

# Tracking Harm: Health and Environmental Impacts of Rail Yards

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## Introduction

This report examines the role of rail yards in the goods movement system. Shipping containers arrive at marine ports and are transported to local rail yards by truck, and then transferred to trains for travel to their final destinations elsewhere in the country. This report highlights the health and community impacts from rail yards that are located in close proximity to homes, schools, and other sensitive receptors. Furthermore, the brief also draws upon the experience of environmental justice and public health organizations to suggest policy solutions for reducing harmful impacts from rail yards.

## The Railroad Industry

The country's two largest freight railroads operate primarily in the western United States. These are BNSF Railway Company, which operates 32,000 route miles in 28 states and Union Pacific Corporation, which operates 32,100 route miles in 23 states<sup>1</sup>. In California these two railroad companies operate 18 major rail yards. The largest freight railroads operating in the rest of the country are Norfolk Southern and CSX. *Figure 2* lists the operational revenue of the country's top railroads in 2008.<sup>2</sup>

## Rail Yards

Southern California has the country's busiest container ports, with large volumes of international trade, much of it from Southeast Asia<sup>3</sup>. Once the containers arrive at the Ports of Los Angeles or Long Beach, they move to their destinations by truck or by train. Close to 50% of the goods entering these two Ports are destined for east of the Rockies – and will get there by rail,<sup>4</sup> through one of the following scenarios. This always involves the container going to a railroad or intermodal facility. A rail yard or intermodal facility is a location where containers are moved from one mode of transport to another. For example, from a truck to a train or vice versa.

- (1) A container comes into the ports and is transferred from a ship to a train, which leaves the port property and hauls the containers out of California.
- (2) A container comes into the ports and is transferred from a ship to a truck, which then travels to a local rail yard where the container is placed onto a train, hauling containers East or North; the yard may be 5 to 20 miles from the ports.
- (3) A container comes into the ports and is transferred from a ship to a truck, which heads to a distribution center or warehouse, or to a "transload center." A transloading center can

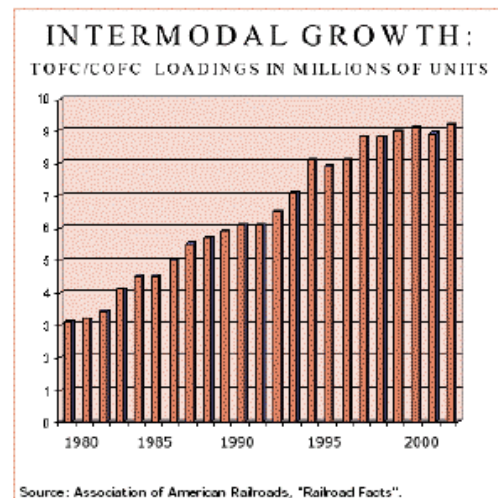


Figure 1

be a private warehouse center or a U.S. Customs warehouse. These facilities may be anywhere from 5 to 20 miles from the ports. At these facilities, the contents of the 40-foot international containers are repackaged and placed into larger 53-foot containers (saving retailers shipping costs) before heading to a rail yard to be placed on a train.

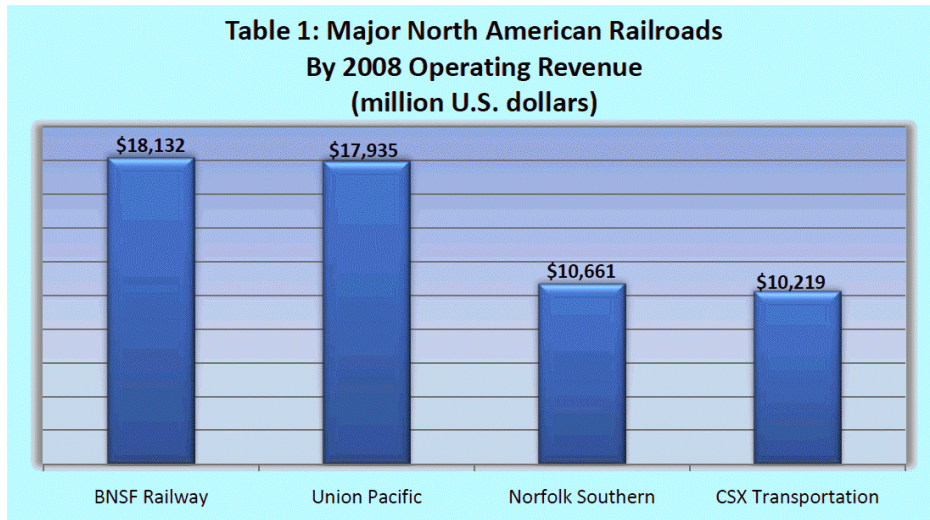


Figure 2

Rail yards employ a variety of equipment and vehicles that operate on diesel fuel. These include trucks, cranes, yard hostlers, switch locomotives, and line-haul locomotives. Switch locomotives move trains around the yard; line haul locomotives haul freight long distances.

Figure 1 shows the tremendous growth in intermodal rail traffic over the past several decades. Although cargo volume decreased recently because of the economic downturn, recent port projections see a steady rise in cargo growth that is projected to triple by 2030<sup>5</sup>. Due to the projected growth and the fact that existing local rail yards are reaching capacity, numerous railroads are proposing expanding existing yards and building new rail yards. Many of these yards are being proposed in close proximity to places where “sensitive receptors” live, learn, or play — homes, schools, nursing homes, day care centers, and parks.<sup>6</sup>

### Case-Study - BNSF Hobart

BNSF’s Hobart rail yard in Commerce, California is the largest rail yard of its kind in the United States. The 243-acre yard, which BNSF says has reached capacity, handles 1.5 million containers a year. The facility is classified as an intermodal yard, meaning inside the yard containers are transferred from trucks, which travel the 20 miles from the port, to rail for distribution across the country.

According to a Health Risk Assessment done by the California Air Resources Board, communities living near the yard are exposed to an increased risk of 250 chances in a million of developing cancer. It is estimated that 315,000 people are exposed to an excess cancer risk of at least 10 in a million (the Environmental Protection Agency’s acceptable risk) around the BNSF Hobart rail yard.<sup>1</sup>

Source: Li, W. (2007). Health Risk Assessment for the BNSF Railway. Hobart Railyard. California Environmental Protection Agency and California Air Resources Board. [www.arb.ca.gov/railyard/hra/bnsf\\_hobart\\_hra.pdf](http://www.arb.ca.gov/railyard/hra/bnsf_hobart_hra.pdf)

## Community Impacts

Communities in the California South Coast Air Basin in close proximity to rail yards include the cities of Colton, Commerce, East Los Angeles, Industry, Lincoln Heights (in the City of Los Angeles), Riverside, San Bernardino, Carson, West Long Beach, and Wilmington. Many additional communities are affected by polluting trucks traveling to the rail yards and locomotives crossing through their neighborhoods. These trucks and trains are major contributors to traffic congestion in Southern California and other parts of the South Coast Air Basin.

Operation of the trucks, locomotives, and yard equipment that service rail yards negatively affects communities' health and quality of life with increased air pollution, noise, traffic congestion, and industrial blight. Most rail yards operate round-the-clock, with stadium style lights allowing night-time operations. Of particular concern are diesel particulate emissions, which have been linked to lung cancer and other health effects.<sup>7</sup>

In 2005, the California Air Resources Board conducted Health Risk Assessments for the 18 major California rail yards. This assessment looks at the rail yard's emissions inventory, wind dispersion data, where people live in relationship to the yard, and other factors that help the agency calculate the increased cancer risk caused by rail yard operations, including the emissions from diesel engines operating at the rail yard. The HRAs found that in total, the 18 rail yards are responsible for 210 tons of diesel pollution emissions a year, posing a significant public health risk and putting more than 3 million people at an elevated risk of cancer.<sup>8</sup> Four of the rail yards (see Figure 3) pose an excessive cancer risk of 500-3,300 chances per million. This means that people living in close proximity to the rail yard have a higher risk of cancer compared to other residents who do not live near the yards.

Figure 3.

Rail Yard	Location	Total Cancer Risk PMI (point of max. impact)
<b>BNSF</b>	<i>San Bernardino</i>	3300
<b>4 rail yards combined (UP and BNSF)</b>	<i>Commerce</i>	3000
<b>Union Pacific</b>	<i>Roseville</i>	1000
<b>Union Pacific</b>	<i>Oakland</i>	640

## Regulatory Issues

Communities across California have struggled to implement more stringent regulations on locomotives and rail operations, due to overlapping regulatory authority between national, state, and local entities. In 2004, community organizations worked to pass state legislation that would require the rail companies to reduce their emissions to levels that would protect public health. The rail companies countered that the state could not regulate locomotive emissions.<sup>9</sup> In lieu of regulations or state legislation, the California Air Resources Board, BNSF Railroad, and

Union Pacific Railroad entered into a voluntary agreement without public process or input, and continue to use this type of agreement as their strategy for addressing emissions from rail yards and locomotives. Environmental justice organizations believe that this approach does not adequately reduce health and community impacts, and have continued to advocate for emission reduction regulations.

## Community Action for Change



"I have lived in the Ayers Neighborhood in the City of Commerce for 33 years. For some time the noise from the locomotives and other equipment used in the rail yard has become unbearable. The constant beeping, tire changing, drilling, and banging on the containers, only to name a few. The noise from the locomotives can vary but will usually happen at night, typically running 2 or 3 engines at the same time about every hour at full speed. All of this affects how and when we go outside, how much rest we get and how much noise we will be exposed to. I am concerned about the smoke from the idling engines and what effect it will have on my health."

-Maria Vargas, resident

Over the last eight years, community members living in environmental justice neighborhoods have engaged in efforts to reduce pollution and adverse health impacts from rail yard facilities and related operations. Thousands of people have participated and testified in hearings, public meetings, and briefings. Communities have taken direct action throughout Southern California from San Bernardino to Commerce to West Long Beach to raise awareness on the impact that rail yard activity has on their health and quality of life. Community members have conducted demonstrations and protests that have elevated the public policy debate. In addition, they have mounted a billboard campaign to draw attention to diesel pollution near the rail yard in San Bernardino.

Rail yard pollution is certainly not just a California problem. Chicago has some of the largest rail yards in the United States and organizations there are beginning to evaluate the risks. Residents in Kansas are fighting for a more detailed environmental review on a large new intermodal rail yard in their state that would be the destination for cargo on BNSF trains from Los Angeles on their way to the Midwest. In Australia, more than 1,000 residents turned out to protest what is touted to be the largest intermodal facility in Australia, The Moorebank Terminal.<sup>10 11</sup>



## Policy Recommendations

The operations of rail yards and the passing diesel trucks through communities on their way to the ports and rail yards also impacts health and quality of life in adjacent communities. Policy makers and the railroad industry need to act responsibly to reduce impacts from rail yard operations. The Impact Project is committed to zero emissions technologies and regulations across all stages of goods movement. Policy recommendations to reduce rather than eliminate emissions should be considered important interim steps towards achieving zero emissions.

Promising policies and solutions that can be implemented include:

1. Strengthen federal regulation of locomotives
  - › The Federal Government should strengthen federal regulation of emissions from the railroad industry. The 1990 Clean Air Act amendments give the U.S. EPA the power to adopt emission standards for new non-road engines including locomotive engines. Existing locomotive regulations have given too much time to the railroads to clean up the diesel emissions. Emission reductions should all be toward the goal of zero emissions.
2. Seek federal authority to allow additional state and local regulation of locomotives
  - › The Federal Government should give states and local government or regional environmental agencies additional authority to address local air pollution caused by rail yards.<sup>12</sup>
  - › Change regulations to allow rail yards to be regulated as stationary sources, so that local government agencies such as Air Quality Management Districts have the ability to control emissions.
3. Strengthen state regulation of rail yard equipment

U.S. EPA has confirmed that state regulation of rail equipment other than locomotives (such as older, polluting switch locomotives) is not preempted by federal law and these technologies are subject to regulation by California and other states<sup>13</sup>. We recommend that states:

  - › Require railroads to replace all diesel fuel switch locomotives, cranes, yard hostlers, trucks and equipment with zero emission electric power equivalents or other lower emission technologies as soon as is feasible.
  - › Mandate that all switch locomotives, cranes, yard hostlers, trucks, and equipment use the maximum achievable air pollution control technology.
  - › Mandate the use of alternative technologies such as Advanced Locomotive Emissions Control System which uses an exhaust hood to capture and scrub clean the smoke stack emissions.<sup>14</sup>
  - › Mandate that rail yards incorporate a 100% closed loop vapor recovery system in all diesel fuel storage tanks to prevent release of fugitive emissions.
4. Use land use rules and alternative transportation strategies to limit health impacts

- › The California Air Resources Board created land use guidelines that include “Avoid siting new sensitive land uses within 1000 feet of a service or maintenance yard.”<sup>15</sup> The guidelines also state that: “Within one mile of a rail yard, consider possible siting limitations and mitigation approaches.”<sup>16</sup> These guidelines should become mandatory, and should work in both directions. That means that a new rail yard should not be allowed to be sited within one mile of sensitive receptors.
- › Eliminate near-dock rail yards, and instead use on-dock rail that transfers a container directly from a ship onto a train. For existing near-dock rail yards, transition to zero-emissions equipment.

#### 5. Use city and county level measures

- › Cities/Counties have the right to refuse to issue business licenses. They can also refuse requested waivers, variances and conditional use permits, or refuse to permit facility expansion.
- › Cities/Counties can revise master plans to limit certain types of industry growth.
- › Cities/Counties can establish a facility truck operating capacity limit. This limits truck traffic, congestion, and accidents.
- › Cities/Counties can charge extra street maintenance and repair fees for truck usage which causes a 50% reduction in the life of the public infrastructure.
- › Cities/counties can require lower lighting and light deflectors to prevent light intruding in fenceline residential areas.
- › Cities/Counties can restrict truck routes, and post no stopping and parking signs.
- › Cities/Counties can restrict hours of operation to limit noise to nearby residential areas at night, as well as require sound barriers and higher walls.
- › Cities/Counties can impose decorative block walls, fences, container/cargo storage height requirements, landscaping and weekly street cleaning.
- › Cities/Counties can charge higher license fees which can be used to mitigate environmental, public health, community, public safety, city economic cost impacts such as extra city services support for police, fire department, public safety, business site inspections and city utilities whereby the city and residences pick up the majority of costs for new power plants, transmission lines etc.
- › Cities/Counties can designate where facility entrances, gates, and parking lots are located.
- › Cities/Counties can require Emergency Response, Evacuation and Public Care Plan.

#### 6. Require additional air quality monitoring and public notification from federal, state and regional air regulatory agencies

- › Air quality agencies can perform 24/7 real time air quality monitoring at and nearby rail yard sites. This includes monitoring hot spot areas in fenceline communities.
- › Agencies can monitor all Criteria Pollutants and volatile organic compounds (VOCs) and Hazardous Air Pollutants.
- › Agencies should release findings of incident and violation reports to the public.
- › Agencies should publish an annual compliance and incident report.
- › Agencies can require a Health Impact Assessment, Community Nexus Impact

Assessment Study, Project Cost-Benefit Analysis, Public Health Care Mitigation, Alternative Green Technologies Assessment Study, Emergency Response, Evacuation and Public Care Plan and Updated Hazard Risk Assessment as part of the permit process.

## Conclusion:

Passenger and freight rail both have important roles in a more sustainable transportation system. But rail will not be truly “green” as long as environmental justice communities near rail yards, intermodal facilities, and rail line tracks are subjected to high burdens of pollution, and while federal law preempts local and state democratic processes from cleaning up the pollution. Affected communities have put forward solutions that would protect the public’s health, advance clean technology, and make railroads better neighbors. It is time for federal, state, regional, county and city officials, and the railroad companies to bring the railroad industry into the 21<sup>st</sup> century and end rail negative environmental, public health, public safety, and economic impacts.

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