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**December 30, 2005**

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**SUBJECT: PORT IMPACT STUDY – FINAL REPORT**

**ISSUE**

On September 27, 2002, the Pacific Maritime Association (PMA) locked out workers at west coast ports in California, Oregon and Washington. The lockout was the culmination of conflicts between the PMA and the International Longshore and Warehouse Union (IL WU) over labor contract renewal. The ports did not fully re-open until October 9, 2002.

Metro partnered with Caltrans District 7 to study the impact of "Port closure" on the I-710 Freeway and adjoining freeways within the vicinity of the port. The final report was recently completed and is attached to this Board Box (Attachment A). The summary of findings indicate that the port shutdown transportation impacts were highly concentrated around the ports and were largely due to reduced Heavy Duty Truck (HDT) traffic related to local transporting activity. The study documented large reductions in HDT traffic on I-710 and I-110 near the ports, and smaller reductions in HDT on SR-60 and SR-91. Only I-710 had a significant reduction in total traffic volume. The absence of any significant impacts beyond the South Bay area are explained in the study by 1) the small share that port-related activity represents in the traffic stream beyond the port area, 2) anecdotal evidence that the trucking industry was able to pick up other business, 3) anecdotal evidence that warehouses and distributors maintained operations, 4) the added activity generated by the shutdown (tracking cargo, searching for other sources of critical products, etc.). The study observed no evidence of peak shifting; this is consistent with stable traffic volumes. The study also observed no statistically significant reduction in traffic accidents, though HDT accidents were somewhat lower for I-710 and SR-91. The shutdown was a very short period of time, and accidents are highly random events. Finally the study observed no changes in transit ridership that could be attributed to the shutdown. Absent a large change in traffic conditions, the researchers did not expect any impact on transit ridership.

**ATTACHMENT**

Caltrans/MTA/Metrans Port Impact Study Final Report





**CALTRANS/MTA/METRANS PORT IMPACT STUDY  
FINAL REPORT**

**September 2005**

Submitted to

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Los Angeles County Metropolitan Transportation Authority

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## ABSTRACT

This report presents results of an evaluation of the impacts of the October 2002 port shutdown on the Los Angeles County transportation system. Using a variety of data, we examine impacts on the state highway system, on traffic accidents, and on public transit. We also examine impacts on cargo movements. We conducted stakeholder interviews to further understand responses to the shutdown and its aftermath. Transportation impacts were highly concentrated around the ports and were largely due to reduced heavy duty truck traffic related to local drayage activity. The absence of any significant impacts beyond the San Pedro Bay area are explained by 1) the small share that port-related activity represents in the traffic stream beyond the port area, 2) anecdotal evidence that the trucking industry was able to pick up other business, 3) anecdotal evidence that warehouses and distributors maintained operations, 4) the added activity generated by the shutdown (tracking cargo, searching for other sources of critical products, etc.). We observed no statistically significant reduction in traffic accidents, nor any changes in public transit use.

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## CHAPTER ONE: INTRODUCTION

On September 27, 2002, the Pacific Maritime Association (PMA) locked out workers at west coast ports in California, Oregon and Washington, accusing them of a work slowdown. The lockout was the culmination of conflicts between the PMA and the International Longshore and Warehouse Union (ILWU) over labor contract renewal. Although the PMA re-opened the ports on September 29, 2002 a second lockout occurred almost immediately, again in response to claims of deliberate work slowdowns. The ports did not re-open again until October 9, shortly after President Bush invoked the Taft-Hartley Act and issued a temporary restraining order requiring the ports to re-open and the ILWU to return to work.

### 1.1 A Natural Experiment

Given the critical importance of international trade in the contemporary economy, the shutdown had significant economic consequences. It also had consequences for local transportation systems. The port shutdown provided a “natural experiment” that made possible an assessment of the impacts of port-related international trade on the surface transportation system. Local impacts were expected to be particularly severe in Southern California, home of the nation’s largest container ports.

Natural experiments provide researchers with unique opportunities to address questions that would be impossible to examine under normal circumstances. Examples include both natural disasters and man-made events. For example, the 1984 Los Angeles Olympics provided a short-term transportation system management experiment that provided interesting insights on what behavioral changes travelers are most likely to make in response to major system changes (Giuliano, 1986). Additionally, the 1994 Northridge earthquake enabled us to examine how people respond to sudden reductions in highway capacity, and how businesses respond to unanticipated interruptions (Giuliano and Golob, 1998; Gordon, Richardson and Davis, 1998). These results can be used to develop better emergency response strategies, and also provide insight on the nature of travel demand.

In the case of the port shutdown, there was the potential to examine the following:

- Responses of manufacturers, wholesalers, retailers
- Responses of shippers, ports, terminal operators

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- Impacts of shifting demand on the transportation system

## **1.2 Purpose of Research**

The purpose of this research was to document the impacts of the port shutdown on the Los Angeles Region's transportation system. The port shutdown interrupted the flow of both imports and exports; these interruptions in turn affected wholesale, retail, and all other elements of the goods movement supply chain. Imports and exports, shipping, freight forwarding, and other associated services were affected. Secondary manufacturing activities and warehousing were likely affected. We therefore expected that both the level and pattern of transportation demand would have changed during the shutdown.

Analysis of the port shutdown is important for two reasons. First, the shutdown was perceived by many as a short test of the extent to which port-related traffic affects the transportation system. The public is increasingly concerned with the local impacts of the ports, from congestion on the highways to the health impacts of diesel particulate emissions. Several observers have noted that while the ports (meaning international trade) generate widespread benefits (cheaper prices to consumers, more efficient economic production), they also generate concentrated environmental costs (Erie, 2004). Taking advantage of the short interruption in port activities makes it possible to better understand the impacts of port activities.

Second, the port shutdown was a crisis situation to which all supply chain stakeholders had to respond. Documenting their responses helps us to understand institutional relationships and barriers that have implications for solving the many port-related problems facing Southern California.

Our assessment was conducted in two parts. First, travel impacts were documented for both goods and passengers using data collected from a variety of sources. Second, we conducted a series of interviews with public and private agency representatives to assist in interpreting the quantitative data and to examine questions that could not be adequately explored with the available data.

## **1.3 Research Challenges**

Studies of natural experiments have many challenges. First, since such events occur with little or no warning the researcher does not have time to set up data collection procedures that would allow a comprehensive "before-during-after" study. The researcher is therefore dependent

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upon whatever data are available; frequently key data are not available. In this case, data limitations significantly limited our ability to draw firm conclusions on port shutdown impacts. Second, as with any real-world situation, external changes may affect results. Notable events that affected our results include 9/11 and its impact on the economy in 2001, and two labor disputes in 2000 and 2003 that led to MTA transit service interruptions. Third, time is critical for evaluation of unanticipated events. Memories fade quickly, and data that may be available a few months after the event may not be available a year later. This project did not begin until June 2004, one and one-half years after the shutdown.

Our research design was also affected by the nature of international trade and port operations. There is significant seasonality in imports and exports, with the peak being the fall months. Seasonality suggests comparisons with same season previous and following years. However, traffic at the ports has been increasing rapidly, and there is no “steady state” from which to make comparisons.

We also had to take into consideration the circumstances of the port shutdown. As will be described in more detail below, the shutdown was the culmination of a labor dispute that began with negotiations for a new contract in May 2002. The contract expired in July, and negotiations took place through the summer. One could argue that suppliers, shippers and trade consumers had some advance warning and might have shipped earlier than usual, or made arrangements for diversions. From a global perspective, there are substitutes for the US west coast (e.g. the US east coast, Panama Canal crossing to south US, Canada, Mexico), but such diversions require advance planning. The post-shutdown period also needed to be considered. The immediate impact of the end of the shutdown was congestion at the port terminals, and it took many months to process the accumulated freight and return to more normal operating conditions. Thus any comparisons of during and immediately before or after the shutdown would not be appropriate.

#### **.4 Research Tasks**

This section describes the tasks undertaken in this research and explains changes from the original scope of work that resulted primarily from data limitations.

##### **Task 1a: Document Freeway Impacts**

Truck trips in and out of the ports of Los Angeles and Long Beach are estimated to be about 40,000 per day (California BTH and EPA, 2005). With the ports closed, not only should heavy duty truck (HDT) volumes have declined on freeways serving the ports, but total traffic

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volumes may have shifted in response to the temporary availability of peak period capacity. This task examined traffic volumes, HDT volumes, and traffic accidents, before, during and after the shutdown period.

**Task 1b: Document Other Passenger Impacts**

Reductions in the total level of economic activity in the region could lead to lower overall travel demand. Reduced congestion on key freeways such as the I-710 could attract diverted trips from local arterials, or might persuade transit riders to shift to car. This task examined transit ridership in the Long Beach – Los Angeles corridor. Route diversion could not be examined, as we were unable to obtain sufficient traffic volume data for key arterials.

**Task 1c: Document Other Freight Transportation Impacts**

This task addressed whether shippers, manufacturers, etc., used other options for shipping or obtaining goods during the shutdown. Although the entire US west coast waterfront was shut down, it was possible that shipments were diverted to Mexico or even to the US east or gulf coasts, or were shifted to air. We examined monthly air cargo volumes, but monthly volumes for alternative ports were not available.

**Task 2a: Interviews with Industry Stakeholders**

The purpose of the interviews was to elicit qualitative information on responses to the shutdown. We conducted interviews with 19 people, representing a broad spectrum of supply chain stakeholders. These interviews support our quantitative analysis and provide numerous insights on institutional issues.

**Task 2b: Activity at Other Ports**

As noted above, diversion of shipments to other ports was at least a possibility. We searched for monthly data for other US ports, but data were available only on an annual basis. Annual volumes are not sufficient for tracking potential diversions.

## **1.5 Changes in Project Scope**

Our analysis of freeway impacts was limited by data availability. Caltrans records and retains hourly traffic volumes only for a sample of locations. HDT counts are available only at selected special count locations such as WIM stations and locations with sensors configured for vehicle classification. Some locations had missing data for key time intervals. Our analysis is based on all available data.

Our analysis of passenger mode shifts was limited by major service interruptions in 2000

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and 2003 during our comparison time periods, and the lack of line level passenger data for bus service. We therefore concentrated on Blue Line ridership, the rail line most likely to be affected. Finally, we were unable to obtain sufficiently disaggregated data for freight rail or for other ports to sufficiently examine the question of diversion.

## **1.6 Organization of Report**

The remainder of this report is organized as follows. Chapter Two provides background on trends in international trade, trends at the LA/LB ports, and the impact of port-related activity on the region's transportation system. The chapter also provides background on the labor issues that led to the shutdown, and describes the shutdown and its aftermath at the ports and for the ports' customers. Chapter Three presents our results, and Chapter Four presents our conclusions and policy recommendations.

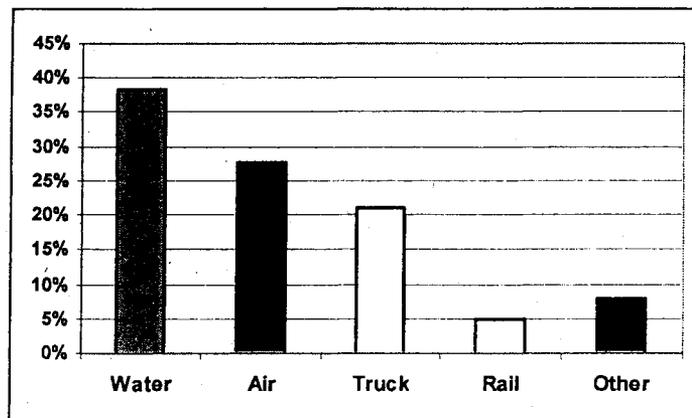
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## CHAPTER TWO: BACKGROUND

This chapter provides a general description of international trade, the Los Angeles and Long Beach ports and their impacts on the Los Angeles region, and a brief history of the port shutdown.

### 2.1 International Trade and the Los Angeles Region

International trade is a significant part of the U.S. economy. It grew from 13.8 % of US GDP in 1991 to 22.2 % in 2001.<sup>1</sup> The U.S. is the world's largest maritime trading nation. During 2001, the value of water-borne goods shipment exceeded all other modes of transport of international merchandise freight (see figure 2.1). The growth in international trade has been accompanied by structural changes in the global economy that imply much greater volumes of goods transport and more dependence on a low cost, fast, and reliable transportation system. These changes include manufacturing processes distributed around the world, just-in-time inventory practices, combining manufacturing and warehousing, etc. Growth in domestic freight has increased across all modes, as shown in Figure 2.2 (the air mode is not visible in the columns because it carries a very small share of all ton-miles). Increased freight flows have particularly affected major import/export nodes, such as the Los Angeles region.



**Figure 2.1** Transportation Distribution of Total U.S. International Merchandise Trade by Value in 2001

Data Source: Bureau of Transportation Statistics

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<sup>1</sup> Source: U.S. Department of Transportation, Bureau of Transportation Statistics; based on data from U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Products Accounts.

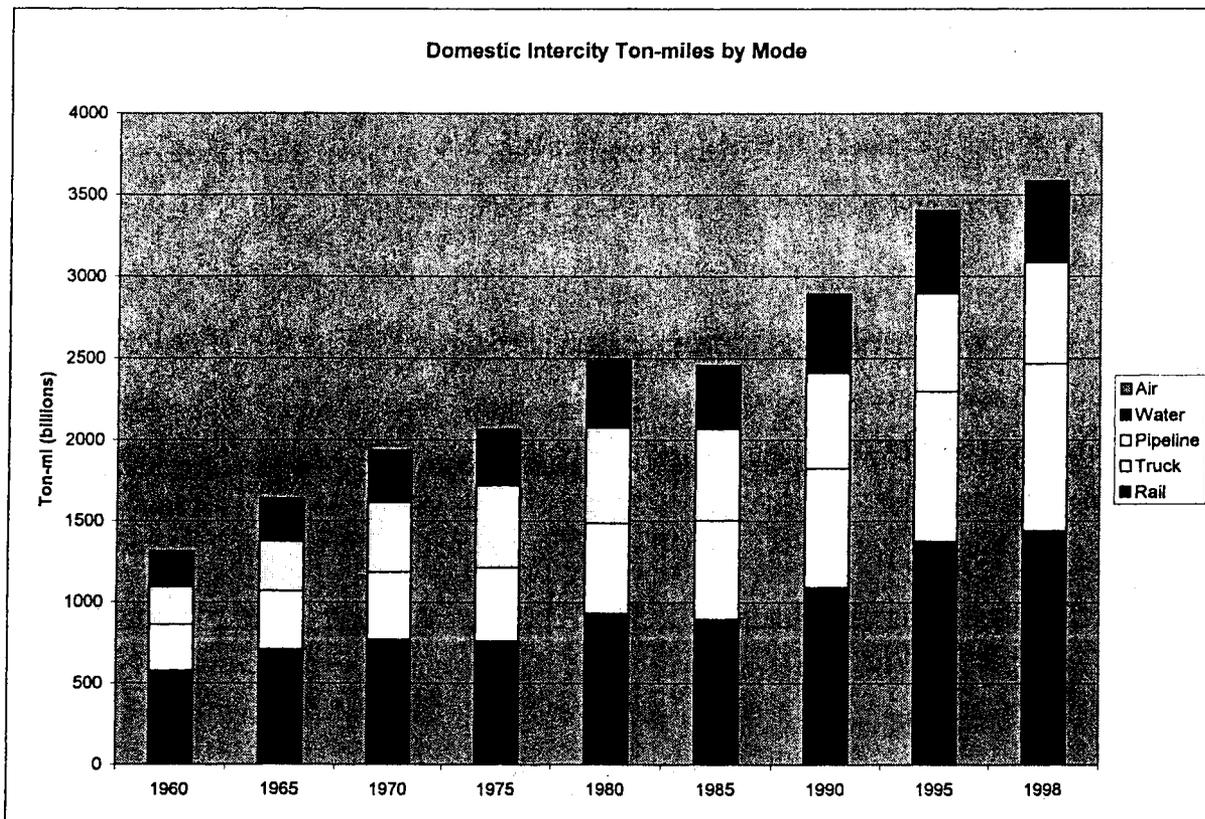


Figure 2.2: Domestic Intercity Ton-miles by Mode

Source: Calculated by the authors from BTS data

### 2.1.1 Goods Movement in Southern California

Southern California is home to two major cargo airports (Los Angeles International, and Ontario); three maritime cargo ports (Los Angeles, Long Beach, and Point Hueneme); two major trunk-line railroads (Union Pacific and Burlington Northern Santa Fe); four short-line or switching railroads (Pacific Harbor Lines, Los Angeles Junction Railroad Company, Ventura County Railway, and San Jacinto Branch Line); the Alameda Corridor, a 20 mile long rail cargo expressway linking the ports of Long Beach and Los Angeles to the transcontinental rail yards near Downtown Los Angeles; and an extensive network of highways and arterial streets.

Together, the San Pedro Bay Ports form the largest container shipping facility in the U.S. in terms of both value of cargo and container traffic. They are also the fifth busiest container facility in the world.<sup>2</sup> The LA/LB ports are critical to the entire US. It is estimated that about 70% of all west coast container cargo and 35% of all US waterborne container trade passes

<sup>2</sup> The ports were ranked third until 2005, when they were surpassed by Shanghai and Shenzhen (Cunningham Report, 6-2-05).

through the San Pedro Bay ports (Los Angeles Metropolitan Transportation Authority, 2002), and about 60% of all LA/LB cargo is destined for markets outside the region. The San Pedro ports together handled close to 13.1 million TEU (Twenty-foot Equivalent Units, the standard measure of cargo volume) in 2004<sup>3</sup>. The Los Angeles Economic Development Corporation (LAEDC) estimates that the 2005 volume will be about 14 million TEU.

It is important to put these numbers in context when considering west coast substitutes: the next largest west coast ports are Oakland (2.04 million TEU in 2004) and Seattle (1.77 million TEU in 2004). The increase in TEU at LA/LB between 2003 and 2004 was 1.2 million TEU. Container volume has grown consistently for the past several years, and estimates of future growth have been exceeded each year. Figure 2.3 gives total tonnage for the combined ports, 1991 – 2003.

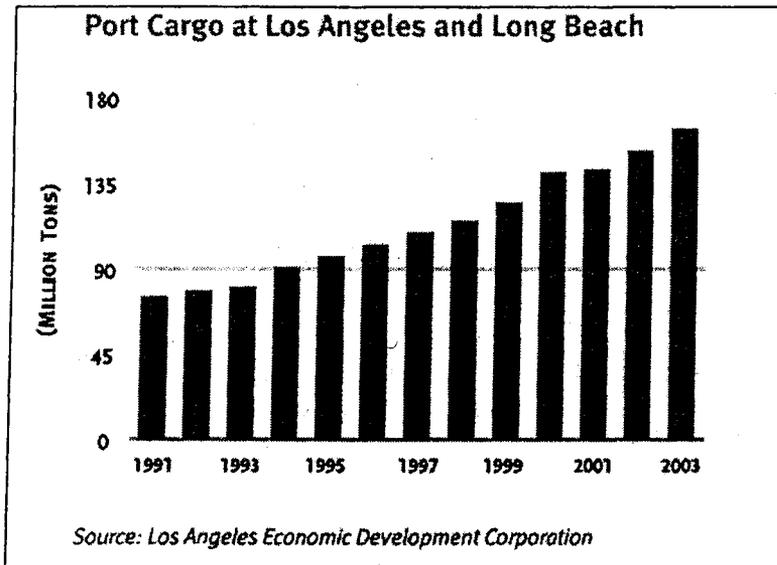


Figure 2.3 Port Cargo at Los Angeles and Long Beach

Source: SCAG 2004

Complementing the extensive freight infrastructure in Southern California are more than 32,500 wholesale trade establishments and 7,300 trucking companies (Los Angeles County Metropolitan Transportation Authority, 2002). Apart from shipping, trucking, and warehousing, the commercial goods movement market includes several types of intermediary firms that facilitate the freight transportation. Intermediaries provide value-added services, although typically they do not own any equipment. Intermediaries include freight forwarders, freight

<sup>3</sup> Total based on figures from official websites of the two ports

brokers who operate primarily within the trucking industry; intermodal marketing companies (IMC, formerly known as shippers' agents) who work primarily with railroads; and third party logistics (3PL) providers who coordinate logistics over a company's entire supply chain. It is estimated that port-related international trade accounts for about 550,000 jobs in the Los Angeles region (California BTH and EPA, 2005).

Growth of international trade has resulted in large increases in freight traffic on the region's highway system; Figure 2.4 shows growth of population, employment, total VMT, 5+ axle truck VMT, and air passengers for the Los Angeles CMSA, indexed to 1982. HDT VMT has increased the most, more than doubling since 1982. The increase in truck traffic has become a major public policy issue, particularly with respect to planning the expansion of the I-710 and recent research on the health damage of small particulate emissions. More generally, there is increasing public opposition to the local impacts of port-related activities, and much of the focus is on highway congestion and air pollution.

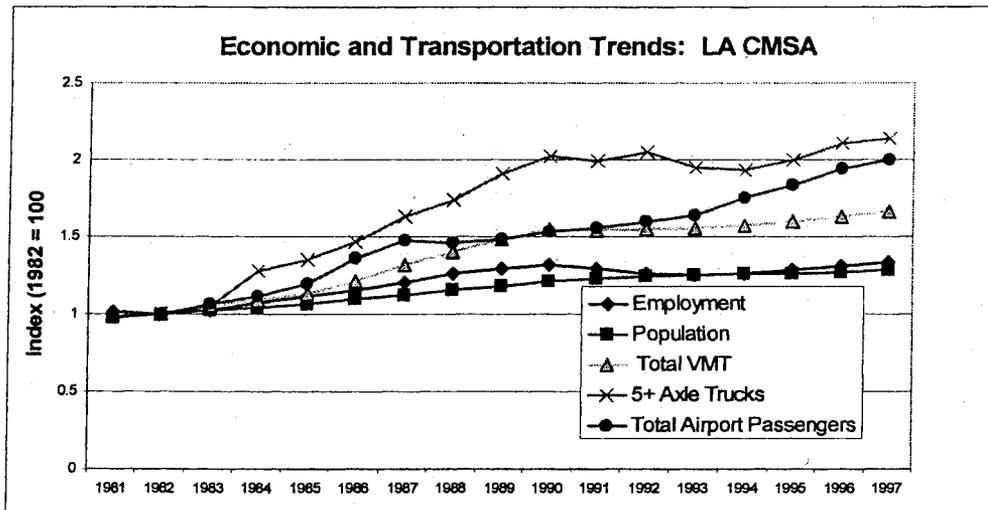


Figure 2.4: Indexed Economic and Transportation Trends, 1981 – 1998

Source: Calculated by the authors from REIS (Regional Economic Information Service), State of California data.

## 2.2 The Port Shutdown

Some basic information on the nature of labor/management relations is required in order to

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understand why the port shutdown happened.<sup>4</sup> The West Coast ports in the states of California, Oregon, and Washington remained closed for 10 days from September 27 to October 8, 2002. The shutdown was the result of an unresolved labor dispute between the International Longshore and Warehouse Union (ILWU) and Pacific Maritime Association (PMA), a group representing ports and shipping lines. The PMA represents foreign and domestic shipping companies, terminal operators, and stevedoring; it was formed to negotiate labor contracts and to administer benefits and pay to all workers. The ILWU represents dockside workers and negotiates their contracts with the goal of protecting jobs and wages. The two organizations have a long history of contentious relationships, “.....the seeds of distrust have been widely sown, poisoning the atmosphere of mutual trust and respect .....” (The White House, 2002).

### 2.2.1 Points of Contention and the Shutdown

Using information technology was a major point of contention in the 2002 labor negotiations. With the increased volume of goods movement, the ports have been under pressure to both upgrade facilities to accommodate larger vessels as well as increase productivity to process more cargo from each ship that docks. Improving efficiency of their operations is therefore critical for ports and terminals to remain competitive. Introducing newer and advanced computer technology to streamline cargo operations at the ports is one way of improving efficiency. Introduction of new technologies that would streamline many union jobs was seen by PMA as vital to remaining competitive, while the ILWU feared large scale job replacement. “Modernizing the West Coast ports is the best long-term job security the ILWU membership can have,” said Joe Miniace, Chief Executive Officer of the Pacific Maritime Association.<sup>5</sup> As new technology is implemented and productivity increases, new jobs will be created to handle increased volume. Even so, the ILWU was concerned that new jobs would not remain under their jurisdiction. Because of high pay scales and stringent work rules, the PMA has a de facto policy of avoiding the creation of longshore jobs, preferring to shift functions to lower wage workers. Thus, job preservation was a major concern for the ILWU.

With these issues at the forefront, the ILWU and PMA began contract renegotiation on

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<sup>4</sup> The following description is based on newspaper reports, the Cunningham Report online newsletter, and information drawn from the PMA website.

<sup>5</sup> [http://www.pmanet.org/docs/index.cfm/id\\_subcat/35/id\\_content/2142588304](http://www.pmanet.org/docs/index.cfm/id_subcat/35/id_content/2142588304)

