressed world prices that put farmers in poor lands at a disadvantage.

A compromise was reached in Hong Kong on December 18, 2005. Delegates agreed to eliminate farm export subsidies by 2013. The agreement also called for rich countries to eliminate all export subsidies on cotton by 2006 and gives the world's poorest nations special trade privileges. Wealthy nations committed to giving duty-free and quota-free privileges to at least 97% of products exported by the least developed countries – countries with annual per capita incomes of \$750 – by 2008. The agreement reached in Hong Kong set April 30, 2006 as a new deadline for working out formulas for cutting farm and industrial tariffs and subsidies — the nuts and bolts of an eventual trade pact. However, U.S. Trade Representative Rob Portman said he would have a hard time selling the agreement to end U.S. export aid for cotton to U.S. lawmakers.<sup>131</sup>

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<sup>128</sup> E-mail communication from Robin Lanier, Executive Director of the Waterfront Coalition, to Gill Hicks, Chairman of CALMITSAC, August 8, 2005.

<sup>129</sup> U.S. General Accounting Office, Marine Transportation: Federal Financing and a Framework for Infrastructure Investments, p. 37.

<sup>130</sup> FedEx Trade News, November 10, 2005. <http://www.customsdoc.com/>

<sup>131</sup> Associated Press, December 18, 2005.

In a December 27, 2005 editorial, the Los Angeles Times had a sobering assessment of the compromise reached at the Sixth WTO Ministerial Conference in Hong Kong:

Especially disappointing was the failure by the World Trade Organization to make much progress in opening markets and reducing subsidies for agricultural goods, a critical step toward raising living standards in the Third World. Bizarrely, leaders of industrialized nations would rather give away money than free up their markets, which would boost their own economies as well as those of their trading partners. A better trade deal must be put at the top of the world's agenda in the coming year.<sup>132</sup>

This better trade deal has not come about. The Director-General of the WTO halted the talks in July of 2006.

Customs carve-out proposals are clearly a futile exercise, considering that:

- U.S. trade negotiators are whittling away at the source of revenue.
- There is no reliable increment of growth in Customs' duties.
- All previous legislative attempts have failed.
- U.S. farmers are trying to hold onto an important source of agricultural subsidies.
- Importers and the White House Office of Management and Budget continue to be opposed to Customs carve-outs.

The Waterfront Coalition is equally clear about legislated fees. In an August 11, 2005 letter to Governor Schwarzenegger, Robin Lanier states:

A state-imposed tax on international cargo would directly challenge several provisions in the U.S. Constitution, and would, if enacted create a significant new precedent that could seriously disrupt national and international commerce. As a general matter the U.S. Constitution reserves the taxation of commerce, both national and international to the federal government. Therefore these proposals are guaranteed to result in litigation that would take years to resolve and would very likely end up before the U.S. Supreme Court. Any revenue from taxes on commerce would, at best, take many years to realize.

There are other good reasons to oppose these proposals. They are bad for business, especially California's agricultural exporters. They have been crafted by individuals who do not fully understand international commerce or the national and international consequences of burdening it with new taxes. They have been put forward without any consultation with the cargo interests who are expected to pay these new taxes or who might face trade retaliation as a result of them. But, ultimately, the main reason to oppose taxes on

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<sup>132</sup> Los Angeles Times, December 27, 2005, p. B12.

international cargo is the absolute certainty that they will be challenged in court and will end up costing the State of California more than they are likely ever to raise.

This does not mean that industry arbitrarily opposes all user fees. There should be a clear distinction between a legislatively imposed fee and a negotiated fee for projects that clearly benefit the industry. Shippers and terminals negotiated the PierPASS program involving a \$40 (now \$50) per TEU fee for peak-period gate moves. The Waterfront Coalition was instrumental in facilitating the negotiations for PierPASS. The Alameda Corridor fee (initially set at \$15 per loaded TEU) was a negotiated fee approved by the railroads.

CALMITSAC believes that Customs carve-outs and legislated container fees are the wrong approach. Senator Lowenthal's container fee legislation, LAEDC's work, the SCAG elasticity study, and the state's Goods Movement Action Plan have been very helpful in terms of motivating all stakeholders to take these issues seriously.

CALMITSAC believes the correct approach is to negotiate public-private funding arrangements for high-priority infrastructure projects. CALMITSAC respectfully requests members of the legislature to refrain from introducing new container fee bills in 2007. Goods movement stakeholders must be given an opportunity to negotiate funding agreements. They cannot do this if they have to put all their time and energy into fighting legislation that they believe is unworkable. Worse yet would be a drawn-out legal battle between shippers/maritime industry lawyers and those advocating a legislated fee. This could substantially limit progress made on the important infrastructure projects and environmental programs so badly needed in California. A proposed bill to charge a container fee in Washington State triggered a resolution in the Alaska state legislature. Alaskans oppose the bill for fear of the negative consequences it could have on the cost of goods there.

First, a consensus on the priority projects and programs must be developed. Second, funding shares must be negotiated. It has been said that shippers will "pay for value" measured in terms of reduced delay, or increased velocity or reliability. The only way to foster true public-private collaboration is to first demonstrate real value to the various stakeholders and then negotiate shared funding responsibility. This is what the Alameda Corridor Transportation Authority did in the 1990's. SCAG continues to refine a matrix of values that can be used to evaluate benefits of key high-priority projects to both the public and private sectors at all levels.

Specific plans of finance must be developed around a limited set of high-priority projects; i.e., future success stories, that all stakeholders agree are absolutely essential, as opposed to mandating user fees through legislation. The industry has repeatedly said, "There is no trust in trust funds". Some funds have been raided; some have been over-collected and under-spent. Project-specific revenue streams for focused, well-managed projects can be protected for the benefit of bondholders and users alike.

Projects that have well-defined plans of finance and negotiated public-private funding arrangements stand a better chance of receiving federal dollars in the next reauthorization. For several years, the U.S. DOT has been promoting innovative finance and Public-Private Partnerships. It is important that all stakeholders start listening to the DOT instead of continuing to believe that the federal government will pay for the lion's share of project costs.

Plans of finance should include a mix of funding sources (federal, state, local and private). Assuming that projects have multiple beneficiaries, no one sector should bear the whole financial burden. Failure to develop feasible plans of finance simply means the projects will not get built, leaving us with more congested traffic, additional delays to the movement of cargo, cargo diversion, economic dislocation, and greater environmental degradation.

Keys to success in Public-Private Partnerships include:

- Consensus on what high-priority projects to build
- Private sector “buy in”
- Clear delineation of costs and benefits
- A balance of economic and environmental benefits
- Consensus on funding shares, point of collection of any fees and method of payment
- Legal authority
- Stable revenue stream
- Funding firewalls
- Sunset clauses
- Appropriate allocation of risk
- Cost and schedule control
- Experienced project management
- Product orientation not process orientation
- Focused agency mission
- Clear decision making authority

This implies that before private capital (in the form of fees or equity investment) can be committed to a project, the institutional arrangements for implementing the high-priority projects will have to be sorted out. In crafting a successful public-private funding program, it is important to consider what it would take to earn an “investment grade” bond rating from Moodys, Standard & Poor's, and Fitch. Project management and oversight are a consideration in rating bonds; thus, it will be important for the agencies responsible for implementation to have a strong track record in cost and schedule control.

## 9. Project Delivery and Options for Project Ownership and Operation

Rating agencies and investors seek to reduce investment risk. One way to reduce risk is to use design-build procurement. Advantages of design-build include reducing overall completion time by enabling the design and construction phases to overlap; reducing inflationary costs and providing an opportunity for earlier revenue collection; facilitating financing through earlier identification of total project cost (i.e. a price can be obtained for the work prior to completion of the design phase, unlike the traditional approach where design is completed prior to obtaining a price); and encouraging contractor innovation through early participation in the development of the project.

In 2005 the federal transportation reauthorization bill, SAFETEA-LU, eliminated the \$50 million floor on the size of contracts that can use design-build contracting without special approval. SAFETEA-LU also eliminated an obstacle contained in the Federal Highway Administration's existing design-build rule, relating to the ability of transportation agencies to take certain preliminary actions prior to receipt of environmental clearance.

Design-build projects often face legal hurdles however at the State level. The law often requires agencies to award contracts on a low-bid basis; and 100% payment bonds are required for all public works projects regardless of the size. Where state and local agencies are granted authority to use design-build for revenue-generating infrastructure projects, state highways are not included. Enabling legislation tends to favor transit projects. With regard to highway projects, the legislature has been more inclined to allow exceptions to competitive proposal rules than to overhaul state contracting law. Post earthquake repairs to the I-10 in Los Angeles were allowed under a legislative exception. 2006 legislation allowing use of design-build to widen the I-405 in Los Angeles for an HOV lane still required a low-bid selection process and the use of Caltrans engineers and employees for certain tasks, including preliminary engineering. The Alameda Corridor Transportation Authority was able to use design-build procedures under procurement authority found in the LA City Charter.<sup>133</sup>

Another method of expediting project delivery is "design sequencing." Design sequencing allows the sequencing of design activities to permit each construction phase to commence when design for that particular phase is complete instead of requiring the design for the entire project to be complete before construction can begin. With design sequencing, agency-employed engineers design and inspect projects. With design-build projects, the design-build consortium performs all design, construction and inspection.

Privately owned and operated facilities, such as toll roads, can help governments to attract alternative financing and to manage risk. There are variations of this approach, such as Design Build Operate Maintain (DBOM) and Design Build Finance Operate (DBFO). The FHWA has an excellent website that describes these and other options

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<sup>133</sup> N.C. Smith, "Design-Build Contracts Under California Public Contracting Laws." Nossaman Guthner Knox & Elliott LLP Memorandum, Nov. 2006. (<http://www.nossaman.com/db30/cgi-bin/news/Cal%20DB%20article.pdf>)

along with several case studies.<sup>134</sup> Examples of privately owned or operated facilities are the SR-125 toll road project in San Diego County<sup>135</sup> and the Chicago Skyway.<sup>136</sup>

The SR-125 toll road project is a new 11-mile highway alignment from SR-905 near the International Border to SR-54 near Sweetwater Reservoir. The southern 9.5-mile section of SR-125 has been constructed as a privately financed and operated toll road with electronic toll collection. The toll road was developed under California's AB 680 legislation passed in 1989. A limited partnership, San Diego Expressway, LP, holds a franchise with the state under which it was allowed to finance and build the highway. The limited partnership then leases back, operates and maintains the facility for 35 years. At the end of 35 years, control goes back to the state at no cost.

The northern 1.5-mile section, including the interchange with SR-54 is publicly financed with a mix of federal highway funds and \$132 million in local sales tax funds from the San Diego Association of Governments. Once opened, this segment will operate as a freeway.

Both the private and publicly funded portions have been built by the same contractor under two design-build contracts with the limited partnership. California Transportation Ventures, Inc. (CTV), the general partner, manages the project and will administer the contracts. CTV is a wholly owned subsidiary of Macquarie Infrastructure Group.

The Chicago Skyway Bridge is a 7.8-mile toll road built in 1958 to connect the Dan Ryan Expressway to the Indiana Tollway. For almost 50 years the Skyway was operated and maintained by the City of Chicago. In January 2005 the Skyway Concession Company, LLC (SCC) assumed operations on the Skyway on a 99-year operating lease. SCC is responsible for all operating and maintenance costs but has the right to all toll and concession revenue. SCC is owned by Cintra Concesiones de Infraestructuras de Transporte S.A. and Macquarie Infrastructure Group. In this public-private partnership, the City of Chicago received a cash infusion of \$1.83 billion.

In 2005, Governor Schwarzenegger proposed a package of bills known as "Go California," to permit design-build procurement (SB 705, Runner) design-sequencing (AB 1266, Niello) and privatization of certain facilities, such as toll roads (AB 850, Canciamilla). Both AB 1266 and AB 850 died in committee. SB-705 would grant design-build authority to Caltrans only. CALMITSAC believes that this authority should be explicitly extended to ports, transportation joint powers authorities, county and city public works departments, and local and regional transportation agencies.

Caltrans and regional transportation agencies, as of January 1, 2007, are allowed to enter into comprehensive development lease agreements with public and private entities for certain transportation projects (AB 1467, Nunez). Furthermore, the Legislature is

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<sup>134</sup> <http://www.fhwa.dot.gov/ppp/contactus.htm>

<sup>135</sup> <http://www.fhwa.dot.gov/ppp/sr125.htm>

<sup>136</sup> <http://www.chicagoskyway.org/>

required to act upon the submittal of a public-private partnership agreement within 60 days.

It is not entirely clear, however, whether ports and transportation Joint Powers Authorities fall under the bills' definition of a "local transportation entity." It is also not clear whether the bills would permit California ports and transportation JPAs to enter into agreements with private entities for ownership or operation of transportation facilities (e.g., Gerald Desmond Bridge). Having the flexibility to award design-build contracts and/or to enter into ownership/lease agreements would be desirable.

The absence of clear direction from the State on the issue of public-private partnerships has not prevented local port authorities from seeking out opportunities to work with the private sector. The Draft Port of Los Angeles Strategic Plan identifies the pursuit of public-private partnerships for infrastructure and environmental projects as an action item.<sup>137</sup> The Port of Long Beach is using private partners to test "sock-on-a-stack" technology to mitigate ship emissions and as part of its hybrid-powered yard hostler demonstration project.

CALMITSAC encourages transportation agencies to seriously consider the option of private ownership and operation, particularly for toll roads such as the proposed truck-only lanes. The U.S. Department of Transportation has published model legislation<sup>138</sup> for states seeking flexibility to contract with private sector partners to invest in and manage transportation projects. The model legislation is based on a survey of existing state laws that authorize various types of public-private partnerships.

## **10. The Role of Academic Institutions in Statewide Goods Movement**

Valid research and reliable data are needed to advance education, information dissemination, and informed decision-making about both the benefits and costs of goods movement and its related activities. There have been a large number of policy and position papers addressing the topic, but many have been written from a single stakeholder perspective.

Academics necessarily cross many social and professional boundaries in ways uncharacteristic of other professions. The academic community is uniquely positioned to consider alternative solutions to complex trade problems and to build an empirical base of information. This information can be used to inform future research and outreach activities and contribute to the knowledge base of goods movement stakeholders including policy makers. As an example, the environmental and health-related impacts of trade are better understood because of independent academic research undertaken by faculty at the University of Southern California and the University of California, Los Angeles (UCLA).

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<sup>137</sup> Port of Los Angeles, 2006-2011 Port of Los Angeles DRAFT Strategic Action Plan, November 9, 2006.

<sup>138</sup> <http://www.fhwa.dot.gov/ppp/legislation.htm>

California's universities will continue to play a pivotal role by assessing the impacts, both positive and negative, of goods movement. All stakeholders rely upon unbiased research into the relationship between trade growth and congestion, traffic safety, air quality and economic mobility. The academic community, in partnership with the research arms of agencies such as Caltrans and the Air Resources Board, is also our best source of economic and operational analysis, shedding light on effective modeling and forecasting methods, and means of measuring productivity. Universities should also be encouraged to evaluate the effectiveness of policies and programs sponsored by both the public and private sectors to improve goods movement. This includes using business tools to assess alternative investment opportunities, and helping to identify industry Best Practices at the state and local level, and from other parts of the country and the world. The University of California, Riverside for example will be monitoring emissions for the test of a fuel emulsification system on a container ship.

The Internet has made it possible for the findings of California's researchers to reach a wider audience. The METRANS Transportation Center<sup>139</sup> is a U.S. DOT national University Transportation Center (UTC) and a joint partnership of the University of Southern California and California State University, Long Beach. METRANS includes goods movement and international trade as one of its four thematic research areas and established the "Monitoring the Ports" Initiative in 2003. The program seeks to broaden the knowledge base of port-based international trade through data gathering and research in the areas of productivity of port operations, including labor, terminal operations, and institutional issues; goods movement within the Los Angeles region; goods movement related regulations or policies; and impacts of goods movement, including congestion, traffic safety, and air quality. A new University Transportation Center at CSU San Bernardino will conduct research on goods movement with a particular emphasis on the Inland Empire where many intermodal, warehouse, and distribution centers are located.

Academic institutions, including the state's community colleges, also have a vital role to play in performing outreach and professional development functions for constituencies that are not normally reached by industry efforts. To better prepare students to take advantage of programs like these and fill the explosion of job openings in the logistics and transportation field, the California Community College System, the California State University System, the Los Angeles County Economic Development Corp., and the Southern California Leadership Council recently formed the California Transportation and Logistics Institute (CATLI). CATLI will attempt to extend education and training efforts to elementary and high school level students so that strong foundations are developed before they enter college. It will provide a service by simply making young people aware of the opportunities afforded by the various goods movement industries.

The industry relies upon both community colleges and state universities in particular to attract students to the discipline of supply chain management and to help develop a well-educated and skilled pool of supply chain professionals ready for employment at all levels. Model programs exist at California State University, Long Beach (CSULB) and the California Maritime Academy (CMA). The CSULB Global Logistics Specialist

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<sup>139</sup> [www.metrans.org](http://www.metrans.org)



(GLS<sup>®</sup>) professional designation program uses industry experts to teach goods movement and the supply chain.<sup>140</sup> Courses are offered both in the classroom and online. The Master of Arts in Global Logistics (MAGL) is the only graduate program of its kind to integrate both the traditional MBA with a curriculum based in global logistics. Both the GLS<sup>®</sup> and MAGL are offered by the Center for International Trade and Transportation (CITT) at CSULB ([www.uces.csulb.edu/citt](http://www.uces.csulb.edu/citt)). CITT is a multi-disciplinary center for multi-modal transportation studies and integrated logistics research, education, training, policy analysis, and community outreach.

The CMA offers majors in Global Studies and Maritime Affairs, Marine Transportation and Marine Engineering Technology. The Business Administration degree has an option in Logistics and International Business. CMA also offers a comprehensive program of Continuing Education.<sup>141</sup>

Similar educational efforts involving both degree and professional designation programs, taking advantage of the expertise of goods movement stakeholders and made available in non-traditional formats, are to be encouraged. They result in a well-informed workforce and general populace. These efforts may even extend to high school students. One model is the statewide Math, Engineering and Science Achievement (MESA) program, which is an effort to attract young disadvantaged students into engineering professions with a particular emphasis on infrastructure-related engineering.

In addition, conferences, workshops, Town Halls, symposia and focus groups are various means of both sharing goods movement information from an industry perspective and receiving feedback on plans and procedures. Educational efforts, like those undertaken by CITT and CSULB, that raise awareness of goods movement issues with elected officials, city managers, planners and others in decision-making positions should be emphasized.

California has long been fertile ground for partnerships that marry the best of industry and academia. The medical and aerospace fields are but two examples. Researchers and goods movement stakeholders should be encouraged to pursue shared interests; and industry and community leaders, including elected officials, should help identify new research, outreach and training opportunities that benefit the state as a whole.

## **11. Recommendations**

Time for action is now. It is not possible to do everything for everyone, but California needs a series of success stories and a willingness to fund them. Collaboration is essential, which means the turf battles must end through a pledge by all stakeholders to work together. Coalition building and successful fund raising depends on commitment, coordination, collaboration, consensus and compromise. CALMITSAC has pursued a spirit of collaboration in developing the following specific recommendations:

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[http://www.uces.csulb.edu/CITT/GlobalLogistics/ProgramDescription.aspx?group\\_number=115&group\\_version=1](http://www.uces.csulb.edu/CITT/GlobalLogistics/ProgramDescription.aspx?group_number=115&group_version=1)

<sup>141</sup> <http://www.maritime-education.com/>

## **A. Economic Growth**

1. Recognize that growing the economy and protecting the environment and public health are cornerstone objectives. These tasks must be done concurrently.
2. Reject proposals for slow growth, no growth or moratoria on port growth. These proposals would negatively impact the state and national economies, hurt opportunities for upward mobility for blue-collar workers, reduce tax revenue, and result in other negative social impacts.

## **B. Environment**

1. Aggressively seek reductions in diesel emissions. Recognize that diesel engine emissions have serious health effects and are therefore the “Achilles Heel” of port and goods movement development. Use environmental enhancements listed in Appendices C and D of the CALMITSAC report as a guide. Without substantial reductions in diesel emissions, goods movement infrastructure projects are in jeopardy. CALMITSAC believes that reducing truck traffic and accelerating the replacement and upgrading of the truck fleet engines can bring immediate reductions in diesel emissions. Thus, programs like the Gateway Cities truck replacement program should receive significant supplemental funding as is called for in the San Pedro Bay Ports Clean Air Action Plan. Truck replacement should emphasize the newest and cleanest trucks where appropriate, and with data made available from environmental or security analysis.
2. Consider many of the other alternatives such as hybrid vehicles, plug-in hybrids, electric vehicles and clean diesel converted from natural gas.
3. Give serious consideration to market-based approaches to emissions reduction, such as those recommended by the Maritime Goods Movement Coalition, incorporating input from community stakeholders.
4. Continue to implement the San Pedro Bay Ports/ACTA truck trip reduction program.
5. Strongly encourage EPA to rapidly finalize stringent rulemaking for the control of emissions of air pollution from vehicles involved in goods movement.
6. Expand state and federal grants, bond moneys or programs to specifically address the replacement of older locomotives, including short line locomotives, operating in the port areas.
7. To the extent that it is feasible and cost effective, use green construction equipment in developing new goods movement infrastructure.
8. Incorporate specific project mitigation cost into total infrastructure project development costs.
9. Advocate for federal money to supplement state and local government and private funds to reduce diesel engine emissions.
10. Develop collaborative processes involving all stakeholders, such as the statewide LNG Taskforce, to facilitate EIR/EIS review and adoption.
11. Advocate for local development plans and policies that preserve access to ports.

### **C. Project Priorities, Funding, and Public-Private Partnerships**

1. Recognizing that available funding is limited, encourage policy makers and funding agencies to consider the selection criteria in the State Goods Movement Action Plan (GMAP) when establishing priorities for major infrastructure projects, operational improvements, and environmental mitigations, using projects lists in Appendices A-D of the CALMITSAC report as a guide.
2. Consult shippers, ports, terminals, vessel operators, trucking companies, railroads, freight forwarders, labor and the environmental community in the selection, and of high-priority infrastructure projects.
3. Concentrate on those projects that are ready to go and clearly of high priority. The Governor's leadership is essential in developing policy that is consistent with the GMAP and with CALMITSAC's Growth of California's Ports: Opportunities and Challenges.
4. Quantify public and private benefits and costs.
5. Continue and strengthen efforts to secure federal funding for critical projects particularly with respect to federal transportation reauthorization.
6. Where appropriate, negotiate joint public-private funding arrangements for high-priority projects. Develop detailed plans of finance, including negotiated shares from federal, state, and local sources and the private sector. Establish appropriate "fire walls" to prevent specifically identified project funds from being diverted to other projects or programs. Ensure that fees correlate to project timelines. Project-based fees should sunset when a project is paid for.
7. Given the limitations of federal and state funding, recognize that "self-help" strategies may be the primary way to complete the financing for high-priority projects. Recognize that projects that have successfully negotiated shared public-private funding arrangements are more likely to receive scarce public funds.
8. Abandon efforts to secure a "Customs carve-out," including proposals to capture an "increment of growth" in customs duties.
9. Establish institutional arrangements for implementation, emphasizing single-purpose entities with a clearly defined mission, decision-making authority, responsibility and accountability. Implementing agencies must have a strong track record in cost and schedule control.
10. Structure project implementation (including institutional arrangements) with the same rigor and transparency required for obtaining "investment grade" revenue bond ratings.

### **D. Intermodal Trucking Availability and Terminal Productivity**

1. Identify sources of inefficiency and delay, and develop specific programs to make better use of existing transportation assets.
2. Measure the severity of the looming shortage in truck drivers.
3. Establish, where feasible, common chassis pools to improve productivity and turn times within the supply chain. Identify Best Practices for chassis pools.

4. Quantify performance measures for reasonable turn times for trucks at port and railroad facilities. Establish benchmarking standards and best practices to maximize the use of existing infrastructure and capacity.
5. Develop strategies for both near-dock and on-dock rail facilities for short and long- term goods movement solutions.
6. Explore the use of federal anti-trust exemption for motor carriers to work together to improve productivity.
7. Develop an inventory of land uses, including industrial uses to facilitate planning.

## **E. Legislation**

1. Extend design-build authority to ports, transportation joint powers authorities, county and city public works departments, and local and regional transportation agencies that adopt performance and accountability measures, and benchmarking standards.
2. Allow port authorities and transportation joint powers authorities to enter into agreements with private entities for owning or operating surface transportation infrastructure.
3. In developing guidelines for the distribution of funds to transportation and air quality programs, give serious consideration to geographic equity based in part on the relative volumes of international cargo flowing through various regions of the State.
4. In lieu of legislatively mandated fees, industry, government and other stakeholders should negotiate joint public-private structures to fund a defined list of freight mobility and environmental mitigation projects.
5. Urge Congress to develop and pass legislation that would implement a national goods movement policy supportive of California goods movement efforts, data collection, modeling and simulation, and performance and effectiveness metrics infrastructure development and air quality improvement efforts
6. Develop a California consensus position on goods movement development, then work closely with the entire California congressional delegation, the West Coast Corridor Coalition, the Waterfront Coalition and other stakeholders to develop a unified approach to lobbying for additional federal support for goods movement related projects, port security and environmental programs.
7. Identify a continuing collaborative role for CALMITSAC to play as liaison to the California Business, Transportation and Housing Agency. Legislation authorizing CALMITSAC to act in an advisory capacity to the Administration, State Legislature and the California Transportation Commission may be modeled on the role that MTSNAC plays vis-à-vis the Secretary of the U.S. Department of Transportation.
8. The State should further examine land use policies that would encourage reduction of conflicts between goods movement activities and local communities.

## **F. MTS Security**

1. Encourage ports and terminal operators to keep business recovery plans current, including off-site storage of important records including financial records, engineering drawings, “as-built” drawings, etc.
2. Encourage the various agencies involved with port and maritime security, preparedness, response and interoperability to work together to avoid overlap, duplication of effort and conflicting regulations.
3. Encourage sharing of intelligence information among federal, state and local agencies. Identify the barriers to intelligence sharing, such as state government.
4. Closely monitor the implementation and impact of the Transportation Worker Identification Credential (TWIC) and any comparable state program.
5. Urge rapid installation of the Automated Secure Vessel Tracking System (ASVTS) by the U.S. Coast Guard District Eleven Command, which covers all California ports, as a component supporting attainment of a common operating picture for safety and security within the MTS.
6. Urge adoption of a global radio-frequency standard for e-seals for use on marine containers.
7. Establish one or more National Port Security Research Centers in California, and encourage the Department of Homeland Security to request, and the Congress to appropriate, funds from the Department of Homeland Security annual appropriations to implement this initiative to improve port security on a national scale.
8. Recommend the California Transportation Commission support the efforts of California Maritime Academy to seek funding support on behalf of PISCES from the proceeds of Proposition 1B approved by the voters in November, 2006 eligible for port security grants.
9. CALMITSAC adopts and reaffirms the recommendations of the Goods Movement Action Plan concerning the California Green Freight Corridor Network concept, supports the efforts of the Strategic Mobility 21 program toward this goal, and recommends that the California Transportation Commission provide additional matching funds from the proceeds of the Proposition 1B initiative to implement and deploy a statewide Green Freight Network of corridors including Los Angeles Long Beach, the Inland Empire, San Francisco Bay Area, San Diego Border, and Central Valley subject to ongoing evaluation.
10. CALMITSAC urges the State of California to add its voice for accelerated resolution and adoption of RFID controls, and encourage the federal DHS to fully support the resolution of the frequency standard debate. With a globally agreed upon radio-frequency standard, the industry will likely adopt e-seals and RFID technology on its own.
11. Recognize the California Maritime Security Council’s role to enact statutory language to implement a multi-jurisdictional port security taskforce as recommended in the Goods Movement Action Plan.
12. Recommend that CA legislature enact permanent statutory authority establishing the Governor's Office of Homeland Security with Statewide interagency port

security policy coordination responsibility subject to appropriate legislative oversight.

## **G. Education**

1. Identify research opportunities as part of the SAFETEA-LU funded “National Cooperative Freight Transportation Research Program” that contribute to our understanding of goods movement in California.
2. Encourage industry leaders to identify skill sets needed for workers at all levels of employment, including entry level. Encourage academic leaders to review curricula within planning, business and engineering programs to ensure that adequate training opportunities exist to produce supply chain management professionals with those various skill sets.
3. Review state directed research programs and priorities to ensure that they emphasize goods movement and trade and transportation issues. Available funding, grants, and training opportunities will encourage faculty who already have an interest in these topics and develop new educators in the trade and transportation disciplines.
4. Encourage state agencies to apply training and continuing education funds toward professional development in the area of goods movement, logistics, maritime, supply chain management and trade and transportation.

**CALMITSAC**  
**Appendix A: Infrastructure Projects**  
**(Not in Priority Order)**

<b>San Pedro Bay Ports and Port of Hueneme</b>	
<b>Top Priority Projects</b>	<b>Cost in Millions</b>
I-710 Improvements including dedicated truck lanes.	\$7,000
Gerald Desmond Bridge replacement	\$800
Alameda Corridor SR-47 Expressway (includes Schuyler Heim Bridge replacement)	\$557
Rail capacity improvements between downtown LA east to Colton Crossing, and from there north to Barstow and east to Indio.	\$2,111
Grade separations :Alameda Corridor-East Trade Corridor covering Los Angeles, Orange, San Bernardino and Riverside Counties.	\$3,456
Southern California International Gateway (SCIG); BNSF near-dock facility	\$200
Intermodal Container Transfer Facility (ICTF) expansion: UPRR near dock facility	\$300
Colton Crossing rail grade separation (BNSF and UPRR lines).	\$280
POLA/POLB Rail Master Plan for on-dock rail infrastructure improvements (several projects, including Pier B Street intermodal rail yard expansion, New Cerritos Channel rail bridge, Triple track south of Thenard, Reeves grade separation, other mainline improvements and additions, and computerized train control.	\$631
I-110/SR-47 Connectors Improvement Program	\$134
Navy Way Connector to westbound Seaside Avenue	\$40
Vincent Thomas Bridge improvement study	\$2
Advanced Transportation Management, Information, and Security (ATMIS) System	\$15
Port of Hueneme: Santa Paula Branch Line gap closure	\$350
Port of Hueneme: Widen Rice Road Interchange and ramps to improve access from Port of Hueneme to Hwy 101	\$30

Port of Hueneme Route – Grade separation at SR118 over UPRR Coast Main Line near Somis	\$50
Port of Hueneme – Grade separation at 5 <sup>th</sup> St. (SR 34/Rice Ave. (future SR 1) over UPRR Coast Main Line in City of Oxnard for Port truck access.	\$30
Port of Hueneme – Grade separation on Gonzales Blvd. from Oxnard Blvd. over UPRR Coast Main Line in City of Oxnard.	\$30
Port of Hueneme – Ventura County Railway grade crossing upgrades and signal replacement , and upgrade of antiquated rail (12,000 feet)	\$2
<b>Total</b>	<b>\$16,018</b>
<b>Bay Area and Northern California Ports</b>	
<b>Top Priority Projects</b>	<b>Cost in Millions</b>
I-80/I-680/SR-12 interchange improvements	\$706
I 880 Hegenberger Rd. to I-980 operational improvements	\$20
I-580 eastbound truck climbing lane	\$65
I-580 westbound truck climbing lane;	\$75
Truck bypass lane at I-238 between Hwy 580 and Hwy 880	\$150
Port of Oakland Reconstruction of 7th Street/UPRR grade separation	\$250
Port of Oakland Outer Harbor Intermodal Terminal including electrified crane system.	\$450
Port of Oakland: Complete dredging to –50 feet	\$80
Port of Oakland Adeline St. bridge reconstruction (seismic and geometric improvements)	\$60
Port of Oakland: UPRR mainline upgrades between Oakland and Martinez.	\$78
Port of Oakland: UPRR Central Corridor double track/rail clearances over Sierra Nevada	\$90



Port of Humboldt Bay reestablishment of freight rail service on state-owned North Coast Railroad Authority from port to national rail system	\$106
Port of Humboldt Bay modernization of Redwood Dock Marine Terminal to facilitate short-sea shipping barge service to the Port of Oakland.	\$92
Port of Humboldt Bay Buckhorn grade separation	\$140
Port of Humboldt Bay Willits Bypass	\$230
Port of Humboldt Bay City of Eureka Waterfront Drive Bypass	\$84
Port of Humboldt Bay Rail crossings improvement project	\$12
Port of Humboldt Bay Richardson Grove Highway 101 Improvement	\$11
Port of Humboldt Modernization of the Fields Landing Marine Terminal	\$35
Port of Redwood City Woodside Road/Seaport Boulevard interchange at U.S. Highway 101	\$40
Port of Redwood City Rebuilding main cargo wharves 1 & 2 for cement and aggregate	\$15
Port of Redwood City deepening and realignment of channels	\$5
Port of Richmond Grade Separation at Marina Bay Parkway	\$38
Port of Richmond Wharf Reconstruction, Pt. Potrero Marine Terminal	\$16
Port of Richmond Rail-dumper and 70,000-ton coke barn at Levin-Richmond Terminal to provide covered storage for the export of petroleum coke. Receipt of coke by rail will remove over 10,000 truck trips per year from I-80.	\$12
Port of Richmond Canal Blvd and Railroad Track Improvements	\$8
Port of Richmond Ship-loading conveyor system at Levin-Richmond Terminal to replace a gantry-mounted diesel hydraulic crane to improve the capacity for handling bulk at LRT by reducing the on-berth times per vessel, allowing more throughput and better terminal utilization	\$8

Port of Richmond Dredging alongside Levin-Richmond Terminal to 41 feet MLLW, thereby doubling vessel capacity for bulk terminal	\$5
Port of Richmond Safeway Railyard expansion for handling of additional bulk cargo	\$2
Port of San Francisco Pier 80 repairs, replacements and seismic upgrades	\$64
Port of San Francisco enlarging tunnels for double stack train clearance, dredging to 45 feet MLLW, new cranes.	\$50
Port of San Francisco Piers 94 and 96 repairs, replacements and seismic upgrades	\$21
<b>Total</b>	<b>\$3,018</b>
<b>Port of San Diego</b>	
<b>Top Priority Projects</b>	<b>Cost in Millions</b>
Port of San Diego Terminal Access - Tenth Avenue/National City Marine Terminals to I-5/I-15, Fwy Access, Grade Sep., Safety	\$198
Port of San Diego Terminal Capacity - Tenth Ave./National City Marine Terminals - Capacity and Operational Improv., Dredging	\$268
Port Expansion (250 acres on-dock/inland port)	\$390
<b>Total</b>	<b>\$856</b>
<b>Central Valley Ports</b>	
<b>Top Priority Projects</b>	<b>Cost in Millions</b>
Port of Sacramento channel deepening -(local share)	\$20
Port of Sacramento warehousing	\$10
Port of Sacramento deferred maintenance of piers, docks, wharves, conveyors, rolling stock	\$15
Port of Sacramento container ferry	\$100
Port of Stockton rail improvements Bakersfield to Stockton, including double track from Shafter to Jastro.	\$36
Cross Town – SR4 Freeway Extension	\$182
Cross-Tehachapi rail capacity improvements	\$82

California Interregional Rail Intermodal System (CIRIS) serving multiple points in Central Valley: Shafter, Fresno, Stockton, Tracy and Sacramento - (for Central Valley facilities)	\$27
<b>Total</b>	<b>\$472</b>
<b>GRAND TOTAL</b>	<b>\$20,364</b>

## Appendix B: Operational Improvements

<b>Strategy</b>
Continue PierPASS program at the San Pedro Bay ports and eventually extend to 24-hour operations when warranted.
Continue advances in technology such as Optical Character Recognition (OCR) and Radio Frequency Identification (RFID) including RFID on containers and chassis. Seek agreement on an international standard for radio frequency for RFID tags on containers.
Develop a regional (if not a statewide or national) chassis pool.
Develop virtual container yards (VCY) in the San Pedro Bay ports and expand the use of Port of Oakland's VCY.
Stow vessels to allow for removal of intermodal cargo first.
Improve the efficiency of "hand-offs" of cargo between various stages of the supply chain.
Improve communications (including electronic data interchange) and planning among terminals, steamship lines and railroads to increase efficiency of on-dock rail movements.
Improve dwell time measurements for containers at port terminals
Improve processing time measurements for trucks inside port terminals
Improve profitability for harbor related trucking to address looming shortage of truck drivers.
Develop port-wide single portal truck appointment systems.
Develop "best practices" for measuring capacity and productivity at ports and terminals.
Monitor effectiveness of free time changes effective July 1, 2005 at the Ports of Los Angeles and Long Beach.
At the federal level, establish clear roles and responsibilities to prevent overlap, duplication of effort and conflicting regulations with respect to port and maritime security.

## Appendix C: Environmental Enhancements

<p><b>San Pedro Bay Ports Clean Air Action Plan Source Specific Performance Standards and Implementation Strategies: Acceptable Health Risk Standards</b></p> <p>All new projects to meet or be below acceptable health risk standards (&lt;10 in 1,000,000 excess residential cancer risk threshold)</p>
<p><b>San Pedro Bay Ports Clean Air Action Plan Source Specific Performance Standards and Implementation Strategies: Heavy-Duty Vehicles/Trucks</b></p>
<p>By the end of 2011, all trucks calling at the ports frequently or semi-frequently will meet or be cleaner than the EPA 2007 on-road PM emission standards and be the cleanest available NOx at the time of replacement or retrofit.</p>
<p><b>San Pedro Bay Ports Clean Air Action Plan Source Specific Performance Standards and Implementation Strategies: Ocean-Going Vessels</b></p>
<p>100% compliance with the Vessel Speed Reduction Program, initially out to a distance of 20 nautical miles from Point Fermin, expanded to 40 nautical miles</p>
<p><u>The use of &lt;).2% sulfur MGO fuel in vessel auxiliary and main engines at berth and during transit out to a distance of 20 nautical miles from Point Fermin and expanded to 40 nm or equivalent reduction (starting 1<sup>st</sup> quarter 2008)</u></p>
<p>The use of shore power (or equivalent) for hotelling emissions implemented at all major container, selected liquid bulk, and cruise terminals in the Port of Los Angeles within five years and at all container terminals and one crude oil terminal in the Port of Long Beach within five to ten years</p>
<p>The use of DPM and NOx control devices on auxiliary and main engines mandated on new vessel builds and existing frequent callers.</p>
<p><b>San Pedro Bay Ports Clean Air Action Plan Source Specific Performance Standards and Implementation Strategies: Cargo Handling Equipment</b></p>
<p>Beginning 2007, all purchases will meet one of three performance standards:</p> <ul style="list-style-type: none"> <li>✓ Cleanest available NOx alternative-fueled engine, meeting 0.01 g/bhp-hr PM, available at time of purchase</li> <li>✓ Cleanest available NOx diesel-fueled engine, meeting same standard as above, available at time of purchase</li> <li>✓ If there are no engines meeting above standard, then must purchase cleanest available engine (engine fuel type) and install cleanest Verified Diesel Emissions Controls (VDEC) available</li> </ul>
<p>By the end of 2010, all yard tractors operating at the San Pedro Bay Ports will meet at a minimum the EPA 2007 on-road or Tier IV engine standards.</p>
<p>By the end of 2012, all pre-2007 on-road or pre-Tier IV top picks, forklifts, reach stackers, rubber tired gantries (RTG), and straddle carriers &lt; 750 hp will meet at a minimum the EPA 2007 on-road engine standards or Tier IV off-road engine standards</p>
<p>By end of 2014, all cargo handling equipment with engines &gt;750 hp will meet at a minimum the EPA Tier IV off-road engine standards. Starting 2007 (until equipment is replaced with Tier IV), all cargo handling equipment with engines &gt;750 hp will be equipped with the cleanest available VDEC verified by the CARB Board</p>

**San Pedro Bay Ports Clean Air Action Plan Source Specific Performance Standards and Implementation Strategies: Harbor Craft**

By the second year of the Plan, all harbor craft home-based at San Pedro Bay Ports will meet EPA Tier 2 for harbor craft and equivalent reductions

By the fifth year, all previously repowered harbor craft home-based at San Pedro Bay Ports will be retrofitted with the most effective CARB verified NOx and/or PM emissions reduction technologies.

When Tier 3 engines become available, within five years all harbor craft home-based at San Pedro Bay Ports will be repowered with the new engines.

**San Pedro Bay Ports Clean Air Action Plan Source Specific Performance Standards and Implementation Strategies: Railroad Locomotives**

By 2008, all existing Pacific Harbor Lines switch engines in the Ports will be replaced with Tier 2 engines equipped with 15-minute idling limit devices, retrofitted with either DOCs or DPFs, and shall use emulsified or other equivalently clean alternative diesel fuels available

Any new switch engine acquired after the initial Pacific Harbor Line replacement must meet EPA Tier 3 standards or equivalent to 3 grams NOx/bhp-hr and 0.023 g PM/bhp-hr.

By 2011, all diesel-powered Class 1 switcher and helper locomotives entering Port facilities will be 90% controlled for PM and NOx, will use 15-minute idle restrictors, and after January 1, 2007, use ULSD fuels.

Starting in 2012 and fully implemented by 2014, the fleet average for Class 1 long haul locomotives calling at Port properties will be Tier III equivalent (Tier 2 equipped with DPF and SCR or new locomotives meeting Tier 3) PM and NOx and will use 15-minute idle restrictors. Class 1 long haul locomotives will operate on USLD while on port properties by the end of 2007. Technologies to get to these levels of reductions will be validated through the Technology Advancement Program.

Any new rail yard development or significantly redesigned at the San Pedro Bay Ports shall be required to operate the cleanest available technology for switcher, helper, and long haul locomotives, utilize idling shut-off devices and exhaust hoods, use only ULSD or alternative fuels and have only clean cargo handling equipment and HDVs consistent with the Clean Air Action Plan.

**San Pedro Bay Ports Clean Air Action Plan Implementation Strategies (Proposed)**

- ✓ Facilities required by lease to meet emissions reduction requirements
- ✓ Port tariffs changed to influence activity and implement uniform rules affecting most or all Port users
- ✓ New projects or changes to existing facilities must meet health risk requirements as part of environmental review process
- ✓ Incentive funding targeted toward specific sources to accelerate emissions reductions
- ✓ Voluntary emission reduction actions encouraged
- ✓ Reward participants for accepting emission reduction responsibility if they achieve reductions early or outperform program expectations
- ✓ Allow a Port to cover initial capital costs for equipment associated with a

measure and then lease back or lease-to-own the cleaner equipment purchased

- ✓ Loan guarantees
- ✓ Loans through a third party available to driver/owners
- ✓ Provide trucking companies meeting clean truck requirements exclusive rights to operate on port property
- ✓ Joint Powers Authority Nonprofit Trucking Entity to directly purchase trucks, hire drivers, etc.
- ✓ Recognize industry efforts under Clean Air Action Plan

### **Port of Oakland Vision 2000 Environmental Strategies**

Tugboats play an essential role in guiding container ships in and out of the Port. In July 2000, the Port approved funding to replace two tugboat engines with new low emission diesel engines. This replacement will eliminate .9 tons of particulate matter (PM) and 26 tons of nitrogen oxides (NOx) annually, or 15.5 tons of PM and 431 tons of NOx over the sixteen year life of the project.

The Port of Oakland has launched a program designed to reduce emissions from trucks that operate at the Port of Oakland maritime facilities. As part of its Maritime Air Quality Program, the Port will allocate up to \$2 million in incentive funding to help owners of heavy-duty trucks that haul shipping containers in the Port maritime area. Port officials estimate that there will be approximately 80 qualifying truck owners who will be eligible for up to \$25,000 each in incentive funding to replace their 1986 or older truck with a 1999 or newer truck.

The Port created a program for marine terminal operators to re-power and retrofit container terminal equipment. All the marine terminal operators submitted applications for Port funding. The Port has approved changing 150 pieces of equipment to new low-emission diesel engines, installing 151 diesel oxidation catalysts and installing 159 diesel particulate filters. Besides these changes to equipment, 50% of the marine terminal operators are now using ultra-low sulfur diesel fuel to further reduce emissions. The container terminal equipment program will reduce hydrocarbon emissions by nearly 80%, carbon monoxide emissions by nearly 70%, nitrogen oxide emissions by over 30% and particulate matter emissions by over 70%. The total project will eliminate 60 tons of particulate matter, over 470 tons of nitrogen oxides and over 150 tons of hydrocarbons.

The Port of Oakland announced a year-long demonstration test of a cleaner fuel (PuriNOx™) in on-road diesel trucks that haul shipping containers to and from the Port's marine terminals in combination with a test of a diesel oxidation catalyst, or DOC (AZ Purimuffler™) - a type of exhaust control that reduces emissions. The Port, Air District and the Air Resources Board are funding the \$148,000 project. A dozen heavy-duty diesel trucks from Horizon Lines will be used for the demonstration testing. DOCs typically reduce particulate matter emissions 20 to 30%. The combination of technologies could result in as much as a 50% reduction in particulate matter and a 20% reduction of nitrogen oxide emissions.

<b>Port of Richmond</b>
Acquire barge-mounted emissions control system for large vessels. The infrequent calls and unpredictable rotation of bulk vessels make cold-ironing initiatives impractical.
Replace current open coke stockpiles at Levin-Richmond Terminal with covered storage, and replace antiquated diesel cranes with a clean, environmentally-friendly shiploader conveyor.



**Appendix D**  
**California Air Resources Board**  
**Emission Reduction Plan for Ports and Goods Movement in California**  
**List of Strategies to Reduce Emissions from Ports and Goods Movement**  
**April 2006**

Strategy	Status (Adopted or New Strategy)	Implementation Could Begin		
		2006- 2010	2011- 2015	2016- 2020
<b>SHIPS</b>				
Vessel Speed Reduction Agreement for Southern California	2001	✓		
U.S. EPA Main Engine Emission Standards	2003	✓		
U.S. EPA Non-Road Diesel Fuel Rule	2004	✓		
ARB Rule for Ship Auxiliary Engine Fuel	New (2005)	✓		
Cleaner Marine Fuels	New	✓	✓	✓
Emulsified Fuels	New	✓	✓	✓
Expanded Vessel Speed Reduction Programs	New	✓	✓	✓
Engines with Emissions Lower than IMO Standards in New Vessels	New	✓	✓	✓
Dedication of Cleanest Vessels to California Service	New	✓		
Shore Based Electrical Power	New	✓		
Extensive Retrofit of Existing Engines	New		✓	✓
Highly Effective Controls on Main and Existing Engines	New		✓	✓
Sulfur Emission Control Area (SECA) or Alternative	New		✓	
Expanded Use of Cleanest Vessels in California Service	New		✓	
Expanded Shore Power and Alternative Controls	New		✓	
Full Use of Cleanest Vessels in California Service	New			✓
Maximum Use of Shore Power or Alternative Controls	New			✓
<b>COMMERCIAL HARBOR CRAFT</b>				
Incentives for Cleaner Engines	2001-2005	✓		
ARB Low Sulfur Diesel Fuel Rule	2004	✓		
ARB Rule to Clean Up Existing Engines	New	✓		
Shore Based Electrical Power	New	✓		
U.S. EPA or ARB New Engine Emission Standards	New		✓	
<b>CARGO HANDLING EQUIPMENT</b>				
ARB Low Sulfur Diesel Fuel Rule	2003	✓		
ARB/U.S. EPA Tier 4 Emission Standards	2004	✓		
ARB Stationary Diesel Engine Rule	2004	✓		
ARB Portable Diesel Equipment Rule	2004	✓		
Incentives for Cleaner Fuels	2001-2005	✓		

Strategy	Status (Adopted or New Strategy)	Implementation Could Begin		
		2006- 2010	2011- 2015	2016- 2020
<b>CARGO HANDLING EQUIPMENT, continued</b>				
ARB Rule for Diesel Cargo Handling Equipment	New (2005)	✓		
ARB Rule for Gas Industrial Equipment	New	✓		
Upgrade to 85 Percent Diesel PM Control or Better	New		✓	
Zero or Near Zero Emission Equipment	New			✓
<b>TRUCKS</b>				
ARB/U.S. EPA 2007 New Truck Emission Standards	2001	✓		
Vehicle Replacement Incentives	2001-2005	✓		
ARB Low Sulfur Diesel Fuel Rule	2003	✓		
ARB Smoke Inspections for Trucks in Communities	2003	✓		
Community Reporting of Violators	2005	✓		
ARB Truck Idling Limits	2002-2005	✓		
ARB Low NOx Software Upgrade Rule	2005	✓		
ARB International Trucks Rule	New (2006)	✓		
ARB Private Truck Fleets Rule	New	✓	✓	
Port Truck Modernization	New	✓	✓	✓
Enhanced Enforcement of Truck Idling Limits	New	✓		
<b>LOCOMOTIVES</b>				
ARB Low Sulfur Diesel Fuel Rule	2004	✓		
ARB 2005 Agreement with Railroads to Cut PM Statewide	2005	✓		
Idle Enforcement Training	2006	✓		
Upgrade Engines in Switcher Locomotives	New	✓		
Retrofit Diesel PM Control Devices on Existing Engines	New	✓		
Use of Alternative Fuels	New	✓		
More Stringent National Requirements	New		✓	
Concentrate Tier 3 Locomotives in California	New		✓	✓
<b>OPERATIONAL EFFICIENCY</b>				
Efficiency Improvements	New	✓	✓	✓
Transport Mode Shifts	New	✓	✓	✓
<b>LAND USE DECISIONS</b>	New	✓	✓	✓
<b>PROJECT AND COMMUNITY SPECIFIC MITIGATION</b>	New	✓	✓	✓
<b>PORT PROGRAMS TO REDUCE EMISSIONS</b>	Ongoing/New	✓	✓	✓

**Appendix E**  
**List of Acronyms**

<b>A</b>	
AAPA	American Association of Port Authorities
AB	Assembly Bill
ACA	Assembly Constitutional Amendment
ACE	Alameda Corridor-East
ACS	Automated Commercial System
ACTA	Alameda Corridor Transportation Authority
AIS	Automatic Identification Systems
AMS	Automated Manifest System
APL	American President Lines
AQMD	Air Quality Management District
ASVTS	Automated Secure Vessel Tracking System
ATMIS	Advanced Transportation Management Information and Security
ATS	Automated Targeting System
<b>B</b>	
BASC	Border Anti-Smuggling Coalition
BHC	Board of Harbor Commissioners
BNSF	Burlington Northern Santa Fe Railway Company
BT&H	Business, Transportation & Housing Agency
<b>C</b>	
CAAP	Clean Air Action Plan (San Pedro Bay Ports)
CAFTA-DR	The Dominican Republic-Central America-United States Free Trade Agreement
CAL/EPA	California Environmental Protection Agency
CALMITSAC	California Marine and Intermodal Transportation System Advisory Council
CALTRANS	The California Department of Transportation
CAP	Clean Air Program (Port of Oakland)
CAPA	California Association of Port Authorities
CARB	California Air Resources Board
CARL MOYER FUND	Carl Moyer Memorial Air Quality Standards Attainment Trust Fund

CATLI	California Transportation and Logistics Institute
CBP	Bureau of Customs and Border Protection
CCT	Central California Traction Company
CGMTA	Coast Guard and Maritime Transportation Act of 2004 (P.L. 108-293)
CHCP	Container Handling Cooperative Project
CIEDB	California Infrastructure and Economic Development Bank
CIP	Connectors Improvement Program (I-110/SR-47)
CIRIS	California Interregional Rail Intermodal System
CITT	Center for International Trade and Transportation
CMA	California Maritime Academy
COHS	California Office of Homeland Security
COTP	Captain of the Port
CPISAQIA	California Ports Infrastructure, Security, and Air Quality Improvement Account
CRNCI	Columbia River Navigation Channel Improvement
CSI	Container Security Initiative
CSULB	California State University Long Beach
CTC	California Transportation Commission
C-TPAT	Customs-Trade Partnership Against Terrorism
CTV	California Transportation Ventures, Inc.
CWIB	California Workforce Investment Board
<b>D</b>	
DBFO	Design Build Finance Operate
DBOM	Design Build Operate Maintain
DERP	Diesel Emissions Reduction Program (POLB)
DHS	Department of Homeland Security
DOC	Diesel oxidation catalysts
DOD	Department of Defense (U.S.)
DTRFM	Diesel Truck Retrofit and Fleet Modernization Program
<b>E</b>	
EIRP	Engine Idling Reduction Program
EPA	Environmental Protection Agency (U.S.)

EPA of 2005	Energy Policy Act of 2005, Act Title VII (Vehicles and Fuels)
EU	European Union
<b>F</b>	
FAST	Freight Action Strategy
FECA	Federal Advisory Council Act (P.L. 92-463).
FEU	Forty Foot Equivalent Unit
FHWA	Federal Highway Administration
FMP	Fleet Modernization Program
FSSFGT	Framework of Standards to Secure and Facilitate Global Trade
FY	Fiscal Year
<b>G</b>	
GATT	General Agreement on Trade and Tariffs
GCCOG	Gateway Cities Council of Governments
GDP	Gross Domestic Product
GGIF	Global Gateways Improvement Fund
GLS®	Global Logistics Specialist®
GMAP	Goods Movement Action Plan
GPS	Global Positioning System
<b>H</b>	
HDV	Heavy-duty vehicles
HSRC	High Speed Rail Corridor
<b>I</b>	
ICTF	Intermodal Container Transfer Facility
ILWU	International Longshore and Warehouse Union
IMO	International Maritime Organization
IRTPA	Intelligence Reform and Terrorism Prevention Act of 2004 (P.L. 108-458)
ISPS	International Ship and Port Security Code
ITIP	Interregional Transportation Improvement Program
<b>J</b>	
JHOC	Joint Harbor Operations Center
JIT	Joint Intermodal Terminal
JoC	Journal of Commerce

JPA	Joint Powers Authority
<b>L</b>	
LACMTA	Los Angeles County Metropolitan Transportation Authority
LAEDC	Los Angeles County Economic Development Corporation
LBCC	Long Beach City Council
LBCT	Long Beach Container Terminal
LLP	Limited Liability Partnership
LNG	Liquefied Natural Gas
LRIT	Long Range Identification and Tracking
<b>M</b>	
MAGL	Master of Arts in Global Logistics
MARAD	Maritime Administration
MARPOL	International Convention for the Prevention of Marine Pollution From Ships
MATES II	Multiple Air Toxics Exposure Study in the South Coast Air Basin
MCGMAP	Multi-County Goods Movement Action Plan
MDA	Maritime Domain Awareness
MEFI	Main Engine Fuel Improvement (POLB GreenPort Program)
MISNA	Maritime Information Services of North America
MLLW	Mean Lower Low Water
MPSMPTFA	Maritime Port Strategic Master Plan Task Force Act
MTC	Metropolitan Transportation Commission
MTN	Multilateral Trade Negotiation
MTS	Marine Transportation System
MTSA	Maritime Transportation Security Act of 2002 (P.L. 107-295)
MTSNAC	Marine Transportation System National Advisory Council
MXSOCAL	Marine Exchange of Southern California
<b>N</b>	
NAAQS	National Ambient Air Quality Standards
NAFTA	North American Free Trade Agreement
NCRA	North Coast Railroad Authority
NNI	No Net Increase Air Emissions Program (Los Angeles)

NOA	Notice of Arrival
NOx	Oxides of Nitrogen
<b>O</b>	
OCR	Optical Character Recognition
OFFPEAK	Offpeak gate program (PierPASS)
OHIT	Outer Harbor Intermodal Terminal
OMB	White House Office of Management and Budget
OSC	Operation Safe Commerce
OTIS-M	Off-Tideflats Infrastructure Study and Modeling
<b>P</b>	
P.L.	Public Law
PAPSCON	Pacific Area Port Security Center Consortium
PCA	Panama Canal Authority
PHL	Pacific Harbor Line
PIERPASS	PierPASS Offpeak extended gates program
PISCES	Port and Intermodal Systems Center for Enhanced Security (CSU)
PM	Particulate Matter
PMA	Pacific Maritime Association
PMSA	Pacific Merchant Shipping Association
POLA	Port of Los Angeles
POLB	Port of Long Beach
PPIC	Public Policy Institute of California
PPP	Public-Private Partnership
PSG	Port Security Grant Program
<b>R</b>	
RFID	Radio Frequency Identification
RMP	Rail Master Plan
ROG	Reactive Organic Gases
RPM	Radiation Portal Monitor
RPRC	Richmond Pacific Railroad Company
RSAA	Rail System Alternatives Study
RTIP	Regional Transportation Improvement Program
RTPA	Regional Transportation Planning Agency

<b>S</b>	
SAFE	Security and Accountability for Every Port Act
SAFETEA-LU	Safe, Accountable, Flexible, Efficient, Transportation Equity Act – A Legacy for Users (Public Law 109-59)
SB	Senate Bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCC	Skyway Concession Company, LLC
SCDP	Strategic Commercial Development Plan–Port of Hueneme
SCIG	Southern California International Gateway (BNSF Railway)
SCLA	Southern California Logistics Airport
SCR	Senate Concurrent Resolution
SECA	Sulfur Emission Control Area
SGP	Governor’s Strategic Growth Plan
SM 21	Strategic Mobility 21
SOCAL-MTSAC	Southern California Marine Transportation System Advisory Council
SOLAS	Safety of Life at Sea Convention
SO <sub>x</sub>	Oxides of Sulfur
SR	State Route
SSAS	Ship Security Alert Systems
STIP	State Transportation Improvement Program
<b>T</b>	
TCNS	Trade Corridors of National Significance
TEA-21	Transportation Equity Act for the 21 <sup>st</sup> Century
TEU	Twenty-Foot Equivalent Unit
TRAPAC	Trans Pacific Container Terminal
TSA	Transportation Security Administration
TWIC	Transportation Worker Identification Credential
<b>U</b>	
UCLA	University of California, Los Angeles
ULESL	Ultra-Low Emissions Switcher Locomotive
ULSD	Ultra-Low Sulfur Diesel
UPRR	Union Pacific Railroad



USC	University of Southern California
USCD	U.S. Customs District
USCG	U.S. Coast Guard
USDA	U.S. Department of Agriculture
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
USGAO	U.S. General Accounting Office
UTC	University Transportation Center
<b>V</b>	
VACIS	Vehicle and Cargo Inspection System
VCTC	Ventura County Transportation Commission
VCY	Virtual Container Yard
VHF	Very High Frequency
VMT	Vehicle Miles of Travel
Vision 2000	Vision 2000 Maritime Development Program (Port of Oakland)
<b>W</b>	
WCCC	West Coast Corridor Coalition
WCNFGP	West Coast National Freight Gateway Program (LAEDC)
WCO	World Customs Organization
WFC	Waterfront Coalition
WMD	Weapons of Mass Destruction
WTO	World Trade Organization

Humboldt Bay

Eureka



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- METRANS Transportation Center, USC-CSULB
- Pacific Maritime Association
- Port of Long Beach
- Port of Los Angeles
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