

Modernizing California's Freight System

HIGHLIGHTS

California is a hub for our nation's freight. Unfortunately, the state's freight system—because of its reliance on diesel-powered trucks, trains, and ships—is the single largest contributor to diesel particulate matter and nitrogen oxide emissions in California, and a significant contributor to global warming. To provide clean air and a safer climate, the Golden State needs a modern freight system that uses advanced technologies and makes better use of the technologies and fuels available today.

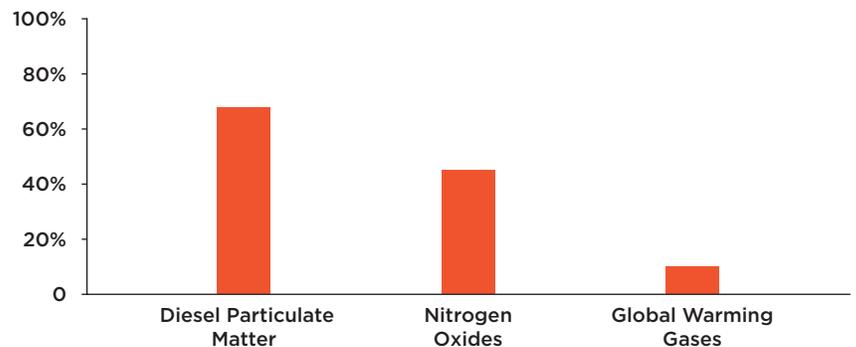
Our economy depends on trucks, trains, and ships to move food, household goods, and other commodities to market. The sheer magnitude of goods, or freight, transported in and through California is impressive: for example, about 40 percent of the country's containerized goods enter or exit through the Golden State's maritime ports, which are a hub for international trade (AAPA 2013). If all the shipping containers that move through California's largest ports in a single year were lined up end to end, they would stretch for 62,000 miles—or two and a half times around the globe.

The Hidden Costs of Freight

However, the movement of goods across California also reduces the quality of our air, health, and environment. Freight transportation is the single largest contributor to diesel particulate matter (or soot) and smog-forming nitrogen oxide emissions in the state. Exposure to particulate matter and other traffic-related pollution has been linked to asthma, reduced lung function in children, heart and lung disease, cancer, and premature death (EPA 2012; IARC 2012; HEI 2010; EPA 2009). Freight transportation is also a significant contributor to the heat-trapping emissions that cause climate change, accounting for about 10 percent of the state's total global warming pollution (CARB 2014).

Moreover, the costs of freight pollution do not affect all Californians equally. Evidence shows that many low-income communities and communities of color are more likely to live in close proximity to freight centers and corridors, and therefore face greater exposure to particulate matter and other air toxics (Hricko

Percentage of Statewide Emissions from Freight Transportation



Trucks, trains, ships, and planes account for the largest share of toxic diesel particulate matter and smog-forming nitrogen oxide emissions in California, as well as a growing source of global warming emissions.

SOURCE: CARB 2014.

et al. 2014). The impacts of climate change, such as extreme heat, also affect poor and minority communities disproportionately (Morello-Frosch et al. 2009).

These challenges are compounded by the fact that the amount of freight traveling on our roads and rails, and through our ports, is growing. The California Department of Transportation estimates that the total goods transported into, out of, and within the state will increase 80 percent between 2011 and 2040 (CALTRANS 2014).

The Next Steps in a Needed Transformation

To reduce its pollution to levels necessary for healthy air and a safer climate, California must continue to pursue bold and innovative policy solutions. The state already has a strong track record in this arena: the California Air Resources Board (CARB), for example, is implementing standards that significantly reduce emissions from new and existing heavy-duty diesel trucks. Nevertheless, in order to meet health-based federal air quality standards, the regions with the dirtiest air (the San Joaquin Valley and the Los Angeles basin) will need to reduce their nitrogen oxide emissions approximately 90 percent below today's levels in the next 15 to 20 years (CARB 2012). Scientists also conclude that a reduction in global warming pollution of about 80 percent by 2050 is needed to prevent the worst consequences of climate change.

To meet these challenges, state policy makers must begin planning for a modernization program that will transform California's freight system. This includes deployment of advanced zero-emissions and near-zero-emissions technologies such as battery-electric and hydrogen fuel cell heavy-duty vehicles. A study by the California Cleaner Freight Coalition found that trucks and trains could reduce particulate matter, nitrogen oxide emissions, and global warming emissions 90 percent or more when powered with electricity that meets California's 2020 renewable energy standards (CCFC 2014). These technologies will need additional policy support to achieve commercialization in time to meet our air pollution and climate challenges.



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Pollution from freight transportation is linked to asthma, heart and lung disease, and other health impacts. A modern, cleaner freight system will reduce air pollution and the heat-trapping emissions that cause climate change.

A modern freight system will also rely on smarter conventionally powered trucks that are far more fuel-efficient and less polluting than those on the road today, thanks to more efficient engines, advanced emissions controls, improved aerodynamics, and hybrid and electric-drive technologies. Cleaner fuels should also play a role (UCS 2014). Finally, research indicates our freight system can be made less polluting if we transport goods in smarter ways. For example, moving goods by trains and ships using the cleanest engine technologies available today can reduce emissions compared with diesel trucks (CCFC 2014).

To make this cleaner freight system a reality, policy makers must commit to a clear road map. Important policy milestones on this map should include stronger truck emissions standards, funding for advanced technology demonstration projects, incentives for broader market commercialization, and improved measurement and reporting of freight emissions. Additionally, CARB's ongoing efforts to develop and implement a sustainable freight system will need to produce concrete results in terms of the regulations, incentives, and planning requirements that will help California reach its ultimate destination.

Modernizing California's freight system will be a challenge, but one the state must confront in order to provide clean air, a safer climate, and improved health for all its communities.

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