

# Shipping Container Congestion in the Port of Los Angeles

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## 1. Introduction

The Port of Los Angeles<sup>1</sup> is a critical node in the global supply chain; in terms of throughput, the Port ranks as the largest in the United States and the sixteenth largest in the world[1] (Lloyd's List, n.d.). The Port is linked to three million jobs in the United States and encompasses 17% of the nation's market share[2] (Port of Los Angeles, n.d.). Container volumes in the past three years have been record-inducing: 9.5 million TEUs in 2018, 9.3 million TEUs in 2019, and 9.2 million TEUs in 2020.

The Port of Los Angeles is facing unprecedented congestion that is directly affecting the global supply chain network. Several factors caused this current congestion issue. One factor was increased trade uncertainty between the United States and China from unpredictable tariff changes; consignees were over-purchasing from shippers in an attempt to receive cargo prior to tariff increases[3]. A second factor is the COVID-19 pandemic that arrived in the United States in 2020, which affected not only the Port of Los Angeles but all aspects of global supply chains for goods and services[4]. The Port of Los Angeles saw a 20% reduction in cargo throughput in the first five months of 2020; however, American consumers shifted purchasing services to purchasing goods, resulting in a cargo surge that continues to the present day. A third factor was the blockage of the Suez Canal in March 2021. The blockage forced shipping companies to reroute their container vessels through other ports.

The current status of the Port of Los Angeles is critical. As of August 6, 2021, 19 vessels were anchored and vessels were facing an average of 5.4 days at anchor[5]. Six ships were scheduled to be at anchor in the next four days. Table 1 shows the port's trending increase of total volumes by quarter.

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<sup>1</sup> "The Port of Los Angeles" will be also referenced in this paper as "PoLA", "the Port", and "the Port of LA"

Table 1. Port of LA Volumes by Quarter

2020	
Q1	888,178
Q2	1,037,587
Q3	1,523,163
Q4	1,510,418

2021	
Q1	1,647,674
Q2	1,823,659
Q3	-
Q4	-

Port of Los Angeles (2021, August 6). Port Optimizer. <https://signal.portoptimizer.com>

With mounting congestion, increased delays, and increased demand from its customers, the Port must find methods to reduce delays and improve cargo flow. This paper explores three potential solutions to reducing congestion in the Port of Los Angeles: enhanced automation and digitalization, increased labor, and additional governmental assistance. While the Port of Los Angeles moves several different forms of cargo (e.g. breakbulk, passenger, and automobiles) this paper concentrates on containerized cargo. Further, this paper does not review potential solutions for other port stakeholders, such as motor carriers and vessel owners, and instead focuses on what steps the Port of Los Angeles can directly take to reduce congestion.

## 2. Past Examples of Congestion in the Port of LA

Port congestion is not a unique or new circumstance for the Port of Los Angeles. In 2014, PoLA faced long delays and dwell times[6]. The congestion arose from contract negotiations between the International Longshore and Warehouse Union (“ILWU”) and the Pacific Maritime Association over healthcare. The negotiations lasted months, which resulted in an alleged purposeful labor slowdown by the ILWU. Simultaneously, the Port of LA saw a seasonal surge in high container volumes from holiday cargo while also facing a chassis shortage. Vessels experienced berthing delays as larger vessels took longer to service. The Port’s customers feared a complete shutdown and promptly attempted to reroute their cargo. In 2012, clerks went on strike for eight days and led to a loss of \$8 billion and heavy traffic congestion[7]. A ten-day union walkout in 2002 also created traffic delays, lost revenue, and port congestion.

## 3. OPTIONS FOR THE PORT OF LA TO REDUCE CONGESTION

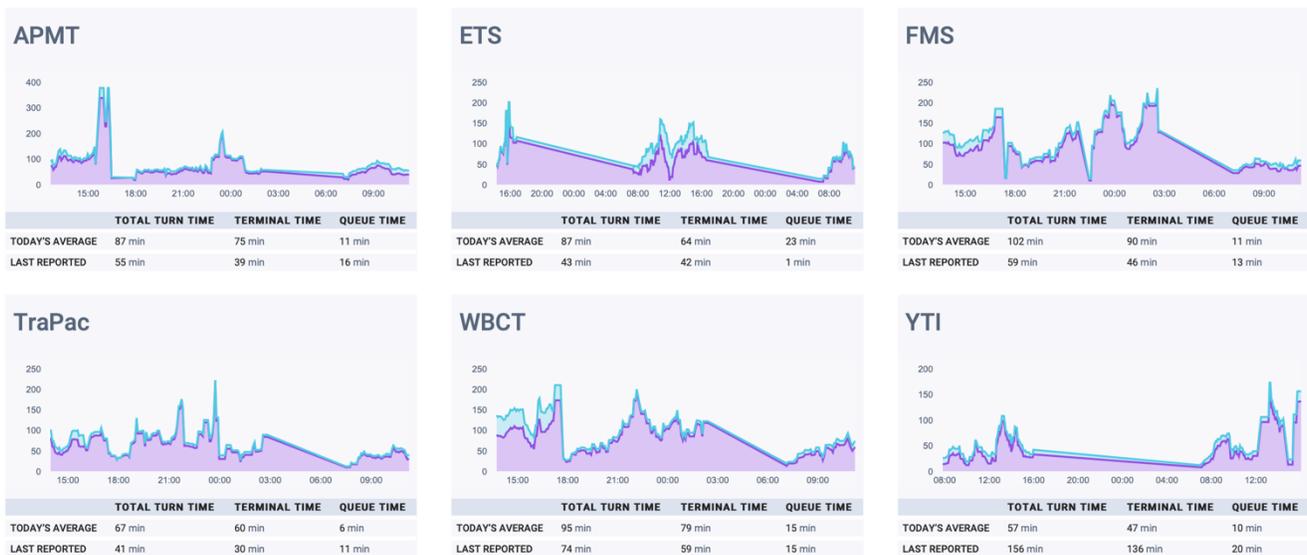
### 3.1 Automation and Digitalization

### 3.1.a Benefits

Pre-Covid, the Port recognized the potential for automation and has included automation and digitalization in its goals. It launched a forecasting application available to all of its stakeholders in February 2021, and in June 2021 it introduced an additional module that uses quantitative and time series forecasting to predict volumes six months in advance[8]. This transparency resource allows port users to better plan for expected changes in cargo volumes.

Automated equipment has improved and increased globally in the past twenty years and is used by 46 terminals worldwide [9]. Fully automated terminals allow ports to operate at all hours of the day, which would benefit the Port of Los Angeles during these times of unavailable berths. Automated stacking cranes can position containers overnight for availability to truckers the next day. Figure 1 shows turn times for the Port’s terminals. TraPac (PoLA’s only terminal that uses automated berths) has the lowest average queue time and the second lowest average total turn time.

Figure 1. Port of Los Angeles Turn Times by Terminal



Note. Queue time = waiting time outside the terminal gate. Terminal time= the terminal’s turn time while inside of the gate. Total turn time = queue time + terminal time

Port of Los Angeles. (2021, August 7). Port Optimizer.<https://tower.portoptimizer.com/dashboard/truck-turn-times>

Two of the four berths at PoLA’s TraPac terminal are automated, but with 23 total berths for container vessels, the Port has room for increased automation.

### 3.1.b. Challenges

One major challenge to automation is labor union sentimentality. Labor unions have historically been against automation because it is viewed as taking away employment opportunities[9]. Past instances of port congestion in the Port of Los Angeles were directly tied to union strikes and slowdowns; another step towards port automation may therefore, unintentionally, create more congestion. Secondly, transitioning all 23 berths would require large spending. The Long Beach Container Terminal automation project for its Middle Harbor Terminal, for example, cost \$1.4 billion. A third challenge is the Port of Los Angeles' landlord ownership structure that combines both public and private parties. The Port of Los Angeles is a department of the City of Los Angeles [10]. It is operated by a Board of Commissioners that is elected by the Mayor of Los Angeles. Its terminals and all services are leased to private companies. A decision to automate all of its terminals would therefore require partnership and approval among all terminal lessees and the Board. The City of Los Angeles Harbor Department developed a strategic plan spanning 2018-2022[10]. The strategic plan lists four objectives: world-class infrastructure that promotes growth; a secure, efficient, and environmentally sustainable supply chain; improved financial performance on port assets; and strong relationships with stakeholders. Automation and digitalization are not explicitly included in their listed initiatives; while PoLA has recently made enhancements involving automation and digitalization, the Harbor Department may decide to allocate its funds and resources toward the other objectives and ongoing initiatives.

A compromise to this solution is semi-automation. With semi-automation, vessel discharging operations are assisted with automatic stacking cranes, yet the transition of containers from the berth to the container yards are handled with traditional yard tractors[7]. Partial automation allows for job preservation, has lower capital investment than full automation, and still can improve productivity and turn times.

## **3.2. Hire additional labor**

### **3.2.a Benefits**

The Port of LA could focus on adding labor to ease dwell times. Stevedores assist with a variety of terminal functions, and because PoLA's berths are largely non-automated, stevedores and longshoremen are necessary for most tasks. Containers are placed in higher stacks in 2021 than on average (five high instead of three high)[11]. Stevedores can assist with container repositioning to assist in the reduction of truck-dwell times.

### **3.2.b Challenges**

As with other businesses in the supply chain, the Port of LA is facing labor challenges. Covid infected nearly as many longshore workers during the first three weeks of 2021 as in the first ten months of 2020 combined[11]. Infected workers - with the possibility of continued infections - paired with a nationwide labor shortage present barriers to this solution.

### **3.3 Governmental support**

#### **3.3.a Benefits**

Government involvement in any industry can be problematic; notwithstanding, governmental assistance to seaports is not a new concept and has been beneficial. Suárez-Alemán and Hernández explore how government incentives can reduce inefficiencies in seaports[12]. They maintain that a port's infrastructure has a direct impact on its level of efficiency. Governments do have an interest in seaport efficiency because inefficiencies affect consumer prices, thereby affecting its citizens. In addition, governments depend on international trade to facilitate health and safety measures (as recently exemplified with the Covid-19 outbreak). Suárez-Alemán and Hernández maintain that government funding can best assist with seaport inefficiencies when the funding is offered in a two-part contract. One part of this contract is providing a fixed subsidy that is provided to a seaport for immediate relief, while the second part of the contract allocates funds that are proportional to the success of a seaport's inefficiency reduction.

The federal government does have immediate plans to fund infrastructure projects in the maritime sector. The U.S. Department of Transportation informs that it plans to award \$502.25 million in grants towards infrastructure improvements in 2021[13]. While the awards list does not include the Port of Los Angeles, grants are to be allocated to Georgia Ports Authority, Port Authority of New York and New Jersey, the Los Angeles County Metropolitan Transportation Authority, and The Los Angeles Department of Transportation; this illustrates the willingness of USDOT to provide financial aid to port authorities and to the Los Angeles area.

#### **3.3.b Challenges**

Governmental assistance does not always translate to success in reducing seaport inefficiencies. Suárez-Alemán and Hernández explain that if a government cannot adequately assess a seaport's efficiency improvements with quantitative data, then it risks using its budget towards a project that does not fix problems such as congestion[12]. Bearing in mind the landlord structure of the Port of Los Angeles, the port authority may not have enough influence to align the success measures of the government with those of its lessees. Further, grants awarded by a government entity may involve or implicate political leanings; proportional funds measured by a port's performance grades a seaport under a government's set of benchmarks instead of its own.

### **4. Conclusion**

The Port of Los Angeles has options to reduce port congestion; however, each option has its own set of challenges and possibilities of being unsuccessful. Automation and digitalization have already proven to be successful in creating efficiencies in the Port of LA. Automating functions can lead to labor tensions

and result in strikes and union-induced slowdowns. Automation and digitalization also take time and are considered long-term solutions. Conversely, adding labor shifts is a short-term solution that can reduce container repositioning times and subsequently truck turn times. Labor is currently not readily plentiful because of a nationwide labor shortage. While PoLA has implemented safety protocols, workers can become infected with Covid and must be placed in isolation. Governmental aid can provide both short-term and long-term support to the Port of Los Angeles, but funds may come with conditions that may not match the goals of PoLA or its internal stakeholders and government financial support does not have a direct correlation with port congestion reduction.

A suggestion that would encourage short-term and long-term congestion relief is for the Port of Los Angeles to implement, in part, all of the reviewed solutions. The Port should request for government assistance using a two-part contract. The fixed award would be used to immediately increase labor while initiating research and development into automating some (not all) portions of port activity. To ease labor concerns, the Port of Los Angeles must work closely with the Pacific Maritime Association and International Longshore and Warehouse Union to develop a contract that would guarantee that some workloads would remain non-automated, train workers in new or advanced skillsets, and offer incentives (potentially funded through the fixed government grant) to union members to accept the transition. The government can then assess the immediate effects of the fixed grant and then offer incentive-based funding determined by the level of reduced port congestion and increased efficiency.

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