Delivering the Green: The Future of California’s Freight Transportation System
Summary and Reading List

California’s freight sector is a critical part of California’s economic engine, generating billions in annual business revenue, as well as state and local tax revenues and hundreds of thousands of direct jobs, with millions of indirect jobs that rely on an efficient, cost-effective freight system.

California’s freight sector, including trucks, trains, and ships 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 including emissions of carbon dioxide and black carbon.

In April and May 2013, the UC Davis Policy Institute, along with Union of Concerned Scientists, and the UCD Institute of Transportation Studies, conducted a three-part forum series, “Delivering the Green: The Future of California’s Freight Transportation System” which featured a range of topics related to the freight sector including policies, vehicle technologies, and logistics. A total of nine expert speakers presented the latest research and explored some of the most promising strategies to address the impacts of California’s freight and goods movement system on air quality, climate, and community health.

The following are some key findings from the forum series:

- With three of the largest North American West Coast ports, more than 40 percent of containerized imports and nearly 30 percent of the country’s exports enter and exit California ports. California is also the largest manufacturing state in the country generating $230B of annual product value with nearly $140B going to the export market. The amount of freight that is moved within and through California amounts to around 5 containers per year for every person in the state.

- These benefits are not without costs. Freight transport contributes ~70% of the state’s diesel soot emissions, ~40% of the NOx emissions, and ~13% of the state’s greenhouse gas emissions. These emissions have a large negative impact on public health, especially for our most vulnerable citizens. And while the state has made substantial progress in reducing freight emissions through incentives and regulations, much more is needed to meet our long term environmental goals.
• Technologies exist to significantly reduce fuel use and emissions from heavy-duty vehicles in California. This includes, in the near term: efficiency improvements in the engines and drivetrains of vehicles, improved aerodynamics, lower rolling resistance, and reduced weight. In the medium to longer-term it includes increased hybridization and electrification, including the increased use of plug-in electric and hydrogen fuel cell electric powertrains and lower-carbon fuels.

• In addition to their energy and emissions savings, these technologies have the potential to contribute to California’s long term climate goals. Developing and deploying these technologies will take time and investment. Overall, the full application of available technologies could cut on-road freight greenhouse gas emissions by 80% by 2050. Doing so will require strong policies and continued technical improvement.

• 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. Strategies focus on last mile/first mile deliveries and pickups, advanced vehicle and fuel technologies environmental mitigation, 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 new study by CSU-Long Beach examined the effectiveness of alternative strategies on urban freight used around the world, to assess their effectiveness and transferability for broad US implementation. They 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. Truck efficiency and emissions standards were also highlighted.

• New research from UC Davis (ULTRANS) indicates that vehicle miles traveled (VMT) fees for commercial vehicles could cut truck travel and emissions significantly, both by encouraging relocation of facilities (resulting in shorter trips) and via reduced traffic congestion. A transit oriented-development simulation produced more modest effects.

• The South Coast Association of Governments has launched 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 will 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.

• Achieving the benefits of a more sustainable freight system will require collaboration between industry including shipping, rail, trucking, and warehousing industries,
technology developers, vehicle manufacturers, researchers, NGOs, local communities, ports, and federal, state, local and regional governments.

*Suggested Reading Referenced by Panelists:*

- [Vision for Clean Air: A Framework for Air Quality and Climate Planning](#)
- [America's Container Ports: Linking Markets at Home and Abroad January 2011](#)
- [Effect of exposure to traffic on lung development from 10 to 18 years of age: a cohort study](#)
- [Traffic-Related Air Pollution, Particulate Matter, and Autism](#)
- [CalHEAT Research and Market Transformation Roadmap for Medium- and Heavy-Duty Trucks](#)
- [Southern California Association of Governments Regional Transportation Plan](#)
- [Examining the Costs and Benefits of Technology Pathways for Reducing Fuel Use and Emissions from On-road Heavy-duty Vehicles in California](#)