

Policy Solutions to Boost Zero-Emission Freight at Southern California's Ports

Summary Report from UCLA / Berkeley Law Conference

THE PORTS OF LOS ANGELES AND LONG BEACH BRING MORE GOODS INTO THE COUNTRY THAN ANY OTHER PORTS, BUT THEY ARE ALSO THE SINGLE LARGEST SOURCE OF AIR POLLUTION IN SOUTHERN CALIFORNIA.

Yet the potential for cleaner air through implementation of zero-emission technologies at the ports is significant. While the heavy-duty trucks that enter and leave the port facilities constitute only 7 percent of vehicles on California roads, they emit 20 percent of the state's transportation-related greenhouse gases, 27 percent of fine particulate matter, and 40 percent of nitrous oxide – mostly within nearby disadvantaged communities of color. As a result, transitioning these vehicles and other freight transportation to zero-emission technologies, such as battery electric and hydrogen fuel cells, would yield substantial environmental, equity, and public health benefits. However, various regulatory, technological, and financial barriers may hinder the achievement of these goals.

To address the challenges and policy solutions to achieve zero-emission freight at the Southern California ports, UCLA Law's Emmett Institute on Climate and Environment and Berkeley Law's Center for Law, Energy & the Environment (CLEE) hosted a conference at UCLA on June 8, 2018, *Toward Zero-Emission Freight at Southern California's Ports*, sponsored by Bank of America. The speakers included leading representatives from vehicle manufacturers, the ports, state and local government, nonprofit advocates, and community groups.

This policy brief summarizes the key challenges and promising solutions to overcome them, as identified by speakers at the conference.

BerkeleyLaw
UNIVERSITY OF CALIFORNIA

Center for Law, Energy &
the Environment

THE EMMETT INSTITUTE
ON CLIMATE CHANGE AND THE ENVIRONMENT

 UCLA | SCHOOL OF LAW



CHALLENGE #1: Lack of Charging and Fueling Infrastructure Deployment

For battery electric and hydrogen vehicle refueling of trucks and port equipment, the ports and surrounding freight corridors will require large infrastructure investment and deployment. Additionally, large-scale electrification will create more demand for electricity during times of the day during which generators already bear a heavy load, creating the possible need for additional power-generating, transmission, and distribution infrastructure and changes in electricity rates.

SOLUTION: More infrastructure funding and community engagement

More grant funding for charging technology deployment. To allow zero-emission vehicles to integrate throughout the freight system and significantly reduce emissions, operations will have to extend beyond the ports themselves—along the state roads and highways and to final delivery destinations. Shippers will need infrastructure investments beyond the port footprint, such as for rapid charging stations along heavily used corridors like Interstate 710. Existing truck stops and freight distribution centers are prime locations to site this new charging infrastructure.

More community outreach about where to site charging infrastructure. The freight traffic that stems from port activities has significant impacts on local communities, frequently disadvantaged communities and communities of color, and large infrastructural and electrification developments would also impact these residents through new construction and potential changes to employment. Community leaders have historically expressed concern about the amount of industrial pollution impacting residents near these facilities as well as their lack of inclusion in decision-making processes. Developers of past projects in these areas who did not properly engage the community at the outset have faced litigation as a result. Greater engagement with surrounding communities and inclusion in political processes will therefore help ensure more equitable and efficient deployment of clean technologies.

Greater utility engagement in siting optimal charging infrastructure. Each new charging station will impact utilities' generating and transmission responsibilities, times of heavy load, and financial commitments, making their participation—including investments in transmission and distribution—integral to achieving either partial or full electrification.

Electricity rate reform to reduce costs on electric charging operation for industrial companies. Current electricity rates, in particular high demand charges for periods of peak usage, can serve as a disincentive for investment in this otherwise necessary infrastructure by increasing costs for major charging depots. Rate reform, such as suspension or lessening of demand charges for qualifying hosts, could reduce this burden and thereby stimulate more investment.

"[The Air Resources Board has] helped to pave the way for and raise the money for hundreds of millions of dollars of investment that is going to be coming to the ports to speed the turnover of both equipment and trucks and other vehicles."

- Mary Nichols
Chair, California Air Resources Board

"Oftentimes we are seen as very oppositional, but what's happening now is that what we needed to happen is happening, because we knew we were right that we needed zero emissions."

- Laura Cortez
Community Organizer,
East Yard Communities for Environmental Justice



CHALLENGE #2:

Uncertainty Regarding Technological and Economic Feasibility of Zero-Emission Technology

Although zero-emission passenger vehicles are close to economic competitiveness with internal combustion engines, freight involves much heavier loads (and often longer average trips) than light-duty vehicles. The rechargeable batteries that power freight must be sufficiently low cost to be affordable, while also having sufficient range to move loaded heavy-duty trucks far enough between charges for goods movement to be efficient. In addition, charging technologies must be faster to reduce delays in the freight process, as well as widely available to facilitate ease of movement over large areas. Because freight duty cycles are currently fairly rigid—typically involving an eight-hour working shift with only one hour available for charging, followed by another eight-hour shift with a three-to-four-hour period for charging—operators are justifiably concerned about range and charging time.

SOLUTION:

More pilot project funding to address technology needs and costs

More funding for pilot programs and demonstration projects to bring down the costs of technology and help demonstrate success to potential adopters.

Although electric vehicles currently involve large upfront costs, truck battery prices are dropping rapidly, falling roughly 90 percent in the last 10 years. More funding or financing can continue to close that gap. These dollars could come from a variety of sources, including government grants, banks and other private organizations, and utilities themselves. Some of the funding will come from initiatives like Senate Bill 350 (de León, 2015), which directed the California Public Utilities Commission to promote widespread electrification for transportation. Based on that authority, the CPUC authorized utilities to distribute almost \$750 million dollars in infrastructure funding, which utilities plan to use for widespread electrification activities, including at the ports. For example, a combined \$580 million from PG&E and SCE is committed to “make-ready” infrastructure for truck charging infrastructure at 1,500 sites, including a minimum 25% and 40% in disadvantaged communities, respectively. The California Air Resources Board has also allocated funding for port-related electrified transportation, providing \$398 million to incentivize clean heavy-duty trucks, buses, and freight projects. That funding also includes \$190 million for freight equipment that could be used at the ports themselves, such as yard trucks, forklifts and cranes. As zero-emission freight technology becomes more widely understood and accepted, banks and traditional lenders will become more comfortable with financing ports’ and shippers’ acquisitions of leading-edge equipment. But more investment may be needed to achieve widespread zero-emission technology deployment.

Address workforce concerns about how autonomous vehicle technology will impact zero-emission efforts and vice versa.

Although electrification is not dependent on vehicle autonomy, the two developments may intersect in practice as manufacturers seek to create and market the most technologically advanced and efficient vehicles. Thus, policy makers must consider development of autonomous vehicles as well, as they could impact route flexibility, workforce needs, liability for inevitable mishaps, and the need for regulation. Although drivers do not want to lose access to jobs, the industry also has a shortage of employable drivers and high driver turnover. Industry-wide, roughly 100,000 drivers are needed every year to replace those who leave the field and to fill new needs. The trucking industry has attempted to expand its training of female drivers and drivers from other underrepresented groups, but multiple speakers saw workforce needs as a pertinent issue that will not be addressed in the short-term by automated vehicle technology.

Encourage technology standardization and deployment.

For all aspects of technology development associated with port electrification, policy makers will need to consider the role of regulation in technology forcing, standardization of battery charging, and eventual deployment. Much of this activity may need to occur at the state level, if California is to become a national leader in electrification and zero-emission freight.



“Our vehicle is not going to be much more expensive than a comparable diesel vehicle...When you incorporate the cost reduction associated with fueling and maintenance, you start to see that changeover where it becomes more compelling.”

- Daniel Witt
Senior Manager of Business
Development and US Policy,
Tesla Motors



“The trucking industry is made up of 97% small businesses, which are operating less than 20 trucks...The trucking industry employs 7.5 million Americans, of which 3.5 million...are actual truck drivers.”

- Michelle Iturralde
Senior Vice President, Bank of America

CHALLENGE #3:

Uniqueness of Deploying New Technologies and New Operations at Ports

Ports have exceedingly complex operational mechanisms, which are necessary to move an enormous amount of freight rapidly. As the Ports of Los Angeles and Long Beach adopt new technologies, the deployment will need to mesh with existing operations. For example, available space is limited at the busy ports, and parking density matters for charging and fueling. If charging is not fast enough or if batteries do not hold a charge for long, logistical problems will follow. Operations port-wide would be hampered, for example, if 300 parked trucks need to be charging at the same time. Additionally, smooth deployment across the industry is not guaranteed due to the predominance of small businesses within the trucking industry, with a large percentage of trucking businesses having fewer than 20 trucks. When electrified freight trucks become widely available and commercially competitive, policy makers and larger industry players will need to help ensure smaller companies' ability to transition to the new technologies.

SOLUTION:

Strategic Roll-Out of New Technologies with Greater Stakeholder Engagement

More engagement and cooperation among technology purveyors and advocates, industry purchasers, the ports, and local communities. For electrification to succeed, it will require an influx of money from multiple sectors and cooperation on deployment among the ports, freight operators, utilities, and surrounding communities. The creation of zero-emission working groups and community outreach initiatives can help those funds reach the highest-yield opportunities with the fewest roadblocks.

Begin the transition to electrified trucks within large companies first, given their greater resources to more effectively integrate the technologies. Policy makers should strategize how to make zero-emission freight both affordable and deployable for small trucking companies. As with most technology change, a lag will be unavoidable as older trucks are slowly retired. Operators will not want to buy new zero-emission technologies if they still have fossil fuel trucks running profitably. As a result, policy makers may want to encourage deployment among larger fleet operators first or provide additional incentives or demonstration projects for smaller fleets.

Ensure multiple clean technologies do not compete unnecessarily among each other. Zero-emission technologies are not the only technology clamoring for adoption; zero-emission and near-zero-emission (such as hybrid electric and liquid natural gas) technology companies often compete for incentives and policy-maker attention. One speaker described the relationship as leading to a prisoners' dilemma, in which both would be better served through collaboration, but individual competitive incentives lead to suboptimal outcomes. And while much of the attention and technological development has centered on electricity-fueled freight, a diversity of equipment will be necessary for electrification of the ports themselves. As a result, policy makers should ensure investments encourage an appropriate amount of competition while facilitating greater industry cooperation.



"In 2017, there were 333 pieces of zero emissions equipment operating at the ports...In 2025 we expect to have 573 of zero emissions equipment. That's more than a 70% increase in 5 years."

- Renee Moilanen
Manager of Air Quality Practices,
Port of Long Beach

"If you're on the receiving end of those fuels, if you've got to deal with the environmental costs, if you're Walmart and your brand is on the side of the truck, I've generally found that heavy duty fleets are very hungry to diversify away from a dependency on fossil fuels."

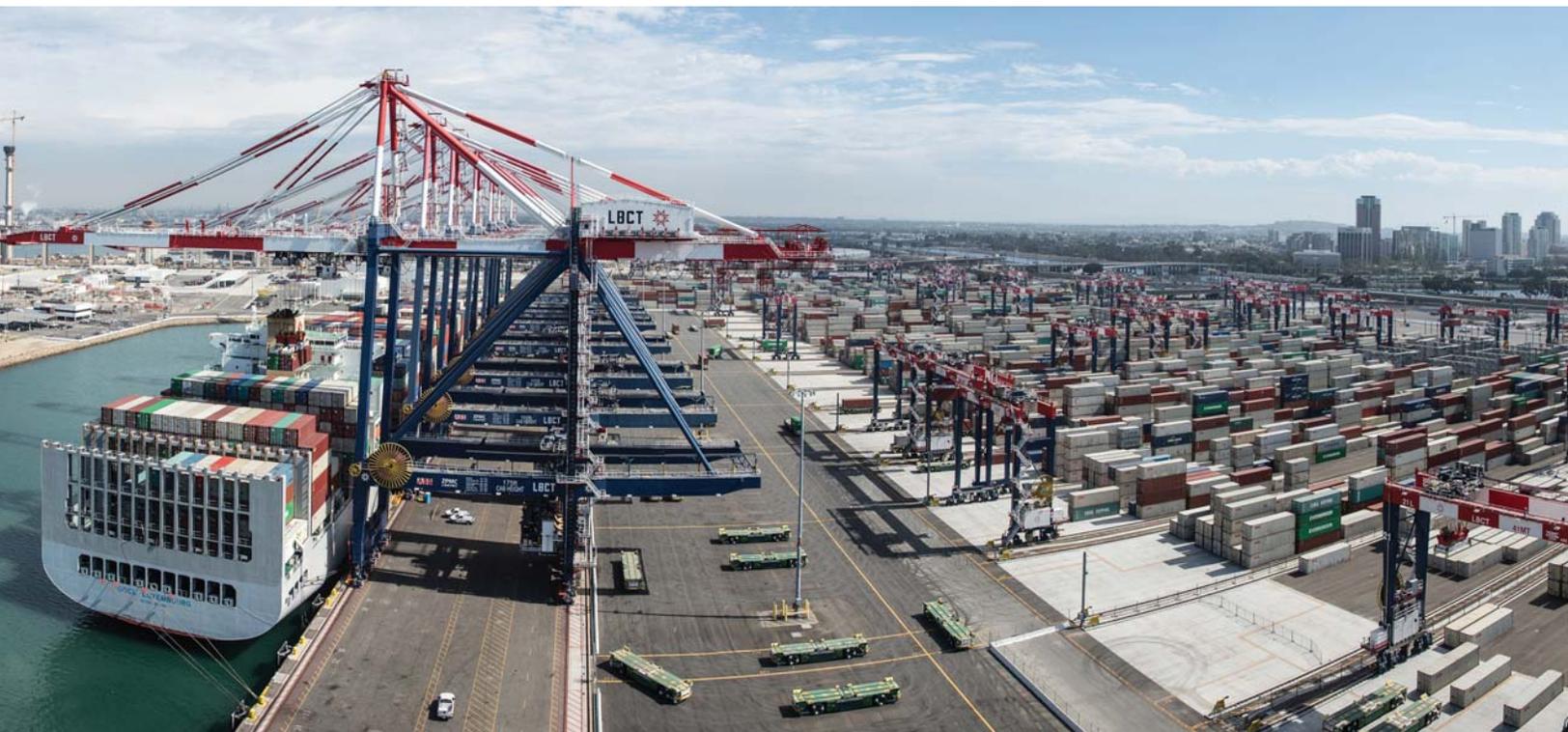
- Ryan Popple
Chief Executive Officer, President
and Director, ProTerra

"[T]he larger fleets...are really pushing the forefront. [But] I recently had an experience with a 30-truck, third-generation family-owned fleet that is looking to do a third of their fleet with one of these zero-emissions truck technologies that was announced last year."

- Chris Shimoda
Vice President of Government
Affairs, California Trucking
Association

CONCLUSION:
California’s Role in Promoting Clean Ports

California environmental policy often leads many other jurisdictions, due to the state’s history of aggressively combatting air pollution and climate change, its national and international economic power, and its many leading technology companies. Although the Southern California ports are not as economically significant in world trade as they are domestically, the state’s historic role as an environmental leader could position it as a trailblazer in zero-emission port technology, particularly within the United States. The June 8, 2018 UCLA conference addressed various policy goals that could be advanced at the ports, as well as the local and global benefits possible through freight electrification and emission reductions. Some speakers expressed hope that California leadership on clean ports could influence areas beyond its borders. Ultimately, strong state-level support for zero-emission freight technologies, along with enhanced coordination across industries and stakeholders, could help transform ports in Southern California and around the world.



About this Policy Brief

This policy brief is part of a series on how climate change will create opportunities for specific sectors of the business community and how policy makers can facilitate those opportunities. The series is sponsored by Bank of America and produced by a partnership of the UCLA School of Law's Emmett Institute on Climate Change and the Environment and UC Berkeley School of Law's Center for Law, Energy & the Environment (CLEE)

Visit climatepolicysolutions.org for more information.

To watch the recorded video of the June 8, 2018 conference at UCLA, please visit: <http://bit.ly/UCLA-zero-emission-freight>.

Authorship

Ethan N. Elkind, Director of the Climate Change and Business Program, UCLA School of Law's Emmett Institute on Climate Change and the Environment and UC Berkeley School of Law's Center for Law, Energy (CLEE)

Nat Logar, Research Fellow at UCLA Law

For more information, contact Ethan Elkind at Elkind@law.ucla.edu and eelkind@law.berkeley.edu

Emmett Institute on Climate Change and the Environment

*UCLA School of Law
405 Hilgard Avenue
Los Angeles, CA 90095
www.law.ucla.edu/emmett*

.....

Center for Law, Energy & the Environment (CLEE)

*UC Berkeley School of Law
390 Simon Hall
Berkeley, CA 94720-7200
www.clee.berkeley.edu*

This brief and its recommendations are solely a product of the UCLA and UC Berkeley Schools of Law and do not necessarily reflect the views of conference speakers or Bank of America.

Support for this initiative generously provided by:

