ATTACHMENT A

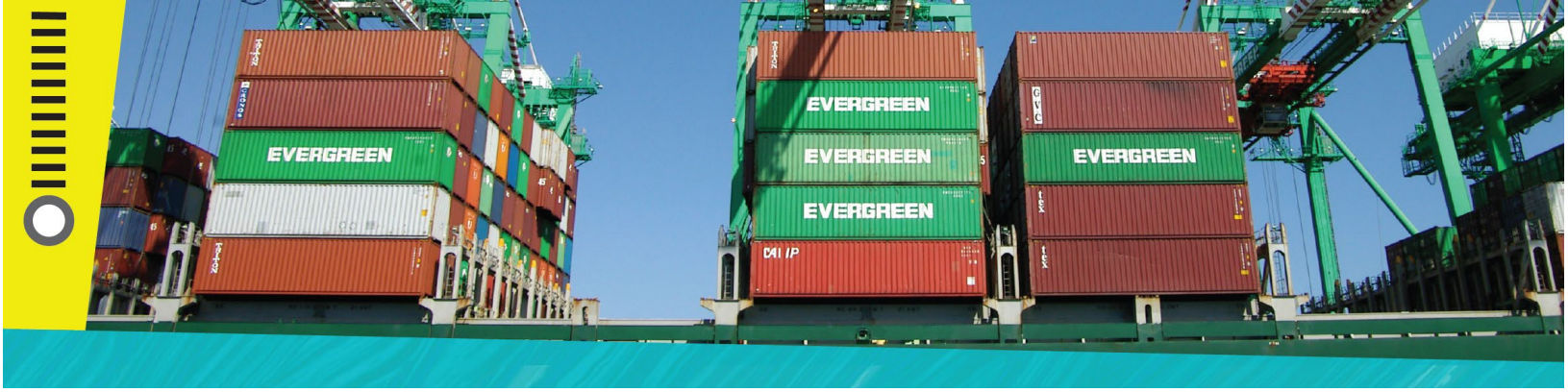
Los Angeles County
Goods Movement Strategic Plan

Clean Truck Initiative Working Group

December 17, 2019

Prepared by Arellano Associates

Metro



Clean Truck Initiative Working Group

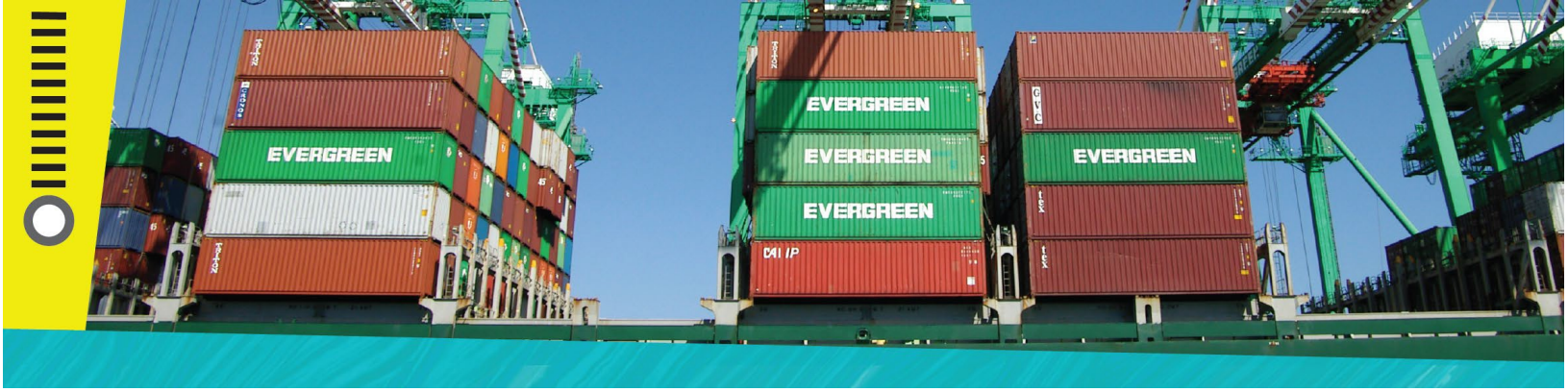
Location **Gateway Cities Council of Governments**

Date **Tuesday, December 17, 2019** **12:00 PM -- 3:00 PM**

ATTENDEES:

PUBLIC SECTOR

Alison Linder, SCAG
Allison Yoh, Port of Long Beach
Dan Kopulsky, Caltrans
David MacGregor, County of Los Angeles
Deanna Matsumoto, CSULB CiTTI/METRANS
Denise Gailey, Air Quality Management District (AQMD)
Erick Martell, Port of Los Angeles
Gary Gero, LA County
Genevieve Giuliano, USC/METRANS
Hilary Norton, CTC/Fixing Angelinos Stuck in Traffic (FAST)
James Shankel, Caltrans
Jocelyn Rivera, LA County, Fourth District
Karen Heit, Gateway Cities Council of Governments
Keith Lehto, County of LA Public Works
Kerry Cartwright, Port of Los Angeles
Kevin Barker, California Energy Commission
Luke Klipp, City of Long Beach
Matthew Arms, Port of Long Beach
Matt Miyasato, Air Quality Management District (AQMD)
Max Reyes, City of Los Angeles
Michael Ervin, Supervisor Hahn's Office
Nancy Pfeffer, Gateway Cities Council of Governments
Paul Hubler, San Gabriel Valley Council of Governments
Steve Lantz, South Bay Council of Governments
Sue Dexter, USC/METRANS
Sydney Vergis, California Air Resources Board (CARB)
Waqas Rehman, LA County, First District
Wayne Nastri, Air Quality Management District (AQMD)



PRIVATE SECTOR

Aaron Gillmore, BYD Motors
Damon Hannaman, Southern California Edison
Enzo Bauk, US Hybrid
John Gerra, BYD Motors
Justin Loyear, Cummins Westport
Kevin Maggay, SoCal Gas
Matt Schrap, California Fleet Solutions/Velocity Vehicle Group
Mike Ippoliti, HDR
Varalakshmi Jayaram, Ramboll
Vincent Pellecchia, BYD Motors

NON-GOVERNMENTAL ORGANIZATIONS

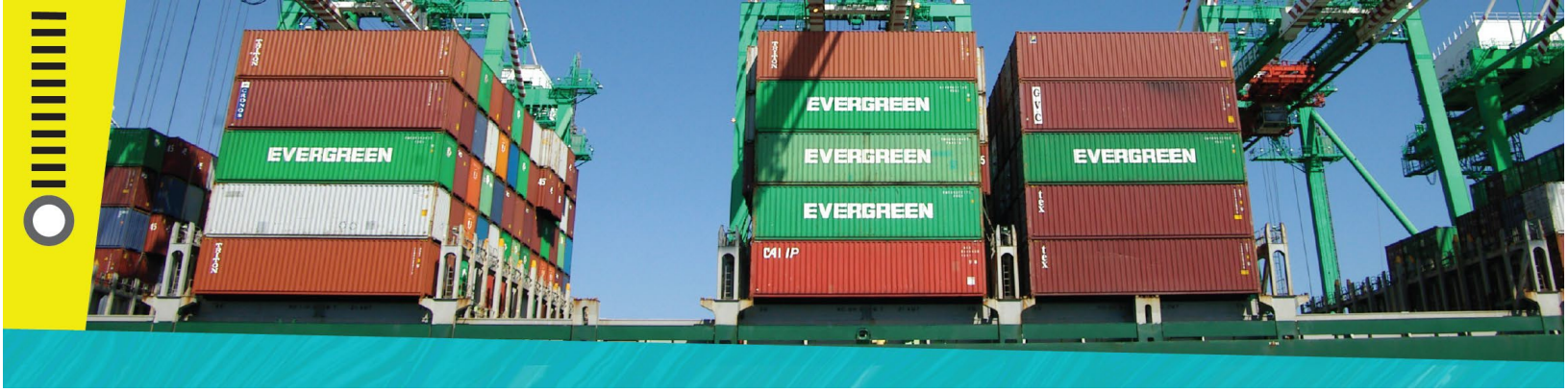
Alex Mitchell, Los Angeles Cleantech Incubator (LACI)
Angelo Logan, Occidental College
Bill Van Amburg, Calstart
Greg Roche, Clean Energy Fuels
Jennifer Ganata, Communities for a Better Environment
Joe Lyou, Coalition for Clean Air
Karla Sanchez, Harbor Trucking Association
Marc Carrel, BREATHE LA
Mariela Manzo, NRDC
Marnie Primmer, Future Ports
Niki Okuk, Calstart
Raj Dhillion, BREATHE LA
Todd Campbell, Clean Energy Fuels
Weston LaBar, Harbor Trucking Association

METRO STAFF

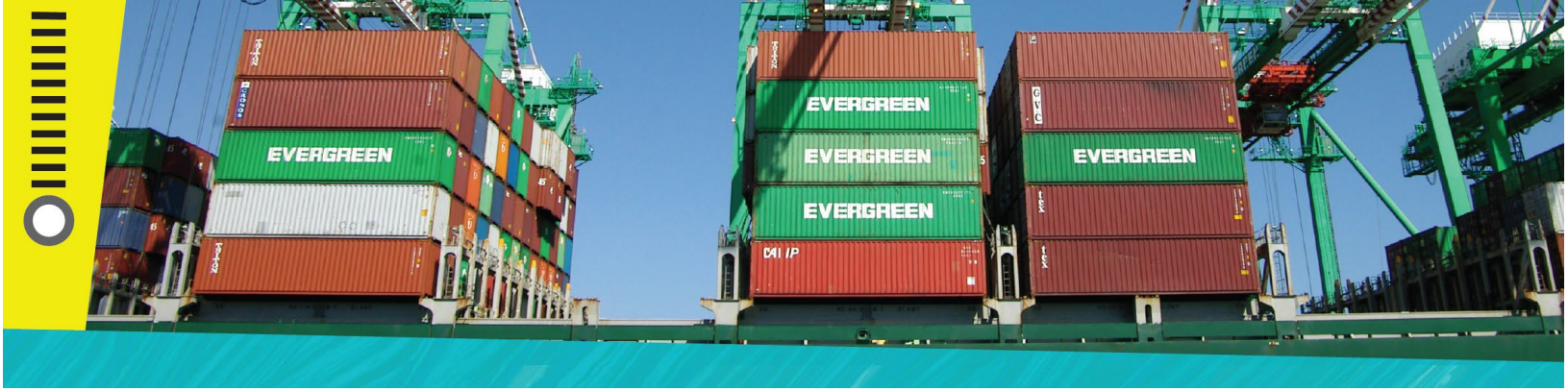
Akiko Yamagami, Metro
Anna Lee, Metro
Ernesto Chaves, Metro
Michael Cano, Metro
Paul Backstrom, Metro

CONSULTANTS

Jim Brogan, Cambridge Systematics
Art Sohikian, AVS Consulting
Susan De Santis, Arellano Associates



Sohrab Mikanik, Arellano Associates
Danielle Rodriguez, Arellano Associates



Introduction

The Los Angeles Metro has initiated a Goods Movement Strategic Plan (Plan) for Los Angeles County to address the issues facing goods movement throughout the region. The Plan will focus on improving the region's multimodal freight system, a critical element of LA County's overall surface transportation system.

Through collaboration and dialogue with the many goods movement stakeholders in Los Angeles County, Metro has identified the urgent need, as an early action program of the Goods Movement Strategic Plan, to develop a regional strategy and implementation plan to accelerate the introduction of cleaner truck technology on our many highways and local roads. This initiative will build upon ongoing efforts undertaken in Los Angeles County, such as the Clean Truck Program implemented by the Ports of Long Beach and Los Angeles as part of the Clean Air Action Plan and the Mobile Source Air Pollution Reduction Review Committee investments for cleaner truck technology implementation.

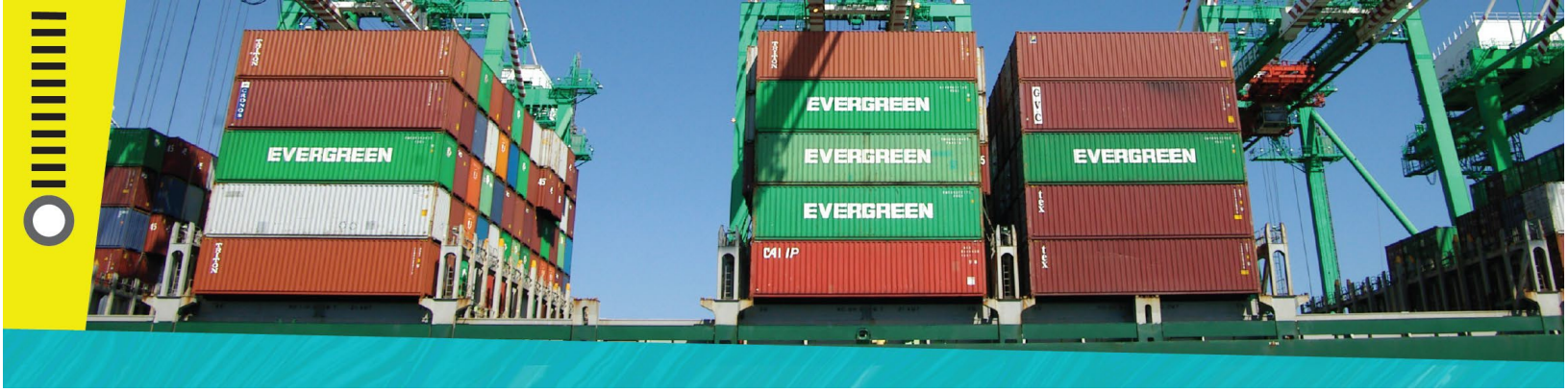
The purpose of the Clean Truck Initiative Working Group is to develop the regional cleaner truck initiative for the Goods Movement Strategic Plan and the Gateway Cities' proposal. The outcomes of the discussion with the key stakeholders will be presented at the next Freight Working Group meeting in March 2020.

Clean Truck Initiative Working Group

The Clean Truck Initiative Working Group Meeting was held at Gateway Cities Council of Governments on December 17, 2019. The meeting was attended by 58 participants from a wide range of public, private and non-governmental sector organizations.

This meeting was organized into two parts: opening remarks and an overview of Metro's Regional Clean Truck Initiative, followed by a group discussion. The introductions and opening remarks were presented by Michael Cano, Deputy Executive Officer, Goods Movement and State Policy and Programming, Metro. He then provided a brief overview of Metro's Regional Clean Truck Initiative. After the introduction and overview, Hilary Norton, Commissioner, California Transportation Commission was invited to the podium to provide opening remarks.

Bill Van Amburg, Executive Vice President, Calstart opened up the group discussion portion of the meeting by providing a overview of the various topics and issues that would be the focus of the discussion. Mr. Cano, supported by Marnie Primmer, Executive Director, FuturePorts facilitated the discussion. Participants provided their thoughts on the first two topics, State of



Technology and Infrastructure Deployment. After a short break, the room re-assembled to explore the remaining topics: Trucking Industry Perspective, Funding Sources and Regulatory Environment.

Prior to the meeting, the Working Group received an overview of the agenda, as well as two Metro Board Motions that were passed on March 1, 2018 related to the I-710 South EIR/EIS Project. After the group discussion, participants engaged in a lightning round and the meeting was concluded.

Agenda Items

A. Welcome & Introductions (Michael Cano, Deputy Executive Officer, Metro)

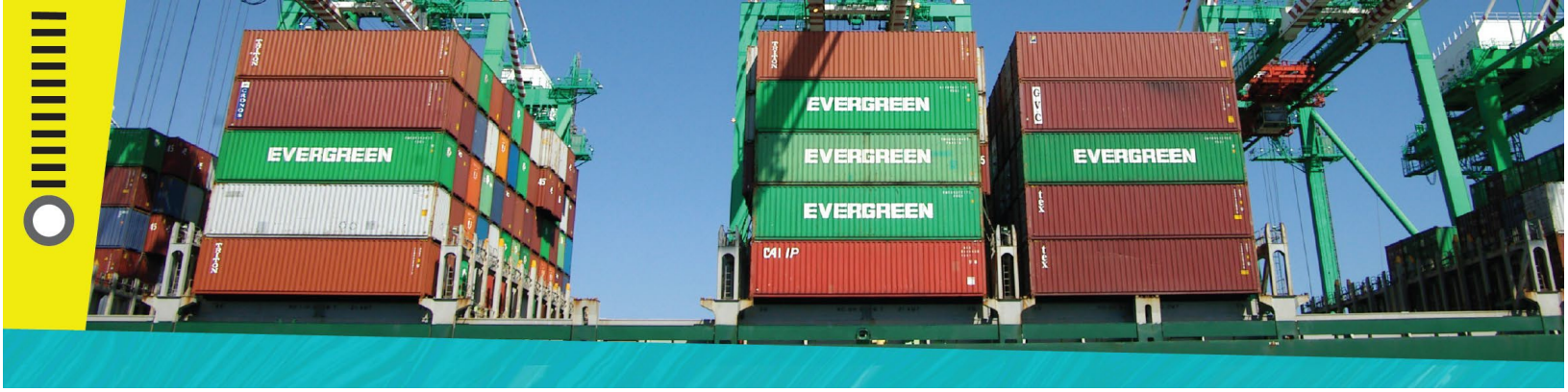
Michael Cano opened the meeting and reviewed the agenda that included an overview of what was to be presented. He then thanked Nancy Pfeffer, Executive Director, Gateway Cities Council of Governments for hosting the meeting. Participants then went around the room for self-introductions

B. Opening Remarks (Michael Cano, Metro)

Mr. Cano's opening remarks began with highlighting the importance of the Goods Movement Strategic Plan for LA County. He acknowledged that goods movement is complex and involves many needs in the region and affects many people and communities. Creating a Plan takes a lot of work, collaboration and partnership. The Plan will be presented to the Metro Board for review and consideration in 2020.

Mr. Cano reiterated that Metro's vision is to provide a world-class transportation system that enhances quality of life for individuals in LA County. Goods movement takes a backseat in interest in the transportation industry, however, Mr. Cano noted the issues associated with goods movement, such as air quality. The Strategic Plan Vision that is being developed envisions Metro as a national leader and regional partner within a framework of equitable and sustainable investments.

The Clean Truck Initiative is a part of a broader element in the Plan focused on clean freight. Metro has been reaching out to rail partners, including Metrolink and Lossan in the discussion of ways to make clean locomotives and improve the air quality in the region. The Plan will be an outcome of discussions with stakeholders on a sustainable



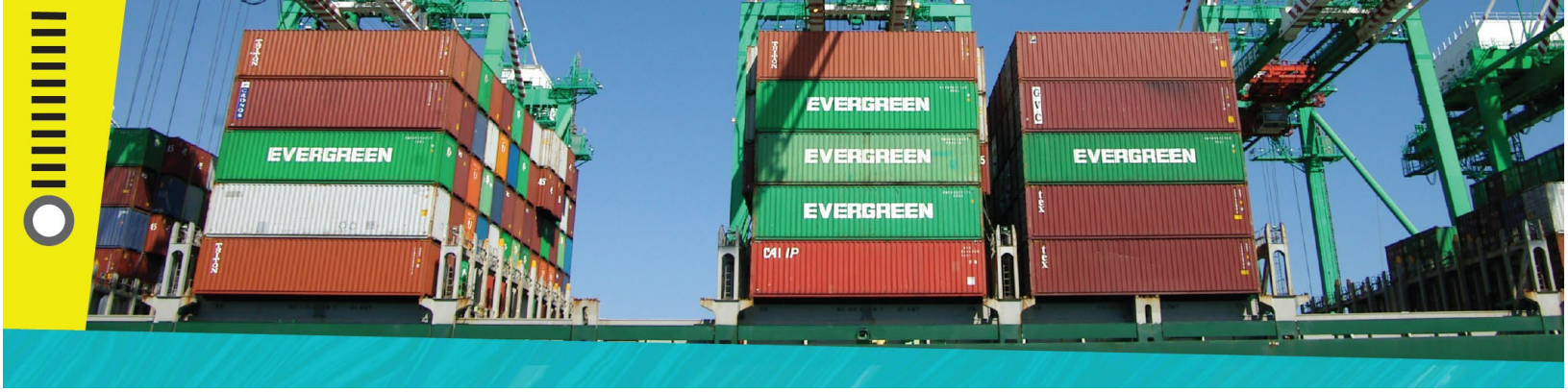
freight competitiveness framework for LA County, which includes listening to all stakeholders. The ultimate goal is to create a higher quality of life for those who live in LA, to breathe better air quality and to be able to travel efficiently in the region. Mr. Cano emphasized that this idea is driving the Goods Movement Plan.

He mentioned the Vision 2028 was adopted by the Metro Board. He hopes to broaden the definition of what mobility means and what it entails. Metro's Long Range Transportation Plan (LRTP) is currently being developed in parallel with Vision 2028. These Plans are all guided by the Equity Platform.

C. Overview: Metro's Clean Truck Initiative (Michael Cano, Metro)

Mr. Cano went on to describe some of the issues that are associated with the 710 EIR, including air quality and public health. The purpose of this meeting is to partner with agencies, such as AQMD and SCAG, to implement projects and programs to improve the air quality in the impacted communities. Primary source of poor air pollution comes from tailpipe emissions. Does not want to lose sight of the major issues surrounding the 710 project, especially the imbalance of equity that affects the communities surrounding the area. The work that Metro is doing in the Freight Working Group and other conversations that take place with stakeholders are, ultimately, to improve the quality of life for those communities that are negatively impacted. Mr. Cano noted that currently, the Board is made up of all five LA County Supervisors, Mayor Garcetti and his appointees, and representatives from all four sectors of LA County (Gateway Cities, South Bay, San Gabriel Valley and North Counties).

Mr. Cano highlighted the two motions that were passed in March 2018. The first motion was passed to phase in zero-emissions technology. The goal for this is to make the 710 a near zero-emission corridor. The second motion that was passed the same day was to create a Working Group for these efforts. The Clean Truck Initiative Working Group, among other stakeholder meetings, will satisfy this Board motion. He hopes that the meetings will identify the barriers, challenges and tools that are necessary to develop effective policies. Ultimately, this practice will become an institutionalized element to work with stakeholders to solve clean truck issues for the years to come. Mr. Cano's goal is to have that incorporated in the Plan that will be presented to the Board. The purpose of the Clean Truck Initiative Working Group is to lay the groundwork for what is



needed to move forward and to discuss other clean truck efforts that are taking place at other agencies such as the ports, and AQMD.

After the overview, Mr. Cano introduced Hilary Norton, California Transportation Commissioner who provided opening remarks.

D. Opening Remarks from CTC Commissioners and Board Officers (Hilary Norton, Commissioner, CTC)

Ms. Norton took the podium and thanked Mr. Cano, Metro and Gateway Cities for planning the Clean Truck Initiative Working Group. She highlighted California Freight Mobility Plan, which the CTC will finalize in 2020. Ms. Norton mentioned that when the region succeeds economically, the state succeeds as well. She thanked everyone in the room for their collaboration and is excited to move forward with an efficient Plan.

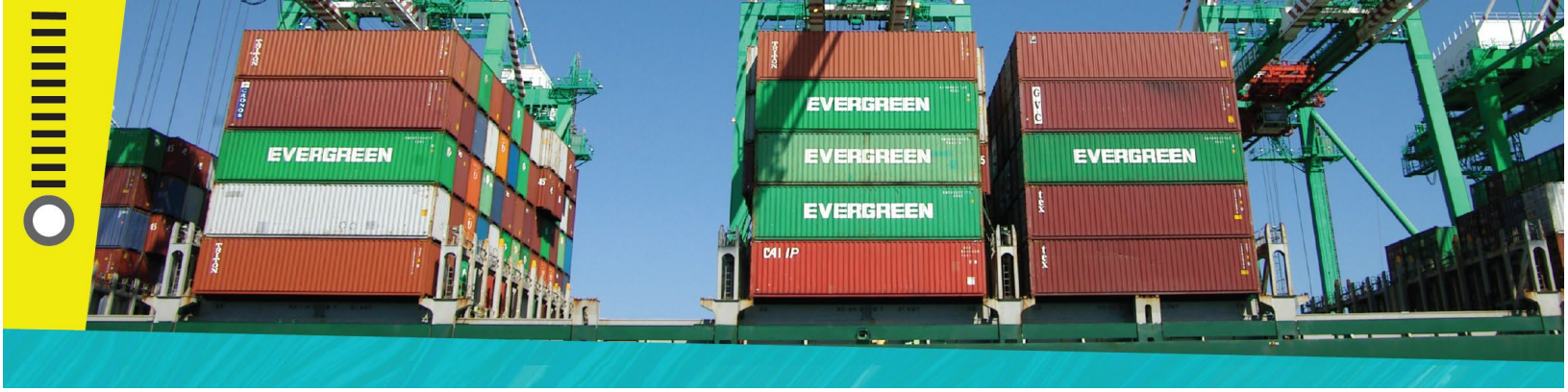
Mr. Cano took a moment to recognize representatives from LA County Board of Supervisors' Offices, including Supervisor Solis and Supervisor Hahn. Mr. Cano then called upon Bill Van Amburg, Executive Vice President, Calstart to transition into the group discussion portion of the meeting.

E. Group Discussion

Mr. Van Amburg was asked to shed light on the context of certain issues that would be brought up during the group discussions. He made a note that the discussion topics were separated into five sections: State of Technology, Infrastructure Deployment, Trucking Industry Perspective, Funding Sources and Regulatory Environment.

State of Technology is the core category of discussion. Mr. Van Amburg reported that a few years ago, Calstart, on behalf of Metro and Gateway Cities, created a commercialization plan for zero emission transportation for the 710 corridor. He highlighted the progress and steps that have been made to reach that goal. He noted that Calstart has also been making strides assessing needs of users and working with the State of California to develop an investment strategy. There has been rapid progress and interest in urban delivery, transit, bus and heavy regional.

He highlighted the shifts in the industry, mentioning that today you can't implement a program at scale. It is crucial to think and as, "What is the strategy for using multiple technologies" and "How do we support these multiple technologies appropriately? He



also encouraged participants to think about rapid evolution of technology because there is no one-size-fits-all approach. There is significant, ongoing pressure to reduce carbon emissions. There needs to be 60% or more reduction of NOx and other pollutants from transportation. There has been progress in finding solutions and multiple pathways are being discovered, such as ultra-low carbon fuel, including electricity or natural gas use fuel. There is a tremendous pressure on diesel, which is causing the current administration to move forward with a plan to use a version to lower NOx in trucking in real-world conditions. Renewable fuels are increasingly available because of the low-carbon fuel standard in California. Energy storage is steadily decreasing in size and cost, while increasing in capability. Trucks are moving from the pilot stage and carrying cargo, and new capabilities are emerging. We are aligning with what we're seeing around the world. We need to grow that supply chain if we want to lower the cost. It is important for the region to focus on this effort, drive the market, and help others adopt these technologies.

Mr. Cano returned to the podium to thank Mr. Van Amburg and introduce Marnie Primmer, Executive Director, FuturePorts as a moderator for the group discussion. He then opened the floor to participants to begin the discussion.

Julia Lester, 710 Air Quality Consultant, Ramboll, then provided a brief presentation related to trucks and their impact on air quality.

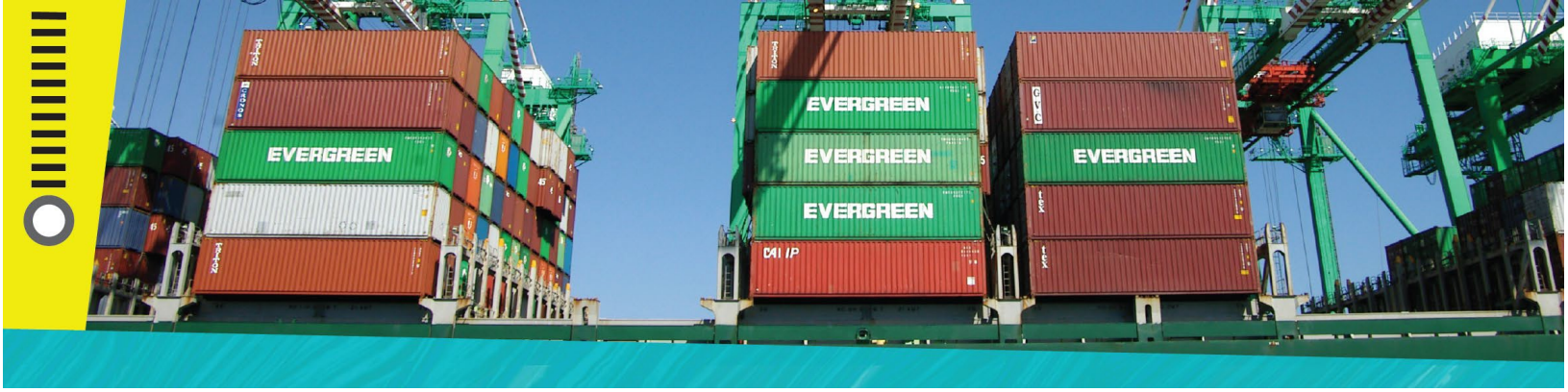
*Please see **Appendix F, slides 14-18** for the Truck Information section of the presentation, **Appendix G** for the Calstart Presentation and **Appendix H** for the Group Discussion Transcription.*

F. Break

Participants discussed the first two topic areas, State of Technology and Infrastructure Deployment. Mr. Cano dismissed the room for a short break. At the conclusion of the break, participants gathered to discuss the remaining three topics: Trucking Industry Perspective, Funding Sources, and Regulatory Environment.

G. Adjournment

At the conclusion of the group discussion, Mr. Cano thanked the Metro and the Consultant team for their efforts, and the Working Group participants for their attendance. He dismissed the participants at 3:00 PM.



Appendix A: Agenda

Los Angeles Metro

Los Angeles County Goods Movement Strategic Plan

Clean Truck Initiative Working Group Agenda

December 17, 2019 12:00 PM – 3:00 PM 16401 Paramount Blvd., Paramount, CA 90723

12:00 – 12:20 PM Gathering/Networking/Lunch

12:20 – 12:30 PM Welcome and Introductions – Michael Cano

12:30 – 12:45 PM Overview: Metro's Regional Clean Truck Initiative

12:45 – 12:55 PM Opening Remarks from CTC Commissioners and Board Officers

12:55 – 2:45 PM Group Discussion Introduction – Michael Cano

Purpose of the discussion is to help us better understand participant Perspectives on the key issues most significantly impacting Implementation of a clean truck initiative regionally and specifically for the I-710 Corridor. The outcome of this discussion will help inform our thinking on the potential for a countywide Clean Truck Initiative as an early action program in the Goods Movement Strategic Plan covering strategies and policies to pursue, and how best to prioritize goals to implement this initiative in a focused and expedited manner.

For each topic area listed below, we would like to cover the Key Questions in our discussion:

- ***Topic Areas for Discussion***
  - 1:00 PM State of Technology
  - 1:25 PM Infrastructure Deployment
  - 1:45 -1:55 PM Break
  - 1:55 PM Trucking Industry Perspective
  - 2:15 PM Funding Sources
  - 2:25 PM Regulatory Environment
- ***Key Questions on the Clean Truck Program***
  - What are the challenges facing LA County in developing a Clean Truck Initiative?
  - What strategies (policies, projects, programs) could address these?
  - Are there immediate steps that can be taken ("early wins") to address these issues?
  - What should Metro do to pursue these? What should Metro not do?
  - How can Metro develop a fundable, implementable program?

2:45 – 3:00 PM Lightning Round, Next Steps, and Wrap Up

Appendix B: Clean Truck Working Group Roster

Los Angeles County
Metropolitan Transportation Authority

One Gateway Plaza
Los Angeles, CA 90012-2952

213.922.2000 Tel
metro.net

Clean Truck Initiative Working Group Roster

CATEGORY	NAME	POSITION	ORGANIZATION
Public Sector			
Council of Governments	Nancy Pfeffer	Executive Director	Gateway Cities COG
Council of Governments	Karen Heit	Transportation Analyst	Gateway Cities COG
Council of Governments	Paul Hubler	Director of Government and Community Relations	San Gabriel Valley COG
Council of Governments	Steve Lantz	Transportation Director	South Bay COG
Educational/ Research Institute	Deanna Matsumoto	Career and Technical Education Specialist	CSULB CiTTI/METRANS
Educational/ Research Institute	Genevieve Giuliano	Director	USC/METRANS
Educational/ Research Institute	Sue Dexter	Lead Instructor and Capstone Advisor	USC/METRANS
Local Government	David MacGregor	Assistant Deputy Director, Road Maintenance	LA County Department of Public Works (LADPW)
Local Government	Gary Gero	Chief Sustainability Officer	Los Angeles County
Local Government	Keith Lehto	Assistant Deputy Director	LA County Department of Public Works (LADPW)
Local Government	Luke Klipp	Board Deputy	City of Long Beach
Local Government	Max Reyes	Senior Management Analyst	City of Los Angeles
Local Government	Waqas Rehman	Director of Planning and Development	Office of Los Angeles County Supervisor Hilda Solis
Local Government	Michael Ervin	Assistant Deputy of Transportation	Office of Los Angeles County Supervisor Janice Hahn
Local Government	Jocelyn Rivera	Deputy	Office of Los Angeles County Supervisor Janice Hahn
Ports	Allison Yoh	Director of Transportation Planning	Port of Long Beach
Ports	Matthew Arms	Acting Director of Environmental Planning	Port of Long Beach
Ports	Kerry Cartwright	Director of Goods Movement	Port of Los Angeles
Ports	Erick Martell	Legislative Representative	Port of Los Angeles
Regulatory Agencies	Denise Gailey	Manager, State/Federal Legislation, EJ, SBA	Air Quality Management District (AQMD)
Regulatory Agencies	Matt Miyasato	Deputy Executive Officer, Science and Technology Advancement	Air Quality Management District (AQMD)
Regulatory Agencies	Wayne Nastri	Executive Officer	Air Quality Management District (AQMD)
Regulatory Agencies	Sydney Vergis	Assistant Division Chief	California Air Resources Board (CARB)
State	Kevin Barker	Chief of Staff	California Energy Commission
Transportation Agencies	Dan Kopulsky	Chief, Regional Planning and Goods Movement.	Caltrans
Transportation Agencies	Hilary Norton	Commissioner	CTC/Fixing Angelinos Stuck in Traffic (FAST)
Transportation Agencies	James Shankel	Senior Environmental Planner	Caltrans
Transportation Agencies	Alison Linder	Senior Regional Planner	Southern California Association of Governments SCAG
Private Sector			
Business	Mike Ippoliti	Automated, Connected & Electric Vehicle Project Manager	HDR
Economic Development	Varalakshmi Jayaram	Managing Consultant	Ramboll
OEM	Aaron Gillmore	Vice President	BYD Motors
OEM	John Gerra	Senior Director, Business Development	BYD Motors
OEM	Vincent Pellecchia	Strategic Account Manager	BYD Motors

OEM	Enzo Bauk	Senior Mechanical Engineer	US Hybrid
OEM	Justin Loyear	Pacific Regional Sales Manager	Cummins Westport
Trucking	Matt Schrap	President	California Fleet Solutions/Velocity Vehicle Group
Utilities	Damon Hannaman	Senior Advisor	Southern California Edison
Utilities	Kevin Maggay	Program Manager	Southern California Gas
Non-Governmental Organizations			
Business	Alex Mitchell	Senior Vice President, Market Transformation	Los Angeles Cleantech Incubator (LACI)
Environmental Advocacy	Angelo Logan	Program Director	Occidental College, Moving Forward
Environmental Advocacy	Greg Roche	Vice President	Clean Energy Fuels
Environmental Advocacy	Todd Campbell	Vice President, Public Policy and Regulatory Affairs	Clean Energy Fuels
Environmental Advocacy	Jennifer Ganata	Senior Staff Attorney	Communities for a Better Environment
Environmental Advocacy	Joe Lyou	President & CEO	Coalition for Clean Air
Environmental Advocacy	Marc Carrel	President & CEO	BREATHE LA
Environmental Advocacy	Raj Dhillon	Manager of Advocacy and Public Policy	BREATHE LA
Environmental Advocacy	Mariela Manzo	Program Assistant	NRDC
Freight Industry	Marnie Primmer	Executive Director	Future Ports
Trucking	Bill Van Amburg	Vice President	Calstart
Trucking	Niki Okuk	Program Manager	Calstart
Trucking	Karla Sanchez	Director of Programs & Communications	Harbor Trucking Association
Trucking	Weston LaBar	Executive Director	Harbor Trucking Association

Appendix C: Invitation

Los Angeles County
Metropolitan Transportation Authority

One Gateway Plaza
Los Angeles, CA 90012-2952

213.922.2000 Tel
metro.net

Metro

11/25/2019

Ian MacMillan
AQMD
21865 Copley Drive
Diamond Bar, CA 91765

Dear Ian,

Metro's Goods Movement Planning Team, in support of our development of the Los Angeles County Goods Movement Strategic Plan, invites you to participate in a special working group meeting focused on the development of a regional clean truck initiative on December 17, 2019 from 12:00 PM – 3:00 PM at Gateway Cities Council of Governments, 16401 Paramount Blvd. Paramount, CA 90723. Lunch will be available starting at noon.

Through collaboration and dialogue with the many goods movement stakeholders in Los Angeles County, Metro has identified the urgent need, as an early action program of our Goods Movement Strategic Plan, to develop a regional strategy and implementation plan to accelerate the introduction of cleaner truck technology on our many highways and local roads. This initiative will build upon ongoing efforts undertaken in Los Angeles County, such as the Clean Truck Program implemented by the Ports of Long Beach and Los Angeles as part of the Clean Air Action Plan and the Mobile Source Air Pollution Reduction Review Committee investments for cleaner truck technology implementation.

To accomplish this important goal, Metro understands that it must bring together key experts and leaders across the region with knowledge of the various elements that will be necessary to develop a successful regional clean truck program. At this meeting we anticipate a robust and honest discussion on the many existing obstacles and barriers to such a program, opportunities and strategies to overcome these challenges, and how best to shape this initiative to achieve success through collaboration among and broad support from our key stakeholders.

As part of this initiative, Metro recognizes the need to prioritize a strategy to deliver cleaner trucks to be operated along the heavily traveled Interstate 710 that serves our Ports, intermodal rail yards, logistics centers, and other freight needs along the corridor. To that end the Gateway Cities Council of Governments has developed a concept paper, titled the *I-710 Clean Truck Prototype Incentive Program*, to catalyze a focused discussion on the various issues involved with introducing cleaner truck technology that will relieve the health impacts suffered by disadvantaged communities adjacent to this vital trade corridor in accordance with the commitments made by the Metro Board in the I-710 environmental document. We will receive a presentation on this concept and hold a discussion on how best to implement such a proposal as part of our working group meeting.

We highly value your expertise and knowledge of this subject matter and would greatly appreciate your input at our December 17th meeting. We plan to convene this group of stakeholders on a regular basis to develop the regional cleaner truck initiative for our Goods Movement Strategic Plan and the Gateway Cities' proposal. The outcomes of this discussion

Los Angeles County
Metropolitan Transportation Authority

One Gateway Plaza
Los Angeles, CA 90012-2952

213.922.2000 Tel
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Metro

with you and other key stakeholders will be presented at the next Freight Working Group meeting in March 2020.

We look forward to engaging in meaningful dialogue with you and our stakeholders on this important initiative, and we would ask that you send your RSVP to Akiko Yamagami at YamagamiA@metro.net . We appreciate your input, your support, and your leadership in helping Metro accomplish this regional vision and in helping our team develop a transformative Goods Movement Strategic Plan to serve the many needs of our residents in Los Angeles County.

With great appreciation,

Michael Cano
Metro | Deputy Executive Officer, Goods Movement

Appendix D: Meeting Hand-Outs

Los Angeles County
Metropolitan Transportation
Authority
One Gateway Plaza
3rd Floor Board Room
Los Angeles, CA

File#: 2018-0053, **File Type:** Motion / Motion Response **Agenda Number:** 5.1

REGULAR BOARD MEETING
MARCH 1, 2018

REVISED Motion by:

HAHN, SOLIS, GARCIA, AND DUPONT-WALKER

Related to Item 5: I-710 South EIR/EIS Project

The 710 Freeway is a major transportation corridor not only for daily commuters, but also for freight movement from the Ports of Los Angeles and Long Beach to the nation. While "goods movement" is a major economic driver for our region, it comes at a high cost for the many communities and residents along the 19 mile freeway. For many years, children and adults alike have suffered from serious health issues as a result of the pollution emitted by the trucks delivering freight inland, and neighborhoods have been severely impacted by congestion and traffic. This freeway is known as the "diesel death zone."

For 15 years, Metro has partnered with Caltrans, the Gateway Cities Council of Governments, the Ports, the individual cities along the 710, community activists and others, to develop different 'alternatives' to re-imagine the 710 in a way that balances commerce and environmental responsibility.

There are now three alternatives for the Metro Board to choose from: "No Build", "Sc" and "7." Both include a funding target of $100 million for the purchase of "Near Zero" (NZE) or "Zero" emission (ZE) trucks that would travel on the 710 corridor. Yet, according to AQMD, even taking into consideration either build alternative, "the region will need substantial additional emission reductions to attain the National Ambient Air Quality Standards." Additionally, Metro has reported that greenhouse gas tailpipe emissions would be reduced by nearly the same levels for either alternative.

Dedicating the funding exclusively to "zero emission" technology once is available and requiring only ZE vehicles be allowed - once they are constructed - could improve air quality standards significantly. The technology for long haul trucks that would emit NO poisonous fumes is emerging quickly, as exhibited by leading auto manufacturers such as Tesla and Daimler AG. Freeways in China, Israel and Norway are being constructed to have electric chargers embedded under the pavement, thus enabling electric vehicles - both cars and long haul trucks - to charge their batteries as they are moving. This significant investment by Metro can be a game-changing accelerator of "zero emission" technology, eliminating the need to subsidize "near zero" emission vehicles.

The future 710 freeway must not be a "diesel death zone" but a corridor where freight can be moved quickly without impairing the health of communities alongside the 710 Freeway. Both can be

achieved.

SUBJECT: REVISED MOTION BY DIRECTORS HAHN, SOLIS, GARCIA, AND DUPONT-WALKER

WE THEREFORE MOVE to direct the Metro CEO and Staff to, as part of, staff recommended Locally Preferred Alternative Sc:

A. Change the Zero Emission/Near Zero Emission truck technology development program to the phased-in "Zero Emission Truck Technology Development Program."

B. Increase program funding target from $100 million to $200 million, and include in the Program incentives and grants investment in the acceleration of zero emission technology both for long hauling trucks and for freeway infrastructure, including but not limited to, "under the pavement" vehicle charging capacity as options to consider.

C. Convene a working group comprised of the California Air Resources Board (GARB), California State Department of Transportation (Caltrans), Southern California Association of Governments (SCAG), South Coast Air Quality Management District (AQMD), California Transportation Commission (CTC), the Ports of Los Angeles and Long Beach, zero-emission industry experts and other key stakeholders to develop a policy recommendation for a full, zero-emission only, dedicated lane including, but not limited to "rechargeable roadways" on the entire 19 mile long stretch of the 710 freeway, and include this as part of thefinal EIR/EIS document, presented in the September2018 Metro board meeting. as part of the reevaluation of the remaining elements of Alternative Sc, after the Early Action Projects have been completed.

File #: 2018-0068, **File Type:** Motion / Motion Response **Agenda Number: 5.2**

REGULAR BOARD MEETING
MARCH 1, 2018

Motion by:

SOLIS, GARCIA, RIDLEY-THOMAS, BUTTS, NAJARIAN, AND HAHN

Related to Item 5: 1-710 South Corridor Project

Local communities along the 1-710 freeway are plagued with life-threatening health ailments resulting from traffic-related pollution in the corridor. As such, communities have been united and explicitly clear that existing conditions are simply unacceptable and they demand and deserve relief. Nevertheless, gaining consensus on a Locally Preferred Alternative for the 1-710 South Corridor Project has been incredibly challenging due to limited right of way, public health concerns and sensitivities surrounding environmental and social justice issues.

After years of vigorous scientific environmental impact analysis, multiple engineering design variations, extensive community outreach, and thoroughly exploring all feasible alternatives, Metro staff has concluded that Alternative 5C is the most viable and cost-effective solution to maximize regional benefits related to safety, mobility, health and the environment while minimizing impacts to local communities. However, the air quality benefits proposed by Alt. 5C are largely contingent on substantial funding becoming available to deploy near-zero and zero-emission trucks to reduce pollutants such as diesel particulate matter, nitrogen oxide, carbon dioxide and others. Moreover, the regional mobility benefits rely on the assumption that passenger vehicle trips are transferred to the mainline freeway versus utilizing local arterials and residential streets, which helps alleviate "cut-through traffic" in surrounding communities. Unless these assumptions materialize the primary goals of this project may not come to fruition. It may be prudent to take a more modest approach to improving the 1-710 South corridor.

An Alt. 5C Early Action Program presents an opportunity to utilize programmed funding to sequence and complete smaller scale projects over the next decade and realize incremental benefits as soon as possible.

Any deviation from implementing viable and reasonable solutions as soon as possible will only prolong the necessary relief and further place these communities at risk.

SUBJECT: MOTION BY DIRECTORS SOLIS, GARCIA, RIDLEY-THOMAS, BUTTS, NAJARIAN, AND HAHN

WE THEREFORE MOVE that the Board adopt Alternative 5C as the Locally Preferred Alternative for the 1-710 South Corridor Project FEIR/FEIS (inclusive of Motion 22.1 from October 2015) and expedite the delivery of an Early Action Program (EAP) that emphasizes the following:

A. Projects that deliver the most immediate and significant benefits related to safety, mobility and air quality;

B. Projects that can be implemented with minimal or no displacement of residences, businesses, and sensitive land uses;

C. Developing a local/targeted hiring policy that is applicable to any and all eligible funding sources;

D. Conduct an operational performance analysis upon completion of the Early Action Program utilizing the most current State and local evaluation measures and standards to re-evaluate and re-validate the remaining elements of Alternative 5C, especially identifying opportunities to further reduce property impacts;

E. Return to the board upon completion of the aforementioned directive to seek further consideration and authorization related to implementing the balance of improvements in Alternative 5C.

FURTHER MOVE that the Board direct the CEO to establish a working group with the freight industry, air quality regulators, transportation and metropolitan planning agencies, the Gateway Council of Governments and other relevant stakeholders to explore the lead authorities, financial impact and other implementation factors related to:

A. Develop a strategic plan that is consistent with the South Coast Air Quality Management Plans, which expedites the transition from diesel freight trucks to near-zero emission vehicles as soon as possible and outlines a transition to zero-emission vehicles as thecleanest, most reliable technology becomes available;

B. Host an industry forum aimed at stimulating and accelerating the deployment of cleaner freight truck alternatives. The forum shall include, but not be limited to topics such as funding and financing, public-private partnerships, new technologies, on- and off-dock rail support facilities, best practices research and development, demonstration programs (example: rechargeable roadways), creative purchase/lease incentive programs, etc.;

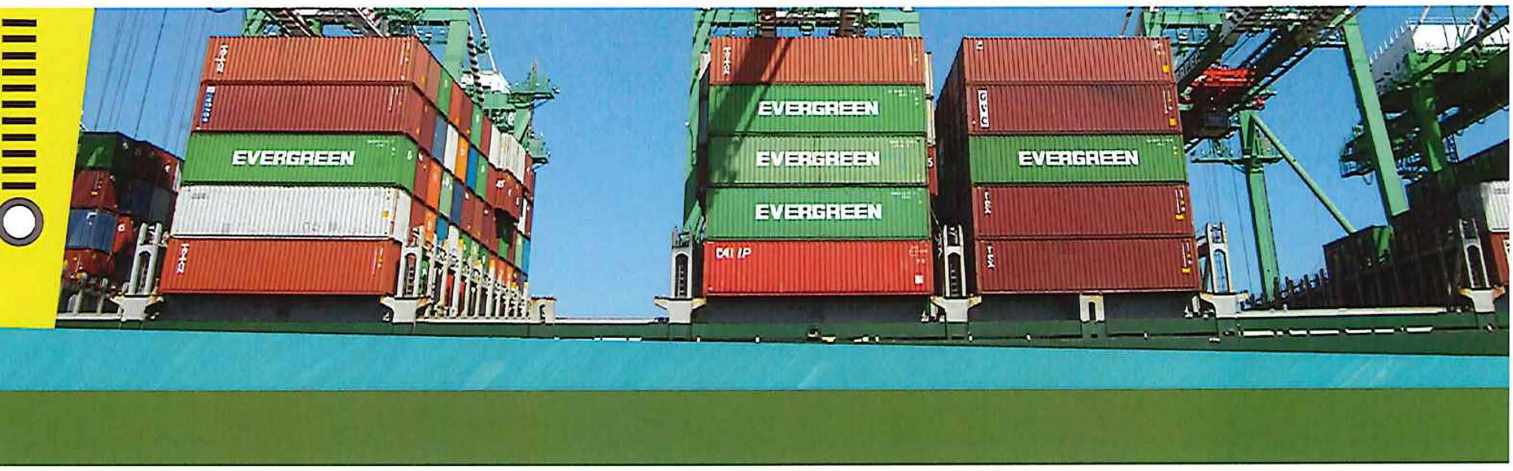
C. Develop and evaluate multiple scenarios for a comprehensive congestion demand management program, to be evaluated independently, that focuses on separating freight and non-freight vehicles (i.e. dedicated toll lanes) within the existing rights of way on freeways facilities throughout Los Angeles County with priority on Near-Zero and Zero-Emission vehicles;

D. Develop an overarching transportation demand management (TOM) strategy consistent with the larger, previously approved TOM strategy development process that will minimize the impact of goods movements and people in the surrounding communities along the 1-710 corridor.

FURTHER MOVE that the CEO works with the Gateway Cities Council of Governments to assess the effectiveness and recommend potential improvements to the community participation structure that was established for the environmental review period. Report back to the board in 120 days.

FURTHER MOVE that, as part of its NextGen Bus Study, Metro evaluate the feasibility of implementing high-frequency bus service in accordance with Motion 22.1 (October 2015).

Appendix E: Sign-In Sheets



Metro Goods Movement Strategic Plan

Clean Truck Working Group

December 17, 2019 – 12:00 - 4:00 PM

Sign-in Sheet

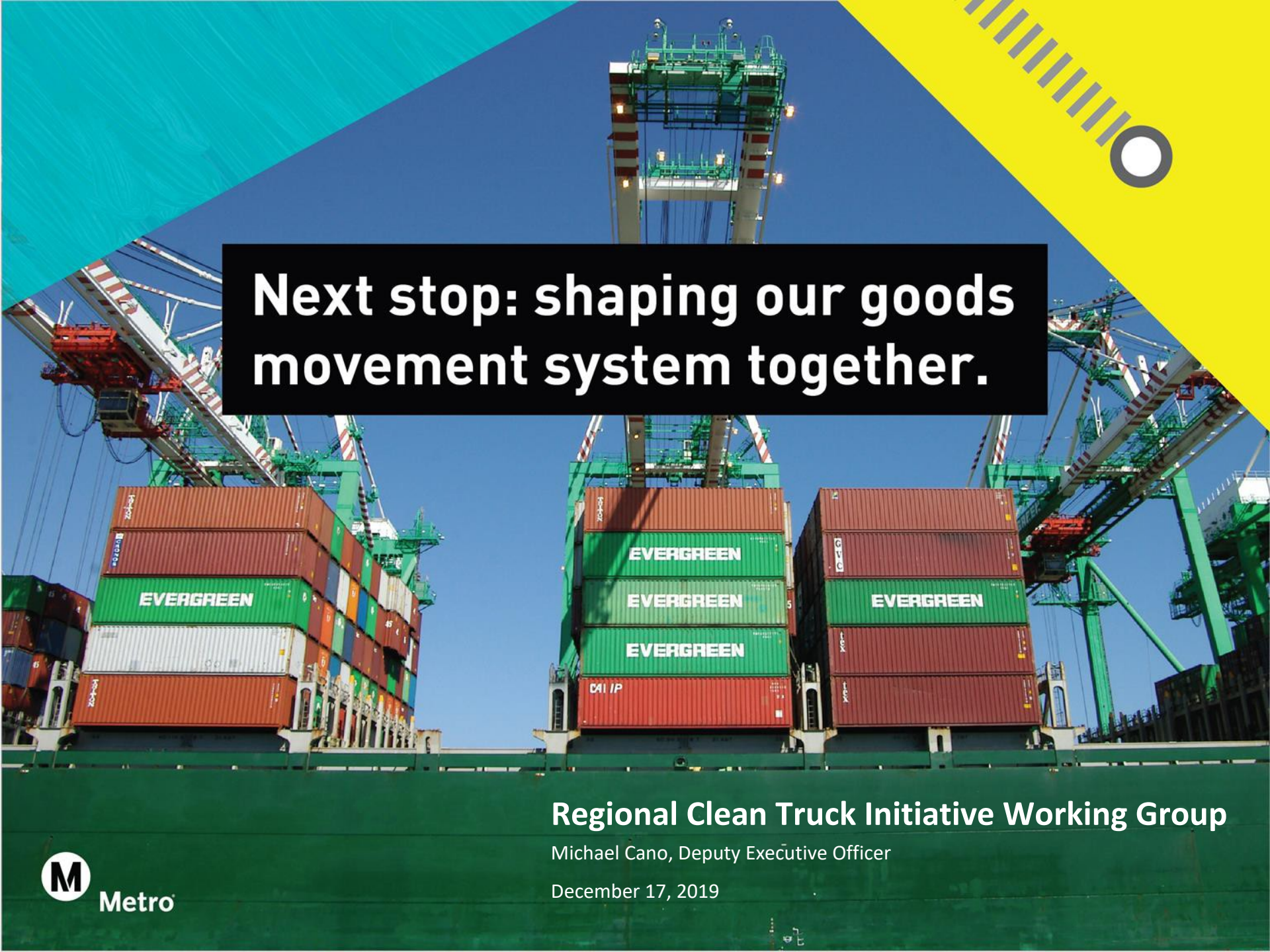
Name	Organization	Initials
Alex Mitchell	Los Angeles Cleantech Incubator (LACI)	✓
Aaron Gillmore	BYD Motors	✓
Abas Goodarzi	US Hybrid	
Adrian Martinez	Earthjustice	
Alison Linder	SCAG	✓
Allison Yoh	Port of Long Beach	✓
Bill Van Amburg	Calstart	✓
Chris Cannon	Port of Los Angeles	
Cris Liban	Metro	✓
Damon Hannaman	SoCal Edison	✓
Dan Kopulsky	Caltrans	✓
Dave MacGregor	County of LA Public Works	✓
David Libatique	Port of Los Angeles	
Deanna Matsumoto	CSULB Cittl/METRANS	
Ernesto Chaves	Metro	✓
Enzo Bauk	US Hybrid	✓
Fran Inman	CTC (Majestic Realty, Inc.)	
Gary Gero	LA County	✓
Genevieve Giuliano	USC/METRANS	✓
Greg Roche	Clean Energy Fuels	✓
Hilary Norton	CTC (Fixing Angelenos Stuck In Traffic (FAST))	✓
Jennifer Ganata	Communities for a Better Environment	✓
Joe Lyou	Coalition for Clean Air	✓
John Boesel	Calstart	
Justin Loyear	Cummins Westport	✓

Name	Organization	Initials
Keith Lehto	County of LA Public Works	✓
Ken Chawkins	SoCal Gas	
Kerry Cartwright	Port of Los Angeles	✓
Kevin Barker	California Energy Commission	✓
Luke Klipp	City of Long Beach	✓
Mariela Manzo	NRDC	✓
Marisa Creter	San Gabriel Valley Council of Governments	
Marnie Primmer	Future Ports	✓
Matt Miyasato	AQMD	✓
Matt Schrap	California Fleet Solutions/Velocity Vehicle Group	✓
Matthew Arms	Port of Long Beach	✓
Michael Ervin	LA County, Fourth District	✓
Mike Bush	NEXT Trucking	
Mike Ippoliti	HDR	✓
Nancy Pfeffer	Gateway Cities Council of Governments	✓
Norm Emerson	Gateway Cities Council of Governments	
Paul Hubler	San Gabriel Valley Council of Governments	✓
Paul Backstrom	Metro	✓
Phillip Fine	SCAQMD	
Sharon Weissman	City of Long Beach	✓
Stephanie Cadena	Gateway Cities Council of Governments	✓
Steve Cliff	California Air Resources Board	
Steve Lantz	South Bay Cities Council of Governments	✓
Sue Dexter	USC/METRANS	✓
Sydney Vergis	California Air Resources Board	✓
Todd Campbell	Clean Energy Fuels	✓
Tom Swenson	Cummins Westport	
Varalakshmi Jayaram	710 EIR Consultant	✓
Vincent Pellecchia	BYD Motors	✓
Waqas Rehman	LA County, First District	✓
Weston LaBar	Harbor Trucking Association	✓

Name	Organization	Initials
Karla Sanchez	HTA	✓
James Shankel	Caltrans	✓
Wayne Nastri	AQMD	✓
Karen Heit	Gateway Cities COG	✓
Niki Okuk	Calstart	✓
Max Reyes	City of LA	✓
Marc Carrel	Breathe LA	✓
Raj Dhillon	Breathe LA	✓
Erick Martell	POLA	✓
Angelo Logan	Occidental College	✓
Denise Gailey	AQMD	✓
Kevin Maggay	SoCal Gas	✓
John Gerra	BYD	✓
Jocelyn Rivera	LA County, fourth District	✓
Julia Lester		

Name	Organization	Initials
Danielle Rodriguez	Arellano Associates	✓
Sohrab Mikanik	Arellano Associates	✓
Susan De Santis	Arellano Associates	✓
Art Sohikian	AVS Consulting	✓
Elaine McKenzie	Cambridge Systematics	
Jim Brogan	Cambridge Systematics	✓
Lila Singer Burke	Cambridge Systematics	
Akiko Yamagami	Metro	✓
Anna Lee	Metro	✓
Cris Liban	Metro	
Ernesto Chaves	Metro	✓
Mark Yamarone	Metro	
Michael Cano	Metro	✓
Paul Backstrom	Metro	✓

Appendix F: Regional Clean Truck Initiative Working Group Presentation



Regional Clean Truck Initiative Working Group

Michael Cano, Deputy Executive Officer

December 17, 2019

Metro

Vision Statement

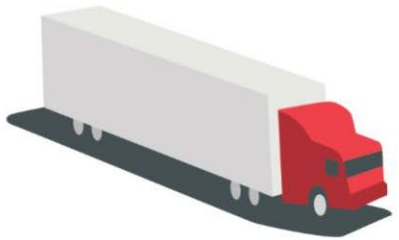
Metro's Mission: *To provide a world-class transportation system that enhances quality of life for all who live, work, and play within LA County.*

Goods Movement Strategic Plan Vision: Metro will become…

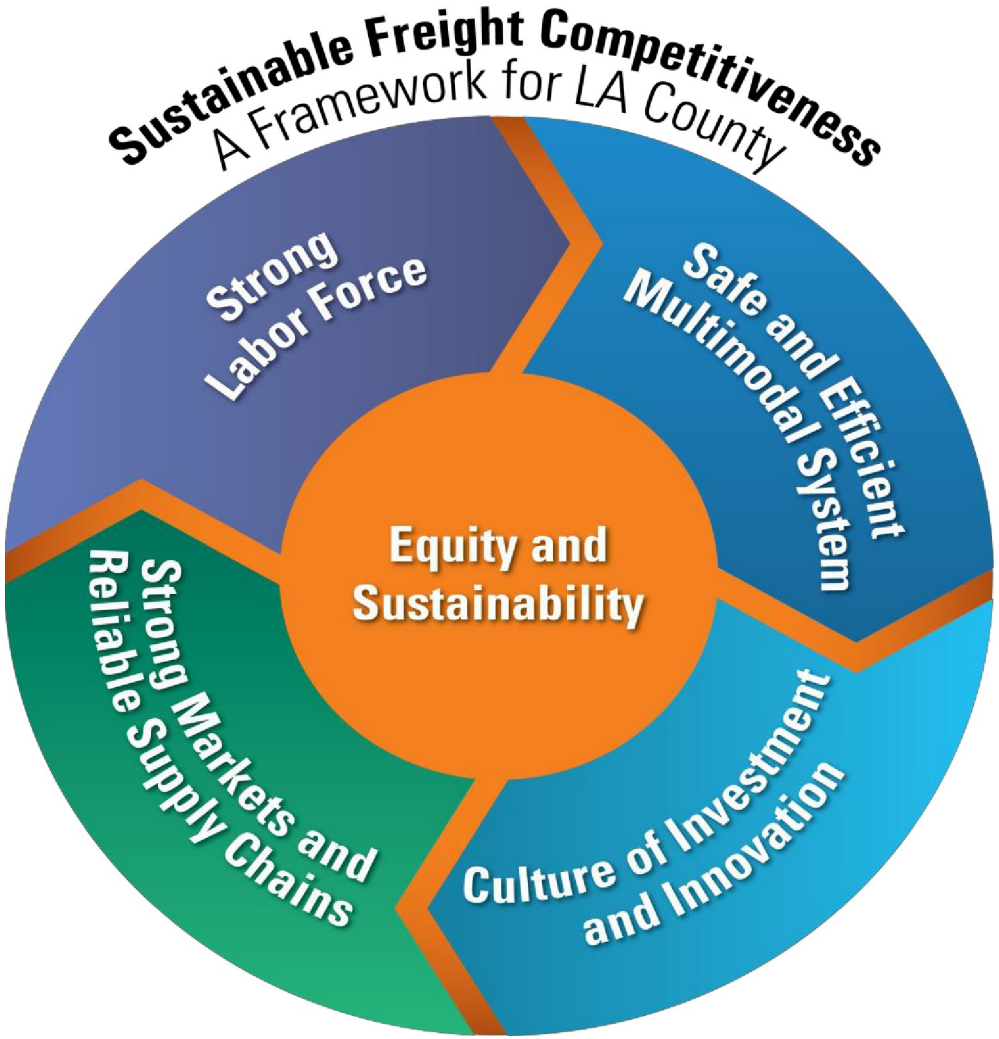
> …a ***national leader*** and ***regional partner*** in implementing a modern, responsive, resilient, and effective freight transportation system through policies, programs, and projects that support a competitive global economy.

> …a steward of ***equitable and sustainable investments*** and ***technological innovation*** that will increase regional economic competitiveness, advance environmental goals, and provide access to opportunity for County residents.

Metro

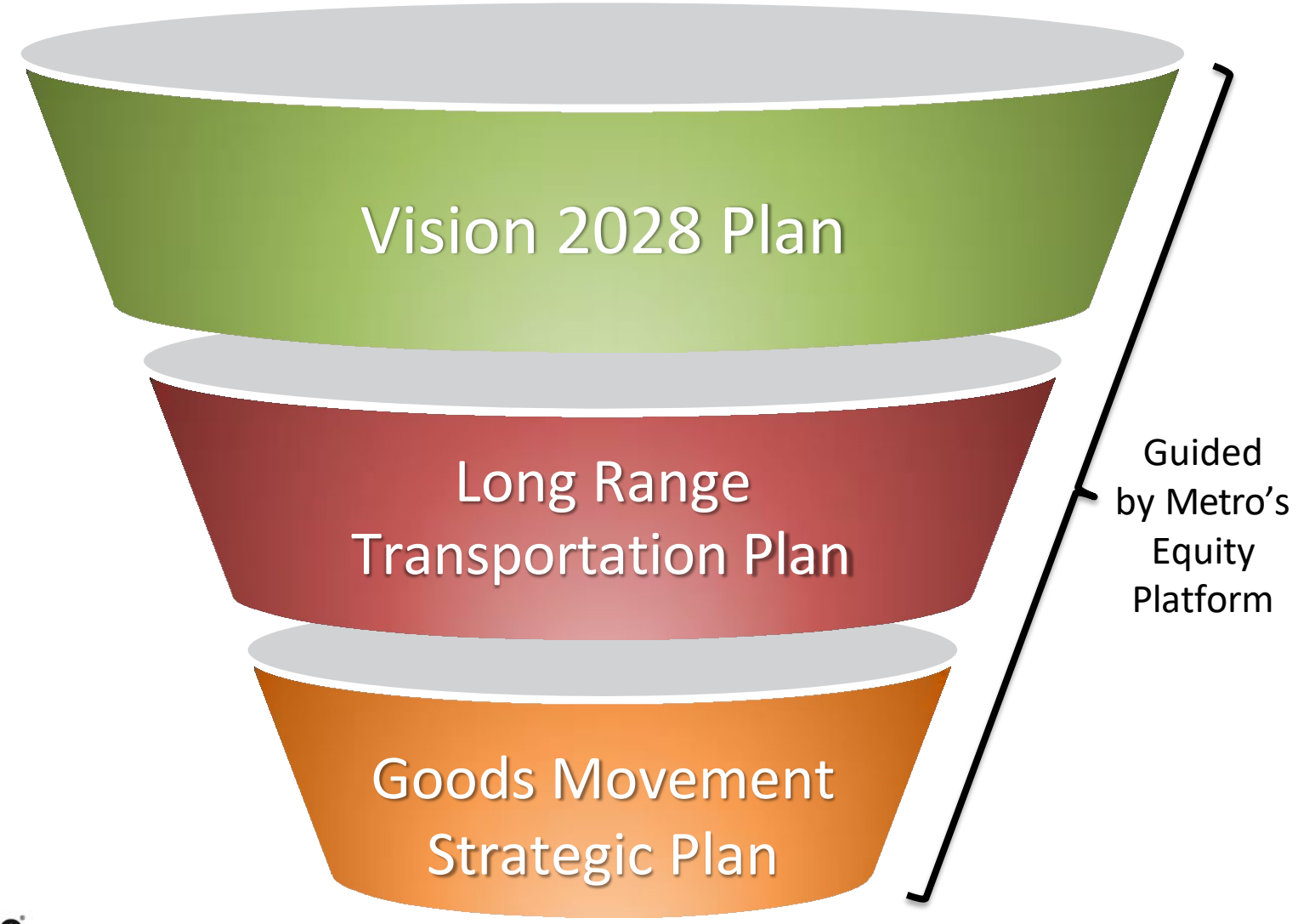


Sustainable Freight Competitiveness



®Metro

Metro's Coordinated Planning Efforts



Metro

Public Health Impacts of Air Quality

The South Coast Air Basin – home to Los Angeles County – has the worst air quality in the nation

Primary source of air pollution comes from tailpipe emissions associated with the transportation sector – particularly from heavy-duty trucks

The residents along the I-710 suffer from poor air quality and public health impacts associated with truck movement along the corridor

Major equity impacts for some of the more vulnerable communities in Los Angeles County

Metro

Public Health Impacts of Air Quality

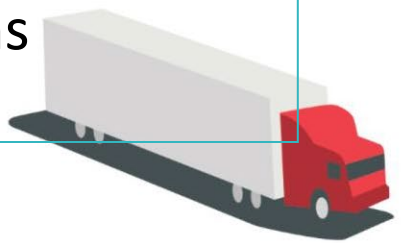
Traffic-related air pollutants known to impact public health include:

Pollutants:

- Ozone
- Diesel particulate matter
- PM_{10}
- $PM_{2.5}$
- Ultrafine particulates
- Carbon monoxide
- Nitrogen dioxide
- Sulfur dioxide
- Lead
- Benzene
- Formaldehyde
- Acrolein
- Acetaldehyde

Health Impacts:

- Asthma
- Respiratory diseases
- Cardiovascular diseases
- Cancer
- Premature death
- Mortality
- Preterm and low-weight births



Metro

Metro Board Directives

Metro Board Motions (March 2018) – I-710 South EIR/EIS

5.1 : Hahn, Solis, Garcia & Dupont-Walker

- Change the ZE/NZE truck technology program to the **phased-in** "ZE Truck Technology Development Program".
- Increase program funding from $100 million to $200 million, and include in the Program **incentives and grants investment in the acceleration of ZE technology both for long-hauling trucks and for freeway infrastructure**, including but not limited to, "under the pavement" vehicle charging capacity as options to consider.
- **Convene a working group** to develop a policy recommendation for a full, ZE only, dedicated lane…on the entire 19-mile long stretch of the 710 freeway as part of the re-evaluation of the remaining elements of Alternative 5C after the Early Action Projects have been completed.

Metro

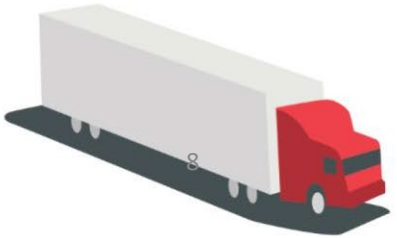
Metro Board Directives

5.2 : Solis, Garcia, Ridley-Thomas, Butts, Najarian, & Hahn

Direct the CEO to establish **a working group** with the freight industry, air quality regulators, transportation and metropolitan planning agencies, the Gateway COG and other relevant stakeholders to **explore the lead authorities, financial impact and other implementation factors** related to:

- **Develop a strategic plan** that is consistent with the South Coast Air Quality Management Plans, **which expedites the transition from diesel freight trucks to NZE vehicles as soon as possible and outlines a transition to ZE vehicles as the cleanest, most reliable technology becomes available**
- Host an **industry forum** aimed at stimulating and accelerating the deployment of cleaner freight truck alternatives. Forum shall include topics such as: funding/financing, P3, new technologies, on/off dock rail support facilities, best practices R&D, demonstration projects, creative purchase/lease incentive programs, etc.

Metro



8

Governor's Executive Order N-19-19

Governor Newsome Issued the Executive Order (EO) in September 2019

Main Points:

- Leverage available state funding "to help reverse the trend of increased fuel consumption and reduce greenhouse gas emissions associated with the transportation sector".

- CalSTA Secretary David Kim will engage stakeholders on how best to implement the EO

- Implemented partially through California Freight Mobility Plan 2020 (in draft form now)

EXECUTIVE DEPARTMENT
STATE OF CALIFORNIA

EXECUTIVE ORDER N-19-19

WHEREAS California is proof that a bold climate agenda is good for the economy, for workers, for health and for our future, as evidenced by our state having achieved record economic growth while reaching some of the strongest climate goals in the world; and

WHEREAS in the face of inaction on climate change from the federal government, California is a global leader in climate change mitigation efforts through bold climate goals and actions, as well as leadership in the US Climate Alliance and Under2 Coalition, using the state's power as the fifth largest economy in the world to drive positive action; and

WHEREAS California has ambitious and essential climate goals to transition to a healthier, more sustainable and more inclusive economy, including: reducing greenhouse gas emissions 40 percent below 1990 levels by 2030; providing 100 percent of the state's electricity from clean energy sources by 2045; reducing methane emissions and hydrofluorocarbon gases by 40 percent; and adding five million zero-emission vehicles to California's roads by 2030; and

WHEREAS California has made substantial, measurable progress on many of the goals enumerated above, but in recent years, direct tailpipe emission from cars, ships, diesel trains, airplanes, and other transportation sources have remained a stubborn driver of greenhouse gas emissions, totaling 40.1 percent of all greenhouse gas emissions statewide; and

WHEREAS the California Air Resources Board has a fifty-year history of leading the globe in addressing harmful pollution through innovative air pollution control standards, including the nation's first NOx emissions standards for motor vehicles; and

WHEREAS California's renewable energy targets have spurred innovation and private investment in new technologies with California leading the nation in clean technology patents and bringing in more than 50 percent of all clean energy investment in the nation; and

WHEREAS the state has made significant progress in lowering greenhouse gas emissions and mitigating climate risk in California's own state government operations and public schools; and

WHEREAS achieving California's climate goals will require concerted commitment and partnership by government, the private sector, and California residents.

Metro

Goals for Today's Working Group

Framework for the Clean Truck Initiative

Goals for this group:

- Develop a comprehensive, timely, fundable, implementable and broadly supported Clean Truck Initiative for the Metro Board to support, invest in, and seek supporting policies and vital funding through partnership with regional, state and federal stakeholders and agencies

- Provide a clear accounting of the landscape of cleaner truck technology – including equity community concerns, barriers to implementation, status of technology, infrastructure needs, truck driver needs, and funding needs – to inform the Metro Board on clean truck issues through the Metro Goods Movement Strategic Plan

- Become a recurrent advisory group to the Metro Board for all issues related to the implementation of clean truck technology within LA County

Concept for Working Group Meetings

Today:

- Convene stakeholders to explain purpose of the regional Clean Truck Initiative
- Through presentation and a constructive dialogue, identify the key challenges, barriers, opportunities, and community needs that surround the development of the Initiative
- Identify additional areas of inquiry for this working group and additional stakeholders for outreach by Metro
- Listen, share, discuss. No decisions made today on the specifics of a funding plan or preferred technology

Concept for Working Group Meetings

Next Meetings (Early 2020):

- Report back on comprehensive assessment of issues raised at the first meeting
- Develop the equity framework associated with implementing the Clean Truck Initiative
- Identify and discuss existing efforts to implement clean truck technology (e.g., Port Clean Truck Program, Gateway COG 710 Prototype, LACI) – and how the Initiative can complement and support these efforts
- Identify and discuss policy needs and available funding opportunities
- Construct the Clean Truck Initiative in a collaborative manner with the purpose of it being presented to the Metro Board for consideration

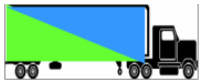
Truck Information

Truck Tailpipe Emissions Factors

Pollutants of Concern (Heavy-Duty Truck Tailpipe Emissions)	**Diesel Trucks (in 2035)**	**ZE / NZE Trucks**	**ZE Trucks**
NO_X	0.2 g/bhp-hr	0.02 g/bhp-hr	0.00 g/bhp-hr
PM_{10} / $PM_{2.5}$	0.01 g/bhp-hr	0.01 g/bhp-hr	0.00 g/bhp-hr
Major toxics	DPM and diesel gaseous toxics	NG toxics (gaseous and particulate)	0

DPM: Diesel Particulate Matter
NG: Natural Gas

Compare NZE & ZE Truck Performance

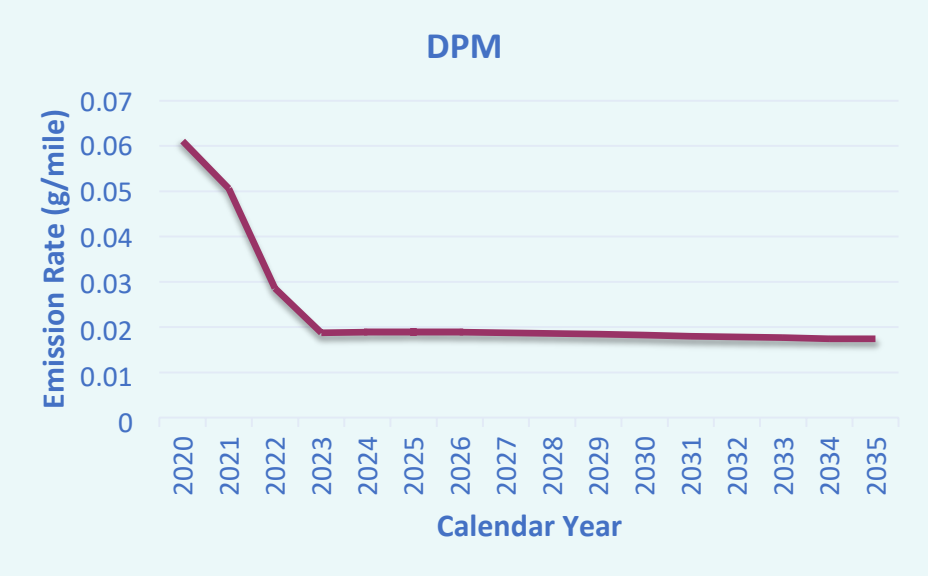
	Conventional Diesel Truck 	Near Zero Emission Truck 	Zero Emission Truck 
			
Diesel Particulate Matter* (DPM) (lb/10,000 miles)	0.38	0	0
Nitrogen Oxides* (NO_X) (lb/10,000 miles)	54.4	5.4	0
Greenhouse Gases* (GHG) (MT CO_2e/10,000 miles)	11.3	11.3	0
Approx. number of Trucks per $100 million of Funding**	N/A	4,000 Trucks	1,520 Trucks

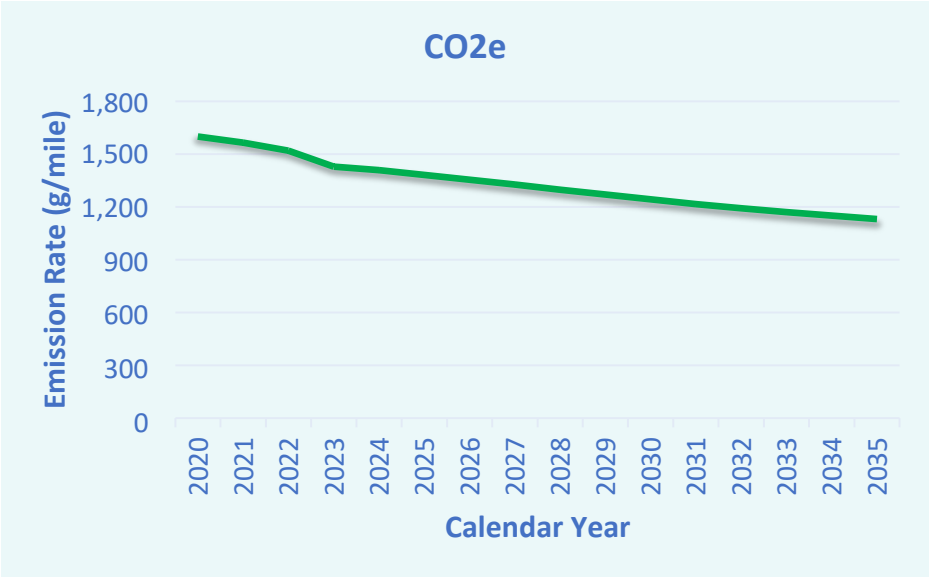
* Running Exhaust emission factors are based on EMFAC2017 for heavy-heavy duty trucks in Los Angeles County for calendar year 2035.

** Unit costs represent incremental, average costs of zero emissions trucks (battery electric, fuel cell vehicles) from I-710 Zero Emissions Truck Commercialization Study, assuming pre-2035 deployment (Calstart, 2013).

Metro

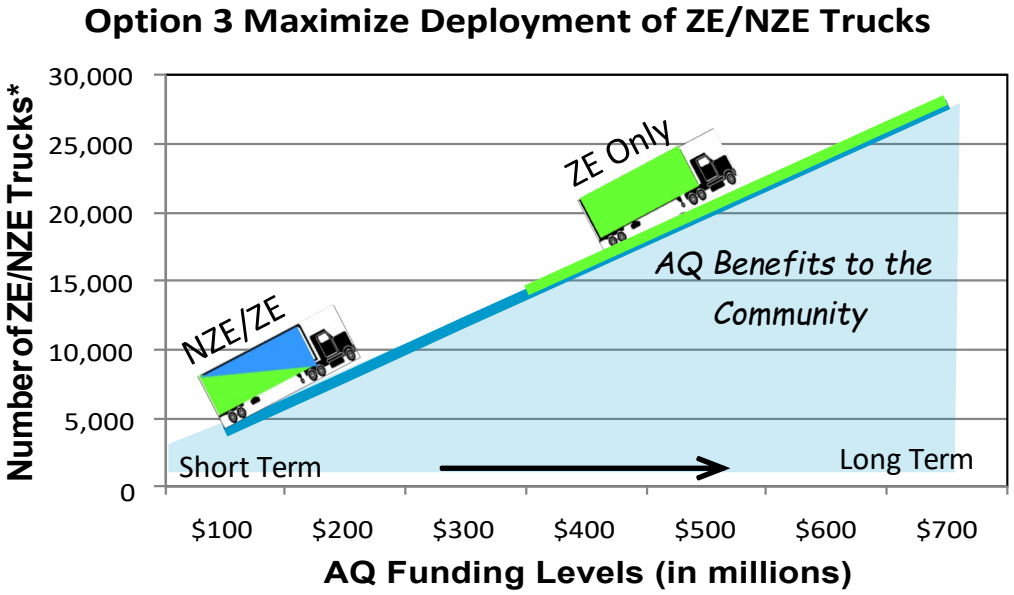
Emission Rate Trends for Conventional Diesel Trucks





Metro

I-710 ZE/NZE Deployment Strategy



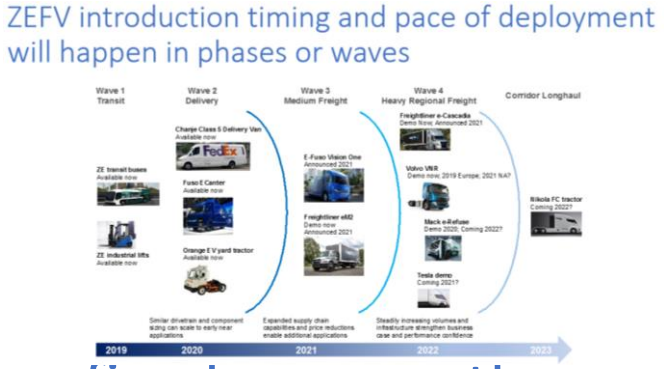
Maximize Number of "Clean Emissions" Trucks and Air Quality Benefits

- Begin with mix of ZE and NZE trucks in the near term
- Transition to ZE trucks as ZE trucks become commercially available and affordable.
- Partner with SCAQMD, EPA, CARB to pursue grant funding outside of the project programmed funds to support health-benefit investments.

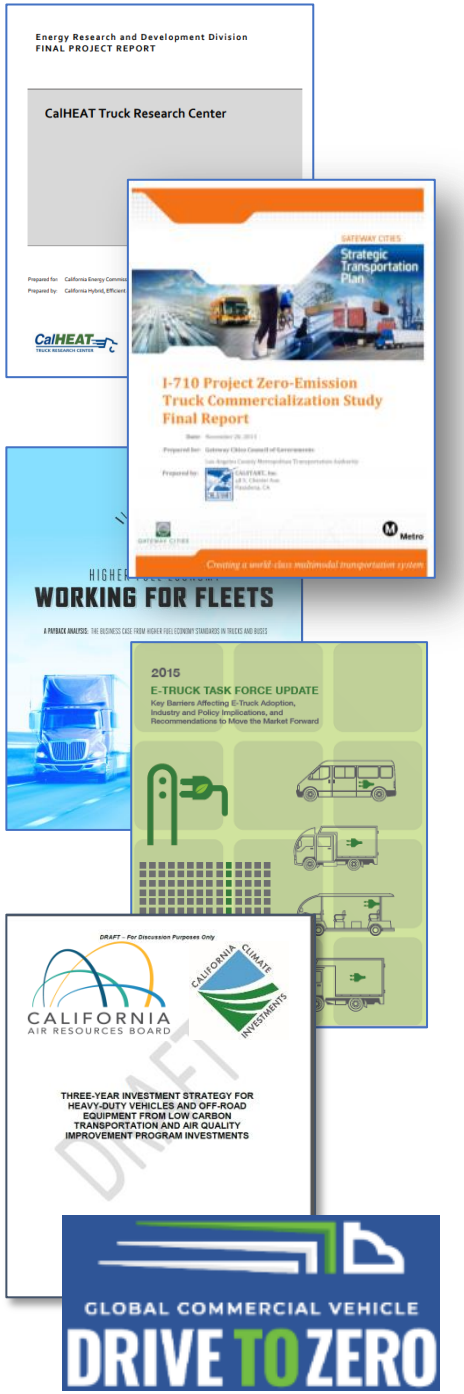
Metro

Appendix G: Calstart Presentation

State of Technology



- Rapid evolution underway – there is no one fixed answer, there will be multiple solutions in play and capabilities in five years will be much greater than today – multiple ways to get low NOx, low carbon good movement
- Tremendous pressure on diesel to meet fuel economy and air emissions standards at same time – 0.015-0.05 NOx coming
- Renewable fuels increasingly available due to LCFS but have production limits
- Energy storage (batteries) steadily decreasing in size, cost and increasing in capability – Class 8 regional trucks now in multiple demonstrations
- Growing global supply chain for ZE and NZE components and vehicles is leading to steady cost reductions



Most current strategy and investment plan: https://ww2.arb.ca.gov/sites/default/files/2019-09/fy1920fundingplan-appd.pdf

Infrastructure Deployment

- Transit buses are the learning platform for HD on ZE (battery electric and H2 fuel cell)
- Different model for users – fuel providers new, lead times for installation extended; requires more planning
- For battery electric, first infrastructure at depots/yards; will expand to regional charging “hubs” and along corridors;
- For H2, ideally need high-volume centralized sites with production on site or near
- Truck stop owners becoming interested in electricity and H2
- Public infrastructure decent for natural gas in key regions and some corridors; providers will build as demand grows

Most current strategy and investment plan: https://ww2.arb.ca.gov/sites/default/files/2019-09/fy1920fundingplan-appd.pdf

Trucking Industry Perspective

- Manufacturers
  - Realize transformation to lower carbon and emissions trucks and equipment coming – part of global market
  - Are investing in new tech and platforms and all OEMs have some ZE platforms coming by 2021/22
  - Concerned about market demand and acceptance and infrastructure on pace of change needed
- Users
  - Larger operations exploring business case and use profiles; TCO looks good in increasing # of applications; smaller operations need support and information
  - Concerned with first price; infrastructure timing and roll-out; service and support
  - Realize it will take a change in process – some looking at “all-in” lease covering infra, maintenance

Most current strategy and investment plan: https://ww2.arb.ca.gov/sites/default/files/2019-09/fy1920fundingplan-appd.pdf

Funding Sources

- In State
  - California has most aggressive funding and investment in US; maybe second only to China – need multi-year commitment
  - CARB (demos, pilots and early market purchase incentives – HVIP, CORE)
  - CalSTA – infrastructure and transit
  - CEC – infrastructure, fuel development
  - Utilities – infrastructure deployment
  - Ports – Clean Air Plan and investments (infrastructure)
  - Air districts – program state and local funds regionally for vehicle deployment incentives (Moyer, MSRC, 617, VW)
  - New local sales tax to raise funds for goods movement investments under consideration for So Cal
  - Metro – local tax measures added to federal
- Federal
  - DOE – demonstration and development
  - FHWA – corridors of national concern; clean corridors (infrastructure) – new STA could include funding of infrastructure
  - MARAD - harborcraft

Most current strategy and investment plan: https://ww2.arb.ca.gov/sites/default/files/2019-09/fy1920fundingplan-appd.pdf

Regulatory Environment

- **SB 32 (Climate Change) – cut GHG emissions 40% below 1990 levels by 2030; goal 80% GHG cut by 2050 – updated to carbon neutral by 2045**
- **Extreme Air Quality Non-attainment (LA Region, Central Valley) – deadlines in 2023 and 2031**
- Gov. Executive Order – 50% petroleum reduction by 2030
- Low Carbon Fuel Standard (LCFS) – secured through 2030
- Utilities – 50% renewable energy by 2030 – updated to 50% by 2026; 60% by 2030; 100% by 2045
- Carbon Cap and Trade – secured through 2030 (funding)
- **Clean Air Action Plan at San Pedro Ports – ZE operations by 2030; ZE trucks by 2035; differential rate structure for clean trucks by ~2023**
- **Advanced Clean Truck Rule – proposed rule by end of 2019; 3+% trucks ZEV starting 2023**
- Sustainable Freight Plan – being acted on and invested in

Table A-1. ZEV Sales Percentage Schedule

Model Year	Class 2b-3 Group*	Class 4-8 Group	Class 7-8 Tractors Group
2024	3%	7%	3%
2025	5%	9%	5%
2026	7%	11%	7%
2027	9%	13%	9%
2028	11%	24%	11%
2029	13%	37%	13%
2030 and beyond	15%	50%	15%

*Excluding pickup trucks until the 2027 model year

- CPUC rule making on M/HD EV infrastructure investments from utilities – approved ~$1B investment and rate recovery
- HVIP (Clean Truck and Bus Incentives) - $142m in 2019/20

Most current strategy and investment plan: https://ww2.arb.ca.gov/sites/default/files/2019-09/fy1920fundingplan-appd.pdf

Appendix H: Group Discussion Transcription

Los Angeles County
Metropolitan Transportation Authority
One Gateway Plaza
Los Angeles, CA 90012-2952
213.922.2000 Tel
metro.net

Clean Truck Initiative Working Group – Group Discussion

State of Technology

Michael Cano, Metro: Let's start with the CNG folks. Who is comfortable talking about CNG in terms of what is the actual state of technology and availability of trucks and the standards that they are meeting?

Justin Loyear, Cummins Westport: As far as availability and scaling, Cummins makes about three million diesel and natural gas engines a year. Right now, we're into the 10 thousands in a year as far as natural gas is concerned. When you say scalability, writing a check and having them done, it can happen. We build the natural gas engines on the same lines that the diesel engines get built on. All the major truck manufacturers offer our engines; there was a big back log with trucks as far as purchasing ability, but that back log is gone now. There are no delays as far as trucks being built here. We're operating with very large customers right now like UPS, and LA Metro is one of our largest natural gas operating customers right now. I believe that they placed an order for about 400 buses and most of those are natural gas and we're in the process of building them right now. Natural gas is here, it's ready, available and scalable.

Bill Van Amburg, Calstart: To add a little more color to what Justin just said, last quarter we reached a milestone in southern California, that is we sold over 100 engines of these low NOx engines in the Ports of Long Beach and LA, a lot of that truck traffic travels up and down the 710 Corridor. These are all new engines that were mentioned earlier, the new technology that was introduced in 2018. There's been a strong market demand and we have support from our friends at AQMD with grant funding to make that possible because these trucks have to compete in the market against the existing fleet of various diesel trucks and it's hard to do no matter what type of clean truck it is. These are very expensive pieces of equipment and they have to compete with virtually free diesel trucks. By the end of this year, the Ports will have about 150 of these low NOx trucks. This is where we can legally haul 95,000 pounds on public roads which is heavier than the 80,000 pounds. It's a very exciting project.

Genevieve Guiliano, USC/METRANS: I have a question I'm hoping somebody in the room can answer. Is there anybody who can talk about the availability of hybrid technology trucks?

Enzo Bauk, US Hybrid: We attach the hybrid with a hand transmission that is low NOx, but we also produce hybrids that use more battery fuel. This is called series hybrid. Most of these technologies are running at the Port of Long Beach right now.

Marnie Primmer, FuturePorts: When we talk about technology, we are thinking about different aspects of technology. First, there is the engine technology. Then, there is also infrastructure that supports the deployment of alternative fuel vehicles in and around the ports around the 710 Corridor, in order to make those vehicles efficient and successful in implementing zero or a near-zero emissions strategy. Can we have someone talk about some of the infrastructure that is being put in place to support this technology?

Damon Hannaman, SoCal Edison: We have been doing some pilots with the Port of Long Beach, but right now we are really focused on our transport program. It is our offering to provide infrastructure to the energy-user customer. We will be installing infrastructure, pulling in our equipment, installing panels for the customer. It is what we call a make-ready position for electric vehicle servicing equipment. Right now, we are in the middle of two pilot programs for the Port of Long Beach. One is our battery-electric cranes, but we are finishing laying infrastructure support and tractors on a charging system for that. Outside of the terminal, we have a project with SSA Marine. They have vehicles that will be moving cargo from their terminals to locations where we will be providing infrastructure support there too. This program right now has about 60 applications. We would love to have this all taken care of within five years.

Steve Lantz, South Bay Council of Governments: When you talk about electrifying drayage and buses, are you using the same common facility? What is the business plan for this?

Damon Hannaman, SoCal Edison: We don't have a public location, but there are plans for truck stops. The program has a minimum requirement of two vehicles. We know that everyone is not going to transform their fleets immediately, so we are going to work with them and grow. We are working with transit agencies outside of this group and looking at shared sites, like regional depots. There might be some solutions there. We're looking at lower voltage over longer periods of time.

Marnie Primmer, FuturePorts: Are there innovations on the technology side for the infrastructure as well as the engine technology?

Damon Hannaman, SoCal Edison: We are not only looking at the lower power units, but we are also looking at 200 KW units at 48 volts, so you can go from a very short charge time to a longer charge time, and that's the major operation on these. A lot of the yard tractors we are looking at shorter charge times to meet the needs of their labor. We are looking at that for our drayage vehicles too.

Nancy Pfeffer, Gateway Cities Council of Governments: I heard you have an investment program of $350 million dollars, are your priorities driven simply by customer's requests?

Damon Hannaman, SoCal Edison: Customers have to apply for the program, and they have to own and operate the site they manage. We have not gotten into a public site yet, but I'm sure that's not far behind. We have two charging units to Port of LA and Port of Long Beach. There will be public charging at those locations.

Hilary Norton, CTC: As you're comparing technologies, are we also looking at where trucks are idling overnight and the air quality issues about those locations? We're addressing air quality issues in terms of infrastructure. Are we also quantifying the size of cargo space among all the different types of technologies? The cargo space is not the same. It's important as we are trying to take on these different comparisons. We need to look at gains and losses and how to make up the overall cost.

Matt Miyasato, AQMD: To answer Dr. Guiliano's question, hybrids are not what they were originally, but I think now they have gone all on electric and it's refreshing to see. Right now, we are working on developing different technologies for the DOE. When we talk about scales, it is great to have these prototypes to show what can be done, but we need to work with the big OEM's. The only technology that is commercially available that is on the market that's cost-effective is natural gas. It is about 90 percent cleaner. We would love to see something else. When we look at 10 years out, we're looking at more electric technology. In the meantime, its good to have smaller class sizes. We see that as a great asset if you have near zero or natural gases.

Joe Lyou, Coalition for Clean Air: This is a glass half empty, glass half full situation. There is no perfect solution at this point in time. We are looking at battery electric and natural gas solutions. As Matt says, nobody is looking at a combination. Nobody is going that route for production. There is a draw back no matter where you go. If its electric, it takes too long to charge, uses too much energy. But that is a glass half full point of view because cost of battery is going down, energy density is improving. All the issues are being addressed. Trucks are expensive and limiting and we know infrastructure is a problem. We are investing in that and all the problems can eventually go away. It would be nice to have a leader in natural gas. The cost will come down, so there are reasons to be optimistic. We need to invest in near zero emissions so we can solve these issues faster. We need a pathway to get to zero. Unless we invest, we can't achieve our goals.

Marnie Primmer, FuturePorts: I'm hearing it's an "all the above" , not an "either or" solution .

Joe Lyou, Coalition for Clean Air: In terms of policymakers, we have to invest in zero emissions to get there. In the short term, we have the Clean Air Act and requirements for that. The sanctions we face are not as heinous - it is going to be real and devastating. There won't be funding for those transportation projects. If we don't work at all levels, it is impossible to get where we need to get.

Luke Klipp, City of Long Beach: I wanted to note that hearing all the different numbers with technology and engines is challenging. What is the current state and expectation of how things are going to change? What would it look like with a specific investment? I have no idea what some of the numbers mean. Frankly, what I'm getting from this discussion is that we are far from an environment where there is an overwhelming amount of vehicles that are zero or near-zero emissions and I am not sure how we are going to get there.

Michael Cano, Metro: Thank you. As someone who has been in both worlds, the translation of this to policy makers is a significant task in itself. They need to understand recommendations in order to make decisions and what it all means.

Vincent Pellecchia, BYD Motors: When we are talking about moving freight, we are talking about different types of trucks. The trucks that BYD makes are the duty cycle and range that our customers ask for. In terms of drayage, it is shorter. For tractors, we are providing the amount of time customers need to complete duty cycles. There are no complaints of charge because we work with customers on what charge times they need. Electricity is becoming cleaner. We can produce at a significant scale, and BYD is commercially available.

Angelo Logan, Moving Forward: I wanted to say having a conversation about technology is premature until we have a better understanding of what the truck initiative is. Right now, it is all inclusive. We have no understanding of what the scope is. I want us to have a better understanding of what the scope and operations are. It will help us understand what infrastructure needs are and the range. Can we get a better understanding? Ours is regional and I want to know, how does that fit into the development of the 710 process and region at large?

Michael Cano, Metro: That's a fair question. The intent of this initiative is regional for LA County. We understand the strategies involved are different for Corridors. We have to tailor the approach to the need. We have truck initiatives to implement on the 710 Corridor. The 710 Corridor strategy may be different than the regional discussion. We have issues on the 57, 60, in the San Gabriel Valley, and many other areas. What we're trying to do now is get information out there and find solutions that can be applied on a regional basis as well as to meet the needs of specific corridors. The issues on the 710 overlap greatly, but we will keep that in mind. This is more gathering for the entire region so we can understand investments made for different areas and the region. We need scopes and a concept of what we are doing for different projects.

Person D: We should be keeping an eye on other technologies that we can be using. People are getting smarter about using battery storage, especially mobile charging sites. But also there are challenges in using battery storage and incurring excess weight costs.

Sue Dexter, USC/METRANS: I have recently been talking to drayage operators along the 710. I have asked, what is your range requirement between charges? They are saying between 200-300 miles. From an operation perspective, that is what I am hearing as a researcher.

Julia Lester, 710 Air Quality Consultant, Ramboll, then provided a brief presentation related to trucks and their impact on air quality. She began her presentation by discussing truck tailpipe emissions factors and provided a chart that showed pollutants of concern that are in heavy-duty truck tailpipe emissions and compared that to diesel trucks in 2035, ZE and NZE trucks. Ms. Lester noted that NZE trucks are 90% less NOx emissions than diesel trucks. The presentation then continued with a comparison of NZE and ZE truck performance, followed by emission rate trends for conventional diesel trucks. Participants were informed that there are more cost-effective benefits from NZE, especially as technology matures and moves toward ZE. Ms. Lester concluded by discussing the I-710 ZE/NZE Deployment Strategy. Following the presentation, participants were given the opportunity to ask questions and continue the group discussion.

*Please see **Appendix F, slides 14-18** for the Truck Information section of the presentation.*

The following comments relate to Ms. Lester's presentation.

Weston LaBar, Harbor Trucking Association: Where do you get the definition of a near-zero emissions engine?

Julia Lester, Ramboll: The near- zero emissions engine was first discussed in the 2016 Air Quality Management Plan, spearheaded with the Environmental Protection Agency. The definition at that time was it was the lowest demonstrated NOx level which was .02 or 90% reduction.

Weston LaBar, Harbor Trucking Association: To use .02 as a reduction is problematic at this point in time and it is not an acceptable legal definition. The EPA has not come up with that yet. We have argued that in order to enforce a near-zero emissions standard, there has to be some sort of approval by EPA, which at this point in time, there is not. With the port, they do not have the ability to move forward with a Clean Truck Program fee until there is a legal definition of what near-zero emissions standard is. Our understanding with the EPA is that they are working toward a federal standard which might be higher than .02. To move forward with that will create legal issues with those who try to pursue a standard without the legal authority to do so.

Sydney Vergis, California Air Resources Board: I would contend that we both have a very different legal opinion on that, as well as our ability to implement our own program.

Julia Lester, Ramboll: These are for incentive programs, and not legal a legal standard.

Kevin Maggay, SoCal Gas: I do not have legal opinion to share. I don't think the slide illustrates that natural gas engines operate much more efficiently versus diesel. That 90% reduction can be modified. The greenhouse gases shows the same number. This is not enough to get people to switch over. It's important to show the scale of the problem here.

Julia Lester, Ramboll: I do not disagree with what you are saying now, as this was prepared a couple of years ago and I know things have changed.

Bill Van Amburg, Calstart: Do everything you can now and plan for a transition later. You do not want to pin yourself in a corner but have a policy that encourages rapid change. We need to start building early versions. Players are already in the market and ramping up. Have duel path ways and have global commercial vehicles drive to zero. You can do it right now, but maybe over time; in the meantime, have the cleanest carbon fuels available now. Another thing is that the market structures can have beneficial results on user choice. POLA and POLB are looking at different pricing models. A clean truck will pay less and a dirtier truck will pay more. If I can do three or four turns a day instead of two, I will figure out how to make a cleaner truck work. That can be a powerful tool. CARB does have a voluntary low NOx standard. There are various pieces of California legislation already at voluntary low NOx standards.

Todd Campbell, Clean Energy Fuels: I wanted to touch on the argument that a standard has a short shelf life. Where we stand in a legal position of .02 that is going to move. It could be .015 and that would be good for breathers if it was. Thank you, Julia, for your presentation. The numbers that were used looked to be certification numbers. There are two ways to look at emissions- certification and lifecycle. We need to look more at life cycle. The grid does have impacts and there are emissions that are happening. I hope we do that. The second thing, more important than CNG and hybrid, we need to figure this out and how we build the technology. This is a real threat to our region. It is air pollution and diesel. It has been a great tool, but it is impacting peoples lives. Diesel emissions are five to nine times higher. This has been backed up by UC Riverside, and we need to pay attention when looking at certification numbers that were established in 2010. They are far worse now.

Matt Miyasato, AQMD: We are going to be faced with challenges. Weston and PMSA might not take to that. About 160,000 vehicles in the slide, what class of vehicles were covered?

Julia Lester, Ramboll: I believe the 160,000 was class eight.

Matt Schrap, California Fleet Solutions/ Velocity Vehicle Group: For understanding technology availability, it would be helpful to have a breakdown of how the truck classes work. We operate 1,500 vehicles in California. There are different weight classes. When I look at medium duty, there is more potential for near-zero emissions. This is there today and it is happening. ZE is beautiful, but there's some interim stuff that needs to happen. If my clients and Weston's members are not ready to step up to this, they are not going to do it. They will use diesel trucks until they are forced not to in 2035.

Waqas Rehman, LA County, First District: I heard there was a requirement by 2023. What kind of reduction will be required even with the 710 Corridor project? I need a better understanding of that.

Julia Lester, Ramboll: The zero-emissions and near zero emission meets the requirements under CEQA analysis. The AQMD people are the experts. The most difficult road is ozone standard. ZE or NZE get us where we need to be going.

Damon Hannaman, SoCal Edison: We are focused on reduction. We want emissions-free sources. Our plan is to be 80 percent emissions free by 2030 and completely free by 2045. We are processing 35,000 connections for systems. We are working with customers on infrastructure charging, but also working with energy restorage. There will be a mix of things, but we are working toward being completely emissions free.

Trucking Industry Perspective

After a short break, participants re-assembled to discuss the remaining topics.

Michael Cano, Metro: What are the challenges and goals for this program for it to be successful in trucking?

Weston LaBar, Harbor Trucking Association: Earlier I wanted to point out that there are certain requirements that should take place when we mandate things. From a member standpoint, we need the opportunity to have an even playing field. We have had members that have been procuring near-ZE vehicles, then if the standard got changed to 0.15, all of those folks invested in equipment would get penalized for buying equipment too early. That is why we need a definition that is enforced for these things. We have concerns but our goal is to work with stakeholders to have a sustainable corridor. We have two focuses. How are we a sustainable partner in the supply chain? How can we meet the economic demands of our customers? This needs to be a partnership.

Let me tell you our concerns because they are different than what you might think. There are short-term concerns over the technology and cost. We feel like between now and 2035 we can get an affordable ZE truck. We will demonstrate pilot programs. We have members that have ZE and NZE trucks. The feedback is that a ZE truck does not do what a diesel truck does. If you are an overweight company, public policy is a big issue. A battery truck is heavier. Unless we get an exemption, we are having issues. That puts us at a disadvantage. From a policy standpoint we are not able to meet those standards because of weight. We also have local municipalities that are putting into place, based on allocations from SB1, they are putting fees on the trucking industry. Carson is a great example. Carson gets the same amount of funding as Beverly Hills because they have the same population, however, the impact is different. The have an extended overweight corridor and they have turned to the trucking industry to fill the funding

gap. We now have to pay a road impact or mitigation fee. My members are now subjected to possibly paying a fee because they invested in what they thought was a solution. This needs to be clarified at a state level. It's not fair to put a fee on a truck just because it is heavier. We have members that procured ZE trucks. The ports will tell you trucking has been great at finding a path. We do not have a resolution to our issues. That is a disincentive to move toward ZE. We have weight issues, fee issues, fee issues on technologies, what is exempt? Are we going to be double taxed on the 710 Corridor? Is it intended that we will carry the load for the entire industry? That is unreasonable and unfair. There are policy issues that need to be addressed. I do want to thank Clean Energy and SoCal Gas for helping us. We are doing our part, but we have issues. I have to pay a 12% sales tax on a truck. We need to look at trucks that are made and bought in California. That is a huge opportunity. We can redeploy that work since the aerospace industry is dwindling. If there is something taken up by the State, lets create incentives. That handles the policy stuff.

For infrastructure, a huge concern is that we have members that have 250 trucks. They have their third BYD truck, but they are capped at three. We have smaller carriers that have no ability to get more electric infrastructure, so they are capped at two. We need some assemblance of what the rates are going to look like. My members need clarification and infrastructure to be ready if we are going to deploy technology. We have lessons learned from the first Clean Truck Program. We need more demo programs and pilot programs. If we mandate things that don't work, it will set things back. Member are testing ZE tech and EV solutions, but we need standards from the EV community as well. There are different concerns beyond cost or availability.

In all, we are looking for a partnership for a reasonable pathway. All we hear is that we are the dirty truckers killing everyone up and down the710 Corridor. We have invested more resources than anyone else has. The ports made us get more expensive equipment and we have less productivity. Whatever we can do to lower the cost and increase productivity, that allows us to be more profitable, make ports more competitive, and be beneficial for everyone. This is a multi-faceted approach. We want to have a sustainable solution, but we need environmental folks to work with us.

Bill Van Amburg, Calstart: How do we actually reward people who are buying clean technology? Originally, it was one of the goals for the 710. It is good to list problems and start tackling them. Let's take legislation out there and work together. I also agree to not pay taxes on incremental cost. These are doable actions if we can work together.

Weston LaBar, Harbor Trucking Association: I'm hoping there is going to be an openness to that. We find that we are often the target but get no credit for progress. If you bought something, a truck brought it. One of the real things we deal with is everyone wants their package within 24 hours but they don't want a warehouse located where they live. We would like to see a real study done on a lifecycle on manufacturing and energy standpoint. What is the true emissions of a truck? How is the power generated? I do not know the effects on climate change. We know what it does for air quality, but we need more academic studies. A lot of the matters are coming from brakes and tires, which are not surprising, but these are new things we need to understand and not just put a band-aid on it.

Kevin Maggay, SoCal Gas I think the weight is an issue and there should be exemptions. But this is not entirely fair for disadvantaged communities. I have cautions about weight exemptions.

Person F: I know we talked about technology getting better, but I have a question related to infrastructure. There are no standards for charging equipment. To buy a ZE truck, you need a charger. How do we overcome that challenge? Does the grid have the capacity for that many trucks on the road? Do we have capacity for that many charging ports? What do I do if there is a blackout? I will need to run my business. I think we need several different technologies and not just electric. Those are the big challenges that I see.

Damon Hannaman, SoCal Edison: There are a couple more things I want to touch on. Utilities have programs available to push electrification through that the municipalities do not have yet and that does need to be pushed. EVSC and SoCal Edison is helping push those standards through programs. Finally, we are developing demand response programs to help manage the cost after implementing new technology.

As far as the other concerns, wildfires and things like that have been specific to circuits and there are ways to be strategic in alerting customers at least an hour in advance. If there is a large blackout, electricity is not the only thing that will not be available. Gas and others will be affected as well. In terms of grid capacity, the state has flattened out in consumption due to energy-saving policies and there is a lot of room for growth.

Regulatory Environment

Todd Campbell, Clean Energy Fuels: DOE and natural gas can work in the state. We should never have a policy that punishes early adopters of new technology, because that is unfair. The industry has worked together for a weight exemption and we should work together toward a bill to eliminate the sales tax.

Alison Linder, SCAG: I just wanted to point out some of SCAG's interests and that is how to best support these emerging technologies. There needs to be more public charging infrastructure, but also how do we make that work?

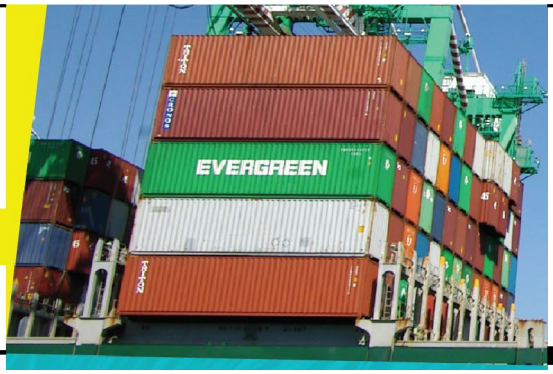
Genevieve Guiliano, USC/METRANS: We should be encouraging the issue of standards at the State level. There is an opportunity to build in standards so that they lasts in the long run. Also, drayage is not the majority of trucking. There needs to be a broader market for this and we need an industry-wide perspective, or else the costs will never go down.

Sydney Vergis, California Air Resources Board: In any serious study on life-cycle analysis comparing diesel trucks to ZE trucks, the lowest NOx will be ZE. SB1 does mandate that any heavy-duty truck that is not compliant starting January 1 will have their DMV registration revoked. It does not matter what kind of long-haul you have, if it is not 2010 or newer then no registration. Appropriations for grant programs happen annually. Also the Advanced Clean Truck Regulation mandated that manufacturers Class 4-8 will have to fit a manual requirement. This is already currently in progress and there are more regulations in the works.

Wayne Nastri, AQMD: 2020 will be a big deal for us. Contingency measures will need to be submitted to the USEPA. If I were a pessimistic person, I would say that the federal government would most likely reject those contingency measures and start sanctions which will impact everyone in this room. If I were a skeptic, I would say that the current administration wants to punish California by seeing cargo in the ports divert. The administration might want to look at directing cargo to other US Ports. The largest emissions reduction now needs to be 45 percent lower NOx by 2023). SB-732 gives voters the decision to invest in technology if they want to or not. It has been calculated that $1-2 billion dollar a year will be spent in years to come just in conforming in technology.

Niki Okuk, Calstart: This is in response to Sydney's comment earlier, but 40 percent of trucks need to retire within three years. Truckers and owners will be scrambling to buy trucks. They will be looking to diesel, but now there is an opportunity to put the clean trucks on their radars.

Appendix I: Event Photos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