



**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

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Order Instituting Rulemaking to Consider
Alternative-Fueled Vehicle Programs, Tariffs, and
Policies.

Rulemaking 13-11-007
(Filed November 14, 2013)

**EAST YARD COMMUNITIES FOR ENVIRONMENTAL JUSTICE, CENTER FOR
COMMUNITY ACTION AND ENVIRONMENTAL JUSTICE, AND SIERRA CLUB
COMMENTS ON AMENDED SCOPING MEMO AND RULING OF THE ASSIGNED
COMMISSIONER AND ADMINISTRATIVE LAW JUDGE**

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and Environmental Justice*; and *East Yard
Communities for Environmental Justice*

Dated: May 18, 2016

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Pursuant to the Amended Scoping Memo and Ruling of the Assigned Commissioner and Administrative Law Judge (Scoping Memo), East Yard Communities for Environmental Justice (EYCEJ), the Center for Community Action and Environmental Justice (CCA EJ), and Sierra Club (collectively “Intervenors”) respectfully submit these timely opening comments in response to the questions posed in Appendix B of the Scoping Memo.

INTRODUCTION

EYCEJ, CCA EJ, and Sierra Club submit these comments on efforts by the California Public Utilities Commission (Commission) and investor-owned utilities (IOUs) to fulfill the mandate of SB 350 to “encourage transportation electrification as a means to achieve ambient air quality standards and the state’s climate goals.”¹ Intervenors represent communities and members suffering the health and other impacts of living near the rapidly expanding freight facilities in the polluted Los Angeles air basin. These comments support expanded efforts to electrify the thousands of heavy-duty and other vehicles and equipment used in the freight industry, which represents the single largest source of emissions that produce ozone and particulate matter. These comments also support the electrification of the transit system to

¹ Pub. Util. Code § 740.12(a)(2).

provide not only important air quality benefits, but also as an important step in developing zero-emission technologies that can be used in other heavy-duty vehicles. If SB 350's mandates are to be achieved, areas like the Los Angeles basin must see rapid and widespread freight electrification and significant investment in clean transit. While such transformation will unfold over the next 20 years, success requires aggressive near-term actions on the part of multiple stakeholders including this Commission and IOUs.

These comments describe the magnitude of the problems caused by freight activities, the unique barriers to, and opportunities for, electrification, and specific recommendations for outcomes in this proceeding to advance the goals of SB 350. EYCEJ, CCAEJ, and Sierra Club also seek to stress the urgency for action even as agencies and other stakeholders continue to study the problem. Transformation of the freight sector will not occur all at once, but actions taken now will build the foundation for the future. EYCEJ and CCAEJ also submit for the Commission's consideration a technical letter produced by Dr. Deb Niemeier, an expert in transportation-air quality modeling, energy consumption and land use interactions, which is attached as Attachment 1 to these comments.

Appendix B of the Amended Scoping Order posed four specific workshop questions to be addressed by these comments. EYCEJ, CCAEJ, and Sierra Club's responses to these questions are summarized here and discussed in more detail below:

1. Recommendations on the Application Straw Proposal
 - The proposal language should communicate the urgent need for action.
 - The application criteria and process should not be too onerous.
 - The application guidance should encourage and allow utilities to make short-term investments in zero-emission infrastructure.
2. Areas of Focus
 - The Commission should focus on freight electrification to meet SB 350's goals around meeting ambient air quality standards.

- The Commission should focus on electrification of vehicles and equipment operating over limited ranges, including transit buses, because they represent the easiest opportunities for transforming the freight sector and will lay the groundwork for expansion to other vehicles.
 - Similarly, focusing on locations where such equipment is concentrated will maximize benefits to disadvantaged communities and minimize the risk of stranded assets.
 - Specific barriers that can be addressed by Commission policies and IOU investments include rate structures and investments that affect costs, consumer awareness that affects adoption, and investments in supporting infrastructure.
3. Recommendations on Pilot Projects and Other Initiatives
- Several initiatives being pursued in the passenger electric vehicle space should be expanded to the freight sector including rate-basing of make ready investments and projects around consumer awareness.
 - Specific pilot projects that should be supported by IOU investment include the Port of Los Angeles/Port of Long Beach harbor area catenary project, the I-710 zero-emission truck lane project, and warehouse electrification.
4. Recommendations on Issues from Workshops
- Intervenors have not identified other issues from the workshops that require further discussion but note that the April 29, 2016 workshop discussion on promoting natural gas vehicles should not be part of the discussion in this rulemaking on how to comply with SB 350 because the plain focus of the statute is electrification.

DISCUSSION

I. Freight Pollution Endangers Public Health and Economic Growth: Strong Action Is Necessary.

The Commission is uniquely positioned to influence the growth of a sustainable freight system in California. SB 350 directs utilities and the Commission to prioritize “widespread transportation electrification” as a necessary step toward complying with state law and attaining ambient air quality standards.² Meeting the requirements set in SB 350 will dramatically reduce greenhouse gas emissions, improve public health, and advance the transformation of California’s transportation sector. The Commission should encourage IOU investment in technologies and

² Pub. Util. Code § 740.12(a)(2).

infrastructure that eliminate emissions in communities most impacted by freight pollution. Electrification of transit buses will also be an important component of achieving this transformation. At a minimum, the Commission should incorporate the imperative for freight-sector and transit electrification into its guidance for IOU applications in this proceeding.

A. Meeting Clean Air and Climate Standards Requires Freight Emissions Reductions.

Freight pollution is the largest obstacle to meeting federal clean air standards and state greenhouse gas emission reduction requirements. California is home to two of the most polluted air basins in the country: the San Joaquin Valley and the South Coast air basin. Both air basins are in nonattainment of federal particulate matter and ozone standards and are facing ozone attainment deadlines in 2023 and 2031 as well as particulate matter

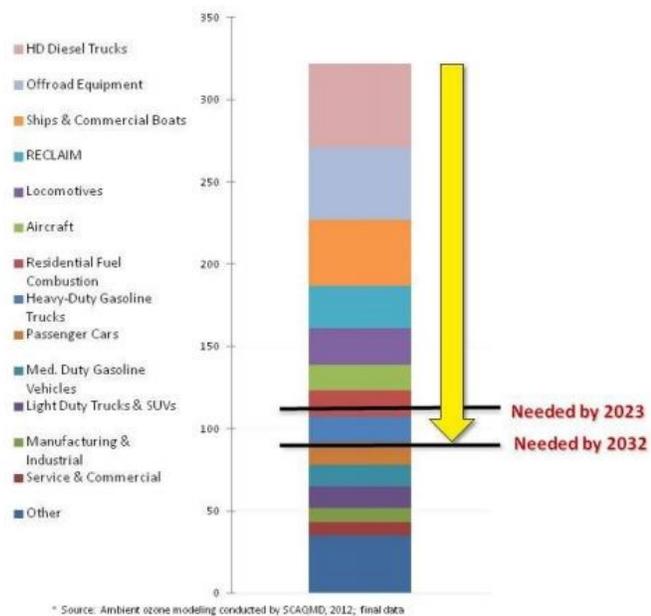


Figure 1. NOx emissions needed to meet federal 8-hour ozone air quality standard.

attainment deadlines between 2021 and 2025. As Figure 1 demonstrates, the South Coast cannot attain federal air quality standards without drastic reductions in emissions from the freight sector.³ The San Joaquin Valley faces a similar challenge.

³ South Coast Air Quality Management District. “Final 2012 Air Quality Management Plan,” at 4-19 (February 2013) (available at: [http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2012-air-quality-management-plan/final-2012-aqmp-\(february-2013\)/main-document-final-2012.pdf](http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2012-air-quality-management-plan/final-2012-aqmp-(february-2013)/main-document-final-2012.pdf)).

Diesel emissions account for much of the South Coast and San Joaquin Valley's challenges in attaining air quality standards. Emissions from diesel trucks alone account for 29% of all nitrogen oxides (NO_x) emissions in the South Coast air basin; NO_x is a precursor to particulate matter and ozone formation.⁴ In the San Joaquin Valley, diesel trucks account for 40% of all NO_x emissions.⁵ Neither of those figures includes emissions from other freight vehicles and equipment, such as off-road equipment like yard trucks, forklifts, and gantry cranes.

The transportation sector also contributes significantly to California's annual emissions of climate change-inducing greenhouse gases. The sector accounts for 37% of the state's greenhouse gas emissions.⁶ Heavy-duty vehicles were responsible for 35 mmTCO₂e of California's 173 mmTCO₂e of greenhouse gas emissions in 2013.⁷ Electrification of the entire transportation sector, from passenger vehicles to heavy-heavy duty trucks, is a crucial step toward meeting air pollution and greenhouse gas reduction standards. Paying particular attention to investments that advance the electrification of freight will result in significant public health and environmental benefits.

⁴ California Air Resources Board. "2012 Estimated Annual Average Emissions for the South Coast Air Basin," (2013) (available at: http://www.arb.ca.gov/app/emsmv/2013/emssumcat_query.php?F_YR=2012&F_DIV=0&F_SEASON=A&SP=2013&F_AREA=AB&F_AB=SC).

⁵ California Air Resources Board. "2012 Estimated Annual Average Emissions for the San Joaquin Valley Air Basin," (2013) (available at: http://www.arb.ca.gov/app/emsmv/2013/emssumcat_query.php?F_YR=2012&F_DIV=-4&F_SEASON=A&SP=2013&F_AREA=AB&F_AB=SJV).

⁶ California Air Resources Board. "Greenhouse Gas Inventory Data – Graphs," (2015) (available at: <http://www.arb.ca.gov/cc/inventory/data/graph/graph.htm>).

⁷ California Air Resources Board. "California's Greenhouse Gas Inventory by Sector and Activity, Eighth Edition: 2000-2013," (April 24, 2015) (available at: http://www.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_sector_all_2000-13_20150831.pdf).

B. Climate Change and Air Pollution Impact Public Health and Economic Growth across the State.

The public health impacts of freight pollution underscore the importance of acting quickly to reduce emissions from freight. Communities closest to freight facilities such as warehouses, distribution centers, ports, railyards, and major roadways experience much more severe health impacts from air pollution caused by freight than other communities. Recent evidence has demonstrated that this pollution is even more dangerous than we previously knew, particularly to children. In California's Draft Sustainable Freight Strategy, several agencies noted:

Despite substantial progress over the last decade, the diesel equipment operating in and around freight hubs continues to be a significant source of air toxics that can cause localized risks of cancer and other adverse health effects. New health science tells us that infants and children are 1.5 to 3 times more sensitive to the harmful effects of exposure to air toxics than we previously understood, which heightens the need for further risk reduction.⁸

Moreover, ample research demonstrates that certain facilities pose even larger impacts because of the concentration of diesel equipment. Another study found that individuals living near four large railyards in Southern California experienced heightened cancer risks relative to others in the region. The study's results suggested that the heightened risk was tied to freight activity because decreased freight activity during the economic recession also resulted in

⁸ "Draft California Sustainable Freight Action Plan," at 6 (May 2016) (available at: http://www.casustainablefreight.org/files/managed/Document/175/CSFAP_Main%20Document_DRAFT_050216%20v2.pdf).

decreased cancer risk for nearby residents.⁹

Other studies in Southern California have also identified heightened risks to residents near freight facilities.¹⁰ In the Bay Area, research has found that West Oakland, the community closest to the Port of Oakland, is exposed to three times as much diesel particulate matter (“diesel PM”) as other communities in the region.¹¹ West Oakland also has a higher percentage of people of color and low-income families than the Bay Area as a whole.¹² Imperial Valley residents region breathe high levels of diesel PM as a result of trucks idling as they wait to cross the US-Mexico border. A study recently found that pollution from diesel trucks, rather than agricultural burning, is the largest source of air pollutants in Imperial Valley,¹³ where communities are some of the most disadvantaged in California according to the state’s

⁹ California Cleaner Freight Coalition. “Vision for a Sustainable Freight System in California,” at 12 (January 2016) (available at: <http://www.ccair.org/wp-content/uploads/2016/01/CCFC-Vision-for-a-Sustainable-Freight-System-in-California.pdf>); California Air Resources Board. “Supplement to the June 2010 Staff Report on Proposed Actions to Further Reduce Diesel Particulate Matter at High-Priority California Railyards,” at 3 (Table 1) (July 2011) (“Railyard Commitments Report”) (available at: <http://www.arb.ca.gov/railyard/commitments/suppcomceqa070511.pdf>); see also, South Coast Air Quality Management District. “Final Report: Multiple Air Toxics Exposure Study in the South Coast Air Basin,” at 6-2 (May 2015) (available at: <http://www.aqmd.gov/home/library/air-quality-data-studies/health-studies/mates-iv>).

¹⁰ See, e.g., University of Southern California. “USC Children’s Health Study: Study Findings” (available at: <https://healthstudy.usc.edu/findings.php>); South Coast Air Quality Management District. “Final Report: Multiple Air Toxics Exposure Study in the South Coast Air Basin” (May 2015) (available at: <http://www.aqmd.gov/home/library/air-quality-data-studies/health-studies/mates-iv>).

¹¹ California Air Resources Board. “Diesel Particulate Matter Health Risk Assessment for the West Oakland Community,” at 2 (December 2008) (available at: <http://www.arb.ca.gov/ch/communities/ra/westoakland/documents/westoaklandreport.pdf>).

¹² Alameda County Public Health Department. “Life and Death from Unnatural Causes: Health and Social Inequity in Alameda County,” at 45. (August 2008) (available at: <http://www.acphd.org/media/53628/unnatcs2008.pdf>).

¹³ Patricia Leigh Brown. “The air is dark and deadly along the Mexico border,” *Reveal: the Center for Investigative Reporting* (April 21, 2015) (available at: <https://www.revealnews.org/article/the-air-is-dark-and-asthma-is-deadly-along-the-mexico-border/>).

CalEnviroScreen tool.¹⁴ Targeting transportation investments toward reductions in freight emissions can benefit disproportionately impacted communities, in keeping with SB 350’s goal of prioritizing communities that bear the brunt of California’s air pollution.¹⁵ The Commission’s guidance should emphasize the importance of investments in heavily impacted communities.

Emissions of greenhouse gases and criteria air pollutants both have significant economic implications for California, and reducing those emissions could mitigate those impacts. Meeting the federal ozone and particulate matter standards in the South Coast air basin would result in health benefits valued at over \$21 billion dollars.¹⁶ Another study found that failing to meet those standards in the San Joaquin Valley costs the region \$6 billion per year, due to lost productivity, health impacts, and premature death.¹⁷ The effects of climate change will also cost the state billions of dollars. Rising temperatures will increase energy costs and threaten the agricultural industry. By 2050, sea level rise will have claimed property valued between \$8 billion and \$10 billion, if business as usual continues.¹⁸ IOU investments in transportation electrification must be in keeping with the scale of the threat that IOUs and their ratepayers face.

C. Freight Industry Growth Projections Underscore the Need for Swift Action to Electrify the Sector.

¹⁴ California Environmental Protection Agency. “California Communities Environmental Health Screening Tool, Version 2.0 (CalEnviroScreen 2.0),” at 136 (October 2014) (available at: <http://oehha.ca.gov/ej/pdf/CES20FinalReportUpdateOct2014.pdf>).

¹⁵ Pub. Util. Code § 454.52(a)(1)(H).

¹⁶ Victor Brajer, Jane V. Hall, and Frederick W. Lurmann. Valuing Health Effects: The Case of Ozone and Fine Particles in Southern California. *Contemporary Economic Policy*, 29 (4), 524-535.

¹⁷ Jonathan London, Ganlin Huang, and Tara Zagofsky. “Land of Risk, Land of Opportunity,” at 4-5 (November 2011) (available at: http://www.ca-ilg.org/sites/main/files/file-attachments/report_land_of_risk_land_of_opportunity.pdf).

¹⁸ Risky Business Project. “From Boom to Bust? Climate Risk in the Golden State,” at 4 (April 2015) (available at: <http://riskybusiness.org/site/assets/uploads/2015/09/California-Report-WEB-3-30-15.pdf>).

The freight sector is projected to grow in California, due to statewide and national demand for goods. The Southern California Association of Governments expects that “Infrastructure for freight will be strained, current efforts to reduce air pollution from goods movement will not be sufficient to meet national air quality standards, capacity at international ports will be overburdened and warehouse space could fall short of demands.”¹⁹ But the Los Angeles basin is not unique. Goods movement in the San Joaquin Valley is expected to grow by 60%, with a total annual volume of over 800 million tons of goods moved by 2040. Nearly all of those goods will be carried by trucks.²⁰ The Inland Empire’s population is also expected to grow, as will the volume of freight on its roadways. San Bernardino Associated Governments expects truck volumes to require all roadway capacity on SR-60 and I-15 in San Bernardino.²¹ In short, California must act quickly to transition to zero-emission technologies for goods movement to accommodate growth without jeopardizing public health due to excess pollution or quality of life due to truck-induced gridlock.

D. Encouraging Significant Investment in Freight Transport Electrification Will Benefit Other State Initiatives

The Commission’s work on transportation electrification in this proceeding can facilitate ongoing transportation electrification efforts in other state agencies if IOU applications result in significant investments in zero-emission infrastructure. Other transportation electrification efforts include the development of California’s State Implementation Plans for federal air quality

¹⁹ Southern California Association of Governments. “The 2016-2040 Regional Transportation Plan / Sustainable Communities Strategy: A Plan for Mobility, Accessibility, Sustainability, and a High Quality of Life,” at 3 (April 2016) (available at: <http://scagrtpscs.net/Pages/FINAL2016RTPSCS.aspx>).

²⁰ Cambridge Systematics. “San Joaquin Valley Goods Movement Plan: Final Report,” at 3-20 (August 2013) (available at: <https://www.camsys.com/publications/san-joaquin-valley-interregional-goods-movement-plan>).

²¹ Neal Nisperos. “Truckers call for dedicated truck lanes as freight expected to double,” Inland Valley Daily Bulletin (May 7, 2016) (available at: <http://www.sbsun.com/general-news/20160507/truckers-call-for-dedicated-truck-lanes-as-freight-expected-to-double>).

standards, the multi-agency Sustainable Freight Action Plan development process, the California Air Resources Board’s Mobile Source Strategy, and Regional Transportation Plans. The Commission has an important role to play in the implementation of these plans through this application process. The Commission should ensure that IOUs prioritize investment in zero-emission charging infrastructure to further California’s progress toward state policy targets. For example, at least one Metropolitan Planning Organization, the Southern California Association of Governments (SCAG), has noted that “critical to electrification of trucks as enumerated in the SCAG’s long range plan is adequate deployment of charging stations or investment in catenary systems.”²² Importantly, this infrastructure must move forward quickly.

The Straw Proposal appropriately directs IOU applications to “align with California policies,”²³ which requires investment in charging infrastructure that supports zero-emission vehicles. Freight electrification is a critical component of many of the listed policies.

The Commission’s Straw Proposal should also require alignment with state and federal air quality mandates. IOU investment in infrastructure supporting transportation electrification will advance progress toward attainment of federal air quality standards. The California Air Resources Board is working with the South Coast Air Quality Management District and the San Joaquin Valley Air Pollution Control District to create a State Implementation Plan for the federal 8-hour ozone standard, and will soon begin work with those air districts on a state implementation plan for the federal particulate matter standard. As described above, both air districts need significant emissions reductions from mobile sources, specifically heavy-duty trucks and other freight equipment, to attain the federal air quality standards by their respective

²² Attachment 1, at 5.

²³ R.13-11-007. “Amended Scoping Memo and Ruling of the Assigned Commissioner and Administrative Law Judge,” Appendix A, at 1 (March 30, 2016).

deadlines. The California Air Resources Board has developed the Mobile Source Strategy, a strategy to help reduce emissions from those sources, and will need support developing the infrastructure necessary to transition toward zero- and near-zero-emission vehicles and equipment.²⁴ IOU investments should be based on the amount of infrastructure and technology support needed to reduce emissions to meet federal air quality standards for ozone and PM2.5, because they are the nearest term compliance deadlines and immediate action is necessary.

The Commission should emphasize the importance of coordination with the agencies developing the Sustainable Freight Action Plan to comply with Executive Order B-32-15. Executive Order B-32-15 requires the California State Transportation Agency, the California Environmental Protection Agency, and the California Natural Resources Agency to lead departments such as the California Air Resources Board, the California Energy Commission, the California Department of Transportation, and the Governor’s Office of Business and Economic Development in developing a Sustainable Freight Action Plan. While IOUs are not involved in developing the plan, their investments will be critical to ensuring its success. IOUs should ensure that their applications meet the needs identified in this effort, as it is the most cross-cutting and comprehensive effort to address freight emissions to date.

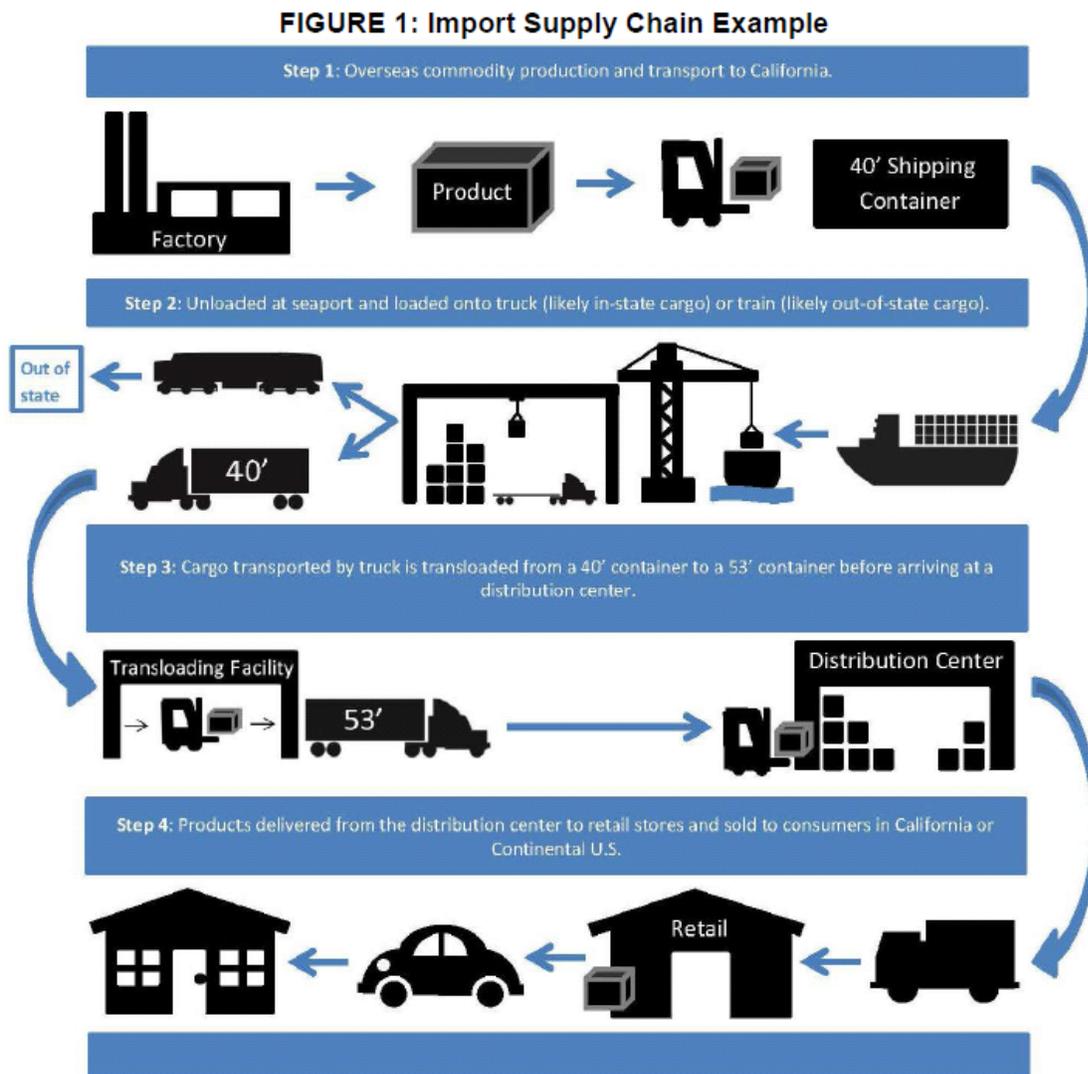
II. ELECTRIFICATION OF THE FREIGHT SYSTEM.

A. Overview of the Freight System.

The freight system is a vast network that touches virtually everything we use including food, clothing, and other goods. In simple terms, the freight system transports goods from factories to consumers and encompasses many different intermediate sites and modes of transportation. The freight system is comprised of a broad state-wide network of transportation

²⁴ See California Air Resources Board. “Mobile Source Strategy: Discussion Draft,” at 4. (October 2015) (available at: http://www.arb.ca.gov/planning/sip/2016sip/2016mobsrc_dd.pdf).

elements involving marine ports, rail yards, airports, warehouses, distribution centers, and refineries. The freight system includes not only international goods movement, but also the movement of local and regional goods throughout California. The California Air Resources Board has offered a useful graphic for describing the various steps that may be involved in the transport of goods to consumers:²⁵



²⁵ California Air Resources Board. “Sustainable Freight: Pathways to Zero and Near-Zero Emissions,” at 9 (April 2015) (available at: http://www.arb.ca.gov/gmp/sfti/Sustainable_Freight_Draft_4-3-2015.pdf) (hereinafter “Sustainable Freight Strategy”).

“California’s freight transportation system differs significantly from our state’s passenger vehicle environment, and will require different approaches to achieve [zero-emission vehicle] market penetration.”²⁶ The type of technological transformation needed to address the pollution problems caused by freight will require the development of new markets for not only the end vehicles, but also for all of the components and technologies that will go into these advanced vehicles. Development of these new manufacturing markets will be key to advancing these technologies and bringing down costs.

Policies to promote the electrification of this system must account for the variety in equipment and operations. Initial efforts should target those advanced technology vehicle types that are closest to commercialization (or that are already commercially available). This may mean starting with vehicle types that have limited ranges, and vehicle categories outside the freight system such as urban transit buses, where application duty-cycles and vehicle attributes such as weight and power requirements are similar to freight applications.²⁷ Focusing on the deployment of zero-emission technologies for the vehicle types where such technologies are closest to commercialization will help demonstrate the viability of these technologies for those equipment types that are farther behind in the development process, and will create the component manufacturing and supply chains that will be needed to support expanding advanced

²⁶ Governor’s Interagency Working Group on Zero-Emission Vehicles, “2015 Draft ZEV Action Plan,” at 19 (April 24, 2015) (available at: https://www.gov.ca.gov/docs/DRAFT_2015_ZEV_Action_Plan_042415.pdf) (hereinafter “2015 Draft ZEV Action Plan”).

²⁷ See, e.g., Eelco den Boer, et al., CE Delft. “Zero emissions trucks: An overview of state-of-the-art technologies and their potential,” at 101 (July 2013) (available at: http://www.theicct.org/sites/default/files/publications/CE_Delft_4841_Zero_emissions_trucks_Def.pdf) (hereinafter “CE Delft Report”) (“[A]dvanced concepts are already being introduced in many countries for both urban bus transport and for the city distribution of goods. Therefore, policy incentives could first be directed to these urban applications and increasingly expanded to intercity and long haul applications after implementation success is seen in urban applications.”).

technologies to these other equipment types. Such action will enable the technology and market development that will support expansion to other categories of freight equipment. Examples of technologies where more rapid deployment of zero-emission technologies is possible include urban buses and shuttles, ground support equipment, forklifts, other on-port equipment, drayage trucks, and urban last-mile delivery trucks.²⁸ The following section summarizes the state of zero-emission technologies for various freight-related vehicles and equipment.

B. Opportunities for Electrification of the Freight System.

1. Trucks.

Zero-emission truck technology is commercially available for some vehicle applications, including urban delivery trucks. Battery electric engines are particularly well suited to the needs of urban delivery trucks.²⁹ Urban delivery trucks are driven short ranges on fixed routes, and the limited ranges of battery electric engines are sufficient for that application. They operate at moderate speeds, thereby maximizing battery life. They make frequent stops, allowing for regenerative braking to partially recharge the engine. They are driven during the day and parked at night, allowing for time to recharge batteries. As a result, they can produce cost savings for companies when used efficiently.³⁰ Companies have already begun adding battery electric delivery trucks to their fleets. Smith Electric's Newton trucks, for example, are currently being used by major corporations such as Staples and Coca Cola. Another Smith Electric customer,

²⁸ See California Air Resources Board, "Heavy-Duty Fuels and Technology Assessment," at 11-12 (Draft April 2015) ("ARB Tech. Assessment") (available at: http://www.arb.ca.gov/msprog/tech/techreport/ta_overview_v_4_3_2015_final_pdf.pdf).

²⁹ California Hybrid, Efficient and Advanced Truck Center (CalHEAT), "Battery Electric Parcel Delivery Truck Testing and Demonstration" at 17 (August 2013) (available at: http://www.calstart.org/Libraries/CalHEAT_2013_Documents_Presentations/Battery_Electric_Parcel_Delivery_Truck_Testing_and_Demonstration.sflb.ashx).

³⁰ *Id.* at 5 ("Data showed that E-Trucks are more efficient than conventional diesel vehicles, with E-Truck efficiency being up to 4 times better than the fuel efficiency of similar diesel vehicles. E-Trucks are also cheaper to operate since they are more efficient and are generally fueled with cheap electricity.")

Frito Lay, has the largest fleet of all electric trucks, with 176 Smith Newton trucks.³¹ UPS and FedEx have also added electric trucks to their delivery fleets.³²

Ports are also currently evaluating zero-emission technology for drayage trucks and yard tractors – the trucks used to move containers from ships to nearby storage lots and the trucks used to move containers within a port. The Port of Los Angeles has been testing battery electric and fuel cell drayage trucks and yard tractors since 2009.³³ These demonstration projects have included trucks manufactured by TransPower and Balqon. Battery life and inverter performance has improved significantly at the Port of Los Angeles over the testing period. Because the Port has found recent data from zero-emission technology demonstration projects to be promising, it is planning for additional rounds of testing to evaluate how battery electric engines perform under a typical operating schedule.³⁴ On May 4, 2016, the Air Resources Board announced a \$23.6 million initiative to fund 43 new zero-emission drayage trucks to be manufactured by BYD, Kenworth, Peterbilt, and Volvo.³⁵

Technologies that enable “zero-emission miles” will also be important in the short-term as a means to reduce emissions and commercialize full zero-emission technologies. For example, overhead catenary systems can help provide additional zero-emission miles for conventional diesel heavy-duty trucks or for plug-in hybrid³⁶ or battery-electric heavy-duty trucks. Trucks can connect to catenary systems for part of their route, and travel via electricity instead of diesel. For

³¹ See Smith Electric’s website: <http://www.smithelectric.com/>.

³² “Sustainable Freight Strategy,” at 25.

³³ Port of Los Angeles. “Draft Zero Emission White Paper,” at 10-11 (July 2015) (available at: https://www.portoflosangeles.org/pdf/Zero_Emissions_White_Paper_DRAFT.pdf).

³⁴ *Id.* at 11.

³⁵ California Air Resources Board. “State Award \$23.6 Million for Zero-Emission Trucks at Seaports (May 4, 2016) (available at: <http://www.arb.ca.gov/newsrel/newsrelease.php?id=809>).

³⁶ Volvo, for example, is offering a plug-in hybrid heavy-duty truck: <http://www.volvotrucks.com/trucks/uk-market/en-gb/trucks/volvo-fe-hybrid/Pages/volvo-fe-hybrid.aspx>.

battery electric vehicles or plug-in hybrid vehicles, the catenary systems help extend range by conserving battery energy. Vehicle manufacturers are developing catenary systems, conductive charging, and inductive charging for heavy duty trucks.³⁷

Catenary lines are especially useful on routes that would require a lot of power and potentially drain a battery, such as very hilly routes or routes where vehicles travel with extremely heavy loads.³⁸ Routes with overhead catenary systems should be viewed as an essential piece of zero-emission freight system, and development projects and future commercial projects should be focused in areas where communities are overburdened by diesel pollution from heavy-duty trucks. Some examples of high priority areas include the I-710 corridor in Long Beach, the I-880 corridor in Alameda County, and the Grapevine on Interstate 5. Communities along these corridors are exposed to high levels of carcinogenic diesel particulates. In addition, the freight hubs near these high volume goods movement corridors are likely to be at the forefront of adopting new technologies, such as battery electric heavy-duty trucks. Early-generation battery electric heavy-duty trucks will benefit from overhead catenary systems to extend their range.

Channeling resources toward greater development of these systems will provide the infrastructure necessary to support greater use of zero-emission equipment in goods movement. Furthermore, regional planning efforts to locate future warehousing and logistics facilities or

³⁷ Siemens, “Siemens builds first eHighway in Sweden.” (June 04, 2015) (available at: [http://www.siemens.com/press/en/pressrelease/?press=/en/pressrelease/2015/mobility/pr2015060246moen.htm&content\[\]=MO](http://www.siemens.com/press/en/pressrelease/?press=/en/pressrelease/2015/mobility/pr2015060246moen.htm&content[]=MO)); Volvo Group, “The road of tomorrow is electric” (May 23, 2013) (available at <http://news.volvogroup.com/2013/05/23/the-road-of-tomorrow-is-electric/>); Fast CoExist, “Volvo Tests A Road That Can Charge Cars And Trucks” (August 2013) (available at: <http://www.fastcoexist.com/3016069/futurist-forum/volvo-tests-a-road-that-can-charge-cars-and-trucks>); Scania, “Scania drives development for electrified roads” (March 13, 2014) (available at: <http://newsroom.scania.com/en-group/2014/03/13/scania-drives-development-for-electrified-roads/>).

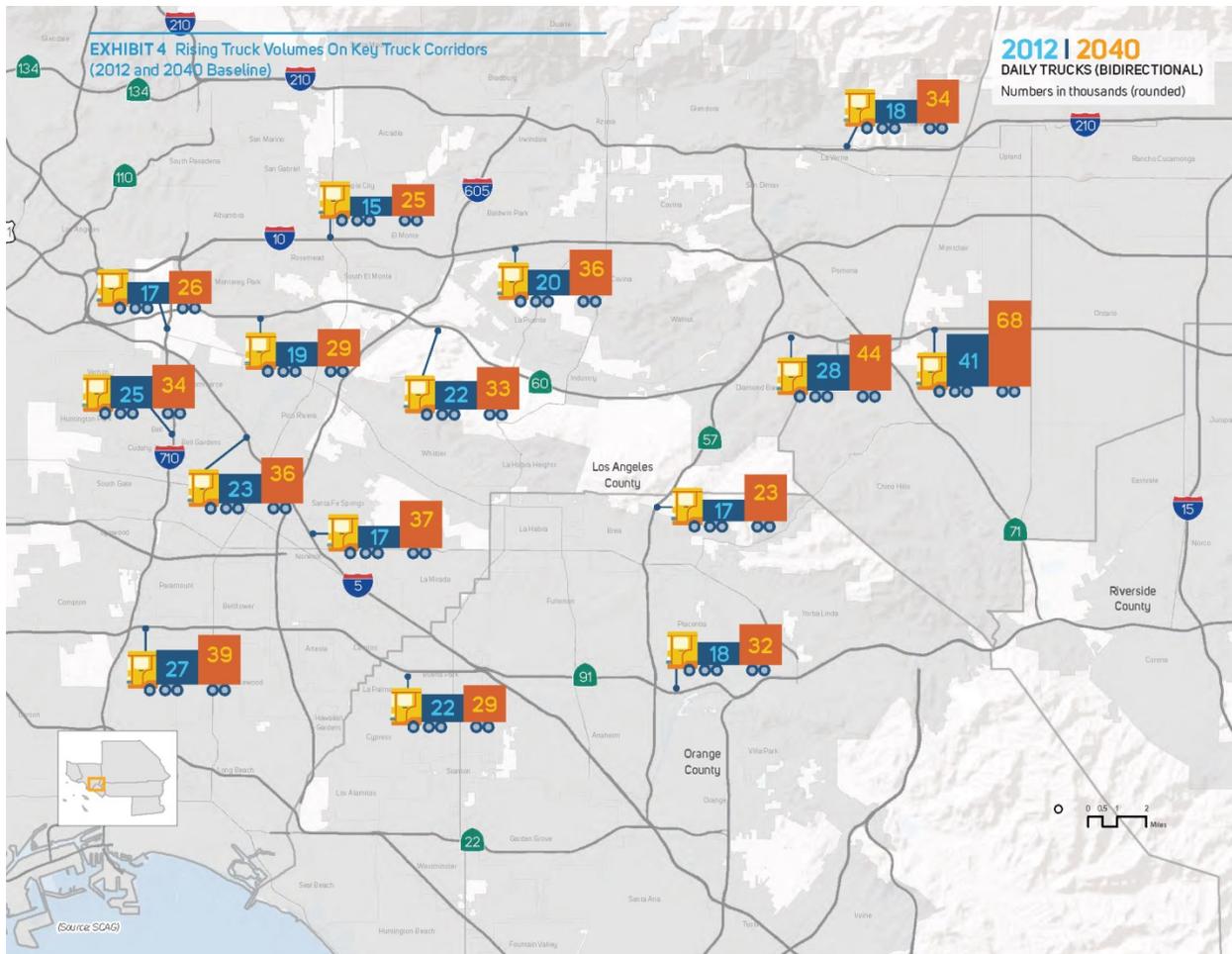
³⁸ *Id.*

other freight hubs must be coordinated with zero-emission trucks routes, including catenary roadway systems.

One project particularly prime for investment is the catenary project the Los Angeles region. As the Goods Movement Appendix to the 2016 Regional Transportation Plan (RTP)/Sustainable Communities Strategy confirms, the catenary project remains a regional priority.³⁹ This project was initially inserted into the SCAG RTP in 2012 as a near-term \$35 million project. In the 2016 RTP, SCAG has confirmed the continued importance of this project. This project, which has been vetted regionally as a critical project to advance, is precisely the type of project the Commission should be facilitating in this application process.

Although on a somewhat longer timeframe, electrification of major corridors is vital to success in the SCAG region. Much work has been completed to understand current volumes of trucks and the projected increases in trucks. The following map shows the trucks volumes –

³⁹ Southern California Association of Governments, “Goods Movement Appendix,” at 47 (Table 15) (April 2016) (available at: http://scagrtpscs.net/Documents/2016/final/f2016RTPSCS_GoodsMovement.pdf).



This map makes clear that certain corridors with high levels of existing truck traffic and large projections for increased truck traffic by 2040 are prime for electrification. For example, the I-710 corridor, which is currently slated for major expansion, provides an excellent opportunity for Southern California Edison, in particular, to facilitate zero emission miles either through a catenary system or other technology. The expansive scope of this project means planning and significant coordination needs to happen now. Down the road, projects such as electrification of State Route 60 – one of the major east west corridors connecting the Ports of Los Angeles and Long Beach to large warehousing – provides another vital opportunity for freight electrification. This application process should encourage and facilitate electrification of these major freight corridors in the SCAG planning region even if the projects are well into the future.

2. Transit System Electrification.

While not directly related to freight, advanced technologies in the bus market are paving the way for greater use of heavy-duty electrification technologies in the freight sector, providing experience with infrastructure requirements, utility level grid impacts, and electricity pricing.⁴⁰ Public transit is also a critical part of the solution to the State’s energy and climate challenges. Transit systems reduce oil and energy consumption, roadway congestion, and polluting emissions, resulting in benefits for riders and non-riders alike. To fully realize these benefits, and to meet SB 350’s air quality and climate goals, California must transition its public transit systems to zero emission technologies.⁴¹

Electrifying transit busses falls squarely within the Straw Proposal directive to for utility programs to “align with California policies.”⁴² In the 2015 Draft ZEV Action Plan, one of the core strategies for promoting broad access to clean transit is to “expand the use of zero-emission buses in public transportation.”⁴³ In polluted urban areas, where access to clean transit can be limited,⁴⁴ zero emission buses (ZEBs) can result in immediate and critical public health benefits by reducing pollution exposure.⁴⁵ The California Air Resources Board’s Advanced Clean Transit

⁴⁰ See California Hybrid, Efficient and Advanced Truck Research Center (CalHEAT). “DRAFT CalHEAT Research and Market Transformation Roadmap for Medium- and Heavy-duty Trucks” at 63-64 (February 2013) (“CalHEAT Roadmap”) (available at: http://www.calstart.org/Libraries/CalHEAT_2013_Documents_Presentations/CalHEAT_Roadmap_Final_Draft_Rev_7.sflb.ashx).

⁴¹ *Id.* at 6 (“Near-zero technologies are an important part of the overall strategy for heavy-duty trucks and buses; however, a transition to zero emission technologies in transit bus applications will be necessary to meet air quality and climate goals.”).

⁴² Appendix A, at 1.

⁴³ 2015 Draft ZEV Action Plan, at 17.

⁴⁴ See, e.g., The Greenlining Institute. “Electric Vehicles: Who’s left stranded?,” at 5 (August 2011) (available at: <http://greenlining.org/wp-content/uploads/2013/02/ElectricVehiclesReport.pdf>).

⁴⁵ See California Air Resources Board. “Advanced Clean Transit Regulation: Discussion Document,” at 2 (May 2015) (available at: <http://www.arb.ca.gov/msprog/bus/actdiscussiondocument.pdf>).

rule, currently under development, is focused on a complete transition of bus fleets to zero emission technologies by 2040.⁴⁶ The discussion document for the rule contemplates a mandate for a modest fraction of bus purchases in 2018 to utilize zero emission technology,⁴⁷ a period within the window anticipated by the Commission for utility programs and investments.⁴⁸

At the same time, transit fleets are expanding. The Sustainable Communities and Climate Protection Act of 2008 (SB 375), which requires the development of regional plans integrating transportation, housing and land-use issues, has resulted in new programs that encourage transit growth and efficiency. The Southern California Association of Governments' Sustainable Communities Plan, for example, anticipates that 20 percent of its total plan budget will be spent on transit and rail investments. The IOUs are well-suited to addressing the issues that must be resolved in order for transit agencies to make these and other long-term investments, which focus heavily on infrastructure needs and utility rate structures. Finally, as has been recognized by the California Air Resources Board, "transit buses are one of the first heavy-duty applications where zero emission technologies have been demonstrated and are commercially available."⁴⁹ The following section briefly summarizes the current state of the zero-emission transit market and technologies.

Zero emission transit buses are ready for scale. In the Mobile Source Strategy Discussion Draft, the California Air Resources Board concludes that "zero emission transit buses are primed to be one of the first heavy-duty vehicle types to achieve significant zero-emission vehicle sales

⁴⁶ *Id* at 1.

⁴⁷ *Id.*

⁴⁸ Appendix A, at 1.

⁴⁹ See California Air Resources Board. "Mobile Source Strategy Discussion Draft," at 85 (May 2016) (available at: <http://www.arb.ca.gov/planning/sip/2016sip/2016mobsrsrc.pdf>).

volumes, leading and supporting technology development in the heavy-duty sector as a whole.”⁵⁰ Many bus manufacturers offer zero emission buses, and multiple fleets already operate zero emission buses in regular revenue service.

At present, thirteen California bus fleet operators have 10 or more electric buses. In February 2016, the Antelope Valley Transit Authority voted to purchase up to 85 new all-electric buses over the next three years, converting its entire diesel fleet to electricity.⁵¹ The San Joaquin Transit Agency, which participated in a fast-charge pilot demonstration with PG&E with waived demand charges, plans to purchase 13 more fast-charge ZEBs. These investments are encouraging, but need to be accelerated.

3. Support Equipment.

Support equipment includes the equipment that moves cargo at ports, distribution centers, and airports. Some examples are forklifts, gantry cranes, and yard hostlers. Many types of support equipment are prime candidates for electrification because they make repetitive short trips during the work day, are centrally fueled, and have time to recharge.

Cargo Handling Equipment. Zero-emissions technology is viable for many types of cargo handling equipment, but use of these technologies remains limited.⁵² Electric gantry cranes, for example, have been available commercially for years but are not widely used at California ports.⁵³ Use of existing zero-emission forklifts and gantry cranes at ports, warehouses, and

⁵⁰ *Id.*

⁵¹ Antelope Valley Transit Authority. “Electric Bus Conversion,” (available at: <http://www.avta.com/index.aspx?page=482>).

⁵² California Air Resources Board, “Vision for Clean Air: A framework for Air Quality and Climate Planning” at Appendix A, 25-26 (DRAFT June 27, 2012) (“Vision for Clean Air”)

⁵³ *Id.* at Appendix A, 25 (The status of battery-electric gantry cranes is listed as “demonstration under discussion.”); “ARB Tech. Assessment,” at 10 (“Electric cable reel or bus bar [rubber tired gantry cranes] and rail mounted gantry cranes (RMG) are a mature technology used at the automated foreign ports with the first delivered in 2002.”)

distribution centers throughout the state must be a near-term priority for building out a clean freight system.

Ground support equipment. Ground support equipment is the equipment used to move cargo at airports, such as tugs, tractors, container loaders, and buses. Zero-emission ground support equipment is commercially available for baggage tugs, tow tractors, lavatory service trucks, water trucks, and belt loaders.⁵⁴ Electric ground-support equipment is manufactured by a number of different companies including TLD, Tug Technologies Corporation, Charlotte America, Tronair, and Eagle Tugs.⁵⁵ Zero-emission ground support equipment provides an opportunity to reduce the severe air quality and environmental health impacts of airports on nearby communities and advance the development of zero-emission technologies more broadly.

4. Ocean-going Vessels.

Zero-emission technologies for ocean-going vessels are still under development. In the near-term, however, vessels can reduce emissions while in harbor by using shore-side power. While docked, ships can use shore-side electricity to power support equipment on board, such as lighting, cooling, and ventilation.⁵⁶ Shore-side power is commercially available from various manufacturers, and the Air Resources Board has already adopted regulations requiring its use in some settings.⁵⁷ The Middle Harbor terminal at the Port of Long Beach is already incorporating shore-side technology as part of its redevelopment plans, demonstrating the availability of this technology.⁵⁸ Like overhead catenary systems, shore-side power can provide emission reductions

⁵⁴ “ARB Tech. Assessment,” at 9-10; Charlotte America, Products (available at: <http://www.charlatteamerica.com/products>).

⁵⁵ “ARB Tech. Assessment,” at 10.

⁵⁶ *Id.* at 15.

⁵⁷ *Id.*

⁵⁸ Port of Long Beach. “Middle Harbor,” (available at: <http://www.polb.com/about/projects/middleharbor.asp>); Port of Long Beach. “Middle Harbor Redevelopment Project,” (available at: <http://www.middleharbor.com/>).

that benefit overburdened communities adjacent to ports and could be a promising target for IOU pilot project investments.

5. Locomotives.

Zero-emission technologies for locomotives lag behind trucks and support equipment, but there are technologies that can reduce emissions from locomotives in the near-term. The near-term focus should be on increasing the amount of zero-emission miles locomotives travel. This can be accomplished using catenary systems, hybrid diesel-electric locomotives, and battery tender cars.⁵⁹ Catenary systems, as with trucks, involve using overhead wires to connect the train to electricity. Hybrid diesel-electric locomotives rely on batteries that store energy released during braking and reuse it when more power is needed. Battery tender cars are similar to the hybrid diesel-electric technology, but a battery tender car is an entire rail car devoted to batteries. Those batteries can power the locomotive without any power from diesel fuel for a short range. Battery tender cars would be a way to increase the amount of zero-emission miles traveled through highly polluted areas.⁶⁰ IOUs should be encouraged to explore investments in rail electrification infrastructure projects.⁶¹

⁵⁹ See Gladstein, Neandross and Associates on behalf of the California Cleaner Freight Coalition. “Moving California Forward: Zero and Low-Emission Goods Movement Pathways,” at 33-36 (November 2013) (hereinafter “Moving California Forward”); Frank Stodolsk, Argonne National Laboratory, “Railroad and Locomotive Technology Roadmap,” at 45-48 (December 2002) (available at: <http://www.ga.com/websites/ga/docs/transportation/ecco/Railroad%20and%20Locomotive%20Technology%20Roadmap.pdf>); BNSF Railway, “Green Technology” (available at <http://www.bnsf.com/communities/bnsf-and-the-environment/green-technology/>); California Air Resources Board, “Freight Locomotive Advanced Technology Assessment” at 26-50 (September 3, 2014) (available at <http://www.arb.ca.gov/msprog/tech/presentation/rail.pdf>); “ARB Tech. Assessment,” at 13 and 28.

⁶⁰ “Moving California Forward,” at 34.

⁶¹ For example, the Bay Area’s Metropolitan Transportation Commission is exploring the feasibility of pilot projects testing lower-emission rail technologies. See Cambridge Systematics. “Freight Emissions Reduction Plan: DRAFT Rail Technology and Application Assessment” (March 11, 2015).

6. Integrated Projects.

The Commission should also consider projects that span several types of equipment and clean energy generation. For example, the Port of Los Angeles at its May 19, 2016 Harbor Commission meeting will consider a lease renewal at the Pasha terminal. As part of that renewal, the Port obtained funding from Air Resources Board to demonstrate four electric yard tractors, two electric (Class 8) on-road trucks, two electric high-tonnage forklift retrofits, one electric top handler retrofit and an at-berth vessel emission control system.⁶² The Project couples these equipment components with construction of a solar powered microgrid, which will be supported by 2.6-megawatts of backup battery storage “intended to provide critical power to the charging units for the plug-in electric equipment as well as terminal system during a grid power outage.”⁶³ These integrated projects with combined clean power generation and storage are very attractive. Moreover, the Commission should look to encourage projects at facilities that are “magnets” for diesel equipment. A prime example includes warehouses. With the proliferation of warehouses in the Inland Empire region of Los Angeles, there is immense opportunity to facilitate the imminent need for electrification of the vehicles combined with renewable power generation and storage. This is another type of project the Commission should encourage and facilitate.

C. Role of the Commission and IOUs in Supporting Electrification of Freight

The Commission and IOUs have a significant role to play in the policies and investments that will be fundamental in determining both the speed and effectiveness of policy efforts toward

⁶² Port of Los Angeles “May 19, 2016 Agenda,” Item No. 9 (available at: https://www.portoflosangeles.org/Board/2016/May%202016/051916_Agenda_Item_9.pdf).

⁶³ *Id.*

electrification of the freight sector.⁶⁴ To accelerate freight electrification, utilities and regulators must pursue innovative strategies to maximize the benefits of freight electrification to the grid and all utility customers while reducing cost barriers for businesses.

The barriers to electrification of freight vehicles and equipment fall into the same broad categories that have been identified for passenger electric vehicles and can be generally divided under three headings: (1) cost; (2) consumer awareness; and (3) supporting infrastructure. The following discussion offers recommendations for ways the Commission and IOUs can take action to help address each of these. The Commission should consider these opportunities now and provide the IOUs an illustrative list of the types of programs and investments that the Commission will approve in this proceeding.

1. Actions to Address Cost Barriers

As discussed above, the viability of electrification varies across equipment and vehicle types and operational parameters. Some technologies are already commercially available and others are in earlier stages of demonstration. For all of these equipment and vehicles, the primary barrier is not technological feasibility, but cost. These cost barriers can be further broken down into upfront capital costs and operation and maintenance (O&M) costs.

The solutions to the high upfront capital costs for many types of zero-emitting freight equipment and transit vehicles will come with more research and development of battery technology⁶⁵ as well as through improvements in manufacturing efficiencies that come with the development of better supply chains and economies of scale. As noted above, targeting

⁶⁴ CALSTART, “Electric Truck and Bus Grid Integration: Opportunities, Challenges, and Recommendations,” at 19 (Sept. 2015) (available at: http://www.calstart.org/Libraries/Publications/Electric_Truck_Bus_Grid_Integration_Opportunities_Challenges_Recommendations.sflb.ashx).

⁶⁵ Experts expect battery life to improve over the next ten to twenty years, with energy densities that are anywhere from 3 times to 10 times greater than current battery energy density. See CE Delft Report, at 22.

investments in projects that will support the electrification of vehicles and equipment with limited ranges such as transit buses, cargo handling equipment, ground support equipment, drayage trucks, and last-mile delivery trucks will enable the development that is necessary to bring down capital costs for other vehicles types.⁶⁶ Using investments to target facilities that house or will attract multiple pieces of equipment or vehicles rather than individual demonstration projects also “allows for concrete examples of cost savings and economic benefits when actually switching to electrified technologies”⁶⁷

Even without significant changes in upfront capital costs, certain types of commercially available battery electric equipment such as transit buses should already be cost competitive because higher upfront capital costs should be offset by lower O&M costs. Maintenance of electric vehicles is substantially less expensive than conventional technologies, and, in theory, “fuel” operating costs should also be lower. Several studies, however, have found demand charges and time-of-use rate structures negatively skew these operational costs.⁶⁸

The 2015 Draft ZEV Action Plan recommends that the Commission “[d]evelop electricity tariffs for public transit fleets and the freight sector that encourage electrification, promote efficient utilization of grid resources and allow for recovery of utility capital costs.”⁶⁹ CALSTART’s review recommended designing rate structures that: acknowledge the unique needs of the electric truck and bus market; recognize the environmental and grid benefits of

⁶⁶ *See, e.g.*, CE Delft Report, at 101.

⁶⁷ ICF. “California Transportation Electrification Assessment – Phase 3-Part A: Commercial and Non-Road Grid Impacts – Final Report,” at 48 (Jan. 2016) (available at: <http://www.caletc.com/wp-content/uploads/2016/01/California-Transportation-Electrification-Assessment-Phase-3-Part-A.pdf>).

⁶⁸ *See, e.g., id.* at 47 (“Utility rate structures are one of several key decision factors for potential [transportation electrification] consumers, and can represent the difference between a consumer accruing a return on their investment or realizing a net loss.”).

⁶⁹ 2015 Draft ZEV Action Plan, at 20.

electrification in the heavy-duty sector; separately submeter such charging where it makes sense; and are compatible with fleet operations.⁷⁰

Demand charges in particular have been identified as a potentially significant barrier to investments in electrification.⁷¹ The 2015 Draft ZEV Action Plan again recommends that regulators “[c]onsider revising demand charges to encourage zero-emission vehicle use in the heavy duty vehicle sector” and “[c]onsider expanding [the] three year demand charge waiver for plug-in electric buses to a minimum of 12 years.”⁷²

In addition to simply changing the way demand charges are calculated and assessed, other Commission policies could be adopted to reduce the cost of installing charging infrastructure. As it has done on the passenger vehicle side, the Commission should allow IOUs to rate-base some or all of the costs to bring the necessary power up to and including the “make-ready” stub.⁷³

Demand charges could also be mitigated by encouraging investments in infrastructure such as smart chargers, storage, energy efficiency and on-site renewables to alleviate peak demand. CALSTART concluded that:

Smart charging systems can enable better grid integration by balancing EV charging and building load to charge the greatest number of vehicles at the lowest cost possible and increase certainty of service for the fleets. In addition to reducing demand charges, smart charging E-Trucks & Buses can also minimize the impact of TOU and reduce charging infrastructure costs. But to achieve the latter benefit, smart charging strategies need to be taken into account when calculating the load added by E-Truck & Bus charging. One fleet detailed a particular case where utility code mandated that a facility electric infrastructure be upgraded to accommodate all the ETrucks charging at the same time at

⁷⁰ CALSTART. “Electric Truck and Bus Grid Integration: Opportunities, Challenges, and Recommendations,” at 26.

⁷¹ CALSTART. “Electric Truck and Bus Grid Integration: Opportunities, Challenges, and Recommendations,” at 16.

⁷² 2015 Draft ZEV Action Plan, at 18, 21.

⁷³ CALSTART. “Electric Truck and Bus Grid Integration: Opportunities, Challenges, and Recommendations,” at 19.

the maximum charging rate even if charging could easily be managed to reduce the peak facility load.⁷⁴

Energy storage systems can also be used to smooth out peak loads. ICF noted that “there may be a way to monetize the value of the secondary life of batteries and pass those benefits on to consumers at the point of purchase” and suggested that the Commission could extend to other vehicle sectors its approval of “PG&E’s request to implement a Plug-In Electric Vehicle Pilot 32 to evaluate whether there is a sufficient business case for light-duty automobile manufacturers to provide grid services from second life batteries”⁷⁵ Second-life battery applications could be of particular interest in freight operations, which often involve larger fleets of equipment and vehicles. The Commission should explore policies that could promote storage projects at freight facilities to mitigate demand charge disincentives.

2. Actions to Address Consumer Awareness Barriers.

As with passenger vehicle electrification, many studies have identified consumer awareness as a barrier that could be addressed by IOUs. CALSTART’s analysis found that: “[u]tility rates are difficult to understand”; “it is difficult to analyze charging data and find ways to minimize costs without utility assistance”; and “not all electric utilities are actively engaged and provide helpful guidance to truck and bus fleets deploying electric vehicles.”⁷⁶ As a result, CALSTART and others have recommended that IOUs be directed to create dedicated program manager positions to guide owners and operators in procurement and other decisions to electrify freight activities.⁷⁷ Such positions could provide a number of useful services including educating customers about the types of zero-emission technologies available

⁷⁴ *Id.* at 21.

⁷⁵ ICF. “California Transportation Electrification Assessment – Phase 3-Part A: Commercial and Non-Road Grid Impacts – Final Report,” at 41 (Jan. 2016)

⁷⁶ CALSTART. “Electric Truck and Bus Grid Integration: Opportunities, Challenges, and Recommendations,” at 18.

⁷⁷ *Id.* at 25.

and how they could impact electricity bills, clarifying costs and responsibilities for system upgrades, and assisting in load management and devising charging schedules that avoid the most expensive hours and reduce or eliminate infrastructure upgrades.⁷⁸ Such a program manager could also engage with local, regional and state planning agencies to help advance zero-emission freight technologies and help design programs that allow for IOUs to leverage the public investments with their own planned investments.⁷⁹

3. Actions to Address Infrastructure Barriers

Infrastructure will obviously be a critical space for Commission and IOU involvement. Building out the infrastructure to support a zero-emission freight system will require both planning and investment.

As noted above, IOUs should be encouraged to engage in the infrastructure planning being led by other agencies. This would include regional transportation planning, air quality planning, and project-specific decisions that hold the potential for advancing freight electrification. Such engagement will improve the decision-making of those agencies and also identify promising opportunities for IOU investment.

At the project-specific level, IOU engagement should be encouraged to support feasibility analyses. CALSTART found that there is currently a lack of information on heavy-duty charging infrastructure costs and charging patterns and recommended comprehensive load studies to monitor the actual distribution system upgrade costs and develop charging load profiles for different medium and heavy-duty vehicle vocations.

Such a study could also look at answering questions fleets have: What is the available capacity (kW) and utilization (%) of the transformer that will support the E-Truck & Bus deployment? Is a single (larger) new substation or substation upgrade or several (smaller)

⁷⁸ ICF. “California Transportation Electrification Assessment – Phase 3-Part A: Commercial and Non-Road Grid Impacts – Final Report,” at 42-43.

⁷⁹ *Id.* at 44.

feeder upgrades more cost effective? [What] would a[n] “E-Truck or Bus ready facility” look like and how much would it cost to create a purpose-built facility that can easily accommodate vehicle deployments in the future?⁸⁰

Areas for IOU investment include projects that will accelerate the commercialization of charging and range-extending infrastructure similar to investments approved for passenger vehicles. In addition, investments in smart charging technologies, on-site generation and energy storage systems are also important for reducing peak demand and associated demand charges. As noted above, these investments should be encouraged by allowing IOUs to rate-base some or all of such investments. CALSTART recommends that IOUs also “be allowed to play a role, along with other market players, in developing and supporting charging stations to allow truck & bus fleets, E-Truck & Bus manufacturers and federal and/or state agencies to focus their resources on purchasing and deploying vehicles.”⁸¹

Finally, in addition to these general investments in infrastructure that will promote the adoption of zero-emission freight equipment, IOUs should be allowed to invest in specific projects that will help enable adoption and operation of zero-emission technologies. As noted above, investing in projects at ports and distribution centers/warehouses promotes rapid deployment of commercially available technologies, which, in turn, provides long-term benefits for cost reductions in other applications, maximizes the air quality benefits to impacted communities around those facilities, and also minimizes the risk of stranded assets because such investments can be coupled with specific equipment electrification projects thereby avoiding the “chicken and egg” problem of other infrastructure investments.

⁸⁰ CALSTART. “Electric Truck and Bus Grid Integration: Opportunities, Challenges, and Recommendations,” at 25.

⁸¹ *Id.* at 26.

III. RECOMMENDATIONS ON STRAW PROPOSAL.

The SB 350 Transportation Electrification Application Guidance Straw Proposal (Straw Proposal) in Appendix A is a good start toward meeting the requirements of SB 350, but the goal must be to encourage faster action. We respectfully suggest that, given the urgency of incorporating zero-emission technologies, this application guidance enable swift deployment of electric vehicle infrastructure. California must move quickly to meet rapidly approaching federal attainment deadlines. This means facilitating electrification projects as quickly as possible. With this goal of a streamlined application process in mind, EYCEJ, CCAEJ, and Sierra Club offer the following specific edits:

- In section “2,” the application should make clear that in addition to being statewide or regional, programs can be local.
- Also, in section “2,” the criteria should clarify that while “leveraging federal funds” is certainly desirable, this criterion is not intended to limit applications to projects that are also receiving federal or other public funding.
- In section “3a.ii,” there is a criterion for protecting “private” investments, but this provision should be expanded to include “public” investments.
- In section “3.a.iii.2,” the document talks about “leveraging high impact decision makers.” The straw proposal should provide some guidance on who are high impact decision makers. In particular, ports and last-mile delivery companies should be called out as high impact decision-makers given the immense potential to achieve the goals expressed in SB 350.
- In section “3.b.1,” we recommend included compliance with National Ambient Air Quality Standards and California Ambient Air Quality Standards as a relevant policy.

EYCEJ, CCAEJ, and Sierra Club support the Commission’s approach of allowing the utilities to be creative in identifying programs and investments in transportation electrification. EYCEJ, CCAEJ, and Sierra Club recommend that the Commission’s guidance include an illustrative list of the appropriate programs and investments in transportation electrification, while providing the utilities the opportunity to develop other types of applications that meet the criteria in the guidance. This approach would signal the scale and variety of applications that are eligible for approval. Such examples would also clarify the meaning of the guidance criteria. The illustrative list of programs and investments should include the following opportunities in the freight sector: 1) Los Angeles harbor area catenary project; 2) electrification of the I-710 corridor; 3) projects to encourage clean energy and transportation electrification at warehouses in the Inland Empire.

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IV. CONCLUSION

For the foregoing reasons, EYCEJ, CCAEJ, and Sierra Club respectfully request that the Commission adopt the recommendations set forth in these comments.

Dated: May 18, 2016

Respectfully submitted,

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