Final Report

FHWA Operations Support - Port Peak Pricing Program Evaluation

prepared for

Federal Highway Administration

prepared by

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date

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Federal Highway Administration

Foreword

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16. Abstract

This report evaluates the applicability, Federal policy implications, and possible public and private sector roles related to peak pricing strategies at ports and intermodal facilities in the U.S. A number of ports and intermodal terminals are considering peak-period truck pricing strategies modeled on the Ports of Long Beach and Los Angeles PierPASS OffPeak program to: 1) reduce peak-period congestion; 2) improve terminal operating efficiencies; 3) reduce truck wait and idle times; 4) improve air quality; and 5) lessen community impacts. This report presents a detailed discussion of the results from this evaluation.

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SI* (MODERN METRIC) CONVERSION FACTORS

APPROXIMATE CONVERSIONS TO SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
		LENGTH		
in	inches	25.4	millimeters	mm
ft	feet	0.305	meters	m
yd	yards	0.914	meters	m
mi	miles	1.61	kilometers	km
		AREA		
in^2	square inches	645.2	square millimeters	mm^2
ft^2	square feet	0.093	square meters	m^2
yd^2	square yard	0.836	square meters	m^2
ac	acres	0.405	hectares	ha
mi^2	square miles	2.59	square kilometers	km^2
		VOLUME		
fl oz	fluid ounces	29.57	milliliters	mL
gal	gallons	3.785	liters	L
ft^3	cubic feet	0.028	cubic meters	m^3
yd^3	cubic yards	0.765	cubic meters	m^3
		NOTE: volumes greater than 1000 L shall be shown in m^3		
		MASS		
oz	ounces	28.35	grams	g
lb	pounds	0.454	kilograms	kg
T	short tons (2000 lb)	0.907	megagrams (or "metric ton")	Mg (or "t")
		TEMPERATURE (exact degrees)		
°F	Fahrenheit	5 (F-32)/9 or (F-32)/1.8	Celsius	°C
		ILLUMINATION		
fc	foot-candles	10.76	lux	lx
fl	foot-Lamberts	3.426	$candela/m^2$	cd/m^2
		FORCE and PRESSURE or STRESS		
lbf	poundforce	4.45	newtons	N
lbf/in^2	poundforce per square inch	6.89	kilopascals	kPa

APPROXIMATE CONVERSIONS FROM SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
		LENGTH		
mm	millimeters	0.039	inches	in
m	meters	3.28	feet	ft
m	meters	1.09	yards	yd
km	kilometers	0.621	miles	mi
		AREA		
mm^2	square millimeters	0.0016	square inches	in^2
m^2	square meters	10.764	square feet	ft^2
m^2	square meters	1.195	square yards	yd^2
ha	hectares	2.47	acres	ac
km^2	square kilometers	0.386	square miles	mi^2
		VOLUME		
mL	milliliters	0.034	fluid ounces	fl oz
L	liters	0.264	gallons	gal
m^3	cubic meters	35.314	cubic feet	ft^3
m^3	cubic meters	1.307	cubic yards	yd^3
		MASS		
g	grams	0.035	ounces	oz
kg	kilograms	2.202	pounds	lb
Mg (or "t")	megagrams (or "metric ton")	1.103	short tons (2000 lb)	T
		TEMPERATURE (exact degrees)		
°C	Celsius	1.8C+32	Fahrenheit	°F
		ILLUMINATION		
lx	lux	0.0929	foot-candles	fc
cd/m^2	$candela/m^2$	0.2919	foot-Lamberts	fl
		FORCE and PRESSURE or STRESS		
N	newtons	0.225	poundforce	lbf
kPa	kilopascals	0.145	poundforce per square inch	lbf/in^2

*SI is the symbol for the International System of Units. Appropriate rounding should be made to comply with Section 4 of ASTM E380.
(Revised March 2003)

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1.0 Introduction

Over the past two decades, international waterborne container trade has been the fastest growing driver of freight transportation demand in the United States. The effects have been particularly dramatic at our major container ports. While intermodal rail has had positive impacts, the effects of truck congestion – both at the terminals and along major access routes – have been increasingly identified by many communities as significant issues. A number of ports and intermodal terminals are considering peak-period truck pricing strategies modeled on the Ports of Long Beach and Los Angeles PierPASS OffPeak program to: 1) reduce peak-period congestion; 2) improve terminal operating efficiencies; 3) reduce truck wait and idle times; 4) improve air quality; and 5) lessen community impacts.

To facilitate this process, the Federal Highway Administration (FHWA) Office of Freight Management and Operations, with support from Cambridge Systematics, Inc. (CS), is conducting an evaluation of the applicability, Federal policy implications, and possible public and private sector roles related to peak pricing strategies at other ports and intermodal facilities in the U.S. This report presents a detailed discussion of the results from this evaluation.

The remainder of this report is organized into the following sections:

- **Section 2: Analysis of the PierPASS OffPeak Program –** This section provides a summary of the key issues pertaining to the PierPASS OffPeak program, focusing on the factors that led to the implementation of the program, the success of the program in mitigating peak-period traffic congestion, and stakeholder perceptions about the program.
- **Section 3: Market Analysis –** This section provides a discussion of the key port market characteristics to be considered in evaluating the feasibility of port peak pricing programs, and the results of the performance evaluation of selected ports with respect to the identified set of market characteristics/factors.
- **Section 4: Institutional Analysis –** This section provides a discussion of the key institutional issues pertinent to port peak pricing programs, including shipper acceptance of peak pricing programs, the role of shipper organizations, longshore labor unions, and independent drayage truckers in program development/implementation, and the impacts of night-time trucking/noise restrictions on the feasibility of port peak pricing programs.
- **Section 5: Policy and Program Considerations –** This section presents a discussion of the key policy/regulatory issues pertaining to port pricing, including a summary of existing Federal congestion pricing programs, existing Federal port related policies, legal issues pertaining to port user fees, and considerations for Federal port peak pricing program and evaluation guidelines.
- **Section 6: Conclusions.**
- **Appendices.**

2.0 Analysis of the PierPASS OffPeak Program

This section presents the results from the work conducted as part of Task 1 of the study, which involved a detailed review of the PierPASS Off-Peak program at the Ports of Los Angeles and Long Beach (San Pedro Bay ports). The work conducted under Task 1 and presented in this section was specifically intended to answer the following key questions about the PierPASS Off-Peak program, which guided the work conducted under the subsequent tasks of the project:

- What were the key factors that contributed to the implementation of the PierPASS Off-Peak program?
- Has the program been successful as a congestion mitigation strategy in the region?
- What are the factors that could be changed to potentially make the program work better in the region?
- What are some of the key factors that need to be considered before implementing a similar program at another port in the U.S.?

In order to obtain answers to the above questions, this section presents a discussion of the following specific issues related to the Off-Peak program:

- Factors leading to the development of the program;
- Background on the operational and institutional aspects of the program;
- Impacts of the program on terminal gate and highway traffic and congestion;
- Reactions of key industry stakeholders to the program.

2.1 FACTORS LEADING TO THE DEVELOPMENT OF THE PIERPASS OFFPEAK PROGRAM

A recent study conducted by the METRANS Transportation Center (METRANS) (a joint research center at the University of Southern California and California State University Long Beach) and an evaluation conducted by Cambridge Systematics, Inc. (CS) for the Riverside County Transportation Commission (RCTC) looked at some key operational, community and regulatory issues that

set the stage for the development of the PierPASS OffPeak program.[1] These issues include the following, and are discussed in detail in the forthcoming sections:

- Sustained and rapid growth of international trade;
- Increased public awareness of port-related trade impacts;
- Capacity constraints at the ports; and
- Legislative pressures.

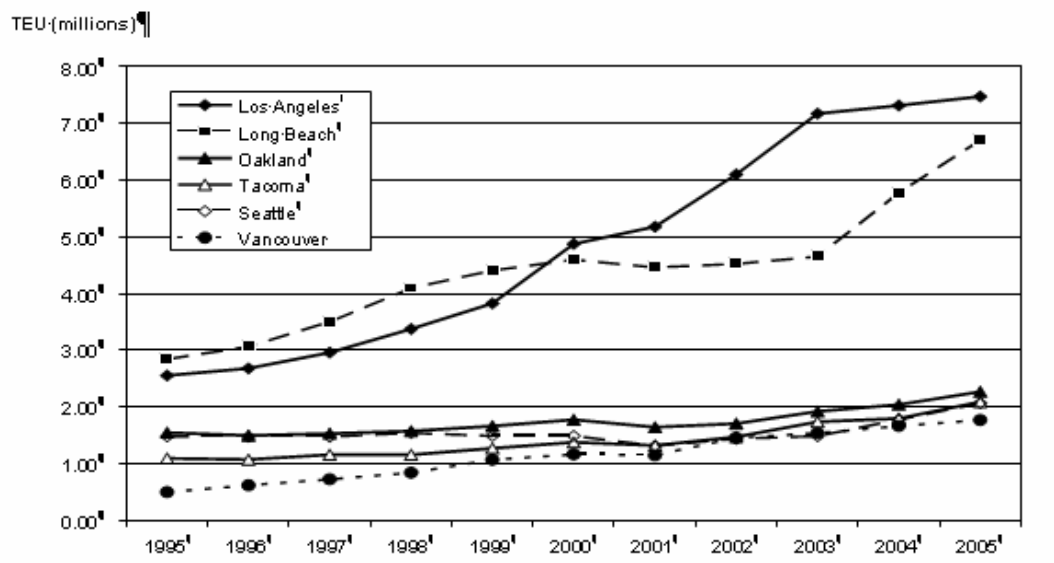
Sustained and Rapid Growth of International Trade

As shown in Figure 2.1, growth in containerized traffic (which accounts for majority of the cargo movements) at the San Pedro Bay ports have exceeded that of any other west coast port in the U.S. This growth can be attributed to many factors, including economies of scale in international shipping through the ports, the large local consumer market in the region, good intermodal rail connections to the U.S. national market, and the availability of large warehousing and distribution facilities and other supporting logistics industries and facilities. It is estimated that warehousing, distribution, and intermodal facilities occupy more than 1.5 billion square feet of space in Southern California currently, with more than 32 million square feet currently in development. Services provided by these facilities account for 15 percent of the total U.S. market and 60 percent on the west coast. The rapid growth in international trade activity has resulted in its increasing visibility within the region.

The San Pedro Bay ports together handled 14.2 million Twenty-Foot Equivalent Units (TEU) in 2005, and 15.8 million TEUs in 2006, a growth rate of more than 11 percent in a single year. The ports are projected to continue to maintain their strong position in the future in accounting for a large share of the containerized trade moving through the west coast. The current forecasts predict containerized trade volumes through the ports to triple to 42.5 million TEUs in 2030. The ability of the ports to handle this unprecedented growth in containerized cargo volumes is critical to the continued health of the local, regional, and the national economy. Table 2.1 shows the container traffic forecasts through the ports for 2010, 2020, and 2030.

[1] *Extended Gate Operations at the Ports of Los Angeles and Long Beach, A Preliminary Assessment*, April 2007.

Figure 2.1 Growth in West Coast Port Container Traffic



Source: American Association of Port Authorities (AAPA).

Table 2.1 San Pedro Bay Ports Containerized Cargo Forecasts

Year	TEUs (Million)	Share of California Total
2006 (actual)	15.8	86.80%
2010	19.7	86.80%
2020	36	85.70%
2030	42.5	86.70%

Source: Growth of California Ports – Opportunities and Challenges, A Report to the Legislature, April 2007.

Increased Awareness of Port-related Trade Impacts

As noted earlier, the rapid growth in international trade activity through the San Pedro Bay ports has led to its increasing visibility in the region, in terms of both positive and negative impacts of trade activity to the region as well as other parts of the nation. On the positive side, a recent economic impact study conducted for the ports estimates that the ports are major economic engines supporting more than 886,000 jobs in California directly or indirectly, and generating more than $6.7 billion in state and local tax revenue benefits in 2005.[2] Additionally, the economic impacts of international trade through the ports are also felt in other parts of the nation in terms of indirect and induced job impacts and associated

[2] http://www.acta.org/Releases/018%20REL%20ACTA-Port%20California%20Press%20Release.pdf.

tax revenue benefits. However, these positive economic impacts of trade activity come with large external costs that are disproportionately affecting the region, which include congestion (highway, terminal), environmental pollution (air, noise), and other impacts on local quality of life (such as lack of green space, etc.).

Congestion

International containerized trade through the ports generates significant local truck traffic associated with pick-up and drop-off of import and export containers, as well as empty container, bobtail, and chassis truck traffic. It is estimated that the ports currently generate about 35,000 daily container (loaded + empty) truck trips, more than 30 percent of which are loaded container movements. In addition, the ports generate around 20,000 bobtail and 6,000 chassis truck trips daily. An analysis of the time of day distribution of truck trips generated at the ports indicates that the majority of the trips occur in the midday (9:00 a.m. to 3:00 p.m.) time period (58 percent). Morning peak commute-period (6:00 a.m. to 9:00 a.m.) accounts for 13 percent of the trips, while evening peak commute (3:00 p.m. to 6:00 p.m.) and night (6:00 p.m. to 6:00 a.m.) time periods account for 19 percent and 10 percent of the total daily truck trips, respectively. The Multi-County Goods Movement Action Plan (MCGMAP) analyzed the impact of port truck traffic on the I-710 freeway, which is one of the most important trade corridors in the region. Table 2.2 shows the share of port truck traffic of total truck traffic, as well as share of truck traffic of total traffic on the I-710 corridor, for 2003. Clearly, port truck traffic accounts for more than 85 percent to 90 percent of total truck traffic on some sections of the freeway. Also, most of the sections of the freeway have truck traffic volumes that are between 14 percent to 17 percent of total traffic volumes, which indicates that truck traffic volumes on the I-710 might be causing congestion problems and contributing disproportionately to incident related delays compared to other highways in the region with lower shares of truck volumes.

Environmental Pollution

Perhaps the most serious impact of increased trade through the San Pedro Bay ports is air pollution. A study conducted in 2000 by the South Coast Air Quality Management District (SCAQMD) titled Multiple Air Toxics Exposure Study (MATES-II) identified the emissions from port-related sources as being of major concern for public health in the region.[3] This is an important issue in Southern California because the South Coast Air Basin (SCAB), where the San Pedro Bay Ports are located, has some of the worst air quality in the nation. The U.S. Environmental Protection Agency (EPA) has designated the SCAB region as being in nonattainment of the National Ambient Air Quality Standards (NAAQS) for Ozone and Particulate Matter less than 2.5 microns ($PM_{2.5}$). The

[3] http://www.aqmd.gov/matesiidf/matestoc.htm.

concentration of Diesel Particulate Matter (DPM), in particular, which is a primary pollutant from port-related sources due to their reliance on diesel fuel, has become a major public health concern in the region, since more than 70 percent of the potential cancer risk from toxic air contaminants, according to the California Air Resources Board (CARB), can be attributed to DPM.

Drayage truck traffic generated by the Ports poses difficult challenges for air quality control strategists. This can be attributed to some key factors, which include the following:

- The institutional framework of the drayage trucking industry involving predominantly owner-operators who are often undercapitalized and therefore often have older, less well maintained, and higher polluting trucks; and
- Increased pollution from idling port-related trucks due to congestion at marine terminal gates (terminal congestion), and on major highway corridors serving as access routes to the marine terminals.

It was determined that a key solution to addressing truck idling problems at marine terminal gates (and consequently, reducing air pollution from truck idling) was to allow for better utilization of gates through extended hours of gate operations. There is a general agreement in the perceptions of key industry stakeholders on the air quality benefits accruing from the PierPASS extended gate operations program at the ports, particularly resulting from reduced truck idling at terminal gates and within terminal areas. In a survey conducted as part of the METRANS study (the results of which are discussed in more detail in subsequent sections), marine terminal operators (MTO) reported notable reductions in midday congestion (and truck idling) at marine terminal gates and inside the terminals due to the PierPASS OffPeak program. Though they reported exacerbation of gate congestion at specific time periods (such as 5:00 p.m. to 6:00 p.m.), there is perceived to be a net reduction in truck idle times at terminal gates and inside the terminals due to the program, leading to a net reduction in emissions. The results of a December 2006 survey of truck drivers were consistent with this perception, in which drivers reported experiencing reduced congestion at marine terminal gates as a result of the program. An ensuing section provides a discussion on congestion impacts on the I-710 corridor due to the PierPASS OffPeak program. However, additional analysis is needed to shed light on air quality benefits (if any) accruing to the region from net reductions in truck idle times on the I-710 corridor due to the PierPASS OffPeak program.

Table 2.2 Share of Total and Port Truck Traffic on the I-710 Corridor

Highways	Segments	Length of Segment (miles)	Number of Lanes (bidirectional)	Total Daily Vehicle Volume	Total Daily Truck Volume	Daily Port Truck Volume	Total Trucks as Percent of Total Vehicle Volume	Port Trucks as Percent of Total Truck Volume
I-710	PCH to Willow	1	6	146,000	25,400	23,900	17.40%	94.10%
	Willow to I-405	1.5	6	161,000	27,100	23,235	16.80%	85.70%
	I-405 to SR-91	3.6	9 (I-405 to Long Beach Boulevard)/ 11 (Long Beach Blvd to SR-91)	186,000	31,400	20,045	16.90%	63.80%
	SR-91 to I-105	2.7	12	227,000	38,300	15,315	16.90%	40.00%
	I-105 to I-5	7.5	8	237,000	34,600	11,685	14.60%	33.80%
	I-5 to SR-60	1.4	10	199,000	24,200	1,025	12.20%	4.20%
	SR-60 to I-10	1.9	6	132,000	11,300	845	8.60%	7.50%

Source: Multi-County Goods Movement Action Plan (MCGMAP).

Capacity Constraints

Capacity constraints at the marine terminals, as seen during the 2004 peak shipping season, were another key factor contributing to the PierPASS OffPeak program. An increase in container volumes of 12 percent in the peak season (contrary to expected growth of around 5 percent) overwhelmed the ports in 2004, and resulted in widespread gridlocks in the international supply chains operating through the ports. The inability of the ports to handle the unexpected growth in container cargo demand clearly pointed to the lack of capacity associated, in particular, with insufficient productivity at the marine terminals. This was seen through the delays in unloading of ships at the terminals, which led to increasing queuing of ships at the harbor, as well as delays associated with processing of containers out of the terminals to the customer locations. According to a Waterfront Coalition report in 2005, the gridlock resulted in an average delay of six to eight days for U.S. shippers, and a diversion of more than 100 vessels to other ports resulting in a major loss of peak season container market share.[4]

Extended gate hours would have a significant impact on terminal productivity, typically under the conditions experienced in the 2004 peak season, by allowing additional capacity to be available per day to process containers out of the terminals. U.S. west coast ports operate at a productivity of around 5,000 TEUs per acre per year, which is significantly less than the productivity of Asian ports that handle more than 16,000 TEUs per acre per year. Operation of single shifts per day at U.S. terminals compared to all day shifts at Asian terminals is a major factor impacting the productivity of U.S. terminals. Also, terminal productivity is expected to be a critical issue in the future as more megaships are deployed in international container trade that can carry more than 10,000 TEUs.

Legislative Pressures

Regulatory pressures to extending gate operating hours at port marine terminals had been growing for several years. In February 2004, Assembly Bill (AB) 2041 was introduced by Assemblyman Alan Lowenthal requiring extended gate operations, which would also establish a regional governing body, the Port Congestion Management District, as an entity of local government, and authorize a charge for cargo moved at the Ports of LA and Long Beach between the peak hours of 8:00 a.m. and 5:00 p.m. intended to shift truck traffic from day to night-time periods. AB 2041 was opposed by the MTOs, particularly because of the management and control of the fee revenue in the hands of a public authority. The MTOs knew that they will incur additional operating costs associated with extended gate operations (on weeknights and weekends), and realized that if the

[4] *National Marine Container Transportation System - A Call to Action*, Waterfront Coalition, May 2005.

control of the fee revenue from an extended gate operations program were to be in the hands of a public authority (as was proposed under AB2041), they will have no way of defraying these additional costs. Some other factors that also contributed to the strong opposition from the MTOs towards AB 2041 included the following:

- AB 2041 called for strict reporting requirements from MTOs. The MTOs, being private companies, were opposed to revealing sensitive operating information due to competitiveness and confidentiality issues; and
- There was a concern among the MTOs that the fee revenues collected from the program would be used for freight related congestion mitigation projects in the region other than those specifically intended to improve operations of the MTOs.

Though factors like rapid growth in container traffic volumes, a growing awareness of the adverse local impacts of trade activity, and the capacity constraints experienced in the 2004 peak season were generating interest in strategies such as extended gate hours at marine terminals to improve productivity and capacity, legislative pressure through AB 2041 was the single most important factor that provided the political cover and impetus for the development and implementation of the PierPASS OffPeak program. As revealed in the survey conducted as part of the METRANS study, the MTOs unanimously believe that the OffPeak program was implemented primarily because of legislative pressure, and not because of concerns (of the MTOs) regarding congestion at the terminals. In the absence of political pressure, competitive conditions between MTOs would have made it difficult for them to come together cooperatively to develop such a program structured primarily on changing their existing business models. The MTOs were able to use antitrust immunity, granted under the Shipping Act of 1984 as amended by the Ocean Shipping Reform Act (OSRA) in 1998, to engage in cooperative discussions (through the West Coast MTO Discussion Agreement) regarding pricing and extended gate operations, and establish the PierPASS OffPeak program as a private sector solution to meet the public policy objectives of AB 2041. Without the provision under the OSRA for antitrust immunity for ports and MTOs, the U.S. antitrust laws would have prevented the MTOs, who are competitors, from coming together to form an agreement to implement a joint port pricing and extended gate operations program at the San Pedro Bay ports. With the agreement that AB 2041 would be dropped if a private sector solution was developed, the MTOs at the ports worked together to come up with an unprecedented approach to develop the PierPASS OffPeak program, more information on which is presented in the following sections.

2.2 BACKGROUND ON THE PIERPASS OFFPEAK PROGRAM

The PierPASS OffPeak program is the off-peak (night and weekend) gate operating hours program created by MTOs at the ports to alleviate truck traffic congestion, and improve air quality in the region. The OffPeak program was launched at the San Pedro Bay ports in July of 2005. The program provides an incentive for cargo owners and their carriers to move cargo at night-time periods and on weekends, as a way of reducing truck traffic during peak day time periods on major highways around the Ports, alleviating Port congestion (for example, at truck gates at marine terminals), and reducing air quality impacts from high peak-period truck traffic volumes.

The program is based on a market incentive approach, where all loaded containers entering or exiting the marine terminals at the ports by truck during the day time shifts (Monday through Friday, 3:00 am to 6:00 p.m.) are charged a Traffic Mitigation Fee (TMF). (The original TMF of $40 per TEU was increased to $50 per TEU in April 2006 to cover the higher than expected costs of sustaining the OffPeak program). The Beneficial Cargo Owners (shippers, consignees, or their agents) are responsible for the payment of the fee. Neither the trucking community nor the ocean carriers is assessed a fee under this program. In addition to providing an incentive for the shippers to divert cargo to off-peak time periods, the TMF also serves to defray the additional costs incurred by the MTOs to keep terminal gates open at night and on weekends.

Before the implementation of the OffPeak program in July 2005, marine container terminal gates at the San Pedro Bay ports were operating mainly during the day time shift (Monday through Friday between 8:00 a.m. and 5:00 p.m.). Some terminals, however, offered extended gate hours on an "as needed" basis, based on the demands of some high-volume shippers for night or weekend pick-up and/or delivery of containers. Under the OffPeak program, all the marine container terminals at the two ports established off-peak gate shifts, which include four new night shifts per week (Monday through Thursday 6:00 p.m. to 3:00 a.m.) and one new weekend shift (Saturday 8:00 a.m. to 6:00 p.m.). The marine terminal gate operating shifts are dictated by the labor work shifts stipulated under the longshore labor contract between the International Longshore and Warehouse Union (ILWU) and the Pacific Maritime Association (PMA) (The PMA is an association whose member companies include cargo carriers, MTOs and stevedores. The primary business of the PMA is to "negotiate and administer maritime labor agreements with the ILWU").[5] Existing longshore labor work shifts (in the current contract that expires July 2008), applicable to longshore labor at all the west coast marine terminals,

[5] http://www.pmanet.org/.

include a day shift (8:00 a.m. to 5:00 p.m.), a night shift (6:00 p.m. to 3:00 a.m.), and a hoot-owl shift (3:00 a.m. to 8:00 a.m.).

Cargo entering or exiting by truck during the off-peak shifts is exempt from the TMF, thus providing incentive for truck drayage operations during these time periods. The program exempts all intermodal containers departing or arriving via the Alameda Corridor from the TMF. Also, there is no fee for empty containers, chassis, or bobtails moving through the terminal gates, since the program assesses the TMF only on the beneficial cargo owners. Bobtails and chassis trucks account for more than 40 percent of the daily truck traffic at the Ports. However, the shifting of loaded truck trips to the off-peak time period due to the program also causes a shift in bobtail and chassis truck trips to the off-peak period because of the direct trip chain linkages between these trips. All the marine terminals at the ports have adopted the same night and weekend operations for improved operational efficiency as part of the program, and the services rendered by the MTOs at the gates during the off-peak shifts are exactly the same as during the day time shifts.

The existing longshore labor work shifts at the west coast terminals have had an impact on extended gate operations as part of the OffPeak program. As discussed earlier, current longshore labor work shifts include a day time shift (8:00 a.m. to 5:00 p.m.), a night-time shift (6:00 p.m. to 3:00 a.m.), and a hoot owl shift (3:00 a.m. to 8:00 a.m.). As a result, there is a one-hour window between the close of the day time gate shift, and the opening of the off-peak night shifts. The discussion of the impacts of this on truck operational efficiency is included in a subsequent section.

The OffPeak program is administered and managed by PierPASS Inc. PierPASS Inc. is a nonprofit organization created by the MTOs at the ports to collect the TMFs and disburse them to the MTOs. For better management and implementation of the OffPeak program, PierPASS Inc. is subject to an external audit, the results of which are published for the trade community.

2.3 IMPACTS ON TRUCK TRAFFIC AND CONGESTION

This section presents the impacts of the PierPASS OffPeak program on time-of-day distribution of port gate traffic, as well as on time-of-day patterns of truck traffic on the I-710 corridor (which is the major highway corridor providing access to the port terminals) before and after the implementation of the OffPeak program.

Impacts on Port Gate Traffic

The PierPASS OffPeak program has been a success in terms of exceeding objectives of diverting truck traffic from day time to off-peak (night and weekend) time periods. On its first day of operations, more than 1,000 port users registered for the program, and over 7,500 containers were shipped during nighttime rather than daytime periods. The program was aimed at diverting

15 percent to 20 percent of all cargo movements to off-peak shifts by the end of the first full year of operation, but far exceeded expectations by realizing off-peak diversions of the order of 30 percent to 35 percent at the end of the first full year. More than 2.5 million truck trips had been diverted to the off-peak shifts at the end of the first year of the program, amounting to an average of 11,000 truck moves per day. According to a Journal of Commerce (JoC) article dated May 07, 2007, around 5 million trucks had been diverted to off-peak hours (from the start of the program – July 2005 – to the date of the article), and around 60,000 truck trips in a normal week moved during the off-peak hours.

According to data available from the Port of Long Beach for 2005, the OffPeak program led to significant changes in the distribution of port truck traffic moving through the terminal gates during the day, night and weekend time periods. These trends for 2005, before and after the implementation of the program, are shown in Table 2.3. As seen from Table 2.3, the OffPeak program clearly led to an increase in share of truck traffic in the off-peak (night and weekend) periods relative to the day time period. A notable impact of the program was to increase the share of gate truck traffic in the night-time period compared to truck traffic during weekends.

Table 2.3 Port of Long Beach Truck Traffic Trends
2005

Time Period	Daytime Weekday Truck Traffic	Nighttime Weekday Truck Traffic	Weekend Truck Traffic	Total
Jan 1, 2005 to July 23, 2005	90%	3%	7%	100%
July 24, 2005 to December 31, 2005	66%	24%	10%	100%

Source: Port of Long Beach Transportation Planning.

Note: Excludes data for Matson/Pier A Port of Long Beach with service to Hawaii.

Impacts on Terminal Congestion

This section discusses impacts of the OffPeak program on terminal congestion focusing on the following two issues:

- Truck traffic congestion at the gates; and
- Truck traffic congestion within the terminal area.

According to interviews of MTOs conducted as part of the METRANS study, the OffPeak program has had a notable impact on truck traffic congestion at the terminal gates. A significant diversion of truck traffic from the day time to the night-time periods has relieved congestion at the gates during the day time. Daytime truck traffic at the gates in 2005 (Table 2.3) reduced from 90 percent to 66 percent due to the implementation of the program, which had a significant impact on reducing day time truck traffic congestion at the gates. However, the effect of this diversion has been an exacerbation of congestion at the gates for

certain specific time-periods. MTOs reported occurrence of queuing of trucks at the gates before the start of the night-time gate shift at 6:00 p.m., because of the one hour lag between the end of the daytime shift when the TMF is enforced (5:00 p.m.) and the start of the night-time shift (6:00 p.m.). It was also observed that most of the night-time gate truck traffic occurs during the 6:00 p.m. to 10:00 p.m. off-peak time period in order to avoid delays associated with longshore labor lunch breaks occurring from 10:00 p.m. to 11:00 p.m. As a downside of the concentration of truck traffic before 10:00 p.m., terminal gates see very little truck activity during the 11:00 p.m. to 3:00 a.m. time period, leading to poor utilization of gate capacity and longshore labor after 11:00 p.m. Since the MTOs must staff the gates for the full night-time labor shift, this represents a cost with limited return on investment.

There is a general agreement that the OffPeak program has reduced truck traffic congestion within the terminal area. Truck drivers surveyed in December 2006 reported experiencing reduced congestion within the gates of the terminals as a result of the program. This can be attributed to the effect of the program in achieving more even distribution of truck traffic within the terminal and improved utilization of terminal capacity during different times of the day. However, there is also an agreement that there is room for further improvement in terminal capacity utilization and productivity, by achieving more even distribution of truck traffic, especially during the night-time periods, through the use of innovative approaches such as appointment systems, and potential changes in longshore labor work shifts.

Impacts on I-710 Truck Traffic

Changes in truck traffic at the terminal gates at the ports are linked with changes in time-of-day distribution of trucking activity on the I-710 freeway, which is the major highway corridor providing access for trucks moving to and from the marine terminals. This section discusses the impacts of the OffPeak program on time-of-day distribution of truck traffic on the I-710 corridor using data from the Caltrans vehicle classification count station on the I-710 freeway north of the Pacific Coast Highway (PCH), a location within a few miles north of most of the terminals. Truck traffic data from this count station by hour-of-day and by truck classes for representative days in February and September 2007 were analyzed and summarized by time of day (6:00 a.m. to 9:00 a.m., 9:00 a.m. to 3:00 p.m., 3:00 p.m. to 7:00 p.m., and 7:00 p.m. to 6:00 a.m.), and compared with truck traffic data for February 2006 and May 2005, to assess changes in time-of-day truck traffic distributions that could be attributed to the OffPeak program, and if there have been any notable trends in these distributions since the implementation of the program.

Table 2.4 shows the comparisons of average weekday truck traffic volumes for 5–or-more-axle trucks by time-of-day between May 2005, February 2006, February 2007, and September 2007. The average daily truck traffic volumes at this location in 2005, 2006, and 2007 based on data available from Caltrans, were observed to be 22,390, 23,023, and 24,411 trucks, respectively.

Table 2.4 Time-of-Day Truck Traffic Distribution Trends on I-710
North of PCH

Northbound					Southbound				
Time Period	May 2005	February 2006	February 2007	September 2007	Time Period	May 2005	February 2006	February 2007	September 2007
6:00 a.m. to 9:00 a.m.	15.20%	12.20%	13.10%	11.20%	6:00 a.m. to 9:00 a.m.	12.20%	12.00%	13.20%	10.40%
9:00 a.m. to 3:00 p.m.	51.40%	44.80%	42.90%	38.90%	9:00 a.m. to 3:00 p.m.	52.10%	44.20%	45.60%	45.00%
3:00 p.m. to 7:00 p.m.	16.70%	16.00%	13.90%	14.40%	3:00 p.m. to 7:00 p.m.	18.30%	15.80%	16.10%	18.50%
7:00 p.m. to 6:00 a.m.	16.70%	27.00%	30.10%	35.50%	7:00 p.m. to 6:00 a.m.	17.40%	28.00%	25.10%	26.10%
Total	100.00%	100.00%	100.00%	100.00%	Total	100.00%	100.00%	100.00%	100.00%
8:00 a.m. to 6:00 p.m.	71.20%	62.80%	60.00%	54.80%	8:00 a.m. to 6:00 p.m.	73.80%	63.00%	64.10%	63.90%
6:00 p.m. to 8:00 a.m.	28.80%	37.20%	40.00%	45.20%	6:00 p.m. to 8:00 a.m.	26.20%	37.00%	35.90%	36.10%
Total	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%	100.00%

Source: Caltrans.

Some notable trends in time-of-day truck traffic distribution on the I-710 corridor before and after the implementation of the OffPeak program are discussed below:

- There has been a steady increase in the share of truck traffic in the off-peak 7:00 p.m. to 6:00 a.m. time period in the northbound direction, from 16.7 percent in the month just before the start of the OffPeak program to more than doubling of the share to 35.5 percent in September 2007 (the latest month for which Caltrans data was available). This is a clear effect of the OffPeak program. A large share of the trucks arriving at the port with loaded export containers or to pick up import containers at the start of the off-peak shift (6:00 p.m.) typically leave between the 7:00 p.m. to 10:00 p.m. time-period (before the start of the lunch break of longshore labor), which is observed in terms of the steady rise of the shares during this time period in the northbound direction of I-710. This diversion of truck traffic from the day time to the off-peak time periods has led to a reduction of share of truck traffic in the 9:00 a.m. to 3:00 p.m. time period from 51.4 percent in May 2005 to 38.9 percent in September 2007.
- The trends in the southbound direction are also worth noting, where there was a significant increase in the share of off-peak (7:00 p.m. to 6:00 a.m.) truck traffic from 17.4 percent in May 2005 to 28 percent in February 2006. Average weekday distributions for February 2007 and September 2007 show an interesting shift in the trend, with reductions in share of truck traffic in the 7:00 p.m. to 6:00 a.m. time period (compared to February 2006), and an increase in share of truck traffic in the 3:00 p.m. to 7:00 p.m. time period. This can be attributed to more trucks arriving at the port before the start of the night off-peak shift (6:00 p.m.) in order to expedite container pick-up and delivery processes, and try to make additional drayage return truck trips before 10:00 p.m. The slight increase in the share of truck traffic in the 7:00 p.m. to 6:00 a.m. time period between February and September 2007 could be partly explained by some of the carriers being able to make additional return drayage trips to the port in this time period.
- There is a notable trend observed between February 2007 and September 2007 in the shifting of truck trips from the 6:00 a.m. to 9:00 a.m. time period (which is the peak commute time period) to the 3:00 p.m. to 7:00 p.m. and the 7:00 p.m. to 6:00 a.m. time periods.

Tables 2.5 and 2.6 show the trends in hourly shares of truck traffic on the I-710 corridor for the day time period between 6:00 a.m. and 8:00 p.m., for the northbound and southbound directions.

Table 2.5 Trends in Hourly Truck Volume Shares on I-710, North of PCH
Southbound

Hour	May 2005	February 2006	February 2007	September 2007
6:00 a.m. to 7:00 a.m.	2.50%	2.50%	2.70%	2.10%
7:00 a.m. to 8:00 a.m.	3.50%	3.40%	4.40%	3.20%
8:00 a.m. to 9:00 a.m.	6.20%	6.00%	6.10%	5.10%
9:00 a.m. to 10:00 a.m.	10.40%	7.90%	8.10%	8.00%
10:00 a.m. to 11:00 a.m.	9.90%	8.00%	8.60%	8.40%
11:00 a.m. to 12:00 p.m.	9.80%	8.40%	7.80%	7.90%
12:00 p.m. to 1:00 p.m.	7.10%	6.20%	7.80%	7.40%
1:00 p.m. to 2:00 p.m.	6.60%	6.30%	7.10%	7.10%
2:00 p.m. to 3:00 p.m.	8.10%	7.20%	6.30%	6.30%
3:00 p.m. to 4:00 p.m.	6.60%	5.60%	5.30%	5.60%
4:00 p.m. to 5:00 p.m.	5.50%	4.50%	3.50%	4.30%
5:00 p.m. to 6:00 p.m.	3.50%	2.60%	3.50%	3.90%
6:00 p.m. to 7:00 p.m.	2.80%	3.00%	3.70%	4.70%
7:00 p.m. to 8:00 p.m.	2.10%	4.20%	3.70%	3.80%
Total	84.70%	76.20%	78.60%	77.70%

Source: Caltrans.

Some notable trends in hourly distribution of southbound truck traffic on the I-710 corridor are discussed below:

- The share of truck traffic in the 5:00 p.m. to 6:00 p.m. time period is observed to be higher in both February and September 2007 compared to February 2006. This points to a trend towards more truck trips trying to access the terminals at the start of the night off-peak shift (6:00 p.m.), which supports the inference from the METRANS study interviews, where an increase in truck queuing at the gates in this time period was reported.
- The share of truck traffic in the 6:00 p.m. to 7:00 p.m. time period has steadily increased for the months reported in the table. This can be attributed to an increasing number of trucks accessing the terminals in this time period to avoid the queues at the gates before the start of the night off-peak shift (6:00 p.m.).
- There has been some diversion of truck traffic from the peak commute time period (6:00 a.m. to 9:00 a.m.) to the off-peak time period in September 2007, which was not observed in the data for February 2007 and February 2006. This points to the fact that the program has recently been able to divert some traffic from the peak commute time period (which is the most congested) to the night off-peak time period. The magnitude of this diversion, however, has been small to have realized any significant congestion reduction benefits.

Table 2.6 Trends in Hourly Truck Volume Shares on I-710, North of PCH
Northbound

Hour	May 2005	February 2006	February 2007	September 2007
6:00 a.m. to 7:00 a.m.	4.40%	2.90%	2.10%	2.20%
7:00 a.m. to 8:00 a.m.	5.20%	3.90%	3.30%	2.80%
8:00 a.m. to 9:00 a.m.	5.60%	5.50%	7.70%	6.20%
9:00 a.m. to 10:00 a.m.	7.10%	7.30%	8.80%	7.50%
10:00 a.m. to 11:00 a.m.	9.00%	8.20%	8.40%	7.00%
11:00 a.m. to 12:00 p.m.	9.40%	8.10%	8.10%	7.70%
12:00 p.m. to 1:00 p.m.	9.30%	7.90%	4.50%	4.10%
1:00 p.m. to 2:00 p.m.	8.70%	7.10%	6.60%	5.80%
2:00 p.m. to 3:00 p.m.	7.90%	6.10%	6.50%	6.80%
3:00 p.m. to 4:00 p.m.	6.20%	4.90%	4.60%	5.00%
4:00 p.m. to 5:00 p.m.	4.90%	3.90%	3.20%	3.40%
5:00 p.m. to 6:00 p.m.	3.10%	3.90%	1.50%	1.30%
6:00 p.m. to 7:00 p.m.	2.50%	3.50%	4.50%	4.70%
7:00 p.m. to 8:00 p.m.	2.40%	3.20%	5.00%	6.60%
Total	85.70%	76.20%	74.90%	71.10%

Source: Caltrans.

The trends in hourly distribution of northbound truck traffic on I-710 for the 6:00 a.m. to 8:00 p.m. time period are also worth noting, a discussion of which is presented below:

- Most notable trends in the northbound direction include a steady increase in the share of truck traffic in the 6:00 p.m. to 7:00 p.m. and 7:00 p.m. to 8:00 p.m. time periods. This has a direct correlation with the increase in truck traffic in the southbound direction in the 5:00 p.m. to 6:00 p.m. and 6:00 p.m. to 7:00 p.m. time periods (for example, return trips of trucks picking up import containers, or dropping off export containers).
- There is an increasing trend towards trucks making the late evening peak-period (4:00 p.m. to 5:00 p.m.) truck trip to access the terminal for the night off-peak shift (6:00 p.m. to 3:00 a.m.), possibly to avoid the queuing taking place before the start of the night off-peak shift at 6:00 p.m. This is corroborated by the observation in the September 2007 data (Table 2.5) that there are an increasing number of trucks moving in the southbound direction in the 4:00 p.m. to 5:00 p.m. time period to access the marine terminals. Since the marine terminals are closed in the time period between the end of the day shift (at 5:00 p.m.) and the start of the night shift (at 6:00 p.m.), trucks are trying to avoid the queuing at the gates in the 5:00 p.m. to 6:00 p.m. time period by reaching the gates earlier.

Impacts on I-710 Congestion

A survey conducted by PierPASS Inc. of drayage truck drivers in May 2006 obtained information on truck driver perceptions of reduced congestion during the day time on I-710. In this survey, drivers perceived reduced congestion during the day time on the I-710 corridor by a ratio of 10:1. Consistent with the results from this survey, in an earlier survey organized by the California Trucking Association (CTA) in September 2005, 73 percent of drayage truck drivers indicated experiencing an improvement in highway traffic conditions since the launch of the program, and 58 percent being able to accommodate more drayage trips in their work shifts. However, these perceptions do not reflect recent trends in time-of-day truck traffic patterns, especially in the evening peak commute time period, as observed in the data from February and September 2007, which show an increase in truck traffic shares in the evening peak commute time period (5:00 p.m. to 6:00 p.m. from February 2006 to February 2007; and 4:00 p.m. to 5:00 p.m. and 5:00 p.m. to 6:00 p.m. from February 2007 to September 2007). These trends, coupled with the observation that the majority of the truck traffic diversion is occurring from the midday (9:00 a.m. to 3:00 p.m.) time period, indicate that the program could actually be exacerbating congestion on the I-710 corridor by shifting some of the truck traffic from midday (which is less congested) to the congested evening peak commute time period. The trends for the morning peak commute time period (6:00 a.m. to 9:00 a.m.) look more promising, with the Caltrans count data showing some reduction in truck traffic shares for this time period in September 2007. However, the magnitude of this diversion will need to be higher in order to realize significant congestion reduction benefits in the morning peak period from the OffPeak program (which could be potentially achieved through innovative approaches such as variable pricing).

2.4 STAKEHOLDER PERCEPTIONS ABOUT PIERPASS

The recently completed METRANS study conducted interviews of key industry stakeholders on their perceptions on the PierPASS OffPeak program, which included 11 of the 14 MTOs at the two ports, representatives from PierPASS Inc., the San Pedro Bay ports, representatives of distribution centers/warehouses and governmental officials. The following sections present a summary of the results obtained from these interviews, as well as information obtained from on-line news and journal articles.

- The MTOs were unanimous in their belief that the PierPASS OffPeak program was implemented not because of concerns related to terminal and highway congestion during the peak periods, but because of legislative pressures (AB 2041). In order to meet the requirements of AB 2041 to implement a peak pricing and extended gate operations program at the marine terminals, while also having complete control of the program, the MTOs decided to come together and devise a program that would help them

recover the costs of extended gate operations. In the absence of political pressure, competitive conditions between MTOs would have made it difficult for them to come together cooperatively to develop such a program, which was structured primarily on changing their existing business models;

- There is an agreement in perception of the MTOs that the OffPeak program has been a significant benefit to the shipping industry (beneficial cargo owners), because of the ability of the MTOs to accommodate significant growth in container volumes through better utilization of terminal gate capacity while agreeing to the same rules of operation. However, MTOs do agree on the negative impact of the OffPeak program in increasing terminal congestion especially for the night off-peak shift, and the challenges faced by them in achieving optimal labor utilization for the 11:00 p.m. to 3:00 a.m. time period;
- The MTOs perceive changes in labor work schedules in the renewal of the current ILWU contract (before the July 2008 expiration of the current contract) to work optimally with the shifts of the OffPeak program (such as eliminating the one hour dead periods between the end of the daytime shift at 5:00 p.m. and the start of the night off-peak shift at 6:00 p.m., and staggering meal hours instead of the 10:00 p.m. to 11:00 p.m. lunch break to allow for continuous operation of the terminals) to be key in achieving higher levels of productivity and labor utilization from the OffPeak program;
- According to Bruce Wargo, General Manager of PierPASS, Inc., the OffPeak program is popular with low-margin exporters such as those that ship wastepaper, and with high-volume importers who own distribution centers that already stay open at night. The presence of these shippers/consignees in Southern California has contributed to the success of the program in terms of diverting truck traffic from day time to off-peak time periods;
- The perception of surveyed warehouse and distribution center operators in the region is that the program primarily benefits the MTOs, and they have had to respond to the program by changing their business practice at no additional monetary benefits (unlike the TMF enjoyed by the MTOs). Some changes to warehouse/DC business practices cited include addition of second shift of operations and night-time security, and additional space allotments for off-peak storage of cargo for delivery of goods at the start of the next business day;
- According to a Journal of Commerce article dated February 07, 2007, in a survey organized by PierPASS Inc. (and conducted by the Los Angeles public policy research firm Fairbank, Maslin, Maullin & Associates) between November 27 and December 9, 2006 of 451 harbor truck drivers, truck drivers reported making more round trips per daily work shift, and a rise in their earnings, since the start of the PierPASS OffPeak program in July 2005. Forty-five percent of the drivers in the survey reported making more round trips per day (compared to 43 percent in a May 2006 survey), and 37 percent

of the respondents reported higher earnings (compared to 33 percent in the May 2006 survey). Also, 61 percent of the respondents in the survey have a positive or very positive opinion about the program, with 67 percent believing that the program has reduced traffic congestion.

2.5 SUMMARY OF FINDINGS

This section summarizes the findings from the work conducted in Task 1 in terms of providing answers to some of the key questions about the PierPASS OffPeak program raised at the outset of this section. These findings are discussed below:

- What were the key factors that contributed to the implementation of the PierPASS OffPeak program?

  The first section of this chapter provided a detailed discussion of some of the key factors that contributed to the implementation of the PierPASS OffPeak program. Though factors like rapid growth in container traffic volumes, a growing awareness of the adverse local impacts of trade activity, and the capacity constraints experienced in the 2004 peak season at the San Pedro Bay ports led to the initial consideration of strategies such as extended gate hours at marine terminals to improve productivity and capacity, legislative pressures through the introduction of AB 2041 can be singled out as the single most influential factor that led to the development and implementation of the OffPeak program. This fact was corroborated by the surveys of MTOs conducted as part of the METRANS study, in which all the surveys MTOs agreed that the OffPeak program was brought about primarily as a result of political pressure and not as an immediate response to problems associated with congestion and environmental impacts. In other words, it can be concluded that the OffPeak program would not have been implemented at the Ports in the absence of legislative pressure, with a similar structure as it did, where the MTOs worked together to come up with a program to protect their business interests. It can be speculated, however, that some sort of extended gate operations at individual terminals would have come about eventually to create additional capacity at the terminals, though these operations would not have been coordinated like the OffPeak program and would not have realized the same level of benefits, and participation from key industry stakeholders (such as carriers, shippers, warehouse/DCs, etc.) in the region.

- Has the program been successful as a congestion mitigation strategy in the region?

  The work conducted under Task 1 to determine the success of the OffPeak program as a congestion mitigation strategy in the region primarily involved the following:

- Reviewing recent studies and latest news/journal articles to get information on perceptions of key industry stakeholders (MTOs, carriers, etc.) on truck traffic congestion reduction at terminal gates, and on the I-710 corridor as a result of the OffPeak program; and
- Analysis of trends in time-of-day distributions of truck traffic along the I-710 freeway north of the Pacific Coast Highway (PCH) using hourly Caltrans truck count data.

Based on the above reviews and analysis, following are some key conclusions on the success of the OffPeak program as a congestion mitigation strategy in the region:

- As discussed earlier, the program has exceeded expectations in terms of diverting truck traffic from day-to-night time periods. The positive aspect of this diversion has been the alleviation of congestion at the gates during the day time. However, MTOs have reported queuing of trucks at the gates during the one hour gap between the close of the day time shift (5:00 p.m.) and the opening of the night off-peak shift (6:00 p.m.). There have been no reports of gate congestion during the night off-peak shifts. However, the MTOs have reported that the concentration of truck traffic at the terminals during the 6:00 p.m. to 10:00 p.m. time period has resulted in problems with gate capacity as well as longshore labor utilization for the rest of the night off-peak shift (11:00 p.m. to 3:00 a.m.).
- The program has been successful in mitigating truck traffic congestion within the terminal area by distributing truck traffic within the terminal over a larger time period (day and night time), and ensuring improved utilization of terminal capacity.
- Based on the trends in truck traffic volumes on the I-710 freeway in the southbound direction, majority of the diversion of truck traffic on the I-710 corridor as a result of the OffPeak program is observed to occur from the midday (9:00 a.m. to 3:00 p.m.) time period. It is also observed that some of this diversion is occurring to the late peak evening commute time period (5:00 p.m. to 6:00 p.m.) as a result of trucks accessing the terminals before the start of the night off-peak shift at 6:00 p.m. Also, truck volume trends (Table 2.5) show that the program has not been very successful in diverting significant truck traffic volumes from the morning (6:00 a.m. to 9:00 a.m.) and evening (3:00 p.m. to 6:00 p.m.) peak commute time periods, which are the most congested time periods along the corridor. Due to the increase in truck traffic shares in the late evening peak commute time period due to the existing gate operating shifts, and the inability of the program to divert significant truck volumes from the morning and evening peak periods, it can be concluded that the OffPeak program has had a more limited impact on highway congestion mitigation than might have been achieved with an alternative program design, such as a program based on variable pricing mechanisms and

appointment systems, which are described in more detail in subsequent sections of this report.

- In the northbound direction on I-710, there have been steady reductions in truck traffic shares for most of the hours in the 6:00 a.m. to 6:00 p.m. time period (Table 2.6) as a result of the OffPeak program, which indicate some positive trends towards alleviating congestion in the northbound direction of I-710, especially during certain hours of peak commute time periods (6:00 a.m. to 8:00 a.m. and 4:00 p.m. to 6:00 p.m.). Increased congestion mitigation benefits in the northbound direction in the peak commute periods are expected to accrue if the OffPeak program is able to divert a larger share of truck trips in the southbound direction from the midday and peak commute periods (for example, 6:00 a.m. to 8:00 a.m., 2:00 p.m. to 3:00 p.m., and 3:00 p.m. to 4:00 p.m.).

- What are the factors that could be changed to potentially make the program work better in the region?

  Based on reviews of recent studies and news/journal articles, the following conclusions can be made about some key factors that could be changed to potentially make the program work better in the region:

  - **ILWU Labor Work Shifts –** The current ILWU labor work shifts have had an impact on the operational aspects of the OffPeak program, as well as the performance of the program in affecting the time-of-day distribution patterns of truck traffic. The one hour gap between the close of the day time shift at 5:00 p.m. and the opening of the night off-peak shift at 6:00 p.m. is a direct consequence of the current day and night ILWU labor work shifts. Some impacts of this operating condition, as discussed earlier, have been i) queuing of trucks at the gates before the start of the night off-peak shift, and ii) increasing the number of trucks in the late evening peak commute time period (5:00 p.m. to 6:00 p.m.) in the southbound direction of I-710. Also, the current ILWU labor lunch break schedule between 10:00 p.m. to 11:00 p.m. has led to an increased concentration of truck traffic in the 6:00 p.m. to 10:00 p.m. time period in the night off-peak shift, and problems with labor utilization in the 11:00 p.m. to 3:00 a.m. time period. The MTOs in the survey conducted in the METRANS study reported this to be a problem, as they are incurring longshore labor expenses for the full shift, without optimal labor utilization. The renewal of the current west coast labor contract between the ILWU and the PMA (which expired in July 2008) is expected to address this issue. According to a recent Journal of Commerce article, there have been preliminary discussions on the proposition for two 10-hour work shifts per day, which are expected to achieve increased efficiency from the extended gate operations as part of the OffPeak program.

  - **Appointment Systems –** The implementation of appointment systems for pick-up and delivery of containers by drayage truck drivers are expected to

significantly improve current OffPeak program operating conditions at the terminals, as well as achieve congestion reduction benefits on the I-710 freeway. With the use of appointment systems, the queuing of trucks at the gates before the night off-peak shift can be reduced, and the diversion of these trucks to other night off-peak shifts can have a direct impact in terms of reducing truck traffic in the southbound direction of I-710 in the late evening peak commute time period. Appointment systems can also be used to reduce the concentration of trucking activity before the 10:00 p.m. time period, and achieve optimal labor utilization by appointing pick-up/delivery activity in the 11:00 p.m. to 3:00 a.m. time period.

Individual MTOs do not face any legislative constraints to implementing appointment systems. Also, the West Coast MTO Discussion Agreement authorizes the MTOs to engage in discussions and implement joint appointment systems across all terminals to facilitate more efficient gate and labor utilization during off-peak hours. However, as stated in a recent METRANS study, the future use of appointment systems by the MTOs to meet the need to better accommodate increased container throughput during off-peak hours would depend on legislative pressures. The MTOs at the San Pedro Bay ports have had past experience with legislative pressures related to appointment systems, namely the California Assembly Bill AB 2650 implemented in 2002, which required the MTOs to adopt either gate appointments or off-peak hours as a means to avoid fines for truck queuing. As understood from the language of the bill, with the implementation of the PierPASS OffPeak program, they were no longer required to have appointment systems. Since some of the MTOs, responding to a METRANS survey, have expressed a negative perception towards appointment systems (such as incompatibility with customer requirements, and increased data burden), it is expected that MTOs might face challenges in establishing joint appointment systems unless they have the impetus to do so through legislative pressures.

- **Variable Pricing –** Under the current framework of the OffPeak program, a constant TMF is assessed for containers moving through the gates for any time period within the day time shift of 8:00 a.m. to 5:00 p.m. In other words, the TMF does not vary by time period. In order to improve the performance of the program in terms of diverting additional truck traffic from the peak commute time periods (morning and evening) and achieving associated congestion reduction benefits, a variable pricing scheme could be a potential solution. This solution would involve assessing an increased fee for pick up and delivery of containers for certain specific time periods during the day time shift (8:00 a.m. to 5:00 p.m.) based on information regarding which pick-up/delivery time windows at the terminals typically correspond to peak commute time periods along the I-710 corridor.

- What are some of the key factors that need to be considered before implementing a similar program at another port in the U.S.?

  Some of the key factors that need to be considered before implementing a similar program at another port in the U.S. are briefly outlined below, which will be analyzed in detail under the subsequent tasks of the project:

  - **Political Influence –** As seen at the San Pedro Bay ports, legislative pressure through AB 2041 was the primary factor that led to the implementation of the program.
  - **Community Perceptions –** Community perceptions regarding international trade activity through seaports and its impacts related to congestion, environmental and the economy play a key role in determining the favorability towards capacity expansion at the ports, as well as the types of infrastructure and operational improvements at port terminals to increase capacity. This has been particularly true in Southern California, where the ports have not been able to initiate a major infrastructure development project for the past 6 years due to community opposition. These issues will be important to consider at other ports.
  - **Congestion and Environmental Issues –** The congestion and environmental problems plaguing Southern California, and the contribution of the San Pedro Bay ports to the same, were the primary factors that led to increased political attention to container traffic through the ports, and to the introduction of AB 2041. Consequently, it will be important to pay attention to these issues for other ports before implementing a similar program. As seen in the case of the PierPASS OffPeak program, the existence of these issues provides a stimulus for governmental organizations to get out in front of these highly pertinent issues, and influence the ports/MTOs to come together to devise strategies such as peak pricing and extended gate operations programs among others, to tackle them. These issues will also play a critical role in prioritizing and identifying the most critical port locations where such a program could be implemented.
  - **Longshore Labor Contracts –** Since all the west coast ports are covered under the PMA-ILWU contract, they will be faced with the same kinds of labor work shift issues that impacted the PierPASS OffPeak program. The longshore labor contracts at the east and Gulf coast ports will also play a key role in determining the applicability of a similar program for representative ports on the east and Gulf coasts of the United States. The labor contracts for the these ports are negotiated between the United States Maritime Alliance (USMX) (an alliance of container carriers, MTOs and port associations on the east and Gulf coasts) and the International Longshoremen's Association (ILA) (the longshore labor union for the east and Gulf coast ports).

- **Market Conditions –** Market conditions played a key role in the performance of the PierPASS OffPeak program. According to Bruce Wargo, the presence of high-volume importers in Southern California, who operate distribution centers at night, was a key factor in the diversion of truck traffic from the day to night-time periods. The presence of large shippers/receivers with existing night-time warehousing/DC operations around other ports is expected to be a key factor determining the success of a similar program in achieving significant truck traffic diversions to night-time periods.

3.0 Market Analysis

This section presents the work conducted under Task 2 – Market Analysis of the study. The objective of this task was to profile key market conditions (success/relevance factors) that exist at the San Pedro Bay ports and compare with other regions of the United States to determine the relevance and/or impact the success of a peak pricing program similar to the PierPASS OffPeak program, This regional analysis was accomplished through the use of representative ports in the Pacific, Atlantic, and Gulf coasts and resulted in the development of a matrix detailing the performance of each port against the various success/relevance factors.

The key steps involved in accomplishing the objectives of the market analysis task included the following:

- Selection of representative ports on the Pacific, Atlantic, and Gulf coasts of the U.S. for the market analysis;
- Identification of a set of relevance/success factors for the performance analysis of each port; and
- Analysis of the relevance/success factors at each port, and development of a performance matrix profiling the performance of each port under each relevance/success factor with respect to the implementation of a peak pricing/extended gate operations program.

3.1 SELECTION OF REPRESENTATIVE PORTS

The selection of ports for the market analysis was based on considerations of the following important factors:

- **Magnitude of Containerized Trade/Traffic –** Serious landside transportation and environmental impacts of port activity are being experienced at some of the largest container ports in the U.S., such as the San Pedro Bay ports.
- **Geographic Location –** The geographic location of the port governs the types of global supply chains relying on the port, which might impact the success of a program similar to the PierPASS OffPeak program (for example, the types of shippers/importers and supply chain characteristics such as amount of rail intermodal traffic at the Port of Houston on the Gulf Coast are different compared to the San Pedro Bay ports).
- **Interport Competitiveness –** The success of a peak pricing program at a port could be impacted by interport competitiveness, particularly in the case of discretionary cargo which can divert to other ports due to an unfavorable price environment created by a peak-pricing program. This could also be an

issue for ports in close proximity to each other that also compete for local cargo (such as the Ports of Seattle and Tacoma);

- **Environmental and Congestion Issues –** The selection of ports was also governed by air quality/environmental issues, and truck traffic congestion at port terminals and on major highway corridors. For example, ports located in large metropolitan areas are under higher regulatory pressure to take action (such as implementation of extended gate operations, etc.) to mitigate the environmental and congestion impacts of port activity in the region.

Table 3.1 presents the representative ports in the Pacific, Atlantic, and Gulf coasts that have been selected for the market analysis. Due to constraints on the scope of this study, other important ports, particularly those in the Southeast United States (such as the Port of Savannah, Miami/Everglades, and Jacksonville) were not profiled as part of the market analysis. The strategic location and the rapid growth in container volumes at these ports in the future (fueled partly by the expansion of the Panama Canal) is expected to result in congestion and environmental issues being at the forefront of the challenges that these ports and their surrounding communities would potentially face in the future.

Table 3.1 Ports Selected for Market Analysis

Location	Port
Pacific Coast	Port of Seattle, Washington
Atlantic Coast	Port of New York and New Jersey
	Port of Virginia
Gulf Coast	Port of Houston, Texas

3.2 IDENTIFICATION OF RELEVANCE AND SUCCESS FACTORS

After the selection of the representative ports for the market analysis, the next step is the identification of the set of relevance and success factors to be analyzed in this task. For the purpose of this analysis, the relevance and success factors are defined as follows:

- Relevance Factors: Relevance factors are defined as those factors that make a peak pricing and extended gate operations program particularly relevant to consider for implementation at a port. These factors are identified by answering the key question "What factors or conditions present at a port justify the implementation of a peak pricing and extended gate operations program at a port"? These include, but may not be limited to, terminal and/or highway congestion; and air quality problems (nonattainment) in the region.

- Success Factors: In addition to relevance factors, it is also important to consider success factors at each port in the performance analysis. Success factors are defined as factors that will govern the successful implementation of a peak pricing/extended gate operations program as well as the success of the program in achieving its intended objectives related to mitigating congestion and environmental impacts, improving reliability of cargo movements, etc. Success factors are identified by answering the question "What factors or conditions at the port will ensure that a peak pricing and extended gate operations program is successful in meeting its intended objectives?." Examples of success factors include, but may not be limited to, shipper characteristics (types of cargo, night-time warehousing operations), carrier characteristics (owner-operators or employee drivers), and interport competitiveness issues.

The identification of the set of relevance and success factors to be considered for the Task 2 analysis relies on the results from the work conducted in Task 1, which involved a detailed review of the PierPASS OffPeak program at the San Pedro Bay ports.

Observed Factors at the San Pedro Bay Ports

Following are a set of key factors that were observed to have played an important role in leading to the implementation and success of the PierPASS OffPeak program:

Market Characteristics

The Task 1 effort involved comprehensive research on the key characteristics of the import and export market at the San Pedro Bay ports that were particularly important in ensuring the success of the PierPASS OffPeak program. According to Bruce Wargo, General Manager of PierPASS, Inc., the primary features of the Southern California market that played an important role in program success include:

- The presence of high-volume importers (big-box retailers such as Wal-Mart and Target) that own warehouses/DCs in the region that operate 24-hours a day;
- The presence of low-margin shippers exporting through the port, such as shippers of wastepaper products; and
- The presence of off-dock rail shipments, due to the ability to shift truck moves to off-dock terminals from day to night-time periods.

Degree of Midday Congestion

As seen from the Task 1 results, the degree of congestion observed at the ports, both in terms of the contribution of port trucking activity to congestion on major highways around the ports, such as the I-710, and congestion at terminal gates

and within the terminals, was a precursor to the legislative introduction of AB 2041, which led to the eventual implementation of the PierPASS OffPeak program. With the level of congestion and the need to add infrastructure capacity, the OffPeak program was implemented as a way of maximizing system capacity utilization without adding infrastructure capacity, which faced fierce opposition from community and environmental groups.

Air Quality/Environmental Issues

Another key reason why the ports receive so much regulatory attention is the environmental issues in the South Coast Air Basin (SCAB), where the ports are located. Air pollution is considered to be one of the most serious impacts of increased trade through the ports, and this is a particularly important issue in the region, because the SCAB region has some of the worst air quality in the nation. The U.S. Environmental Protection Agency (EPA) has designated the SCAB region as being in nonattainment of the National Ambient Air Quality Standards (NAAQS) for Ozone and Particulate Matter less than 2.5 microns ($PM_{2.5}$). The concentration of Diesel Particulate Matter (DPM), in particular, which is a primary pollutant from port-related sources due to their reliance on diesel fuel, has also been identified as a major public health concern in the region, since more than 70 percent of the potential cancer risk from toxic air contaminants, according to the California Air Resources Board (CARB), can be attributed to DPM.

The air quality issues in the region and the ports' contribution to the air pollution are mainly due to truck idling at terminal gates and congestion on the I-710 corridor. These key factors, coupled with the degree of congestion lead to the introduction of the AB 2041 legislation with the intention of developing a program that would relieve day-time congestion, and reduce air quality impacts from port activity.

Interport Competitiveness Factors

Interport competitiveness was a particularly important issue for the ports because of the close proximity of the ports. Since the ports are strong competitors in international container trade, the implementation of the program called for a collective collaboration among the MTOs at both the ports (through antitrust immunity under the Shipping Act of 1984). The implementation of the program by just one of the ports would have potentially resulted in some loss of container market to the other port (particularly for those shippers not having night-time warehousing/DC operations, and who are not bound by long-term contractual obligations with certain ocean carriers).

In the analysis of the success of the program at the ports, it is also important to pay attention to the competition faced by the ports from other U.S. west coast ports for Asia-Pacific container traffic. The San Pedro Bay ports account for the bulk of the west-coast container market (owing to the presence of extensive warehousing and distribution facilities and strong intermodal connections to the

eastern U.S.). Owing to their shear market dominance on the west-coast for international container traffic, the ports were able to implement a peak pricing program without fears of losing some of the market share to other ports on the west-coast.

Consequently, interport competitiveness, from the perspective of competition from neighboring ports competing for the market over the entire port market coverage area, would be an important factor to consider in analyzing the success of a peak pricing program.

Regulatory Issues

As discussed earlier in the report, legislative pressure through AB 2041 was the single most important factor that provided the political cover and impetus for the development and implementation of the PierPASS OffPeak program. In the absence of political pressure, competitive conditions between MTOs would have made it difficult for them to come together cooperatively to develop such a program structured primarily on changing their existing business models.

Institutional Issues

Institutional issues, such as longshore labor contracts between the Pacific Maritime Association (PMA) and the International Longshore and Warehouse Union (ILWU), had an impact on the OffPeak program. Most notably, the labor work shifts stipulated under the longshore labor contracts impacted the gate operating times for extended gate operations, as well as the truck operational characteristics under extended gate hours.

Among the set of factors discussed above, congestion and air quality and other environmental issues can be categorized as relevance factors (as these issues determine if a peak-pricing program would be relevant for implementation at a port), while market characteristics, interport competitiveness, regulatory, and institutional issues fall into the category of "success" factors (as these issues determine if a peak-pricing program, if implemented, would be successful at a port).

Table 3.2 lists the relevance and success factors that have been selected for the Task 2 analysis. Regulatory and Institutional issues, which have been excluded from the analysis in this task, will be discussed in Task 3 and Task 4 of the study.

Table 3.2 Selected Set of Relevance and Success Factors

Category	Type of Factor
Relevance Factors	Air Quality/Environmental Issues
	Congestion
Success Factors	Market Characteristics (Number of High-Volume Shippers, Volume of Low-Margin Shipments, Amount of Off-Dock Rail, etc.)
	Interport Competitiveness

3.3 SUMMARY OF FINDINGS FROM PORT MARKET ANALYSIS

As part of the Task 2 – Market Analysis effort, a detailed evaluation of conditions at each selected port was conducted with respect to the various relevance and success factors identified above. It is important to note that the objective of this analysis was not to assess the need for application of a peak pricing and extended gate operations program at these ports per se, but to demonstrate the approach used to analyze the identified set of relevance and success factors at these representative ports. Additionally, the results from this analysis also provide some useful insights into why, if so, are certain ports, based on some specific characteristics, observed to be particularly suitable to peak pricing programs compared to other ports. The results from the performance analysis of selected ports are presented in Appendix A. The following sections provide a summary of the key findings from the port market analysis:

- The results indicate that though some of the ports selected in the analysis are observed to have the conditions that would make a peak pricing/extended gate operations program relevant for future consideration, none of the ports replicate the exact same conditions/issues experienced at the San Pedro Bay ports. The results also corroborate the fact that like the San Pedro Bay ports, each of the selected ports is facing a unique set of conditions/issues, the implications of which, from a peak-pricing program perspective, might be unique to each port. This is an important inference, particularly from a policy development standpoint, potentially calling for considerations of different sets of criteria for implementation and success of the program based on conditions pertinent to each port. For example, a policy framework providing guidance on interport collaboration approaches to address port competitiveness issues in the implementation of port pricing programs might be relevant for consideration at some ports (those facing competition from adjacent ports) but not at others. Similarly, ports have differences in their institutional arrangements (for example, landlord versus owner-operator ports), and the policy considerations in implementing peak pricing programs will be different based on the type of port institutional arrangement.
- The results shed light on the differences in market characteristics at each of the ports that would be important to consider in analyzing the success of peak pricing programs. For example, consider the case of a port having a large share of its container market moving via off-dock rail and another port having a significant local container market dominated by high-volume shippers. These ports have very different market characteristics but both the ports have favorable market conditions for peak pricing programs. This is because truck trips associated with both these markets would be potentially favorable to diverting to night-time periods under a peak pricing program. Information on port market characteristics is also expected to be a key input

for the development of evaluation guidelines to analyze the success of port peak pricing programs.

- The results also elucidate the impacts of issues related to market dominance and interport competitiveness on the success of peak pricing programs at the selected ports. It is observed that large ports having a dominant share of the local container market (and with local market accounting for a large share of their total container market) are not too concerned about interport competition. Though discretionary cargo is a key market segment that these ports are vying for in the future, they perceive peak pricing programs to have a marginal impact on any potential losses in market share, either because majority of the cargo moves by on-dock rail, or the perception that truck trips associated with off-dock rail moves will be favorable to diverting to night and/or weekend time periods.

4.0 Institutional Analysis

This section presents the results of the work conducted as part of Task 3: Institutional Analysis of the study. Some of the key institutional issues related to the development of port congestion pricing and extended gate hours programs discussed in this section include the following:

- **Acceptance of the Program by Shippers –** This section presents a discussion of the experience of shippers with the PierPASS OffPeak program, the role of shipper organizations such as the Waterfront Coalition in contributing to the development of the PierPASS OffPeak program, as well as specific recommendations from the Waterfront Coalition on key issues to consider in the development of port peak pricing policies;
- **Role of Independent Drayage Truckers –** This section discusses the experience of independent drayage truckers with the PierPASS OffPeak program, and summarizes some of the key concerns of independent drayage truckers with regard to port peak pricing and extended gate operations;
- **Role of Labor –** This section discusses the role played by the ILWU in the implementation of the PierPASS OffPeak program, and some of the key longshore labor issues to be considered in the development of port peak pricing and extended gate operations programs; and
- **Night-Time Trucking and Noise Regulations –** This section provides a summary of existing night-time trucking and noise regulations in some of the cities with major port facilities in the U.S., which would serve as useful information for future analyses on the impacts of these regulations on the feasibility of peak pricing and extended gate operations at these ports.

4.1 ACCEPTANCE OF THE PROGRAM BY SHIPPERS[6]

Shipper Experience with the PierPASS OffPeak Program

A recent study performed by BST Associates for PierPASS Inc. conducted surveys of major importers and exporters to understand their perceptions about the PierPASS OffPeak program, and the impacts of the program on their business practices.[7] The key results from these surveys, which provide useful insights into shipper perceptions and concerns with port peak pricing and extended gate operations, are presented below:

[6] "Shippers", in the context of this discussion, include both importers and exporters.

[7] *PierPASS Review: Final Report,* BST Associates, July 9, 2008.

Importers

Some of the key responses from importers related to the OffPeak program included the following:

- Most of the importers interviewed in the study reported that the OffPeak program has worked for them in shifting containers to off-peak hours;
- Some of the importers reported to have changed the operating hours of their facilities in response to the OffPeak program;
- Importers expressed their concern about delays during the night time because of the concentration of truck trips before the start of the one-hour lunch break at 10:00 p.m. They would like the program to ensure better utilization of night gate times, in order to alleviate some of the delays associated with concentration of truck trips before 10:00 p.m.;
- A significant share of the importers interviewed felt that they were not being provided with as much information on use of revenues from the program as they had expected. Unlike a more traditional peak pricing approach, shippers were told that the fees associated with the OffPeak program were necessary to offset increased costs to the MTOs of night gate operations (union rules call for overtime wages in the night shift and MTOs contend that prior to the PierPASS OffPeak program, experience with night gates suggested that there would be low utilization and thus higher unit costs). Shippers want to ensure that the fees are set only to cover costs and not as a source of increased profit for the MTOs. Thus, transparency of information on program finances was reported to be a major concern;
- Importers also expressed concern with accounting issues associated with the program, particularly regarding accounting problems arising at night times, which resulted in significant delays for container pick-ups.

Exporters

Some of the key responses from exporters related to the OffPeak program included the following:

- One of the primary concerns of exporters with the OffPeak program was the impact of the TMF on the competitiveness of their products in the international market, particularly for low-value commodities such as agricultural products;
- Though the program offers the capability to by-pass the TMF by use of the night gates, many small exporters, unlike larger exporters, expressed their inability to use night gates within their existing operational practices, and the higher costs for them to change their operational practices in response to the program;
- Exporters felt that the TMF discriminates against exporters as it accounts for a much larger share of the value of the cargo compared to imports;

- Like importers, exporters also expressed their concern regarding transparency of information on program finances. The interview respondents indicated that not enough information was being shared on the use of fees from the program, and that more was being collected than needed to cover the costs of extended gate operations.

The recent surveys conducted by BST Associates obtained responses on existing facility hours of operation, as well as impacts of the OffPeak program on shipper facility hours of operation. Responses to the survey question "*Do Facilities have Off-Peak Hours?"* indicated that approximately 25 percent of the facilities already had off-peak hours of operation even before the start of the program. These facilities included warehouses, distribution centers, cross-dock facilities, and local storage yards excluding rail yards. It was also observed that existing off-peak hours of operation varied by the size of the facility in terms of number of TEUs handled, as indicated below:

- Fifteen percent of the facilities handling between 1 to 75 daily TEUs had off-peak gates;
- Nineteen percent of the facilities handling between 76 to 587 daily TEUs had off-peak gates; and
- Forty-one percent of the facilities handling more than 587 daily TEUs had off-peak gates.

Based on the surveys, it was inferred that large retailers, accounting for around 45 percent of the container volumes moving through the ports, were able to shift truck trips to the night gates of the OffPeak program more easily compared to smaller shippers, as many of them already had off-peak facility operations.

The impacts of the OffPeak program on existing facility hours of operation were analyzed based on responses to the survey question "*Did Facilities Change their Off-Peak Hours in Response to the OffPeak Program?."* Approximately 17 percent of the respondents to this question indicated that they established off-peak operations at their facilities (warehouses, distribution centers, cross-dock facilities, and local storage yards excluding rail yards) as a result of the program. As with the case of existing off-peak operations, a higher share of the larger facilities were able to establish off-peak hours as compared to smaller facilities, in response to the OffPeak program:

- Eleven percent of the facilities handling 1 to 75 daily TEUs established off-peak operations after the startup of the OffPeak program;
- Twelve percent of the facilities handling 76 to 587daily TEUs established off-peak operations after the startup of the OffPeak program; and
- Thirty percent of the facilities handling more than 587 daily TEUs established off-peak operations after the startup of the OffPeak program.

Based on the responses to the above two questions, it was observed that more than 70 percent of the large facilities (handling more than 587 daily TEUs) were

able to allow for cargo shifts to night times due to existing or induced off-peak operations.

The results from the surveys are consistent with the findings from the METRANS study, which reported that pre-existing off-peak facility operations allowed many of the consignees to shift truck moves to night gates at the start of the OffPeak program, and continued gradual increases in off-peak volume shares indicated continued adjustments and expansion of facility hours of operation to off-peak time periods.[8] According to the study, warehouses and distribution centers have modified their operations by adding second shift staff, including security, and allocating more space to off-peak storage as a result of the OffPeak program, while not enjoying the benefit like the MTOs of the TMF as a means of covering off-peak operating costs.

Role of Shipper Organizations

The Waterfront Coalition, an organization representing the interests of cargo owners (such as retailers, manufacturers, and agricultural producers) on issues impacting the movement of goods through deep water ports, has been actively involved in working with port industry stakeholders to address issues such as port congestion. A report by the Coalition on extended marine terminal gate hours clearly indicates its supportive stance with respect to expanding hours of operation at marine terminal gates.[9] According to the report:

- "Waterfront Coalition understands that day time truck traffic congestion remains a problem for the communities surrounding the ports";
- "Members of the Waterfront Coalition believe that moving cargo at night will improve the productivity of the transportation system and the economic viability of owner-operator truckers";
- "Extended hour gates complement the ongoing technological advancements that terminal operators are now installing"; and
- "Extended gates are an important element of terminal and port efforts to improve the infrastructure required to meet the growing international trade."

However, the Waterfront Coalition's support for extended gate operations is interlinked with ensuring that its members can take advantage of operational changes at marine terminals within their current and future business models. The Coalition's active participation in exploring the potential for extended gate hours at marine terminals as a congestion mitigation strategy began in 2001

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[8] *Extended Gate Operations at the Ports of Los Angeles and Long Beach, A Preliminary Assessment*, April 2007.

[9] *Written Comments of the Waterfront Coalition, Assembly Select Committee on California Ports Hearing, Extended Marine Terminal Gate Hours,* Waterfront Coalition, January 23, 2004.

through its efforts to initiate a "pilot demonstration project" for extended gate hours in cooperation with the MTOs at the San Pedro Bay ports. This effort, lasting a period of more than two years, was instrumental in bringing together key port industry stakeholders and streamlining their focus towards actively considering extended gate hours at the marine terminals at the San Pedro Bay ports. Particularly notable were the Coalition's efforts in educating shippers and drayage truckers – through an educational session in August 2003, cosponsored by the ports and the Pacific Merchant Shipping Association – on the business benefits of using extended gates at marine terminals. Subsequently, the Coalition played an important role in facilitating negotiations between shippers and MTOs during the development of the PierPASS OffPeak program.

The Waterfront Coalition's stance with respect to encouraging the development of policies for port peak pricing and extended gate operations include the following:

- **Opposition to any kind of government imposed fees at ports**: The Coalition is against any kind of government imposed fees at ports. Some of the key factors contributing to this stance include the following:
  - Uncertainty on the use of revenues generated from government imposed fees;
  - Belief that government imposed fee mechanisms would not provide the means for inducing MTOs to keep terminals open during off-peak periods on a coordinated and consistent basis;
  - The likelihood of government imposed fees to remain in place in perpetuity and become a continuous revenue generating source; and
  - The likelihood of government imposed fees to impose recordkeeping burdens potentially difficult for shippers to handle.
- **Outreach to stakeholders other than cargo owners:** The Coalition believes that ensuring the success of a port peak pricing and extended gate operations program would entail outreach not just to cargo owners alone, but also to other parties in the port supply chain. These parties include, but may not be limited to, logistics divisions of steamship lines, freight forwarders, and consolidators. Owing to the increasing use of Store Door Delivery processes in international port container supply chains, in which cargo owners pay third party logistics service providers (3PLs such as steamship line logistics divisions and freight forwarders) to manage their inbound transportation, quite a large proportion of containers dispatched through ports are increasingly being controlled by 3PLs. While some cargo owners work closely with their 3PLs, others may completely transfer responsibilities to their 3PLs to manage the entire international container move from the foreign factory location to the U.S. warehouse or retail facility. Clearly, in these instances, conducting outreach to 3PLs would be critical to i) gaining the support of these parties in the implementation of port pricing and extended

gate operations programs, ii) engaging these parties in making necessary operational changes, if needed (such as establishment of off-peak facility operations), and iii) ensuring container diversions to off-peak time periods.

4.2 ROLE OF INDEPENDENT DRAYAGE TRUCKERS

Port terminal and highway congestion is a key issue for the port drayage trucking industry. Drayage truckers have long complained about the negative impacts of terminal and highway congestion on their ability to maximize daily income from port drayage operations due to constraints on number of daily drayage truck trips (drayage truckers are typically paid per individual drayage trip, which means that higher daily number of drayage truck trips would result in higher daily income).

The METRANS study reported the experience of drayage truckers with the PierPASS OffPeak program, based on the results of three surveys (two of them conducted by the California Trucking Association – CTA, and one by PierPASS Inc.). The study reported that the OffPeak program was not favorable to actors in the port supply chain without market power, particularly the independent drayage truckers. The program was implemented without consulting the drayage trucking industry, despite its obvious impacts on this industry segment. According to the study, some of the key factors that contributed to making the program unfavorable with the drayage trucking industry included the following:

- The 5:00 to 6:00 p.m. gap (between the end of the day shift and the start of the night shift), and 10:00 to 11:00 p.m. gap (due to longshore labor lunch break during the night shift) in operations, in conjunction with the smaller size of the evening labor force led to additional delays for truckers;
- Drayage truckers were unable to strike a deal with the MTOs to claim any share of the revenues from the OffPeak program.

The Waterfront Coalition report to the Assembly Select Committee on California Ports on perceptions regarding extended marine terminal gate hours specifically states that "*Any effort to move forward with extended terminal gate hours must also gain the support of the harbor drayage industry*.**"**[10] According to this report, extending marine terminal gate operating hours cannot bear fruit unless port drayage truckers can take advantage of night gates. The Waterfront Coalition, through involvement in an extended marine terminal gate hours pilot project, determined that certain members of the drayage trucking industry are supportive of extended gate hours, based on the understanding that night gates offer the potential to perform more drayage moves in a given day, thereby resulting in higher revenues per shift. However, the report states that other

[10] *Written Comments of the Waterfront Coalition, Assembly Select Committee on California Ports Hearing, Extended Marine Terminal Gate Hours,* Waterfront Coalition, January 2004.

members of the drayage trucking industry remain much more apprehensive about extended gate hours at marine terminals, owing to the following concerns:

- If extended gate operational programs do not offer the same hours of operation at all the marine terminal gates, the program would not be in the best interest of drayage truckers; and
- Some drayage truckers have expressed reluctance to participate in extended gate operations programs due to the belief that terminals would not be able to offer full-service staffing during extended gate operations, thereby contributing to increased delays for truckers.

As part of the Task 3 effort, CS conducted an interview with the Owner Operator Independent Drivers Association (OOIDA). OOIDA is an association representing the interests of independent owner-operators and professional drivers on all issues affecting independent truckers. This interview process obtained answers to questions related to the perceptions of OOIDA on port congestion pricing and extended gate operational programs as they relate to the business impacts on drayage truckers, as well as the Federal involvement in developing port congestion pricing policies. The OOIDA has expressed strong support for port congestion pricing and extended gate operations, owing to their positive impacts related to congestion mitigation, and increased earning potential for independent truckers.

Some of the specific concerns expressed by OOIDA that they would like to be addressed in port congestion pricing programs include the following:

- The OOIDA has expressed an interest in supporting a Federal policy framework for port peak pricing and extended gate operations, particularly in the case where the policy framework also requires ports to grant exceptions to drayage truckers on certain port-related fees due to their willingness to participate in night-time gate moves. The OOIDA specifically cited the example of some ports having their own port security credentialing programs in addition to the Transportation Worker Identification Credential (TWIC) program administered by the Transportation Security Administration (TSA) that are resulting in additional costs to drayage truckers, which the OOIDA would like to be waived for truckers as part of their willingness to participate in port peak pricing programs.
- In order for port peak pricing and extended gate operations programs to be favorable to drayage truckers, the OOIDA would like a Federal policy framework to specifically consider requiring all marine terminals at a port to participate in the program (as opposed to only a few terminals participating in the program), since drayage truckers typically have significant interterminal container pick-up and delivery activity, which is essential to sustaining their current business practices.
- The Federal policy framework should not impose fees at ports, but act more as a policy guidance that ports and other stakeholders can use to analyze the

feasibility and determine the potential for implementation of port peak pricing programs. In other words, the OOIDA is against the Federal government directly imposing peak-period fees at ports.

4.3 ROLE OF LABOR

Longshore labor unions are an important component of port institutional frameworks, and their operational practices and business interests are key factors to consider in the development of port peak pricing and extended gate operational programs. The International Longshore and Warehouse Union (ILWU) on the west coast played an important role in the development of the PierPASS OffPeak program. Realizing the benefits of extended gate operations at the San Pedro Bay ports in terms of generating additional longshore labor jobs, the ILWU provided its full support for the OffPeak program. The ILWU, however, was able to protect its business interests through provisions in the existing longshore labor contract with the Pacific Maritime Association (PMA) for appropriate labor shift times and wage rates for night gate operations. The west coast labor wage rates are higher for night-time work shifts (evening shift – 6:00 p.m. to 3:00 a.m., and hoot owl shift – 3:00 a.m. to 8:00 a.m.) compared to the day time shift (8 am to 5:00 p.m.). Under the current labor contract, which is under renewal at the time of this writing, workers are entitled to 1.33 times the day time hourly rate for working night shifts. As indicated in the Task 1 report, existing longshore labor shift times were the determinants of the shift times of extended gate operations in the OffPeak program. The program did not include gate operations for the hoot owl labor work shifts (3:00 a.m. to 8:00 a.m.).

As seen from the wage rate information above, extended gate operations result in significant incremental costs for MTOs. According to the METRANS study, night-time longshore labor costs are the single main reason why MTOs do not typically accommodate container pick-up and delivery outside of day time gate hours. This was also observed in the case of the PierPASS OffPeak program, wherein MTOs came together to create a private sector solution so that they could have control over the fee revenues to defray the additional costs associated with extended gate operations.

The longshore labor conditions on the east coast, in terms of the labor work shift times and wage rates, are different compared to the west coast, and are derived from a different labor contract. The International Longshoreman's Association (ILA) is the labor union for the Atlantic, South Atlantic, and Gulf coasts of the U.S, which stipulates labor work rules for ports on these coasts, based on a labor contract with the United States Maritime Alliance and the Carriers Container Council. Consequently, any efforts towards implementing port peak pricing and extended gate operations at ports on the Atlantic or Gulf coasts would entail looking at the existing ILA labor contract to determine work shifts and labor wage rates, which are key inputs to estimating extended gate operations costs and shift times.

Both the ILWU and the ILA are expected to support future efforts to develop Federal port pricing policies and implement individual pricing programs at specific ports, as long as they are able to protect their business interests through existing labor contracts. No specific concerns have been raised by the ILWU thus far related to the PierPASS OffPeak program. Both the ILWU and the ILA could potentially contribute to creating more favorable work shift conditions at ports favorable to port peak pricing and extended gate operations programs, and avoiding some of the constraints experienced with the PierPASS OffPeak program arising due to existing labor work shift timeframes (such as queuing of trucks before the start of the evening shift at 6:00 p.m., and underutilization of longshore labor in the 11:00 p.m. to 3:00 a.m. time period). Identifying the process involved in engaging the labor unions in making labor work shift changes at ports that are more compatible with the requirements of port pricing and extended gate operations programs is, however, outside the scope of the current study.

4.4 NIGHT-TIME TRUCKING AND NOISE REGULATIONS

This section documents night-time noise and truck operating restrictions in some of the cities with major ports in the U.S. This information will be useful in assessing the feasibility of port peak pricing/extended gate operations programs from the perspective of night-time trucking activity restrictions stipulated by local city ordinances. Ordinances for the following cities are reviewed in this section:

- Seattle, Washington;
- Houston, Texas;
- New York, New York;
- Norfolk, Virginia;
- Charleston, South Carolina; and
- Oakland, California.

Truck Restrictions

Currently none of the cities listed above have imposed any specific restrictions for night-time trucking operations. Restrictions were only found during daytime for some roadway segments of the designated truck routes in Manhattan and Brooklyn, mainly from a peak-period congestion standpoint.

Noise Restrictions

All the cities listed above have ordinances on night-time noise restrictions. However the threshold for maximum sound levels, measured in decibels (dBA), vary among each of them. A detailed discussion on quantitative night-time sound level thresholds for each of these cities is presented in Appendix B.

Though currently no restrictions exist in the cities analyzed above for truck traveling during nighttime on the roadway system, it is likely that residential areas located in proximity to the ports or in truck corridors accessing the ports can request the application of the City noise ordinances to reduce or limit the nuisance of the noise produced by trucks traveling at night, which could potentially have implications for night-time trucking operations resulting from peak pricing and extended gate hours programs.

5.0 Policy and Program Considerations

This section presents a discussion of key issues to be considered in the development of public policies targeted towards the implementation of port peak pricing and extended gate operations programs. The initial sections provide background information on existing Federal policies/programs related to congestion pricing to understand where port peak pricing programs can potentially fit within the existing Federal framework, and a discussion of other existing Federal policies/regulations that may have applicability for implementation of peak pricing programs at ports. Subsequent sections provide a discussion on legal issues, if any, associated with the implementation of port user fees, the possible role of the Federal government in the implementation of port peak pricing programs, as well as provide considerations for key elements constituting port peak pricing program and evaluation guidelines. These considerations include major factors such as the identification and selection of ports for peak pricing and extended gate operations, developing appropriate port pricing program governance structures, and issues related to the maximization of private and public sector benefits from port peak pricing programs.

The specific topics covered in this discussion include the following:

- Existing Federal Congestion Pricing Programs;
- Existing Federal Port Related Policies;
- Legal Issues Pertaining to Port User Fees; and
- Considerations for Port Peak Pricing Program and Evaluation Guidelines.

5.1 EXISTING FEDERAL CONGESTION PRICING PROGRAMS

The Federal government has been playing an increasingly active role in the realm of congestion pricing. This section discusses some of the pertinent congestion pricing programs and initiatives undertaken by the Federal government, which include the Value Pricing Pilot Program, the U.S. Department of Transportation (U.S. DOT) Congestion Relief Initiative, and an Airport Congestion Pricing initiative. Though these programs have not been applied to ports (FHWA's Value Pricing program focuses on highway congestion), a discussion of these programs is useful in understanding the Federal role in congestion pricing, and

where within the existing Federal framework there may be opportunity for a port peak pricing program.

Value Pricing Pilot Program

Value pricing strategies to address highway congestion were first addressed in the Intermodal Surface Transportation Efficiency Act (ISTEA) in 1991 through the authorization of the Congestion Pricing Pilot Program. This program was renewed as the Value Pricing Pilot Program with the passage of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). The Value Pricing Pilot Program (VPP), a provision within the Federal-aid Highway Program to support congestion pricing, was authorized to create a Federal mechanism to encourage the implementation and evaluation of congestion pricing pilot projects to manage congestion on highways through tolling and other innovative pricing approaches that do not involve tolls, such as mileage-based charges for insurance, taxes, leasing fees, and car sharing. This is the only Federal discretionary grant program that provides funding to support planning/feasibility studies, and implementation of highway congestion pricing pilot projects, and is administered by the FHWA Office of Operations under Tolling and Pricing Programs. The VPP program has been in operation for more than 10 years, under which many innovative highway pricing projects have been successfully implemented.

A total of $59 million for Fiscal Years (FY) 2005 to 2009 were provided by SAFETEA-LU for the VPP program, of which $11 million was authorized for FY 2005 and $12 million for each of the FYs 2006 to 2009. Value pricing projects not involving highway tolls receive $3 million out of the authorized funds described above for each of the FYs 2006 through 2009. Funds allocated to the VPP program can be utilized for pre-implementation studies and/or to pay for the implementation costs associated with value pricing projects. Costs eligible for reimbursement include costs of planning for, setting up, managing, operating, monitoring, evaluating, and reporting on local value pricing pilot projects.

U.S. DOT's Urban Partnership Agreements

The U.S. DOT's National Strategy to Reduce Congestion on America's Transportation Network, otherwise known as the Congestion Initiative, provides a streamlined process for the Department to focus the efforts of its many programs, including the VPP, towards the overall goal of relieving congestion. The initiative calls for the Department to enter into Urban Partnership Agreements (UPA) with selected cities, pursuant to their commitment to implement broad congestion pricing or variable toll demonstrations. Cities selected to participate in the UPA are required to aggressively adopt four complementary and synergistic strategies to relieve congestion, which include Tolling, Transit, Telecommuting, and Technology (also referred to as the 4Ts). In August 2007, the following cities were selected for the UPA – Miami, Minneapolis/St. Paul, New York City, San Francisco, and Seattle, and a total of

$853 million in Federal discretionary grants were announced by the Secretary of Transportation, Mary Peters, for these partners for congestion relief initiatives. Through the Congestion Initiative UPA program, the Department continues to work with States and cities across the nation to use tolling and other pricing approaches to reduce congestion.

Airport Congestion Pricing Policy Proposal

In January 2008, U.S. DOT submitted a proposal to the Airports Council International-North America (ACI-NA) to address congestion and delays at airports caused by increased commercial and passenger flight traffic. The new policy, outlined in a Notice of Proposed Rulemaking (NPRM), calls for the amendment of Federal Aviation Administration's (FAA) existing airport rate policies through the implementation of rates based on a congestion pricing approach. The rationale for the proposed policy is that the imposition of airport rates at overcrowded airports based on congestion pricing would encourage airlines to spread their flights more evenly throughout the day, thereby increasing system capacity and reducing air traffic delays. Once finalized, the proposed policy will allow congested airports to shift from the decades-old practice of levying aircraft landing fees based on aircraft weight to a more flexible rate structure based on congestion pricing, such as varying the rates by time of day and volume of traffic. U.S. DOT's proposal was welcome by the ACI-NA particularly because it did not involve the imposition of a "congestion fee" but rather gave flexibility to the airports to set rates or adopt other congestion programs that would best fit their specific circumstances.

As seen from the above discussion, the Federal government has played an important role in encouraging and initiating the implementation of congestion pricing programs in the highway and air travel modes. There are no existing Federal policies and programs that specifically target port congestion pricing strategies. However, with Federal involvement in congestion pricing programs for other modes, a Federal peak pricing policy framework for ports can be incorporated into the existing FHWA framework, such as the Value Pilot Pricing Program.

5.2 EXISTING FEDERAL PORT RELATED POLICIES

This section presents a discussion of existing Federal port related policies that would be important to discuss from the perspective of understanding existing Federal role and involvement in the port sector. Specifically, Federal policies addressing port authority and marine terminal agreements are discussed, which can serve as potentially important frameworks to ensure the feasibility of port peak pricing programs.

The Federal Maritime Commission (FMC) regulates ocean carriers, ports and maritime terminal operators (MTO) under the Shipping Act of 1984, most recently amended by the Ocean Shipping Reform Act of 1998 (OSRA). One of

the key elements of this act are the permitting of ocean carriers and ports/MTOs to engage in discussions and agreements involving rates, services, capacity, and practices in U.S. trades, which might otherwise run afoul of U.S. antitrust laws. If such activities by ocean carriers and ports/MTOs are undertaken under the auspices of agreements filed with and approved by the FMC, they are immune from antitrust laws. However, these activities will be subject to the restrictions stipulated under OSRA.

The framework stipulated under OSRA for port authority and MTO agreements ensures that ports and MTOs enjoy antitrust immunity while engaging in discussions and agreements related to, but not limited to, labor practices, infrastructure development, fees and tariffs, and environmental policy. Such agreements can also be created at the regional level involving several ports such as the Gulf Seaports Marine Terminal Conference which congregates 20 public ports in the Gulf of Mexico.

Among the programs or strategies that ports have implemented supported by their antitrust immunity through the creation of agreements include:

- **PierPASS OffPeak Program.** FMC granted authority to MTOs at the Ports of Log Angeles and Long Beach to engage in discussions as part of the West Coast Marine Terminal Operators Discussion Agreement (WCMTO) to create the OffPeak program, as part of which MTOs jointly assess a TMF on Beneficial Cargo Owners (BCO) moving cargo through the ports at peak hours of operation.
- **Port Infrastructure and Environmental Programs.** The San Pedro Bay ports released in June 2006 a coordinated plan called The San Pedro Bay Clean Air Act Action Plan outlining the measures they will undertake to diminish pollution emissions from port related activities. In January, 2008, the harbor commissioners at the San Pedro Bay ports approved an Infrastructure Cargo Fee (ICF) of $15 to be assessed, beginning January 1, 2009, on every 20-foot equivalent (TEU) cargo container entering or leaving the marine terminals at either port by truck or train, which would generate around $1.4 billion in revenue to be used for a host of transportation projects to improve traffic flow and air quality in the harbor area. However, at the time of this writing, the Port of Long Beach Board of Harbor Commissioners has decided to delay the implementation of the ICF by at least 6 months, at which time it is proposed to assess an initial fee of $6 per TEU instead of the originally proposed fee of $15 per TEU. The Port of Los Angeles Board of Harbor Commissioners, in the coming weeks, is expected to approve a similar 6 month delay in the implementation of the ICF.
- **West Coast Labor Issues.** The Northwest Marine Terminal Association and the California Association of Port Authorities have an interconference agreement to confer, discuss, and make recommendations on rates and charges, and consistency of labor practices.

- **Security Practices and Fees.** The West Coast Discussion Agreement has allowed marine terminal operators to work together in implementing port wide security programs such as the use of radio frequency identification (RFID) tags on motor carriers.
- **Uniformity of rules and regulations.** The Gulf Seaports Marine Terminal Conference gathers 20 public ports in the Gulf of Mexico and enables its members to consult with each other and establish terminal minimum rates and charges, as well as uniform rules and regulations. Any member may decide to take independent action by simply notifying the Conference members.

5.3 LEGAL ISSUES PERTAINING TO PORT USER FEES

This section examines the laws and regulations that might obstruct the implementation of user fees at the U.S. ports. The Lowenthal Bill (SB 974), which proposed to levy a $30 container fee on each shipping container (TEU) processed through the San Pedro Bay ports and the Port of Oakland was highly controversial among port authorities and shippers based on the argument that the fee violated the Interstate Commerce Clause. The Interstate Commerce Clause Article I, Section 8, Clause 3 of the United States Constitution empowers the United States Congress "to regulate Commerce with foreign Nations, and among the several States, and with the Indian Tribes." According to this clause, only the Federal government has the power "to lay and collect taxes, duties, imposts, and excises" in order to "regulate commerce with foreign nations, and among the several states, and with the Indian tribes."

Since the imposition of a container fee could create barriers to commerce, it was argued that the states of Alaska and Hawaii had a valid judicial grievance with the State of California, given the economic dependence of these states on the San Pedro Bay ports and the Port of Oakland. However, according to the Legislative Counsel, while the commerce clause grants to the Federal government the power to regulate commerce, the states retain the power to legislate in absence of Federal legislation "in matters of local concern, even though the legislation may indirectly affect interstate commerce." This means that state governments have the ability to impose fees at ports in their jurisdiction, if necessary, without violating the Commerce Clause. On July 15, 2008, SB 974, after months of negotiations, passed the California State Assembly.

The next question would be whether ports under different operating schemes (Landlord versus Owner-Operator ports) and under different government levels have the ability to impose fees, as the states do, without violating the Interstate Commerce Clause. As discussed earlier, the Shipping Act of 1984, amended in 1998 as OSRA, allows ports and MTOs to establish agreements, including, but not limited to, labor practices, tariffs, railroad practices, among others; consequently, ports profit from the antitrust immunity and do not necessarily need to comply with the Commerce Clause.

The West Coast Agreement signed in 2003 among the ports of California, Oregon, and Washington states that:

> "Article II- The parties are authorized to exchange information, discuss, agree upon, establish, revise, maintain, cancel and enforce terminal rates (excluding the inland division or inland portion of through rates), charges, rules, regulations, procedures, practices, terms and conditions relating to cargo moving in the foreign commerce of the United States."

The West Coast Agreement is a type of marine terminal agreement that is a commonly used tool to reach ports specific purposes. In addition to the establishment of marine terminal agreements, ports are allowed to charge user fees. The Water Resources Development Act (WRDA) of 1986 enables port authorities to charge user fees for the services they provide. This type of fee is strongly supported by port authorities on a project basis to fund its security, dredging, or landside access needs.[11] A recent example of port user fee is the implementation of the Infrastructure Cargo Fee (ICF) which will be levied at the San Pedro Bay ports beginning January 1, 2009. The purpose of the ICF is to generate $1.4 billion to finance multiple transportation projects. The new fee will be assessed on every loaded 20-foot equivalent (TEU) cargo container entering or leaving any terminal at either port by truck or train. Through the establishment of marine terminal agreements ports have the autonomy of setting fees as they consider pertinent.

Also, research on international trade agreements (ITA) and any restrictions posed by these agreements on port pricing issues conducted as part of this project indicates that ITAs do not restrict application of user fees at ports, since these fees are levied for services rendered by the ports. Any restrictions from ITAs on pricing at ports would focus on taxes on cargo movements through ports, which is not a pertinent issue for the current discussion on port peak pricing programs.

5.4 CONSIDERATIONS FOR PORT PEAK PRICING PROGRAM AND EVALUATION GUIDELINES

Port peak pricing program and evaluation guidelines should consider the following key issues:

- Federal role in port peak pricing programs;
- Factors impacting the selection of ports for peak pricing programs;
- Peak pricing program governance structures;

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[11] Testimony of Jean Godwin on Before the House Transportation and Infrastructure Subcommittee on Water Resources and the Environment on November 20, 2003. Available at http://www.aapa-ports.org/Issues/content.cfm?ItemNumber=1043.

- Maximizing public benefits from private sector implemented programs

Federal Role in Port Peak Pricing Programs

Understanding the Federal role in future port peak pricing programs would be critical to the development of Federal port peak pricing program and evaluation guidelines. Owing to the critical role played by the nation's seaports in contributing to the state and national economies, ports already rely on a host of Federal (and state) government funds to meet their capital improvement (including maintenance dredging), environmental mitigation, and security needs. However, when it comes to pricing issues, past experience has shown that ports are generally wary about any direct Federal (and state) government involvement. This was observed in the case of the PierPASS program, wherein the proposed state government legislation (AB 2041) requiring the San Pedro Bay ports to impose fees on peak-period cargo movements was opposed by the ports and the MTOs. The Federal government imposed Harbor Maintenance Tax (HMT), which is an ad valorem tax levied on imports through seaports, continues to face opposition from the ports on the grounds of being a tax (as opposed to a user fee for services performed by the ports) that is unconstitutional, and creates undue competitive advantages for international ports (such as in Canada) in international trade. Some of the key factors that have contributed to port opposition to government involvement in pricing issues include interport competitiveness (ports are wary about the impacts of government imposed fees and tariffs on market diversion to competing ports), and opposition from port private sector entities such as MTOs to public sector imposition of fees at ports.

Ports would tend to support Federal programs related to port pricing if these programs, in lieu of imposing fees, provide ports with the flexibility to devise pricing strategies, if applicable, that meet their specific needs based on their operational and institutional frameworks, while at the same time provide policy guidance on program implementation issues such as governance structure and how to design programs that maximize public sector benefits.

Considerations for Federal involvement in port peak pricing programs include, but may not be limited to, the following:

- Grants to state governments as part of an expanded VPP program to pursue port peak pricing programs: As part of an expanded VPP program encompassing port peak pricing programs, the Federal government would provide grants to state (and local) governments to pursue pilot port peak pricing programs.
- Port peak pricing policy guidance to state governments: A Federal port pricing policy framework could be used by state governments to obtain guidance on the evaluation of the potential for pricing programs at ports in their jurisdiction. This could be particularly relevant for owner-operator ports that are chartered by state government.

Factors Impacting the Selection of Ports for Peak Pricing Programs

Port peak pricing program and evaluation guidelines should provide consideration of the factors impacting the selection of ports for future implementation of peak pricing and extended gate operations. These factors were determined from an in-depth analysis of the PierPASS OffPeak program conducted as part of this project. As discussed in the Task 2 report, these factors can be broadly categorized into relevance and success factors. Relevance factors are associated with conditions in and around ports that make peak pricing and extended gate operations programs relevant for implementation, while success factors represent conditions in and around ports that would impact the ability of a peak pricing program in meeting its intended objectives. Based on the research conducted in Tasks 1 and 2, the following relevance and success factors should be considered while evaluating the applicability and feasibility of peak pricing programs at specific ports:

- **Relevance Factors –** Terminal and Highway Congestion; Air Quality/ Environmental Issues; and Community Issues; and
- **Success Factors –** Regulatory Environment; Market Characteristics; and Interport Competitiveness.

Relevance Factors

The following sections present a discussion of the specific kinds of issues to pay attention to under each relevance factor.

Terminal and Highway Congestion

The degree of congestion observed in and around the ports, both in terms of the contribution of port trucking activity to congestion on major highways around the ports, and congestion at terminal gates and within the terminals, are important factors determining the applicability of peak pricing and extended gate operations programs. If determined applicable, a peak pricing program could potentially offer significant benefits in terms of maximizing system capacity utilization and relieving peak-period congestion, without adding infrastructure capacity which might not only be faced with community opposition but also be cost-prohibitive to implement. The kinds of policy questions that would need to be answered in the analysis of this factor include the following:

- Is port trucking activity contributing disproportionately to peak-period congestion on major highways surrounding the port? Answering this question would involve looking at the port truck shares of total vehicular traffic during the peak periods, as well as peak-period level-of-service parameters such as volume-capacity (V-C) ratios and/or speeds.
- Are there specific hours of the day when there is significant truck idling and congestion at the gates of marine terminals?

- Are there specific hours of the day when there is significant truck idling and congestion inside the marine terminals that is impacting the efficiency of terminal container pick-up and delivery operations?

Air Quality/Environmental Issues

The air quality issues in the region where the port is located, and the relative contribution of the port (compared to other sources of air pollution) to air quality problems in the region, particularly due to truck idling at terminal gates and inside the terminals, and/or truck idling on major corridors surrounding the port would be important factors to consider in evaluating the applicability of peak pricing programs. The kinds of policy questions that would need to be answered in the analysis of this factor include the following:

- Is the region in nonattainment of the U.S. Environmental Protection Agency's National Ambient Air Quality Standards (NAAQS) for criteria pollutants, especially Diesel Particulate Matter (DPM), which is a major pollutant from trucks?
- What is the relative contribution of port trucking activity to air pollution for each pollutant type, compared to other port and nonport related sources?
- How much does truck idling at terminal gates, inside the terminals and on surrounding highways contribute to incremental pollutant emissions in the region?

Community Issues

Community perceptions in the region regarding international trade activity through the port and its impacts related to congestion, environmental issues, and the economy play a key role in determining the favorability towards capacity expansion at the ports, as well as the types of infrastructure and operational improvements at port terminals to increase capacity. As was observed in Southern California, the San Pedro Bay ports have not been able to initiate a major infrastructure development project for the past 6 years due to community opposition. Peak pricing and extended gate operations programs would be effective operational strategies in lieu of infrastructure improvements to increase system capacity and mitigate congestion in cases where community opposition poses a major constraint to the implementation of port infrastructure capacity improvements. Key policy questions that would need to be answered in the analysis of this factor include the following:

- What are the perceptions of the community in the region on trade activity through the port, and its impacts on congestion, and air quality?
- Is community opposition a major constraint in the region for the implementation of port infrastructure capacity improvement projects?

Success Factors

Regulatory Issues

Regulatory issues could potentially impact the success of a peak pricing program at a port. Noise regulations are an important issue to consider in this regard. For example, local ordinances/regulations related to night-time trucking restrictions due to noise considerations in the region where the port is located could have a prohibitive impact on the implementation of a peak pricing and extended gate operations program. Other regulatory issues that would potentially need to be considered include land use regulations related to night time warehousing operations. Addressing these regulatory constraints would be needed if a peak pricing program is determined to be applicable at a port facing these constraints. Some of the key policy questions that would need to be answered in the analysis of this factor include the following:

- Are there local ordinances/regulations in the region where the port is located on night time trucking restrictions; and
- Are there local land use regulations in the region on night time facility operating restrictions?

Market Characteristics

Market characteristics at a port will have a direct impact on the success of a peak pricing program, by determining the favorability of diversion of shipments from peak to off-peak time periods. Based on the research conducted in Tasks 1 and 2, the following types of markets would be particularly favorable to using night gates as part of a peak pricing program:

- High-volume importers (big-box retailers such as Wal-Mart and Target) that own warehouses/DCs in the region that operate 24-hours a day;
- Shippers of low-margin commodities such as wastepaper products; and
- Off-dock rail shipments, due to the ability to shift truck moves to off-dock terminals from day-to-night time periods.

Some of the key policy questions that would need to be answered in the analysis of this factor include the following:

- What share of the total cargo market at the port is accounted for by high-volume importers?
- What share of the total cargo market is accounted for by low-margin shipments?
- What share of the total container market is intermodal, and what share of the intermodal market moves via off-dock rail?

Interport Competitiveness Factors

Interport competitiveness, not just from the perspective of competition from neighboring ports, but also from ports competing for the market over the entire port market coverage area, would be an important factor to consider in analyzing the success of a peak pricing program. For example, all the West Coast ports, including the ports of Vancouver (British Columbia, Canada), Seattle, Tacoma,

Portland, Oakland, and the newly developed Canadian port of Prince Rupert compete with the San Pedro Bay ports for a share of the discretionary Asia-Pacific container market. Future port developments on the west coast, such as the Port of Punta Colonet on the west coast of Mexico, are also expected to vie for a share of the Asia Pacific container market with other west coast ports in the future. Thus, the competition for the discretionary cargo market, as observed on the west coast, may not be limited to close geographic proximities between ports, but over a wider geographic area.

Interport competitiveness was a particularly important issue for the San Pedro Bay ports because of the close proximity of the ports. Since the ports are strong competitors in international container trade, the implementation of the program called for a collective collaboration among the MTOs at both the ports (through antitrust immunity under the Shipping Act of 1984). The implementation of the program by just one of the ports would have potentially resulted in some loss of container market to the other port (particularly for those shippers not having night-time warehousing/DC operations, and who are not bound by long-term contractual obligations with certain ocean carriers).

In the analysis of the success of the program at a port, it would also be important to pay attention to the competition faced by the port from other ports not in the immediate vicinity of port, with regard to discretionary cargo. Though this was not particularly an issue in Southern California due to the market dominance of the ports in the Asia Pacific container trade (owing to the presence of extensive transloading, and warehousing/distribution facilities and strong intermodal connections to the eastern U.S.), this might be an important issue for consideration at other ports.

Some of the key policy questions to address in the analysis of interport competitiveness issues include the following:

- Are there any neighboring ports from which the port faces a strong competition for local as well as discretionary cargo? If so, what is the relative market share of the port compared to these competing ports?
- What is the port's market share for discretionary cargo?
- Are there any other ports (in the U.S. and internationally such as Canada) from which the port faces a strong competition for discretionary cargo?

Institutional Issues

Institutional issues, such as longshore labor contracts between the Pacific Maritime Association (PMA) and the International Longshore and Warehouse Union (ILWU), had a direct impact on the PierPASS OffPeak program. Most notably, the labor work shifts stipulated under the longshore labor contracts impacted the gate operating times for extended gate operations, as well as the truck operational characteristics observed during extended gate operational times (truck queuing problem in the extended gate operating period observed in the PierPASS program was a result of the one hour lag between the end of the

peak period gate operations and the start of the night gate operations). Thus, the success of a port peak pricing program in meeting its intended objectives might be impacted by labor operating frameworks at ports. Some of the key policy questions to address in the analysis of institutional issues include the following:

- What are the existing longshore labor work shifts at the port?
- Are any proposed renewals of longshore labor contracts going to impact future changes to existing longshore labor work shifts?

Peak Pricing Program Governance Structures

This section discusses port peak pricing program governance structures. As discussed earlier, port peak pricing program and evaluation guidelines should consider governance structures for a peak pricing program based on the different types of institutional frameworks at ports. For example, the governance structure of the PierPASS OffPeak program might not necessarily work at other ports with different institutional frameworks such as the type of ownership and marine terminal operations. The following sections first provide a brief introduction to the main types of institutional frameworks for port ownership and terminal operations, and provide recommendations for a port pricing governance structure applicable to these different institutional scenarios.

In the U.S., unlike many countries, Federal jurisdiction over harbors stops at the water's edge. Neither the Congress nor any Federal agency has the power to appoint or dismiss port commissioners or to alter or repeal port authority charter. Nevertheless, certain port activities are subject to Federal law and jurisdiction, specifically, those related to foreign and interstate commerce. U.S. port ownership is diffused among all three levels of government, including state, regional, and local and the private sector. In terms of terminal operations, both the public and private sectors are involved. Therefore, port institutional structures for port ownership and terminal operations can involve several possible combinations.

Privately owned and operated ports (private ports) are few compared with those that are publicly owned and publicly or privately operated, and these ports are typically smaller in size, such as the industrial ports located on the Great Lakes, where port facilities are privately owned and operated and their purpose is to serve exclusive industrial activities. The focus of this discussion is thus limited to the publicly owned larger ports in the U.S. which would be potential candidates for future consideration for peak pricing programs. Public ownership and operational structure exists at many ports where the state, counties, or municipalities own and operate port facilities. These ports are also referred to as Owner-Operator (OO) ports. Major state owned and operated ports in the U.S. include the Port of Virginia, Georgia Ports Authority, and South Carolina State Ports Authority (SCSPA). County and locally owned and operated ports include ports in Alabama, Alaska, North Carolina, and Oklahoma, among others. Publicly owned by the state, county, or municipality and privately operated

ports, also referred to as Landlord ports, are found in Alabama, California, Delaware, Michigan, and New Jersey and New York, among others. Landlord ports are among the largest ports in the U.S.; however, rapid increase in international trade activity is spurring the growth of OO ports such as the Port of Virginia and SCSPA.

Based on the different port institutional structures for ownership and operations described above, two different mechanisms to collect the revenue from congestion pricing are suggested: one addressed to Landlord ports and the other to OO ports.

Peak Pricing Program Governance Structure for Landlord Ports

Regardless of whether the port is owned by the state, county, or municipality; in the case of public ownership and private terminal operations, a way to collect the revenue from the congestion fee could be through the creation of a non profit organization, as in the case of the San Pedro Bay ports with the PierPASS OffPeak program. The rationale of creating a nonprofit organization is to guarantee that the revenue collected through the program from the Traffic Mitigation Fee (TMF) is solely used to pay the expenses incurred from extending the gate hours of operation to night time. In the case of the PierPASS OffPeak program, the nonprofit organization (PierPASS Inc.) allocates the net proceeds from the TMF to the MTOs to cover the extra costs associated with operating extended gates. Net proceeds in this case consist of TMF collections less the administrative and overhead costs incurred by PierPASS Inc. in implementing and managing the program.

The PierPASS nonprofit organization (PierPASS Inc.) was born through the establishment of the West Coast Marine Terminal Agreement (MTA) in June 23, 2005.[12] The agreement states that the marine terminal operators *agree upon and undertake the formation, management, supervision, contracting with and or dissolution of one or more nonprofit corporations and or limited liability companies, two of which are to be known initially as PierPass, Inc. and PierPass L.L.C., respectively, to implement and administer some or all agreements reached under Articles II(a)(i) though (vi)* in the marine terminal agreement.

Article II(a) (ii) of the agreement focuses specifically on the congestion pricing program stating that the parties signing the agreement are authorized to exchange, revise, maintain, cancel and enforce terminal rates (excluding the inland division or inland portion of through rates), charges, rules, regulations, procedures, practices, terms and conditions relating to cargo moving in the foreign commerce of the United States concerning *off-peak operations at marine terminal facilities in California, including: measures to encourage use of off-peak hours; recovery of costs of establishing and maintaining off-peak operations; hours and days of*

[12]http://www2.fmc.gov/agreement_lib/201143-005-MC.pdf.

service; services and facilities to be made available; and measures to facilitate efficient payment; collection and distribution of any funds collected with regard to off-peak operation.

The following specific elements should be considered with regard to peak pricing program governance structure for Landlord ports:

- What should be the dollar amount of the fees? The dollar amount of the fees will depend on the intended minimum diversion of cargo from the peak to the off-peak periods to achieve notable terminal and highway congestion reduction benefits from a peak pricing program. The dollar amount of the fee to achieve required diversion could be estimated using available information on shipper price elasticities, or from shipper interviews. Alternatively, a dollar amount could be charged when the program is implemented and modified subsequently based on observed cargo diversions from peak to off-peak periods. It would also be important to ensure that the revenue obtained from fees levied during the peak period is able to significantly, if not completely, cover the costs of extended gate operations. This pricing does not necessarily have to be a one-for-one relationship to extended operating costs as other sources of funds can supplement these additional costs.
- Who should manage the program and collect the fees? A nonprofit organization created jointly by the MTOs to manage the program, collect fees, and distribute fee revenues to the MTOs.
- How to create a nonprofit organization to manage the program and collect and distribute the fees? As in the case of the PierPASS OffPeak program, the marine terminal agreement frameworks available through OSRA can be used by the MTOs to engage in discussions and reach agreements on creating a nonprofit entity.
- How should the fee revenues be used? The fee revenues would be disbursed by the nonprofit entity to the MTOs (after accounting for program administrative and operational costs) to cover the costs of extended gate operations.
- How to ensure transparency in the fee collection and distribution process? As in the case of PierPASS Inc., the not-for-profit entity collecting and distributing the fees to the MTOs will be subject to an external audit, the results of which would be published for the trade community.

Peak Pricing Program Governance Structure for Owner-Operator Ports

At Owner-Operator (OO) ports a congestion fee, as part of a peak pricing program, could be collected the same way other user fees are currently being collected. User fees are supposed to reflect the cost of the service provided and thus, are not considered a "revenue source." There is no need to create a new agency or department to collect the fee, if the fee amount really reflects the cost

of providing the service. If there is concern about the transparency of the use of funds, a trust fund could be created by a public entity (the state, the county, or the municipality), as is currently the case of the harbor maintenance tax at the Federal level. The trust fund would specify the uses of the resources collected, in this case the payment of all administrative and operating expenses incurred by the public entity from extending terminal gate operations.

The following specific elements should be considered with regard peak pricing program governance structure for Landlord ports:

- What should be the dollar amount of the fees? This would be determined using the same approach described above for Landlord ports.
- Who should manage the program and collect the fees? The port authority would be directly responsible for managing and collecting the fees. If the port has existing user fees, then the congestion fees as part of the peak pricing program could be integrated with the management and administrative processes associated with existing user fee programs. Otherwise, separate entity within the port could be established to manage and administer the program.
- How should the fee revenues be used? The fee revenues collected from the program would be deposited into a trust fund to be used to cover the costs associated with managing and administering the program.

Maximizing Benefits from Port Peak Pricing Programs

One of the key issues that needs consideration in implementation of a port peak pricing program is how to ensure that the program maximizes both public and private sector benefits. Ensuring private sector benefits would be critical for the program to garner support and participation from the private freight stakeholders, including shippers, MTOs, motor carriers, and longshore labor. Consideration of the following types of public and private sector benefits will need to specifically be taken into account when implementing port pricing programs.

Public Sector Benefits

Some of the key public sector benefits that a port pricing program would be intended to achieve include:

- Mitigating congestion on major highway corridors surrounding the port;
- Mitigating congestion at marine terminal gates and within the terminals, to ensure terminal operating efficiency and increased port system capacity;
- Mitigating air quality impacts from truck idling due to congestion within the terminals, at the terminal gates, and along surrounding highway corridors;
- Addressing community issues with regard to port system capacity enhancements, and their negative impacts on the community; and
- Mitigating detrimental impacts of peak pricing programs on interport competitiveness.

Private Sector Benefits

Some of the key private sector benefits that a port pricing program would be intended to achieve include:

- **Longshore Labor –** Ensuring optimal longshore labor utilization in the off-peak periods (this was observed to be a major problem in the PierPASS OffPeak program, wherein the ILWU complained about labor utilization especially in the 11:00 p.m. to 3:00 a.m. extended gate operational time period);
- **Motor Carriers –** The drayage trucking industry at U.S. ports is dominated by independent owner-operators who get paid per drayage truck trip (thus, the daily income of drayage truckers is a direct function of the total number of daily port drayage truck trips). Since congestion at the terminals and on surrounding highways can impact the number of drayage trips made per day, a peak pricing program can benefit the drayage carriers by minimizing peak period congestion (this was observed in the PierPASS OffPeak program, where interviews of drayage carriers indicated some of the truckers experiencing increased truck turns per day, resulting in higher daily income);
- **MTOs –** A peak pricing program can benefit the MTOs by reducing truck congestion within the terminals and at terminal gates, thereby resulting in increased terminal productivity and efficiency. In the PierPASS OffPeak program, interviews of MTOs have reported off-peak truck queuing at terminal gates, which is impacting terminal productivity during the extended gate operational times;
- **Shippers –** Congestion mitigation at port terminals and on surrounding highways resulting from a peak pricing program would have direct benefits to shippers, due to reduced truck travel times and travel time reliabilities. Also, drayage truckers accounting for congestion costs in their port drayage charges would be able to provide better rates to shippers if they can experience reduced congestion as well as increased daily truck turns.

The following elements should be considered to ensure that a peak pricing program achieves the above mentioned benefits:

- **Appointment Systems –** Future implementation efforts for port peak pricing programs should consider appointment systems for trucks diverted to off-peak gates. Some of the expected benefits from implementing appointment systems include improved longshore labor utilization in the off-peak periods and balanced truck traffic distribution in the off-peak period, thereby mitigating truck queuing. Benefits of reduced truck queuing include increased truck turn times for drayage truckers, terminal productivity enhancements for MTOs, and travel time and reliability benefits for shippers;
- **Variable Pricing –** In order to improve the performance of a peak pricing program in terms of diverting additional truck traffic from the peak commute time periods (morning and evening) and achieving associated congestion

reduction benefits, a variable pricing scheme could be a potential solution. This solution would involve assessing an increased fee for pick up and delivery of containers for certain specific time periods during the day time shift (8:00 a.m. to 5:00 p.m.) based on information regarding which pick-up/delivery time windows at the terminals typically correspond to peak commute time periods along the major highways surrounding the port;

- **Longshore Labor Work Shifts –** Consideration should be given to what longshore labor work shift structures would be most favorable to port peak pricing programs. These considerations could serve as a framework that labor unions and marine businesses can use in future renewals of longshore labor contracts that would potentially address any constraints that existing longshore labor work shifts pose on the optimal terminal operations under peak pricing programs.

6.0 Conclusions

Some of the major highlights of the information presented in the report on port peak pricing program evaluation are summarized below.

6.1 LESSONS LEARNED FROM THE PIERPASS OFFPEAK PROGRAM

Some important lessons learned from the PierPASS OffPeak program could be applied to future programs to avoid some of the problems experienced with the OffPeak program:

- **Application of Appointment Systems –** Appointment systems for pick-up and delivery of containers by drayage truck drivers could significantly improve current OffPeak program operating conditions at the terminals, as well as achieve congestion reduction benefits on the I-710 freeway. With the use of appointment systems, the queuing of trucks at the gates before the start of the night off-peak shift can be significantly reduced. Appointment systems can also be used to reduce the concentration of trucking activity before the 10:00 p.m. time period, and achieve optimal labor utilization by appointing container pick-up/delivery activity in the 11:00 p.m. to 3:00 a.m. time period.
- **Application of Variable Pricing –** Under the current framework of the OffPeak program, the TMF is assessed for containers moving through the gates for any time period within the day shift of 8:00 a.m. to 5:00 p.m. and does not vary by time period. In order to improve the performance of the program in terms of diverting additional truck traffic from the peak commute time periods (morning and evening) and achieving associated congestion reduction benefits, a variable pricing scheme could be a potential solution. This solution would involve assessing an increased fee for pick up and delivery of containers for certain specific time periods during the day time shift (8:00 a.m. to 5:00 p.m.) based on information regarding which container pick-up/delivery time windows at the terminals typically correspond to peak commute time periods along the major corridors providing access to the port(s).

6.2 KEY FACTORS TO BE CONSIDERED IN EVALUATING THE APPLICABILITY/FEASIBILITY OF PORT PEAK PRICING PROGRAMS?

The key factors that need to be considered in evaluating the applicability and feasibility of port peak pricing programs can be broadly categorized into relevance and success factors. Relevance factors are associated with conditions

in and around ports that make peak pricing and extended gate operations programs relevant for implementation, while success factors represent conditions in and around ports that would impact the ability of a peak pricing program in meeting its intended objectives. Based on the research conducted in Tasks 1 and 2 of the study, the following relevance and success factors should be considered while evaluating the applicability and feasibility of peak pricing programs at specific ports:

- Relevance Factors:
  - Terminal and Highway Congestion;
  - Air Quality/Environmental Issues; and
  - Community Issues.
- Success Factors:
  - Regulatory Environment;
  - Market Characteristics; and
  - Interport Competitiveness.

6.3 ROLE OF THE FEDERAL GOVERNMENT IN PORT PEAK PRICING PROGRAMS

Potential Federal government roles in port peak pricing programs:

- Provide grants to state (and local) governments as part of an expanded VPP program to pursue port peak pricing programs at ports in their jurisdiction.
- Develop evaluation guidelines for state (and local) governments to use that include factors to consider in evaluating port peak pricing programs, port peak pricing governance structures and how to ensure maximization of public and private sector benefits.

6.4 INCORPORATING PORT PEAK PRICING PROGRAMS WITHIN EXISTING FEDERAL CONGESTION PRICING PROGRAMS

FHWA's Value Pricing Pilot (VPP) program, which provides grants to state (and local) governments to establish, maintain, and monitor value pricing pilot programs can be expanded to encompass peak pricing at ports as strategies to mitigate congestion. Since the existing structure of the VPP program provides grants for value pricing programs to mitigate highway congestion, port peak pricing programs could already be eligible for these grants if they can demonstrate significant congestion reduction benefits on surrounding highways. The program could be designed to ensure that States receive grants pursuant to

the commitment that they consider port peak pricing strategies as key measures to meet their objectives to reduce congestion (both highway and port terminal) through value pricing.

6.5 PORT PEAK PRICING PROGRAM EVALUATION GUIDELINES

Federal guidelines on how to evaluate the potential for peak pricing programs at ports in their jurisdiction, as well as apply the grants to pursue such programs if determined applicable and feasible are discussed in this section. Some specific elements to include in the guidelines in this regard are discussed below:

- The public entity receiving the grants could use them to conduct planning/ feasibility studies to assess the potential for implementation of peak pricing programs at ports in its jurisdiction.
- If a peak pricing program is deemed applicable and feasible for implementation, the public entity, pursuant to its commitment as part of receiving the grant, would be responsible for working with the ports and private sector entities in implementing a peak pricing program at the port.
- Since pilot programs, by definition, only operate for a limited time period, the guidelines would discuss the optimal use of these funds depending on the institutional arrangements at the port (OO, Landlord, etc.). For example, in the case of Landlord ports, the funds could be used to cover the costs incurred by MTOs in operating extended gates, while n the case of OO ports, the funds could be used to cover the administrative and operational costs associated with the pilot program.
- The guidelines would add potential collection and usage of fee revenue.

6.6 TRANSITIONING TO SUSTAINABLE PORT PEAK PRICING PROGRAMS

If pilot port pricing programs are observed to be successful in meeting their intended objectives, they could serve as platforms for longer term implementation of port peak pricing programs that do not have to rely on Federal grants. In the case of Landlord ports, the success of a pilot program could encourage the MTOs to develop a private sector solution, like the PierPASS OffPeak program. In the case of OO ports, it could lead to a longer term pricing program wherein the fee revenues are used to cover the costs of program administration and operations, and additional revenues are placed in a trust fund for port congestion reduction projects.

A. Port Market Analysis Results

A.1 PORT OF SEATTLE

Market Characteristics

- **High-Volume Shippers –** The Port of Seattle is a major container port on the U.S. west coast. The port is used as an international trade gateway for Asian containerized cargo by many high-volume shippers. According to statistics compiled by the port from PIERS data, it is estimated that high-volume shippers account for around 80 percent of the total container market at the port, and represent 20 percent of the total number of shippers using the port. Many of these shippers operate large warehouses and DCs; however, according to port officials, most do not operate on a 24-hour basis.
- **Low-Margin Shipments –** The port's export container market represents more than one-third of the total loaded container movements moving through the port. More than half a million loaded export TEUs moved through the port in 2007 (an increase of close to 15 percent from 2006). The port handles many kinds of low-margin shipments in its export market. Information on the exact shares of low-margin shipments of the port's total export market is not tracked by the port; however, the share of this market of total exports is not expected to be significant, as the export container market is dominated by farm and food products.
- **Off-Dock Rail –** Of the total volume of intermodal container traffic moving through the port, around 85 percent of the containers move through near-dock intermodal yards (the rest are on-dock) operated by the Union Pacific and Burlington Northern & Santa Fe railroads. Given that around 70 percent of the total container traffic is intermodal, near-dock rail represents close to 60 percent of the total container traffic. Based on these statistics, a large share of the truck traffic generated by the ports is destined to near-dock rail yards.

Congestion

The Port of Seattle does not have any significant congestion problems as being faced by the San Pedro Bay ports. According to information provided by port officials, the port terminals are congestion-free for most time-periods of the day. The terminals experience some truck congestion during the lunch time-period when they operate at reduced staffing, and are unable to process any surges in truck traffic, leading to truck queuing/idling. Truck congestion also occurs, though not frequently, before the opening of the gates (at 7:00 a.m.) when trucks arrive and start queuing at the terminal before 7:00 a.m. Port truck traffic is also not contributing to truck traffic congestion on major highways around the port,

since most of the port trucks do not use the most congested segments of the major highway corridors in the region (such as the downtown sections of I-5).

Air Quality/Environmental Issues

Air quality is not currently an issue in the Puget Sound region where the Port of Seattle is located. The region is in attainment of the NAAQS established by the U.S. EPA. Nevertheless, the port has been working on a proactive, voluntary basis to do its part in reducing air quality and associated public health impacts of port activities, and protecting the region's attainment status. The Port led a three year effort under the Puget Sound Maritime Air Forum to conduct an emissions inventory of all maritime-related sources in the Puget Sound region. The inventory estimated emissions for the year 2005 using an activity-based approach from port-related sources, including cargo-handling equipment, rail, heavy-duty vehicles, light-duty vehicles, ocean-going vessels, and harbor craft. Table A.1 summarizes the results of the emissions inventory, in terms of the share of maritime activity emissions of total emissions by pollutant for the four-county Puget Sounds Clean Air Agency region (King, Kitsap, Pierce, and Snohomish):

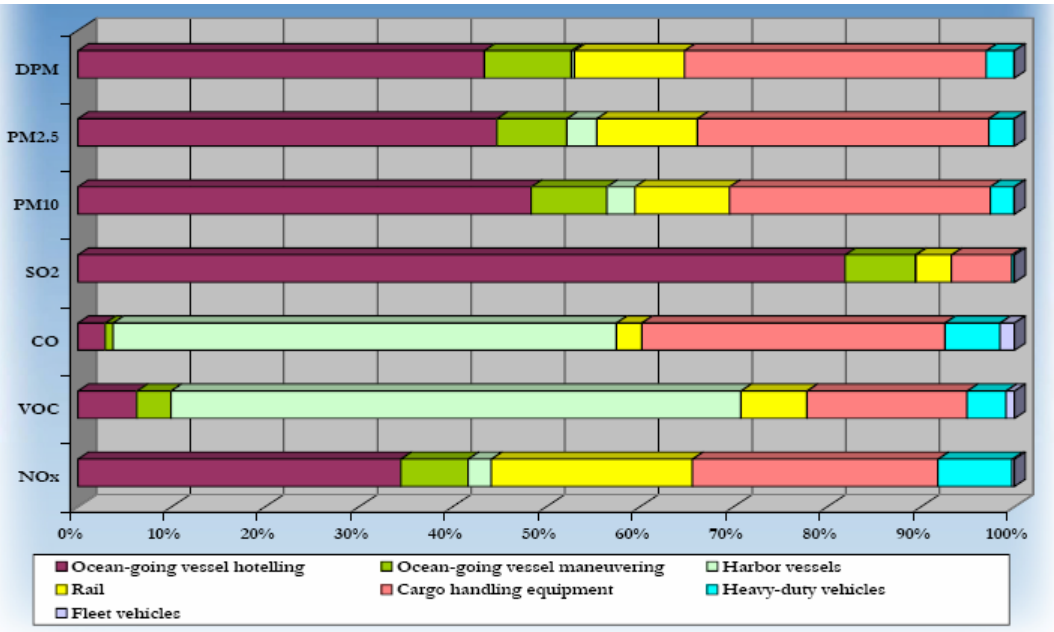
Table A.1 Contribution of Maritime Activities to Total Emissions by Pollutant, Puget Sound Clean Air Agency Region *2005*

Pollutant	Share
Oxides of Nitrogen (NO_x)	11%
Volatile Organic Compounds (VOC)	2%
Carbon Monoxide (CO)	1%
Sulfur Dioxide (SO_2)	33%
Fine Particulate Matter	4%
Diesel Particulate Matter (DPM)	28%

Source: Puget Sound Maritime Air Emissions Inventory, http://www.maritimeairforum.org/emissions.shtml.

Figure A.1 shows the share of heavy-duty truck emissions relative to other sources for the Port of Seattle. As seen from the above table, the contribution of port-related heavy duty truck traffic to pollutant emissions is relatively low compared to other port sources. With the port's objective to increase the share of on-dock intermodal container traffic in the future, the relative impacts of port trucking activity compared to other sources on air quality are expected to decline in the future.

Figure A.1 Port of Seattle Share of Emissions by Source and Type of Pollutant, 2005



Source: Puget Sound Maritime Air Emissions Inventory, http://www.maritimeairforum.org/emissions.shtml.

Interport Competitiveness

Interport competitiveness is expected to be an important factor impacting the success of a peak pricing/extended gate operations program at the Port of Seattle. The Port of Seattle shares a long history of competition with the Port of Tacoma, its neighboring port in the Puget Sound. Due to the proximity between the two ports, they compete with each other not only for "discretionary" cargo, but also for "local" cargo. From the Port of Seattle's perspective, the effect of this competition on its market position, particularly for Asia-Pacific trade, cannot be ignored, more so now than anytime in the past, as the Port of Tacoma has grown to be a major west-coast port rivaling the Port of Seattle in total container traffic volumes, as well as strong intermodal rail connections to the eastern U.S. The fact that the Port of Tacoma has a lot more available space for capacity expansion compared to the Port of Seattle also places the Port of Tacoma in a strong position to leverage available resources to increase capacity and potentially gain market share relative to the Port of Seattle in the future. In addition, the Port of Seattle also faces competition for "discretionary" cargo from other ports on the west coast, such as the Port of Vancouver (British Columbia) and most notably from the newly developed Port of Prince Rupert in British Columbia, which offers the fastest intermodal route between Asia and the U.S. Midwest.

Port officials indicate that any future efforts towards the implementation of a peak pricing/extended gate operations program at the port would entail working together with the Port of Tacoma, and potentially with other ports such

as the Port of Vancouver, so that a joint program can be developed (a program implemented solely at the Port of Seattle is expected to induce some loss in market share, particularly to the Port of Tacoma). These ports have already worked cooperatively in the past to address environmental issues through the development of the Northwest Ports Clean Air Strategy.

A.2 PORT OF HOUSTON

Market Characteristics

- **High-Volume Shippers –** The Port of Houston Authority (POHA) handles a large share of the total container market in the Gulf of Mexico. According to port estimates, POHA accounts for 98 percent of the container market in Texas, and around 75 percent of the container traffic in the Gulf of Mexico. A significant share of the total container market for the port is consumed locally; owing to the strategic geographic location of the port (more than 17 million people live within 300 miles of the city). It is estimated that around 75 percent of all the containers moving through the port stay within 250 miles of the port. POHA's strategic location has spawned the growth of large warehouses and DCs around the port, as big box shippers are realizing the future potential of the port as a key alternative trade gateway to the San Pedro Bay ports for international imports with the expansion of the Panama Canal. In 2005, Wal-Mart opened a huge 4 million square foot DC in the Houston Ship Channel area, and Home Depot has a 750,000 square-foot DC in Baytown. These are some of the big-box retailers who are importing large volumes of containers through the port that are destined by truck to local warehouses/DCs for subsequent distribution for local consumption, or reshipment to other destinations. It is estimated that currently, around a dozen big-box shippers are moving containers through the port. Though the port does not track the operational times of warehouses and DCs operated by these big-box shippers, it is estimated that some of these facilities are operating 24-hours a day. Future container market trend projections indicate that expected growth in population in the port hinterland (such as in major metropolitan areas in Texas) and expansion of the Panama Canal will spur the development of new warehouses/DCs around the port, and result in increased local container traffic movements through the port.
- **Low-Margin Shipments –** Unlike some of the other ports, POHA has a very diversified portfolio of commodities moving through the port, which include low-margin shipments as well. However, low-margin commodities do not account for a significant share of the total export container market, which is dominated by plastics and cereal products.
- **Off-Dock Rail –** Intermodal rail cargo at the port moves through near-dock and off-dock rail yards. The port does not track how much of the container traffic is moving by off-dock rail intermodal, but the share of this traffic is

expected to be fairly low as majority of the containers are destined for the local market, which move by truck to warehouses and DCs.

Congestion

Unlike the San Pedro Bay ports, POHA does not experience any congestion within the terminals, at terminal gates, as well as on the surrounding highway corridors. This is because the port is continually expanding to add infrastructure capacity to handle the growing container traffic demand. The first phase of the new Bayport container terminal became operational in January 2007. At full build out, the terminal will have seven container berths with the capacity to handle up to 2.3 million TEUs annually. The Barbour's cut container terminal at the port was built in the 1970s and is the other major container terminal at the port, currently handling bulk of the port's container traffic. The port has extensive highway connectivity provided by 8 major highways, and other major arterials. In addition to available highway system capacity, the absence of high-density container truck traffic occurring on specific highway corridors (like the I-710 in Southern California) is another reason why congestion is not an issue at the port.

Air Quality/Environmental Issues

POHA is located in a nonattainment area for U.S. Environmental Protection Agency's (EPA) National Ambient Air Quality Standard (NAAQS) for 8-hour ozone pollutant. Thus, air quality is a serious issue in the Houston-Galveston area. However, the air quality issues being faced by POHA are inherently different from the kinds of issues plaguing the San Pedro Bay ports. Most notably, POHA does not have the level of truck traffic generated by the San Pedro Bay ports. Also, there is no truck traffic congestion/idling in and around POHA, which is a major contributor to air pollution around the San Pedro Bay ports. To meet the air quality challenges in the region, POHA plays a very active environmental stewardship role in mitigating the air quality impacts of port activities. It is the first port in the U.S. to have achieved ISO 14001 certification, which recognizes the port for identifying and controlling the environmental impacts of its activities, and continually improving its environmental performance.

Interport Competitiveness

POHA handles 98 percent of the Texas container market and around 75 percent of the container market in the Gulf of Mexico. So, the port faces a stronger competition from other Gulf of Mexico ports for the "discretionary" container cargo market (as compared to local container market in Texas). Since a large share of the container market is local, discussions with port officials indicate that the port is not really worried about the competition for discretionary cargo from other ports in the Gulf of Mexico. Port officials indicated that the port is expected to lose some market to the Port of New Orleans if a peak pricing

program is implemented in the future. However, owing to the port's strong customer base and container market shares in the region, it is expected that the port will quickly recover any such loss in market through the attraction of new customers.

A.3 PORT OF NEW YORK AND NEW JERSEY

Market Characteristics

- **High-Volume Shippers –** According to information provided by port officials, high-volume shippers constitute a relatively small percentage of the total container throughput at the Port of New York and New Jersey (PONYNJ). It is estimated that in 2007, the top five import receivers accounted for approximately only three percent of total TEUs, while the top five exporters accounted for about five percent of the total containerized exports. Recent interviews with regional trucking firms conducted by PONYNJ also indicate that only a small percentage of cargo coming into the port is destined for large wholesalers or distributors. Thus, the port's import container market destined for local consumption is largely dominated by a significant number of small and midsized importers.
- **Low-Margin Shipments –** A total of close to 1.5 million loaded export TEUs moved through PONYNJ in 2007, an increase of 13.7 percent from 2006. Among the top 20 export commodities moving through the port, 5 can be characterized as low-value (low margin) commodities. Waste paper is one of the largest export commodities, accounting for 20 percent of the total export TEUs. Low-margin shipments, in all, account for close to 30 percent of total export TEUs.
- **Off-Dock Rail –** Off-dock rail shipments account for a very low share of the total port container throughput. According to data reported by the port, the amount of port-generated containers moving via off dock rail is in single digits and declining. This is due to the increased attention in the port's capital development program towards increasing on-dock rail capacity at each of the terminal facilities. The $600 million ExpressRail on-dock rail project, when completed by 2012, will double the current on-dock rail capacity to serve rail growth for decades to come.

Congestion

PONYNJ does face truck traffic congestion within the marine terminals, attributed primarily to marine terminal operating conditions. The Bi-State Carriers Association, which represents around 80 percent of the drayage carriers serving the port, is critical of the in-gates processes of most MTOs. The association claims that gate related container pick-up and drop-off processes, which vary from terminal to terminal, are generally slow and inefficient, which is leading to in-terminal truck congestion/idling. Truck traffic congestion,

particularly on the local connectors just beyond the port's Marine Terminal Highway System, has also been expressed as a critical problem by the MTOs.

General a.m. and p.m. peak-period traffic congestion on major highway corridors, such as the New Jersey Turnpike, I-78, and I-80 is impacting port trucking operations. Also, functionally obsolete segments (particularly bridges) of key local service roads such as Truck Routes 1 and 9, and the New Jersey Department of Transportation (NJ DOT) designated Portway route are slowing and hampering truck operations, since they are major routes used by port-related trucks. The capacity of these highway systems in light of substantial port-related truck traffic growth predicted for the region is a major concern of the freight community in the region.

Air Quality/Environmental Issues

PONYNJ lies in the New York-New Jersey-Long Island nonattainment area for PM-2.5 and 8-hour ozone. PONYNJ, like the San Pedro Bay ports, is faced with the serious challenge, to find ways of accommodating growing cargo volumes and realizing associated economic benefits, while at the same time minimizing the impacts of port growth and expansion on the environment. Being the largest port on the east-coast, the port is a significant contributor to air pollution in the region. In order to assess the relative impacts of port emissions on air quality, and identify prioritized solutions for impact mitigation, the port has been proactive in conducting detailed air emissions inventories of the primary sources of air emissions, which include ocean-going vessels (OGV), heavy-duty trucks, and cargo handling equipment (CHE). These analyses, the results of which are not available at this time, have indicated that trucks are a major contributor to air pollution from port-related sources. This can be attributed to the fact that a large share of the container traffic moving through the port is destined for local distribution by truck. Also, off-terminal truck trips have been identified to be the primary contributors to truck-related pollution, followed by on-terminal truck idling. Based on these findings, the port has identified several key issues to mitigate air pollution from trucks, and has made notable strides in addressing these issues, which are discussed below:

- Finding alternatives to trucks (such as ExpressRail): ExpressRail, the port's on-dock rail service, handled 358,043 lifts in 2007, saving over 610,000 truck trips on the region's roads. When complete in 2011, ExpressRail will have the capacity to handle 1.5 million containers a year, taking approximately 2.5 million trucks off the roads, resulting in significant air quality benefits;
- Finding ways to finance acquisition of newer trucks (SmartWay Plus loans): The port is working with lenders and other funding sources to promote U.S. EPA's SmartWay Partnership for trucks serving the port. This includes the installation of SmartWay upgrade kits, which can achieve between 20 percent and 90 percent reductions in Particulate Matter emissions, and SmartWay Plus low-interest loans to finance acquisition of newer trucks, equipped with

a Particulate Matter filter that would cost the truck owner $100 to $200 less/month than what they are paying currently for their trucks.

- Reducing the length of off-terminal trips (near-port warehouse/DCs on Portfields to reduce truck vehicle miles traveled (VMT): The port is working with regional development entities and the New Jersey Economic Development Authority on a Portfields initiative to establish near-port warehouses and DCs on abandoned former industrial sites. Bringing these dormant, unproductive sites back into productive use will not only benefit the economy with jobs and the environment through remediation of a contaminated site, but significantly reduce port truck VMTs, bringing significant energy consumption and air quality benefits.
- Reducing on-terminal congestion and associated idling (for example, implementation of electronic gates, and extended gate hours): Some of the terminals at the port are experimenting with extended gate operations as a way of adding system capacity and improving the efficiency of trucking operations. The results of any potential improvements in trucking operations as a result of extended gates are not available at this time.

Interport Competitiveness

PONYNJ faces competition from others ports in the U.S. mainly for international containerized imports. The major competitors for the port include:

- The San Pedro Bay ports for Asian imports to the U.S. Midwest and Northeast markets (however, the port is showing strong gains in market shares for containerized imports to the local market relative to the San Pedro Bay ports as evidenced by the recent declines in goods coming to local markets through the west coast); and
- Other East Coast ports along the North Atlantic range (Boston to Norfolk/Hampton Roads), particularly the Port of Virginia, for containerized imports destined to the upper Ohio valley and Chicago. The Port of Virginia has a 21 percent market share for "discretionary" cargo moving to the U.S. Midwest through the North Atlantic range, which is expected to increase in the future with the ongoing development of the Heartland Corridor.

The port has a strong market share for containerized imports through the North Atlantic range for local markets. Consequently, the port is not particularly concerned about losing any of the local market share to other east-coast ports under a peak pricing/extended gate operations program. The port has expressed interest in analyzing the impacts of a peak-pricing/extended gate operations program on potential market diversion for "discretionary" cargo. However, the impact is expected to be minimal since most of the cargo moves via on-dock intermodal, which will not be affected by the program.

A.4 PORT OF VIRGINIA

Market Characteristics

- **High-Volume Shippers –** The Port of Virginia's customer base includes several large shippers, including the traditional big box retailers. They represent more than 25 percent of the port's share of total container traffic. With respect to imports alone, these big-box retailers are estimated to account for around 40 percent of the total containerized imports through the port. Some of the big-box shippers have 24-hour warehousing/DC operations in the region. Over the past few years, the port has had notable success luring some major retailers to establish regional DCs near the port. Some of the notable big-box retailers importing containers through the port, and having large warehousing/DC operations in the region include Wal-Mart, The Home Depot, Target, and Dollar Tree. It is estimated that around 13-million square feet of warehousing/DC space has been added near the port in the past few years to service the big-box retailers. In 2005, Wal-Mart expanded its 2-million square-foot DC in James City County, Virginia by 50 percent.
- **Low-Margin Shipments –** The commodity mix of cargo traveling through the Port of Virginia is varied and diverse. The primary low-margin commodities exported through the port include waste paper and scrap metals. An updated analysis has not been performed but 2006 data show low-margin shipments accounting for less than 10 percent of the total TEU volume.
- **Off-Dock Rail –** The Port of Virginia has one of the highest percentages of cargo that moves by rail for east-coast ports. Intermodal rail shipments account for approximately 25 percent of total container shipments, and are expected to grow in the future. Of the total intermodal rail volume, 81 percent is on-dock and 19 percent is off-dock drayage to the Norfolk southern Rail Ramp in Portsmouth Virginia.

Congestion

According to port officials, the port does not experience any truck traffic congestion at terminal gates, and within the marine terminals. The Hampton Roads region, where the port is located, faces growing highway congestion, like other metropolitan areas. The major highways used by port trucks include I-64, I-664, and Route 460. Majority of the port trucks also use the bridge-tunnels (underwater tunnels) along I-64 (Hampton Roads Bridge-Tunnel) and I-664 (Monitor Merrimac Memorial Bridge-Tunnel). Congestion is particularly an issue along the I-64 Hampton Roads Bridge-Tunnel, which carries around 3 million vehicles each month. Also, growing auto and truck traffic volumes are worsening the traffic conditions on Route 460 and sections of I-64 in the peninsula (north of Newport News). Even though the region is taking a proactive approach towards implementing transportation solutions (for example, Interstate quality access was

recently completed at the Portsmouth Marine Terminal (Route 164), and a major east-west route (U.S. Route 460) is being upgraded to an Interstate highway), there remains some uncertainty in the implementation of some key projects – notably, the Hampton Roads Third Crossing, and I-64 widening from Newport News to New Kent – primarily due to funding constraints. Unless these projects are implemented, which are key corridors used by port trucks, congestion is expected to remain a critical issue in the region.

Air Quality/Environmental Issues

The Hampton Roads region is currently in attainment of EPA's NAAQS for all criteria pollutants. However, the region has been on the border line for attainment/nonattainment for 8-hour ozone. The region was recently redesignated (nonattainment to attainment status) for 8-hour ozone, and has a maintenance plan in place to ensure attainment of the 8-hour ozone NAAQS in the future, through the year 2018. The port's contribution to air pollution in the region relative to other sources has not been made available as of this time. Since port truck traffic accounts for a significant share of the NOx emissions from ports, and reducing NOx emissions in the Hampton Roads region is critical to maintaining the attainment status for 8-hour ozone, the port is taking a proactive leadership role in reducing port truck emissions. Notable among these efforts is the port's partnership with the EPA in a new program that encourages truckers through facilitation of grants to purchase new trucks or retrofit older units to cut emissions. As a result of all the port air pollution reduction efforts, it is estimated that between 2005 and 2015, the port will experience a surge in cargo volumes by 49 percent, while port emissions will drop 38 percent. Also, with the development of the Heartland rail corridor, the port is well positioned to increase the share of containers moving on the rail system, which will have a net benefit in terms of port air quality impacts.

Interport Competitiveness

The Port of Virginia faces competition in varying degrees from other East Coast Ports. The port has one of the highest percentages of cargo on the East Coast that moves by rail. In that respect, the port faces strong competition for "discretionary" cargo from PONYNJ, and the ports of Savannah and Charleston. The port has a strong market position for local containerized imports. As with PONYNJ, interport competitiveness is not expected to play a role in the success of a peak pricing/extended gate operations program at the port, owing to the following reasons:

- It is expected that the port will be able to retain its strong position for local containerized imports owing to minimal competition in this market;
- Even though the port faces competition for "discretionary" cargo from other East Coast ports, a peak-pricing/extended gate operations program will not have an impact on the land-side supply chains for "discretionary" cargo moving primarily via on-dock intermodal.

- Table A.2 summarizes the results from the performance evaluation of selected ports.

Table A.2 Peak-Pricing/Extended Gate Operations Program Performance Evaluation of Selected Ports

Port	Performance Factors	Summary of Issues/Characteristics	Peak-Pricing/Extended Gate Operations Program Performance Evaluation
Port of Seattle	Market Characteristics	A significant share of high-volume shippers in the market; 24-hour warehousing/DC operations not prevalent currently; Relatively low share of total export container volumes accounted for by low-margin shipments; A major share (85 percent) of total intermodal imports accounted for by off-dock rail	✓
	Congestion	Congestion not an issue for port truck traffic within terminals, at terminal gates, and on major highway corridors around the port	X
	Air Quality/ Environmental Issues	NAAQS attainment area for all criteria pollutants; Relative impacts of port truck traffic on air pollution observed to be low, owing to lack of truck idling and relatively lower magnitude of truck volumes compared to other large ports (such as Los Angeles/Long Beach)	X
	Interport Competitiveness	Serious competition for Asia-Pacific trade with the Port of Tacoma (and with the Port of Vancouver to a certain extent). Implementation of a peak-pricing program at the port expected to result in a notable loss in market share, particularly to Tacoma	X
Port of Houston	Market Characteristics	Significant presence of high-volume shippers in the import container market; 24-hour warehousing/DC operations prevalent to a certain extent; Relatively low share of total export container volumes accounted for by low-margin shipments; Not a major rail port; Most of the container market is local. Some off-dock rail related truck trips for intermodal container traffic	✓
	Congestion	Congestion not an issue for port truck traffic within terminals, at terminal gates, and on major highway corridors around the port; and not expected to be a major issue in the next five years	X
	Air Quality/ Environmental Issues	NAAQS nonattainment area for 8-hour ozone; Relative impacts of port truck traffic on total emissions not available at this time; however, the region experiencing no truck idling/congestion and its exacerbating environmental impacts; the port taking a leadership role in mitigating environmental impacts of its activities (ISO 14001 certified)	X
	Interport Competitiveness	Primary competition from the Port of New Orleans in the Gulf of Mexico, mostly for "discretionary" cargo; Port having a very strong market position for local cargo; Interport competitiveness not expressed as a primary concern for a peak-pricing program, because of the port's strategic location, strong customer base and market position for local container traffic (98 percent of Texas container market)	✓

Port	Performance Factors	Summary of Issues/Characteristics	Peak-Pricing/Extended Gate Operations Program Performance Evaluation
Port of New York/ New Jersey	Market Characteristics	Low share of the local container market accounted for by high-volume shippers; Low share of low-margin shipments in the export container market; Low share of off-dock rail in the total port container throughput	X
	Congestion	Significant truck traffic congestion within marine terminals, local connectors beyond the port's Marine Terminal Highway System, and on major highway corridors (New Jersey Turnpike, I-78 and I-80)	✓
	Air Quality/ Environmental Issues	Nonattainment area for PM-2.5 and 8-hour ozone; Port trucking activity and truck idling/congestion contributing significantly to air pollution; Extended gate hours identified as a key strategy to reduce truck congestion, and realize environmental benefits	✓
	Interport Competitiveness	Primary competition from the Port of Virginia in the North Atlantic range for "discretionary" cargo; Port having a very strong market position for local containerized imports; Interport competitiveness not expressed as a major concern for the implementation of a peak pricing program, owing to the port's strong market position	✓
Port of Virginia	Market Characteristics	Notable share (40 percent) of the import container market accounted for by high-volume (big-box) shippers, which is expected to grow in the future; Some of these shippers operate 24-hour warehouses/DCs; Low share of low-margin shipments in the port's container traffic; Low-share of off-dock rail shipments of the total port container traffic	✓
	Congestion	Congestion not an issue at marine terminal gates, and within the terminals; Truck congestion a critical problem on certain specific corridors such as the Hampton Roads Bridge-Tunnel and the I-64 corridor in the peninsula	✓
	Air Quality/ Environmental Issues	NAAQS attainment area for all criteria pollutants; however, 8-hour ozone air quality remains a critical problem; Port truck congestion on certain key corridors (such as the Hampton Roads Bridge-Tunnel) exacerbating air quality impacts; Port implementing a clean truck/retrofit program in partnership with the EPA; however, extended gate operations could have additional air quality benefits through reduction in highway truck congestion	✓
	Interport Competitiveness	Strong market position for local containerized imports; Competition from PONYNJ, and the ports of Savannah and Charleston for "discretionary" cargo; Interport competitiveness not expressed as a concern for a peak-pricing program	✓

B. Night-Time Trucking and Noise Regulations for Select Port Cities

B.1 SEATTLE, WASHINGTON

The Seattle Municipal Code establishes sound limitations based on land uses and time of day. Table B.1 shows the maximum permissible sound levels between the hours of 7:00 a.m. and 10:00 p.m. Between 10:00 p.m. and 7:00 a.m. during weekdays, and between 10:00 p.m. and 9:00 a.m. on weekends, the maximum permissible sound levels established in Table B.1 are reduced by 10 dBA where the receiving property lies within a residential district of the City.

Table B.1 Seattle Permissible Sound Levels

Land Use	Noise Threshold (dBA)
Residential	55
Commercial	60
Industrial	60

Source: Seattle Municipal Code.

B.2 HOUSTON, TEXAS

The Houston Municipal Code establishes sound limitations based on two land uses and times of the day. According to the Houston Municipal Code Chapter 30 on Noise and Sound Level Regulation, "*Sound nuisance shall mean any sound which either exceeds the maximum permitted sound levels specified in section 30-2, or for purposes of sections 30-4 and 30-6, otherwise unreasonably disturbs, injures or endangers the comfort, repose, health, peace or safety of others within the limits of the city*."

The maximum permissible sound levels are as follows:

- For Residential Property:
  - 65 dBA between 7:00 a.m. and 10:00 p.m.; and
  - 58 dBA between 10:00 p.m. and 7:00 a.m.

For Nonresidential Property:

- 68 dBA during either daytime or nighttime hours.

B.3 NEW YORK CITY, NEW YORK

New York City has noise standards based on land use and time of day. The difference from other cities is that it explicitly states that the sound level limits in its ambient noise quality zones do not include sounds from sources such as public highways, vehicular traffic, and overflying aircraft.

Based on the New York City Code Chapter 24, Table B.2 summarizes the noise standards for the different noise quality zones.

Table B.2 New York City Permissible Sound Levels

	7:00 a.m. to 10:00 p.m.	10:00 p.m. to 7:00 a.m.
Residential	60	50
High-Density Residential	65	55
Commercial and Manufacturing	70	40

Source: New York City Code, Chapter 24.

In addition to specifying noise restrictions by type of land use, New York City Code restricts in Subchapter 4 the noise generated by containers and construction material. According to the code, "*No person shall handle or transport or cause to be handled or transported in any public place, any container or any construction material in such a way as to create an unreasonable noise.*" However no specific decibels are given.

B.4 NORFOLK, VIRGINIA

The Code of Norfolk, Virginia Chapter 26 establishes that "Loading, unloading, opening, closing or other handling of boxes, crates, containers, building materials, garbage cans, dumpsters or similar objects between the hours of 10:00 p.m. and 7:00 a.m., in such a manner as to cause a noise disturbance across a residential real property boundary or within a noise sensitive zone, is prohibited."

Table B.3 summarizes the maximum sound pressure levels permitted by type of land use.

Table B.3 Norfolk Permissible Sound Levels

Receiving Land Use Category	Sound Level Limit dBA	
	7:00 a.m. to 10:00 p.m.	10:00 p.m. to 7:00 a.m.
Noise sensitive zone	55	50
Residential	57	52
Park and recreational	67	62
Business (commercial)	67	62
Industrial	77	77

Source: Code of Norfolk, Virginia, Chapter 26.

B.5 OAKLAND, CALIFORNIA

Oakland has not established sound level limits by type of land use; however the Municipal Code Title 8 on Health and Safety states that "any annoying" and "excessive noises" are prohibited. "Annoying noise" means noise with a repetitive pattern, shrill frequencies, and/or static-like sounds, including loud music and noise attributable to, but not limited to, leaf blowers, alarms, engines, barking dogs, and other animals.

"Excessive noise" means any unnecessary noise which persists for 10 minutes or more; such period of noise need not be witnessed by enforcement personnel if the occupants of two or more separate housing or commercial units certify that they have experienced such period of noise and describe with particularity the source.

B.6 CHARLESTON, SOUTH CAROLINA

As in the case of the City of Oakland, The Code of the City of Charleston Chapter 21 on Offenses does not specify sound level limits by type of land use, however it does punish loud and unnecessary noises.

According to the code "It shall be unlawful for any person to ride, drive, propel or otherwise operate a motorized vehicle in a manner which emits loud and unnecessary noise or long continued noise, either in the day time or at night, which disturbs the peace and quiet of the city, whether in the public street or on private property, or within enclosures, public or private. The prohibitions of this subsection shall include operating a motorized vehicle by rapid throttle advancing (revving) of an internal combustion engine resulting in increased noise from the engine." Motorized vehicle includes but is not limited to cars, trucks, vans, buses, motorcycles, motor scooters, motorized skateboards, mopeds, and low-speed neighborhood electric vehicles.

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