Delivering the Green: The Future of California's Freight Transportation System

Issue

The freight sector is a critical part of California’s economic engine, enabling critical movement of goods, directly and indirectly generating billions in annual business revenue and state and local tax revenues. It also provides hundreds of thousands of direct jobs, with millions of indirect jobs that rely on an efficient, cost-effective freight system [1].

Three of the largest North American West Coast ports are in California, which handles container traffic for over 40% and 30% of the country’s imports and exports respectively. California is also the largest manufacturing state in the country generating $230B of annual product value with nearly $140B going to the export market [1].

However, California’s freight sector is also the largest contributor to ozone-causing nitrogen oxide emissions and diesel particulate pollution in the state, and a major contributor to climate change through the emissions of carbon dioxide and black carbon [1].

Fortunately, a range of stakeholders in California are already exploring strategies and policies to transform the freight logistics system and the manner in which goods are moved around and through the state.

On April 19th, April 26th, and May 10th, 2013, the UC Davis Policy Institute hosted a policy forum series “Delivering the Green: The Future of California’s Freight Transportation System”. The forum drew from the latest research to explore ways to maintain the high service level of California’s freight system while mitigating the impacts of goods movement on air quality, climate, and community [1].

Policy Implications

As California moves forward with the development and implementation of the Sustainable Freight Transport Initiative and related policies, it should take into consideration the latest research on costs, benefits and plausible scenarios for improved environmental and economic performance of freight technologies and systems.

Technologies exist to significantly reduce fuel use and emissions from heavy-duty vehicles in California. Developing and deploying improved technologies for California’s freight sector will take time and investment, but will contribute to California’s long-term climate goals while also lessening the negative impact of the freight sector on public health.

Research Findings

Improved technologies are required to decrease the negative impacts of the freight sector on health and the environment, while also allowing a vital component of California’s economy to thrive. Achieving the benefits of a more sustainable freight system will require collaboration between industry including shipping, rail, trucking, and warehousing industries.

The full application of available technologies could cut freight emissions significantly. Technologies that may be deployed in the near term include efficiency improvements in the...
engines and drivetrains of vehicles, improved aerodynamics, lower rolling resistance, reduced vehicle weight, hybridization and the use of cleaner fuels like natural gas and biomethane.

In the longer-term, advanced technologies including the increased use of plug-in-electric and hydrogen fuel-cell-electric powertrains and low-carbon biofuels offer the potential for very deep reductions in emissions up to 50-80% below 1990 levels by 2050 [2].

Regarding logistics researchers at CSU-Long Beach found that intelligent transport systems, traffic and parking regulations, off-hours delivery systems, appointments and pricing strategies at ports, and local planning and community environmental efforts were among the most effective and applicable in the US context [1].

The Southern California Association of Governments is considering a clean freight corridor system between the ports of Los Angeles and I-15 (including I-710 and the East-west Freight Corridor) as part of a $60 billion freight mobility program. It would include testing of zero-emissions truck systems, mobility improvements to reduce truck-related traffic congestion and associated emissions and energy use, and improved multi-modal facilities [3]. Additional strategies and policies being pursued around the state include more efficient last-mile and first-mile deliveries and pickups and trade nodes.

Furthermore, increased efforts to integrate regional land use and transportation systems have the potential to reduce the distances traveled by, and GHGs from, local commercial vehicles in urban areas.

A preliminary study by UC Davis researchers indicates that higher gasoline or vehicle miles traveled (VMT) fees for passenger and commercial vehicles could cut truck travel and emissions significantly. The costs provide financial incentives to minimize distance traveled and congestion reduction allows for more efficient tour routes to delivery destinations with fewer return-to-establishment trips [4].

References Cited and Further Reading


Figure 2: The California truck population analyzed in the 2010 CalHEAT Truck Inventory and Impact Study. Ball size corresponds to CO2e emissions for each truck category.