



Legislation Text

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SUBJECT:

PRESENTATION ON THE DRAFT FINAL HEAVY DUTY ZERO EMISSION TRUCK TRANSITION PLAN PURSUANT TO TRUCK OBJECTIVE 1A OF THE MARITIME CLEAN AIR STRATEGY AND DIRECTION TO STAFF

EXECUTIVE SUMMARY:

The Maritime Clean Air Strategy (MCAS) includes a vision of “Health Equity for All” and thirty-four near-term objectives, several of which aim to reduce emissions from maritime-related activities and industries. Importantly, the MCAS aspires to achieve 40 percent zero emission heavy-duty truck trips to/from the District’s marine cargo terminals by June 30, 2026, and 100 percent zero emission heavy-duty truck trips by December 31, 2030. At the November 9, 2021 Board of Port Commissioner’s meeting, the Board directed staff to hire a consultant to help prepare a Heavy-Duty Zero Emission Truck Transition Plan that identifies a pathway(s) to meet the MCAS zero emission truck goals for 2026 and 2030. This agenda item summarizes the Draft Final Heavy-Duty Zero Emission Truck Transition Plan (Truck Transition Plan).

To advance progress towards the 2026 goal, the Truck Transition Plan identifies a Targeted Zero Emission Pathway. This pathway consists of replacing between 86 to 153 diesel truck trips with zero emission truck trips. The Truck Transition Plan recommends strategies to help advance achieving the 2026 goal including:

- Providing technical assistance to truck operators;
- Pursuing funding opportunities to offer subsidies to reduce the initial capital costs of zero emission trucks;
- Assisting in the planning, design, and implementation of zero emission supporting infrastructure; and
- Supporting and promoting policy goals to increase adoption of zero emission trucks.

Advancing progress towards the District’s long-term goal in 2030 would involve the following framework:

- Developing a truck registry to track trips and monitor progress;
- Conducting biennial updates to the Plan; and
- Collecting data for new leases and projects located at the marine cargo terminals.

As implementation of zero emission trucks begins, the District should remain flexible to evolving

technologies, emerging business models, and new strategies to support maritime commerce.

RECOMMENDATION:

Receive the presentation and provide direction to staff, on the Draft Final Heavy-Duty Zero Emission Truck Transition Plan pursuant to Truck Objective 1A of the Maritime Clean Air Strategy

FISCAL IMPACT:

This agenda has no fiscal impact. Funds for the Electrification Clean Truck Program (\$1,080,000) were approved by the Board in the Economic Recovery Program. Funds for Technical Assistance (\$60,000) are included in the Professional Services expense account in the FY 2023 budget within the Planning Department. Funds for the Truck Registry (\$150,000) are included in the Technology Capital Projects expense account in the FY 2023 budget within the Technology Management Program. Future years' funds will be included in their corresponding budget year and are subject to Board approval upon adoption of each year's budget.

COMPASS STRATEGIC GOALS:

This agenda item supports the following Strategic Goal(s).

- A Port that the public understands and trusts.
- A thriving and modern maritime seaport.
- A Port with a healthy and sustainable bay and its environment.
- A Port with an innovative and motivated workforce.
- A financially sustainable Port that drives job creation and regional economic vitality.
- Not applicable.

DISCUSSION:

The Board of Port Commissioners adopted the Maritime Clean Air Strategy (MCAS) on October 12, 2021. The MCAS includes a vision of "Health Equity for All" and contains thirty-four near-term objectives, several of which aim to reduce emissions from maritime-related activities and industries. The MCAS also includes long-term goals to achieve 100 percent zero emission trucks and cargo handling equipment by 2030. These aspirational goals advance the conversion to zero emission technologies ahead of the 2035 zero emission goals proposed by the State and based on staff research are currently the most ambitious goals for heavy-duty trucks in the country.

The MCAS aspires to achieve 40 percent zero emission truck trips to/from the District's marine cargo terminals by June 30, 2026, and 100 percent zero emission heavy-duty truck trips by December 31, 2030. At the November 9, 2021 Board meeting, the Board directed staff to hire a consultant to help prepare a Heavy-Duty Zero Emission Truck Transition Plan (Truck Transition Plan) that identifies a potential pathway(s) to meet the MCAS zero emission truck goals for 2026 and 2030. Staff were requested to complete the Truck Transition Plan and provide a presentation to the Board in June 2022 (Attachment A). The Draft Final Heavy-Duty Zero Emission Truck Transition Plan can be found in Attachment B. An overview of the Truck Transition Plan will be described herein.

Approach to the Truck Transition Plan

The purpose of the Truck Transition Plan is to serve as a roadmap to attain the District's ambitious goals to reach zero emission trucking at the marine cargo terminals. Implementation of the Truck Transition Plan will support emission reduction regionally and in neighboring communities; help existing fleet and truck operators prepare for new zero emission truck requirements proposed by the California Air Resources Board; and position the District for State and Federal funding opportunities regarding transportation electrification.

The general approach to develop the Truck Transition Plan consisted of multiple steps, as follows:

- Creation of a Truck Operating Profile from which to forecast zero emission pathways;
- Formation of a Preliminary Zero Emission Pathway based on truck turnover, technical capability of zero emission technology, and commercial readiness;
- Development of a Targeted Zero Emission Pathway for 2026 to guide specific strategies for implementation;
- Analysis of a Near Zero Emission Pathway; and
- Recommendation of a list of Implementation Strategies and Next Steps.

Each of these steps will be described.

Truck Operating Profile

District staff and a consultant, WSP, developed a Truck Operating Profile of heavy-duty trucks which transport freight to and from the marine cargo terminals. Information regarding the trucks was collected through two primary methods: an Automated License Plate Reader (ALPR) positioned at the Tenth Avenue Marine Terminal and surveys of fleet managers and truck drivers from both marine cargo terminals. The data collected provided important information regarding the age of trucks, their mileage, daily operating distances, and frequency of trips to the marine terminals. The Truck Operating Profile represents a sample of the overall population of heavy-duty trucks which visit the terminals.

Preliminary Zero Emission Pathway

Based on the Truck Operating Profile, an analysis was conducted to forecast truck turnover based on assumptions regarding a diesel truck's useful life and the ability of battery electric truck technology and/or fuel cell electric trucks to achieve the operating demands of existing trucks. Due to a lack of fuel cell electric trucks in the market, emphasis of meeting the operating demands of trucks in 2026 was focused on battery electric trucks. The feasibility of achieving daily operating demands of existing diesel trucks with battery electric trucks considered scenarios with and without the use of opportunity charging. Opportunity charging refers to the need to recharge a battery electric vehicle during the course of its duty cycle to extend its mileage capability.

The results indicated that by 2026, between 25 percent and 50 percent of the truck population may meet their useful life thresholds. Replacing these trucks with capable battery electric trucks results in only 20 percent zero emission truck trips without opportunity charging and 37 percent zero emission truck trips with opportunity charging. Both scenarios fall short of the 40 percent goal. By 2030, approximately 63 percent of the truck population may reach useful life thresholds resulting in just over 60 percent of truck trips accommodated by zero emission truck technology. Similar to the 2026 goal, the 2030 goal will not be achieved based on standard assumptions of vehicle replacement and

current knowledge of zero emission technology.

Based on the findings above, a Preliminary Zero Emission Pathway was recommended to achieve the near-term 2026 goal focusing primarily on the deployment of battery electric trucks with the addition of opportunity charging. As stated, this would possibly achieve 37 percent of truck trips. To close the remaining three percent gap by 2026, strategies to advance fuel cell electric trucks with associated infrastructure and/or promote early retirement of diesel trucks to battery electric trucks are recommended. To achieve the 2030 goal, a combination of battery electric trucks with opportunity charging, as well as fuel cell electric trucks will be needed. In addition, infrastructure to support charging and hydrogen fueling will need to be developed across freight corridors throughout the western United States. Moreover, diesel trucks will need to be replaced prior to the end of their useful life to achieve 100 percent zero emission truck trips by the end of 2030.

Targeted Zero Emission Pathway for 2026

Because the turnover of diesel trucks according to useful life assumptions, fails to result in the necessary truck trips to achieve the District's goals for 2026 and 2030, targeting trucks for early replacement is recommended to achieve the District's zero emission targets. Due to the current operating profile of trucks, the state of zero emission technology, and present market and regulatory conditions, emphasis was focused on developing a Targeted Zero Emission Pathway for 2026. Creating a targeted pathway to 2030 is premature given the uncertainty of truck operating logistics as zero emission trucks emerge over the next few years. Rather, a framework to guide the transition to zero emission trucks by 2030 is recommended.

By 2026, a targeted population of between 86 to 153 trucks are estimated to be capable of achieving 40 percent of truck trips to the District's marine cargo terminals using battery electric trucks if opportunity charging is included. These vehicles represent a population that will not have fully met their useful life thresholds by 2026 as some may be within six years of their useful life by 2026. Considering the capital cost of battery electric trucks, charging equipment for each truck, and the residual value of diesel trucks prior to the end of their useful life, the overall costs to replace these trucks ranges between \$49M to \$87M. These costs do not reflect utility enhancements that will be necessary to provide electrical power to specific locations, nor do these costs represent incentives which reduce the overall capital cost.

Furthermore, it is estimated that additional opportunity charging will be necessary to allow these trucks to meet their operating demands. Up to 60 chargers may be necessary to provide opportunity charging for this targeted population. As the District is considering up to four locations where infrastructure could be sited for opportunity charging, minimum costs to deploy these chargers is projected to be \$16M prior to incentives; however, costs will likely be more based on utility enhancements, site characteristics where chargers can be developed, and land value.

Further analysis is being conducted by District staff to evaluate specific locations where opportunity chargers could be deployed near the marine cargo terminals and throughout the region. A Request for Information (RFI) was distributed on May 23, 2022 seeking input from public and private organizations on eight potential sites where charging and/or hydrogen fueling stations could be deployed. The RFI will help to better understand potential site designs, costs, and opportunities for innovative public-private partnerships to possibly develop these locations. District staff will present the results of the RFI and provide recommendations for deploying charging stations and/or hydrogen fueling stations to the Board by the end of 2022.

Implementation Strategies

The Truck Transition Plan includes a suite of strategies to help advance progress towards the District's 2026 goal as well as the longer-term 2030 goal. The strategies outlined below provide a more tactical approach to reach the 2026 goal whereas a guiding policy framework is encouraged to support the transition to 100 percent zero emission trucks by 2030. As the District evaluates progress to implement zero emission truck trips, new strategies will emerge and develop from the preceding efforts to eventually achieve a systems-level change.

Strategies to achieve the 2026 Targeted Zero Emission Pathway are discussed below.

Provide Technical Assistance to Truck Operators

Technical assistance could be afforded to truck operators who transport freight to and from the District's marine terminals. This assistance will help fleets prepare for pending zero emission regulations and position them for funding opportunities. The District could allocate resources to assist with, but not limited to, the following items:

- Understanding California proposed regulations;
- Preparing zero emission truck acquisition plans;
- Navigating funding and incentive programs;
- Conducting total cost of ownership analyses; and
- Determining cursory infrastructure needs.

Staff recommends up to \$60,000 be allocated to provide technical assistance. Funds associated with this recommendation are included in the proposed Fiscal Year 2023 budget within the Professional Services expense account (#620100).

Pursue Funding Opportunities to Offer Incentives to Reduce Costs

To encourage early adoption of battery electric trucks, the District could supplement state and utility based incentive programs with an increased incentive amount to cover the high upfront expenses of zero emission trucks. Based on a comparative cost analysis between a diesel truck and battery electric truck, the District could further offer subsidies between \$45,000 to \$120,000 in incentives per truck to reduce the higher upfront expenses and achieve cost parity with a diesel truck within the first three years of operation. Considering the Targeted Zero Emission Pathway, this incentive program is estimated to cost the District between \$4M and \$18M between the present and 2026. The District will pursue funding opportunities to provide additional incentives from local, state, and federal resources.

Offering an incentive should focus on those truck operators which comprise the Targeted Zero Emission Pathway and seek to ensure the zero emission trucks continue to perform truck trips to the marine cargo terminals. The structure of the incentive program should consider equal opportunity enhancements based on small business status, veteran- and woman-owned truck operators, and ADA status of the potential recipients. Other enhancements could consider higher incentives based on early retirement of existing diesel trucks.

Assist in the Planning, Design, and Implementation of Zero Emission Infrastructure

To support the transition to zero emission trucks, the District should pursue and consider assisting in

the deployment of infrastructure such as electric truck charging and/or hydrogen fueling stations. A critical finding of the Truck Transition Plan is that opportunity charging is needed to achieve the near-term 2026 target of 40 percent zero emission truck trips. It is estimated that roughly half of the Targeted Zero Emission Pathway will need opportunity charging to accomplish their operating demands. As stated above, minimum projected costs to deploy charging infrastructure is approximately \$16M prior to incentives; however, costs will likely be more based on utility enhancements, site characteristics where chargers can be developed, and land value.

Based on the needs of the truck operators, these sites could potentially serve as locations where trucks could be domiciled if the truck owners do not have access to overnight charging. Emerging business models such as Trucking As A Service, where a third party owns, operates, and maintains trucks and chargers providing vehicles on a subscription basis to truck operators may also be considered.

As stated, District staff have released an RFI to discern information regarding eight locations within the vicinity of the District's marine cargo terminals and throughout the region where infrastructure could potentially be positioned. These sites were selected based on conversations with the San Diego Association of Governments, the California Transportation Agency, and others. District staff will present the results of the RFI and provide recommendations for deploying charging stations and/or hydrogen fueling stations to the Board later this calendar year.

Support and Promote Policy Goals to Increase Adoption of Zero Emission Trucks

The Truck Transition Plan identifies a list of policy goals to enable the conversion to zero emission trucks while advocating for the best interests of the District and its stakeholders. These policy goals are intended to assist in implementation of the truck goals, prepare for upcoming zero emission regulations, and position itself for state and federal funding opportunities. The policy goals are outlined below:

- Leverage partnerships with regional agencies such as San Diego Gas and Electric, the San Diego Air Pollution Control District, the San Diego Association of Governments, and others to encourage public investment in the San Diego Region to support freight electrification;
- Advocate for funding equity among California ports and encourage set-asides in state and federal funding programs to implement the Truck Transition Plan;
- Reduce the sales tax burden for the procurement of zero emission medium- and heavy-duty trucks;
- Increase weight limits above 82,000 pounds for over-the-road Class 8 electric trucks, where feasible;
- Collaborate with Caltrans on priority access to dedicated lanes and border crossings for zero emission trucks, where appropriate;
- Evaluate Department of Transportation requirements regarding "Hours of Service" to consider time spent while charging an electric truck;
- Support the continuation of electric utility-based programs to build make-ready infrastructure for medium- and heavy-duty charging;
- Encourage local and utility streamlining of permits for electric vehicle charging and hydrogen fueling infrastructure installation; and
- Advocate for continued deployment of infrastructure to support zero emission trucks along highway and interstate corridors throughout the western United States to support long-term

freight transportation.

While the strategies geared for 2026 are more specific, a longer-term framework has been established for achieving the 2030 goals of 100 percent zero emission truck trips. This framework is meant to keep the District on course to achieve the 2030 goal through monitoring zero emission truck trips, re-evaluating strategies, and assessing consistency with MCAS for new projects at the marine terminals. These strategies are outlined below.

Develop a Truck Registry to Track Truck Trips and Measure Progress

According to MCAS Truck Objective 1D, the District will develop and deploy a truck registry by June 30, 2023. The registry will consist of a database of trucks which transport freight at the marine cargo terminals. Pertinent information regarding truck characteristics, operating profiles, and fuel type will be collected. The registry will be able to track trips to and from each of the terminals to measure progress on zero emission truck goals. The data will allow District staff continued insight into trucking operations as they evolve over time.

Conduct Biennial Updates to the Truck Transition Plan

MCAS Truck Objective 1E includes a biennial review of the truck baseline, assessment of the state of zero emission technology, evaluation of market conditions, and identification of funding availability. The biennial status report presents an opportunity to re-evaluate and update the Truck Transition Plan's strategies after 2026. The first biennial update is scheduled to be completed by the end of 2023.

Collect Data for New Leases and Projects at the Marine Cargo Terminals

District staff will review new leases and projects at the marine cargo terminals and associated truck trips. Data regarding the number of projected truck trips and anticipated types of trucks will be collected. This data will help to inform the District as to the status of zero emission truck trips according to MCAS goals and the baseline of 100,000 diesel trucks trips to the marine terminals (in accordance with the MCAS). The data will also inform the biennial updates to this Truck Transition Plan, as well as market availability of zero emission trucks, daily mileage limitations, and infrastructure and/or manufacturer delays.

Near-Zero Emission Analysis

Near-zero emission trucks offer the ability to reduce criteria air pollutants and greenhouse gas emissions compared to traditional diesel trucks. The definition of a near-zero emission vehicle has evolved and deserves explanation. The California Code of Regulations (CCR 13, CCR section 1963 (c)(16)) describes a near-zero emission vehicle as essentially a plug-in hybrid vehicle which operates from electricity stored in a battery for a minimum number of miles and can be recharged from an external source. In the District's MCAS, a near-zero emission vehicle also includes one that can be powered by an alternative fuel like compressed natural gas (CNG) that eliminates diesel particulate matter emissions and reduces nitrogen oxide (NOx) emissions by 90 percent. These vehicles have become commonly called Low Emissions Trucks.

Although proposed regulations aim to require the transition of heavy-duty trucks to zero emissions, the state acknowledges that not all trucks will become zero emissions on the same regulatory timeline. For example, certain types of trucks which visit ports may be exempted from converting to zero emission by 2035. These include car carrier trucks or trucks that utilize auxiliary power to operate hydraulic pumps on a trailer. Truck operators or fleets who control these types of trucks may

be defined as “high priority fleets” by CARB and afforded greater flexibility when converting their trucks to zero emissions through 2042. Some truck operators and fleets may not have to convert to zero emissions at all.

Fleets or truck operators with these types of trucks, which may not have to convert to zero emissions straightaway, may be able to convert to near-zero emission trucks or low emission trucks to reduce overall emissions and remain in compliance with state regulations. CARB may allow near-zero emission (plug-in hybrid) trucks in place of a zero emission trucks in the proposed regulations. However, it should be noted that near-zero emission (plug-in hybrid) heavy-duty trucks are limited in the marketplace with only one announcement of a manufacturer which can upfit a truck with near-zero emission technology. A low emission truck could be procured by a fleet or truck operator who does not need to comply with upcoming zero emission requirements (for example, a truck operator that does not fall into a drayage requirement nor a high priority fleet requirement). There are commercially available CNG heavy-duty trucks that have low-NOx engine certification. While use of these trucks would not achieve the zero emission goals of the District, they do reduce emissions which results in less health risk to nearby communities.

Stakeholder Outreach

Stakeholder outreach was conducted during the development of the Truck Transition Plan. The table below presents the dates and stakeholder events conducted.

Table 1. Stakeholder Outreach

Date	Stakeholder Events	Number of Participants
3/3/2022	AB 617 Community Emission Reduction Program / Maritime Clean Air Strategy Implementation Subcommittee	15
3/24/2022	Maritime Stakeholder Forum	60
4/7/2022	Pepper Park Outreach Event	5
4/9/2022	Pepper Park Outreach Event	40
4/26/2022	AB 617 Portside Community Steering Committee	50
5/4/2022	Truck Operator Meeting	38
5/5/2022	Pepper Park Outreach Event	80
5/19/2022	Port Tenants	10
5/26/2022	Port Tenants	10

Looking Forward and Next Steps

The Truck Transition Plan provides a deeper understanding of the current truck operating profile at the District and provides a suite of strategies that can help the District advance progress towards its near-term zero emission goals given the state of technology, as well as a framework for maintaining direction to accomplish the long-term 2030 goal. As the truck operating profile changes over time and zero emission technologies advance, the Truck Transition Plan will too evolve. District staff and stakeholders should remain flexible to evolving technologies, emerging business models, and new strategies to support maritime commerce.

In addition to information and guidance provided in the Truck Transition Plan, concurrent efforts

already underway will proceed and new initiatives will commence. A summary of these efforts, including next steps as applicable, is provided below.

Zero Emission Technical Assistance Program

During Fiscal Year 2023, staff will spearhead a program to offer technical assistance and education to fleets and truck operators regarding the transition to zero emission technologies. The program will provide individual guidance to fleets and/or truck operators and will be conducted by a consultant with an initial budget of \$60,000 from non-personnel expenses. Future funding for the Zero Emission Technical Assistance Program may be allocated in future Fiscal Years with approval from the Board.

Zero Emission Truck Program

Per MCAS Truck Objective 1B, staff have been working to launch an initial zero emission truck program to stimulate early adoption of zero emission trucks to the District's marine terminals. With an initial \$1M, the program will seek to develop an incentive structure, fund the replacement of several trucks, and identify additional funding partners to deploy zero emission technology. The program will be presented to the Board for by the end of 2022. Upon further direction from the Board, staff will continue to develop incentive programs to encourage replacement of diesel trucks for zero emission technology.

Zero Emission Infrastructure Site Analysis

MCAS Truck Objective 2A serves to identify at least four public charging locations where charging ten medium- and/or heavy-duty vehicles can occur to support opportunity charging. As mentioned, District staff recently released a Request for Information (RFI) which identifies eight potential locations situated along freight corridors throughout the San Diego region and/or in close proximity to the District's marine cargo terminals where infrastructure to support zero emission vehicles could possibly be sited. Staff are seeking to learn about design concepts, business models, and costs to provide zero emission infrastructure at these locations. Staff will present a concept plan to the Board for further consideration by the end of 2022.

Truck Registry and Tracking Mechanism

MCAS Truck Objective 1D is to establish a tracking mechanism to measure progress to achieve the MCAS goals of 40 percent zero emission truck trips by 2026 and 100 percent by 2030. To accomplish the objective, staff will identify appropriate processes and technologies to count and report truck trips. As such, the system will be deployed at both the Tenth Avenue Marine Terminal and the National City Marine Terminals. Equipment and/or capital expenses of \$150,000 for the Truck registry are included in the Fiscal Year 2023 budget. Deployment and Implementation of the truck tracking system will occur by June 30, 2023.

General Counsel's Comments:

The Office of the General Counsel has reviewed and approved this agenda, as presented, as to form and legality.

Environmental Review:

This Board item does not constitute an "approval" or a "project" under the definitions set forth in

California Environmental Quality Act (CEQA) Guidelines Sections 15352 and 15378 because no direct or indirect changes to the physical environment would occur. CEQA requires that the District adequately assess the environmental impacts of its projects and reasonably foreseeable activities that may result from projects prior to the approval of the same. Any project approval resulting in a physical change to the environment will be analyzed in accordance with CEQA prior to such approval. CEQA review may result in the District, in its sole and absolute discretion, requiring implementation of mitigation measures, adopting an alternative, including without limitation, a “no project alternative” or adopting a Statement of Overriding Consideration, if required. The current Board direction in no way limits the exercise of this discretion. Therefore, no further CEQA review is required.

In addition, this Board item complies with Section 87 of the Port Act, which allows for the establishment, improvement, and conduct of a harbor, and for the construction, reconstruction, repair, maintenance, and operation of wharves, docks, piers, slips, quays, and all other works, buildings, facilities, utilities, structures, and appliances incidental, necessary, or convenient, for the promotion and accommodation of commerce and navigation. The Port Act was enacted by the California Legislature and is consistent with the Public Trust Doctrine. Consequently, this update is consistent with the Public Trust Doctrine.

Finally, this Board item does not allow for “development,” as defined in Section 30106 of the California Coastal Act, or “new development,” pursuant to Section 1.a. of the District’s Coastal Development Permit (CDP) Regulations because it will not result in, without limitation, a physical change, change in use or increase the intensity of uses. Therefore, issuance of a Coastal Development Permit or exclusion is not required. However, development within the District requires processing under the District’s CDP Regulations. Future development, as defined in Section 30106 of the Coastal Act, will remain subject to its own independent review pursuant to the Districts certified CDP Regulations, PMP, and Chapters 3 and 8 of the Coastal Act. The Board’s direction in no way limits the exercise of the District’s discretion under the District’s CDP Regulations.

Diversity, Equity, and Inclusion Program:

This agenda sheet has no direct impact on District workforce or contract reporting at this time.

PREPARED BY:

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Attachment(s):

Attachment A: Draft Presentation
Attachment B: Final Draft Heavy-Duty Zero Emission Truck Transition Plan