

# The impact of truck repositioning on congestion and pollution in the LA basin

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## Project Objective

The objective is to develop accurate data about the repositioning costs of trucks under current and future conditions. We do this by surveying truck drivers and trucking companies to determine truck parking practices and discuss how they could be changed. Using the California Air Resource Board's (CARB) EMFAC 2007 model we analyze the pollution impact of several possible repositioning and container distribution scenarios. We also discuss the resulting net impact on congestion and pollution in the LA basin under different assumptions about potential trucking company behavior.

## Problem Statement

When researchers study pollution and congestion caused by port related truck traffic, attention is normally focused on trucks on their way from a terminal at the Los Angeles or Long Beach ports to a delivery point or on their way from a pick up point to a terminal. In general empty, repositioning routes, however, are generally discarded in the overall analysis of a truck's pollution and congestion impact, or at best a simple estimate is used instead. This is reasonable as long as it can be assumed that the drivers live very close to the port, a fact that may potentially change, however, with the future development of inland ports. It is usually assumed that any inland port location will reduce congestion at the ports and automatically will lead to a reduction of congestion and pollution *near the ports*. Little, however, is so far known about the real impact a potential inland port site such as Victorville would have on pollution and congestion *in the Southern California region*. Also little is known about the potential subsequent behavior of trucking companies. What if, for example, a company decides not to move close to an inland port site and hence the length of empty repositioning drives increases?

## Research Methodology

We first take a closer look at the Port of Long Beach and Port of Los Angeles Clean Truck Programs (CTP). Our interviews show that the CTP already has had a tremendous impact on the drayage industry in the region. We then determine the impact of an inland port such as Victorville on the length of empty repositioning routes, and gauge truck drivers' and trucking companies' willingness to move closer to an inland port site. Predictions based on the interviews allow us to compute the current length of repositioning routes (baseline) and compare it with the predicted length of repositioning routes. Using the information obtained from CARB's EMFAC

2007 model we determine the pollution and congestion impact of the current practice of truck repositioning. This will be our baseline for a comparison with potential inland port sites and inland port container feeding scenarios. Again using EMFAC 2007 and based on our surveys and some choice predictions we next test different repositioning scenarios with respect to the Victorville inland port site to determine the impacts of each of these scenarios.

## **Results**

All our experiments show that if the drayage operations are not carefully coordinated with the development of an inland port, a potentially significant increase of repositioning-related pollution and congestion in the Southern California region is likely. The only example scenarios that reduce repositioning impacts require that truck parking locations are coordinated with container availability locations. Namely trucks had to reposition only to the port (sea port or inland port) closest to their parking location. We studied empty repositioning routes only, but our results are indicative of the broader impact. If drayage trucks do not solely travel to the nearest port location, but instead hop between the two, overall pollution and congestion increases.

It is likely that long-run economic forces will concentrate drayage companies around one port or the other. How quickly this situation is reached with an inland port will be a function of how quickly customers relocate to the inland port area. If an inland port is developed, there must be a holistic effort to coordinate the drayage fleet with the inland port. It would be beneficial if the drayage companies that relocated to the inland port haul primarily inland port containers, and companies located near the seaport haul most seaport-related container traffic. They should be encouraged to continue their focus on the seaport and not pick up containers at the inland port.

Our results also indicate that, from a congestion and pollution standpoint, it will not be enough to disallow container moves between the seaport and the inland port. On the contrary our analysis shows that this could lead to a dramatic spike in congestion and pollution in the region. In a scenario this case we observe a spike in annual empty repositioning related Vehicle Miles Traveled by over 300%. Similarly pollution numbers also increase by over 300%.

For a potential inland port site such as Victorville we therefore recommend that any attempt to establish an inland port site must be accompanied by a careful and detailed study of the warehouses and the drayage companies that serve them. The study should investigate how to best execute a move to this inland port so that this move involves all stakeholders – namely it must move not only containers but also drayage companies and warehouses. Decisions about which containers to relocate to an inland port must be made in consultation and in coordination with warehouses and the drayage industry. Incentives should be given to warehouses to move closer to an inland port to mitigate the spike in regional pollution and congestion. The study should propose ways to motivate drayage companies and the warehouses to only access the closest port. To ensure that an inland port will not have a significant negative impact on congestion and pollution in the Southern California region, the seaports and the inland ports may need to create regulations comparable to the clean trucks program that force warehouses and the drayage industry to make the repositioning move that is in the best interest of the region as a whole. This could involve restrictions with respect to delivery distance (if possible) and pick up origin.