

Welcome!

We will begin in a few moments.

710 Task Force

Zero-Emission Truck Working Group

Meeting #10

September 20, 2022



We're developing a new vision for the 710 corridor.

710 Task Force

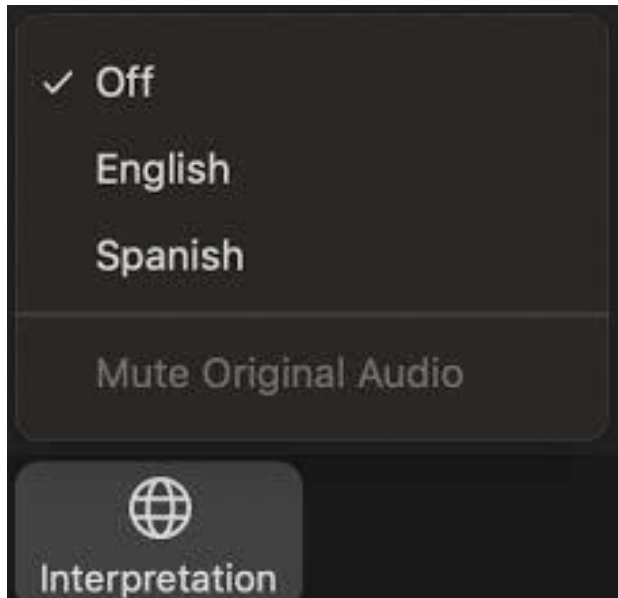


Metro

Interpretation/ *Interpretación*



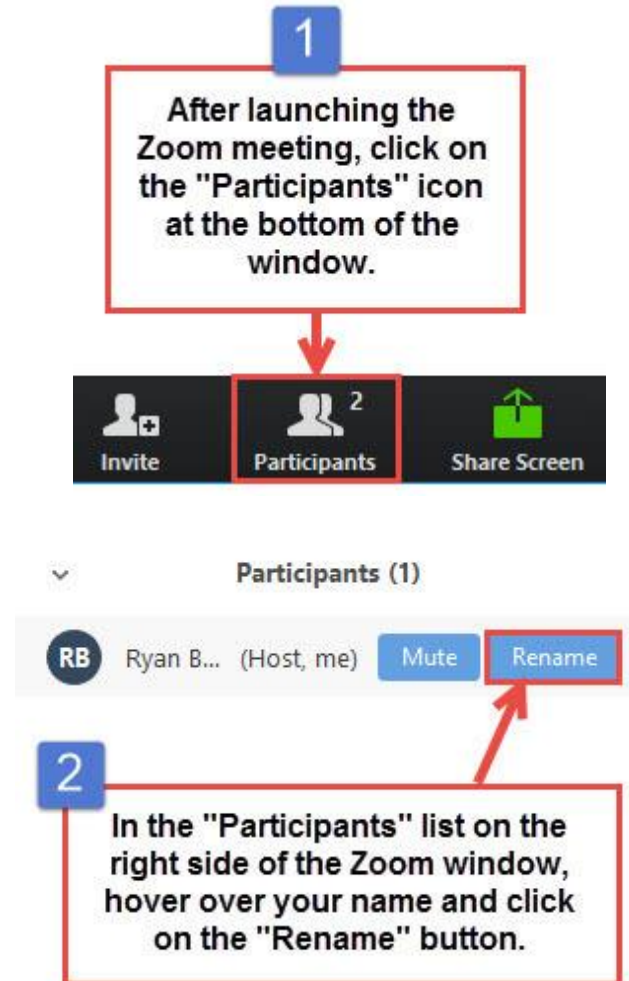
- > Click the **Interpretation** icon in your meeting controls to enter the Spanish room
- > (Optional) To hear the interpreted language only, click **Mute Original Audio**



- > *Haga clic en el ícono de **Interpretación** en los controles de su reunión para ingresar la sala en español*
- > *(Opcional) Para escuchar solo el idioma interpretado, haga clic en “**Mute Original Audio**” o “**Silenciar audio original**”*

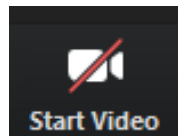
Task Force Member, CLC Member, and Participant Identification

Please change your Zoom screen name to include: Name and Organization Name (and if you are a Task Force Member, CLC Member)

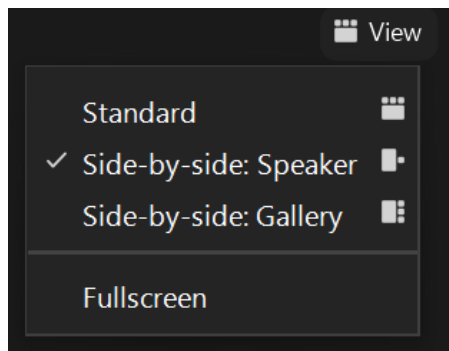


Turn on Camera / Prende la cámara

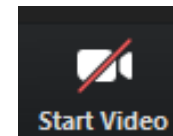
- > To **start** and **stop** your video, click the camera icon at the bottom left of your control panel



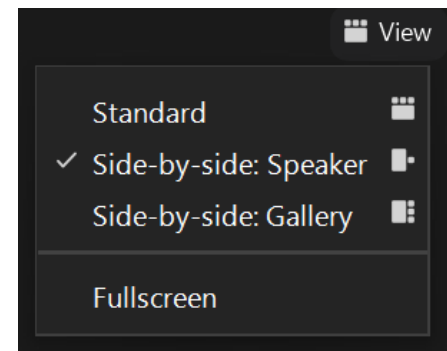
- > To switch between views during the meeting click or tap on **Standard**, **Side-by-side Speaker View**, and **Side-by-side Gallery View** at the top right corner of your zoom screen



- > Para **iniciar** y **detener** su video, haga clic en el ícono de la cámara en la parte inferior izquierda de su panel de control



- > Para cambiar entre vistas durante la reunión, haga clic o toque **Estándar**, **Vista de orador en paralelo** y **Vista de Galería en Paralelo** en la esquina superior derecha de la pantalla de zoom



Zoom Protocols

- > Click **Raise Hand** in your meeting controls or
- > **Press*9** on the phone line.
- > To lower your hand, click **Raise Hand** in your meeting controls.
- > Comments & questions can also be provided in writing by using the **Chat** function.
- > The **Chat** button is located on the control panel at the bottom of your screen.

Welcome!

710 Task Force

Zero-Emission Truck Working Group

Meeting #10

September 20, 2022

Welcome, Agenda Review, and Purpose of the I-710 South Corridor Zero-Emission Truck (ZET) Working Group

Meeting Objectives

- ✓ Receive presentations and engage in discussion on the following topics:
 - Applying Best Practices of Getting to ZERO to the 710 South Corridor Infrastructure
 - Regional EV Charging Study to Accelerate Electrification
 - Is the Electric Grid Ready?
 - 2019 Electric Vehicle Charging Guidebook for Medium-Duty and Heavy-Duty Commercial Fleets
 - EV Charging Infrastructure for Southern California Warehouses

- ✓ Engage in a discussion on the next steps in developing the ZET Program.

Detailed Agenda

- 1:00pm** **Welcome, Agenda Review, and Purpose of the Zero-Emission Truck Working Group** (5 minutes)
- 1:05pm** **Agenda Item #1: Metro Update** (5 min)
ZET Program – Metro Board Direction
- 1:10pm** **Agenda Item #2: I-710 South Corridor Zero-Emission Truck Program Proposed Principles** (5 minutes)
- 1:15pm** **Agenda Item #3: Medium-Duty and Heavy-Duty Infrastructure, Global Commercial Vehicle Drive to Zero**
Presentation by Bill Van Amburg, Global Strategic Advisor Zero Emission Commercial Vehicles, Energy and Sustainability (15 minutes)
Facilitated Discussion (10 minutes)
- 1:40pm** **Agenda Item #4: Regional Roadmap for Zero-Emission Vehicle Infrastructure**
Overview by Alison Linder, Senior Regional Planner, Southern California Association of Governments (10 minutes)
Question and Answer (5 minutes)
- 1:55pm** **Agenda Item #5: If EV's are the Future, is the Grid Ready?** (30 minutes)
Moderator: Micah Wofford, Energy Commission Specialist, California Energy Commission
Panel Discussion
- Sean Wilder, Energy and Environmental Services, LA County Internal Services Department
 - Salim Youssefzadah, CEO, WattEV
 - Quintin Sumabat, Deputy Executive Officer, Vehicle Engineering and Acquisitions, LA Metro
- 2:25pm** **Agenda Item #6: 2019 Electric Vehicle Charging Guidebook for Medium-Duty and Heavy-Duty Commercial Fleets (10 minutes)**
Presentation by Patrick Couch, SVP, Gladstein, Neandross, and Associates
Question and Answer (5 minutes)
- 2:45pm** **Agenda Item #7: Electric Vehicle Charging Infrastructure for Southern California Warehouses – MAERSK Performance Team Report**
Report by Carlo Bertani, MAERSK (10 minutes)
Question and Answer (5 minutes)
- 3:00pm** **Closing Remarks and Next Steps**

Agenda Item #1.1: Metro Board Update

Metro Board Update

> **Metro Staff to report to Board on the following:**

Board approved Motion #9 (Directors Hahn, Solis, Mitchell, & Dutra) that provided direction for the development of the I-710 South Corridor Investment Plan. Motion #9 also asked for the following items to return to the Board for consideration:

- Vision Statement / Guiding Principles / Goals
- Pre-Investment Plan Opportunity
- Re-naming the I-710 South Corridor Project This Board report provides recommendations for all items requested.

[September 2022 710 Task Force Report to the Metro Board of Directors](#)

ZET Program Recap – Metro Board Direction

> **Metro Board Direction and desired outcomes**

- \$200 million minimum funding target
- Leverage \$50 million local matches with private, regional, state, and federal funding
- Accelerated ZE deployment in the I-710 South Corridor
- Collaboration with regional stakeholders
- Independent, accelerated process from overall 710 Task Force Investment Plan process

> **Strategies to accomplish outcomes**

- Identify discretionary grant opportunities
- Convene and collaborate with community and regional stakeholders
- Develop a scope of work for the ZET Program
- Identify regional funding partners
- Identify near and long-term opportunities
- Identify policy and legislative barriers to implementation

Agenda Item #2:
I-710 South Corridor ZET Program
Proposed Principles

ZET Program Principles – Introduction and Overview

- > Metro Board Action in October 2021 (Motion 16) committed \$50 million as seed funding for an I-710 South Zero Emission (ZE) Truck program to support the deployment of zero-emission trucks and supporting zero-emission truck infrastructure.
- > The ZET Program Framework and Principles incorporate these fundamental elements and seek to leverage and amplify that \$50 million seed funding.
- > The Program Framework and Principles for the Zero-Emission Truck Program were developed through collaboration with the 710 Zero-Emission Truck Working Group. Five major themes were brought forward through discussions with the Working Group for consideration:
 - Community Engagement
 - Strategic partnerships and funding opportunities
 - Legislative and policy initiatives
 - Truck subsidies
 - Environmental impacts and equitable outcomes

ZET Program Principles – Introduction and Overview

Principle 1	Maximize leverage of seed funding by collaborating with regional partners and agencies.
Principle 2	Employ a transparent community engagement framework that centers corridor residents and stakeholders throughout the development process and ensures community benefits are uplifted when considering investments.
Principle 3	Ensure and create corridor community benefits delivered through the ZE Truck Program.
Principle 4	Coordinate ZE Truck Infrastructure Deployment and ZE Truck Strategies with planning, funding, and strategy developed by regional and community partners, state and federal agencies, funding partners, and other key stakeholders.
Principle 5	Work with regional and community partners to prioritize workforce development efforts that ensure community benefits in support of ZE truck and infrastructure deployment.
Principle 6	Develop performance metrics and evaluate outcomes of the ZE Truck Program that ensure community and corridor benefits.
Principle 7	Develop a comprehensive legislative platform for board consideration that comprises initiatives and policies designed to support the accelerated, equitable deployment of ZE Class 8 Truck and Infrastructure deployment in the I-710 South Corridor and region.
Principle 8	The ZE Truck Program will expedite investment in ZE Infrastructure and vehicle deployment within the corridor with the goal of leveraging and expending all ZET Program leveraged resources by FY 2027-28.

ZET Proposed Principles

Next Steps

- > **Community Leadership Committee (CLC)** to provide input on Thursday, September 22nd.
- > **Equity Working Group (EWG)** to provide equity-focused input on Thursday, September 29th.
- > At the October 18th **ZET Working Group Meeting**, the ZET Working Group:
 - Review input CLC and EWG
 - make final refinements to the ZET Proposed Principles
- > Review recommendations to the **Task Force** on November 14th.
- > Metro Project Team to present the ZET Principles with the **Metro Board of Directors** at its November 2022 Meeting.

Agenda Item #3: Medium-Duty and Heavy-Duty Infrastructure, Global Commercial Vehicle Drive to Zero

*Presentation by Bill Van Amburg,
Global Strategic Advisor Zero Emission Commercial Vehicles, Energy and Sustainability
(15 minutes)*

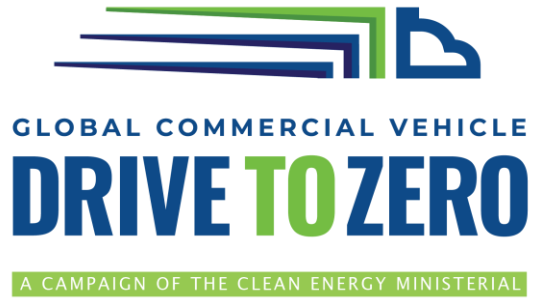
Facilitated Discussion (15 minutes)



Bill Van Amburg

Global Strategic Advisor Zero Emission Commercial Vehicles,
Energy and Sustainability





MHDV Infrastructure – Policy Maker Guidance

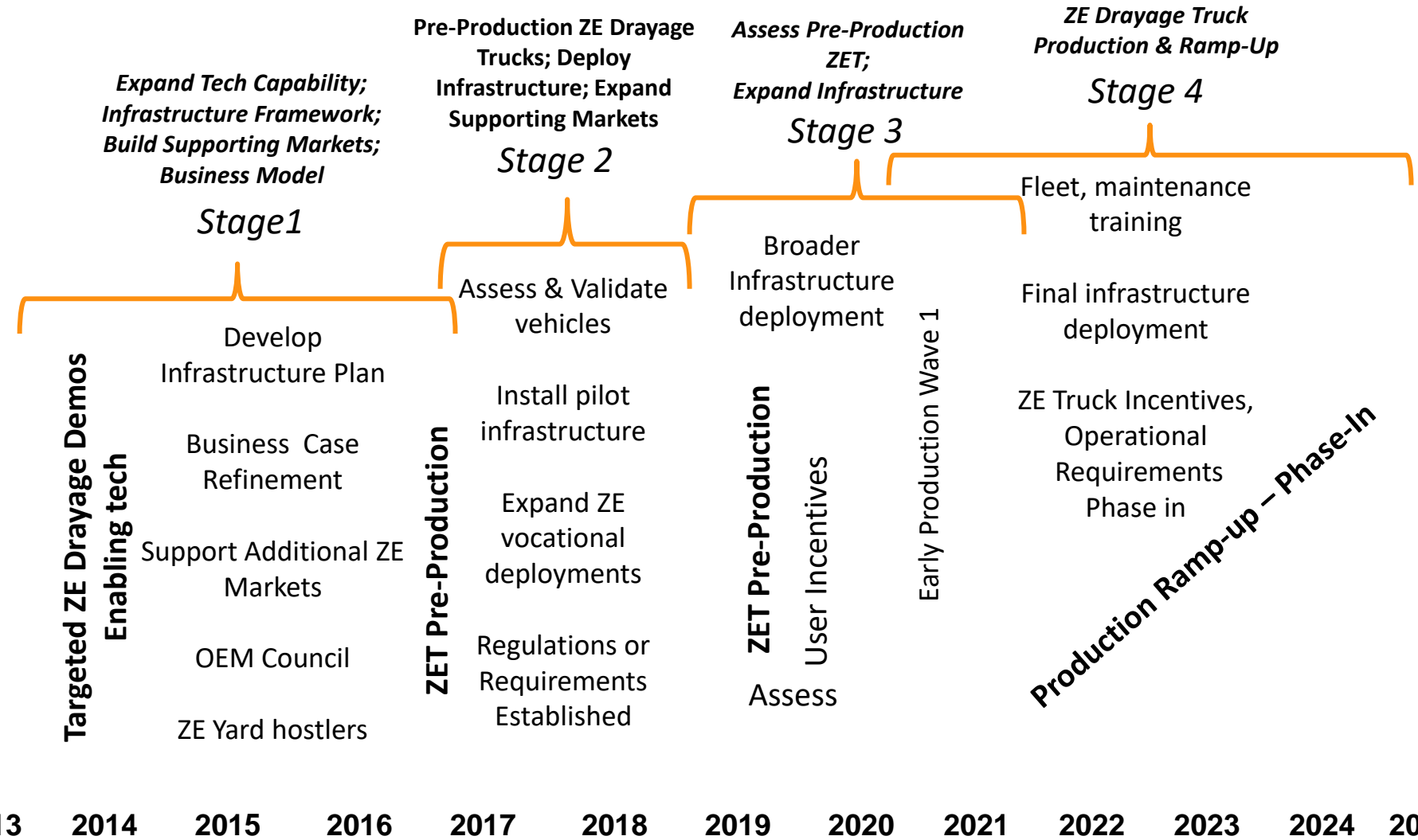
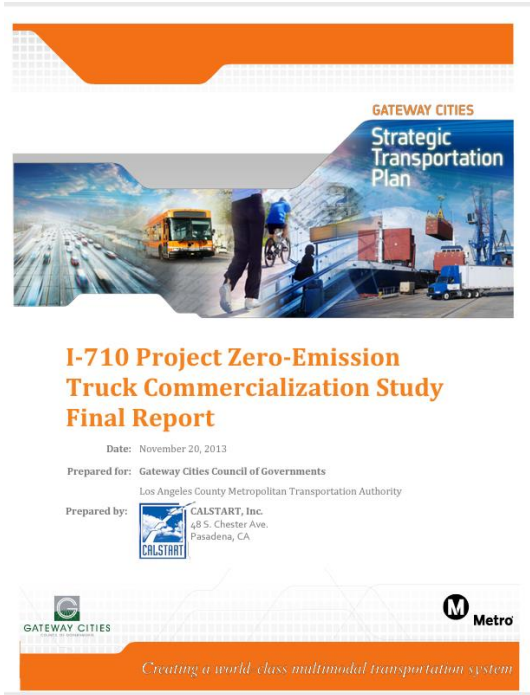
For Metro I-710 Task Force
September 20, 2022

Agenda

- Context – Pace of Change
- Drive to Zero and Policy Maker Engagement
- MHDV ZE Infrastructure Guidance
- Demand Forecasting
- Remaining Gaps



I-710 Zero-Emission Drayage Truck Commercialization & Phase-In Process



ZEROING IN ON:
**ZERO-EMISSION
TRUCKS** SHOWCASE +
RIDE AND DRIVE



38 products available now
500+ attendees



www.calstart.org/cctupdate

CCTU
CLEAN COMMERCIAL TRANSPORTATION UPDATE

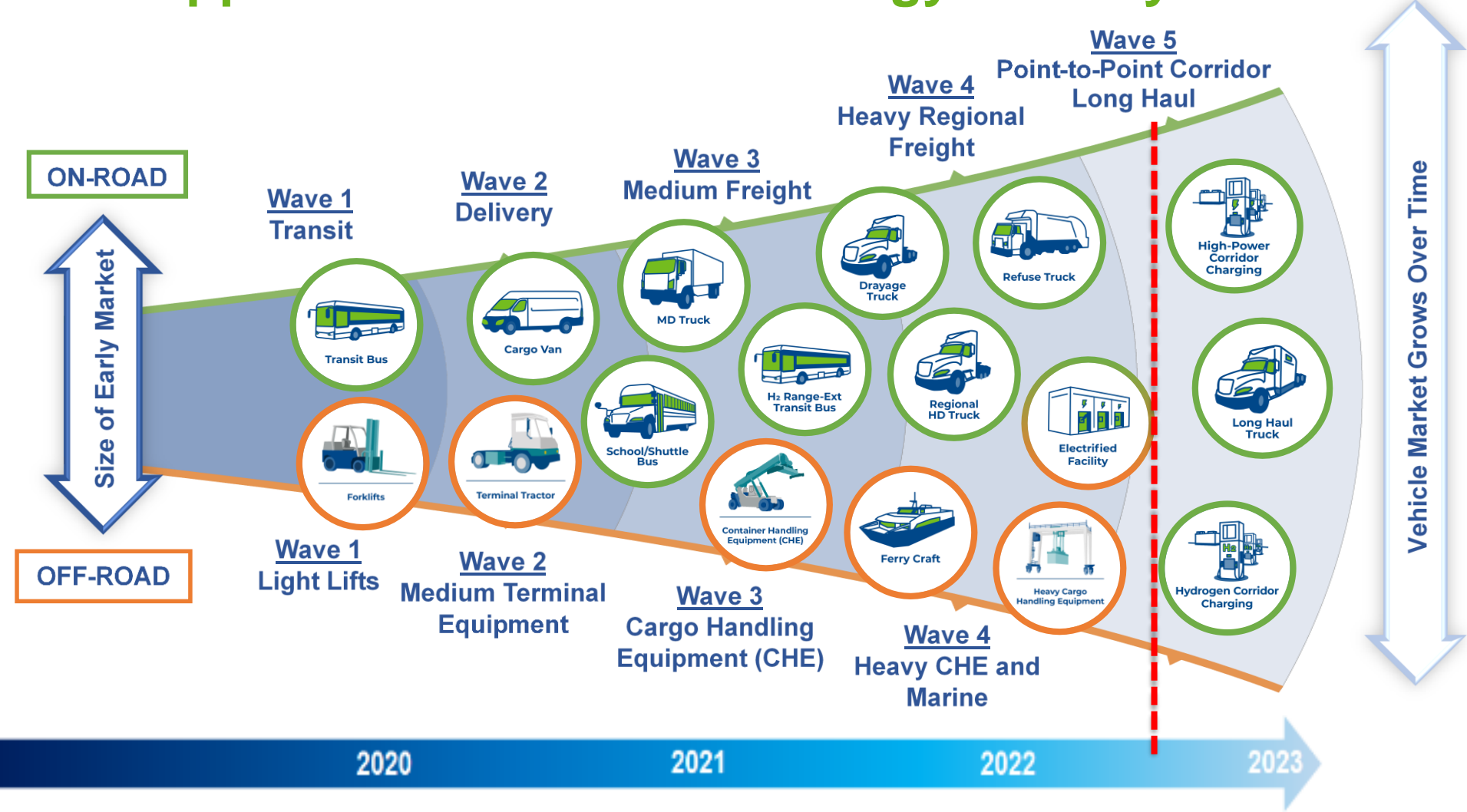
JUNE 28TH, 2022

11:00 AM	PACIFIC
1:00 PM	CENTRAL
2:00 PM	EASTERN
8:00 PM	CENTRAL EUROPEAN

EDISON INTERNATIONAL



Zero-emission vehicles are coming in waves, taking foothold in beachhead applications where technology is ready first



Global MOU – the first international agreement on zero-emissions trucks and buses

Share of new MHDVs that are zero emissions

100% by 2040

30% by 2030



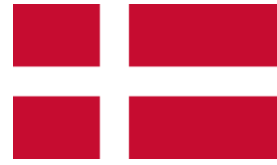
Austria



Canada



Chile



Denmark



Finland



Portugal



Uruguay



Switzerland



Luxembourg



Netherlands



New Zealand



Norway



Scotland



Wales



United Kingdom



Turkey

Global MOU goes beyond (non-binding) targets, and establishes a forum supporting countries to develop action plans to meet the targets, and monitoring progress through robust, consistent, and transparent data reporting



Action Plan



Data Reporting and Progress Dashboard



Policy ecosystem

- Regulations
- Incentives
- Investments



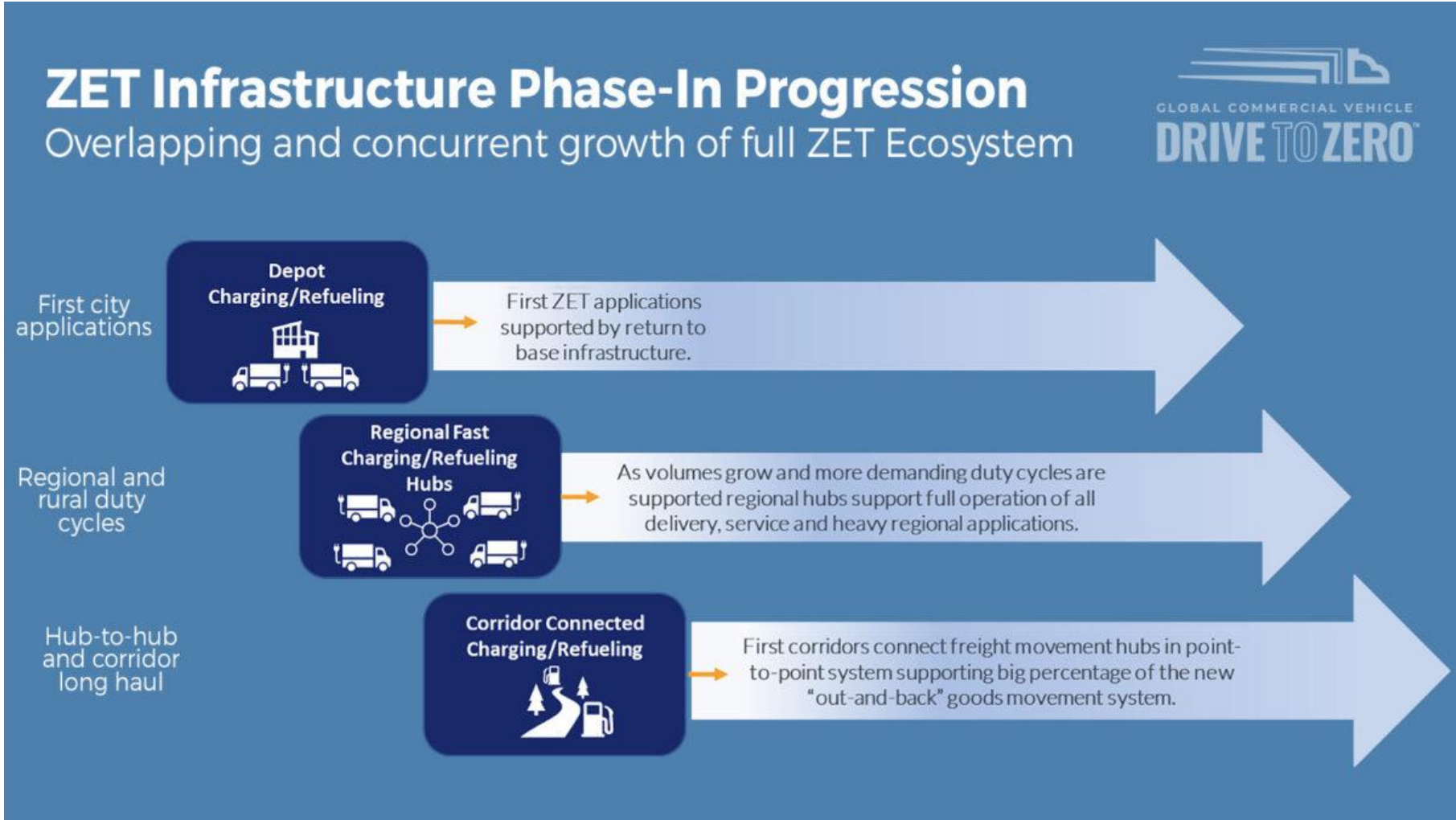
Non-binding Targets



Forum to report progress and exchange lessons



Context for Infrastructure – Guidance to Policy Makers



BRIEFING PAPER

Thematic Deep Dive Series 2: Zero-Emission Medium-and Heavy-duty Vehicle Infrastructure

Bill van Amburg, Strategic Advisor to CALSTART
Owen MacDonnell, CALSTART
Cristiano Façanha PhD, CALSTART
July 2022

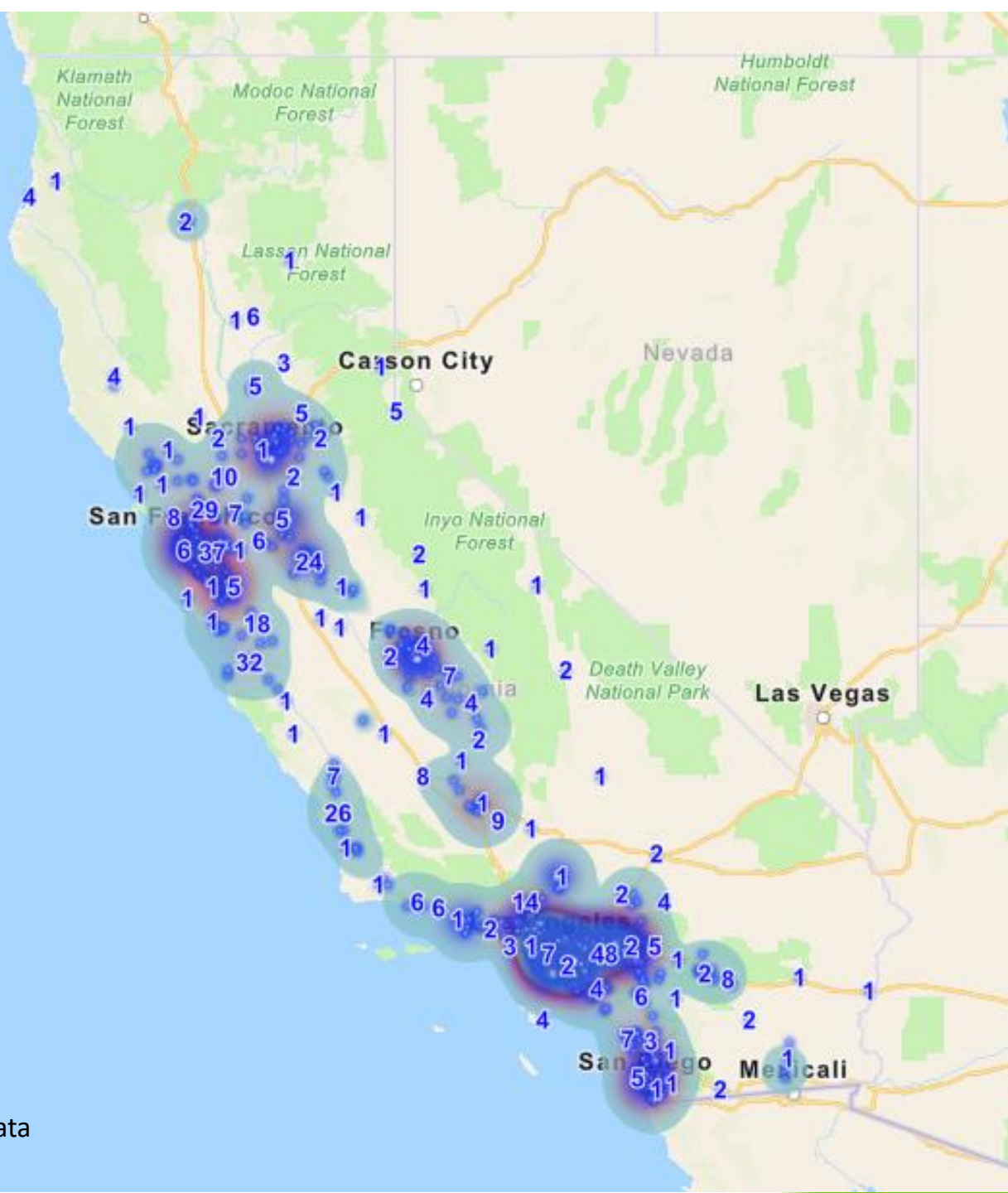
This infrastructure Briefing Paper has been developed to support the Multi-country Action Plan development process of countries who have signed the Global Memorandum of Understanding (MOU) on Zero-Emission Medium- and Heavy-duty Vehicles (ZE-MHDVs). In short form, it is intended to inform and provide guidance and resources to governments on strategies they can undertake to drive rapid deployment of ZE-MHDV infrastructure.

Core Guidance to Global Policy Makers

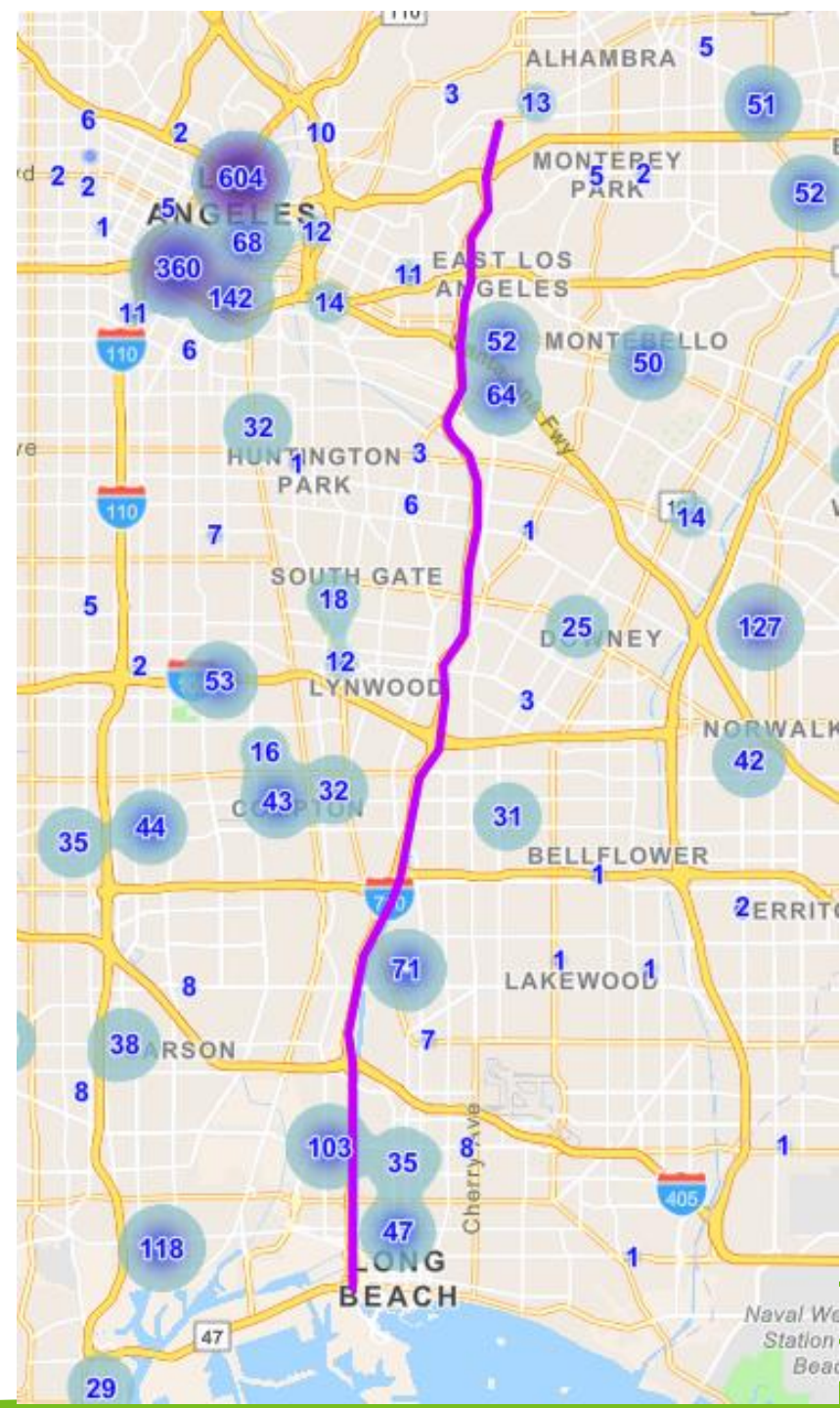
- **Zero-Emission MHDVs are ready for greatly expanded deployments** in all regional applications and emerging longer range routes.
- **Infrastructure is a critical enabling capability** and potential limiter that must keep pace with and anticipate the rapid growth of ZE-MHDVs or risk slowing the market.
- **Do not delay policy adoption and vehicle implementation because of either/or technology choices**; battery electric and fuel cell electric systems are complementary.

Infrastructure Guidance – Key Actions for Government

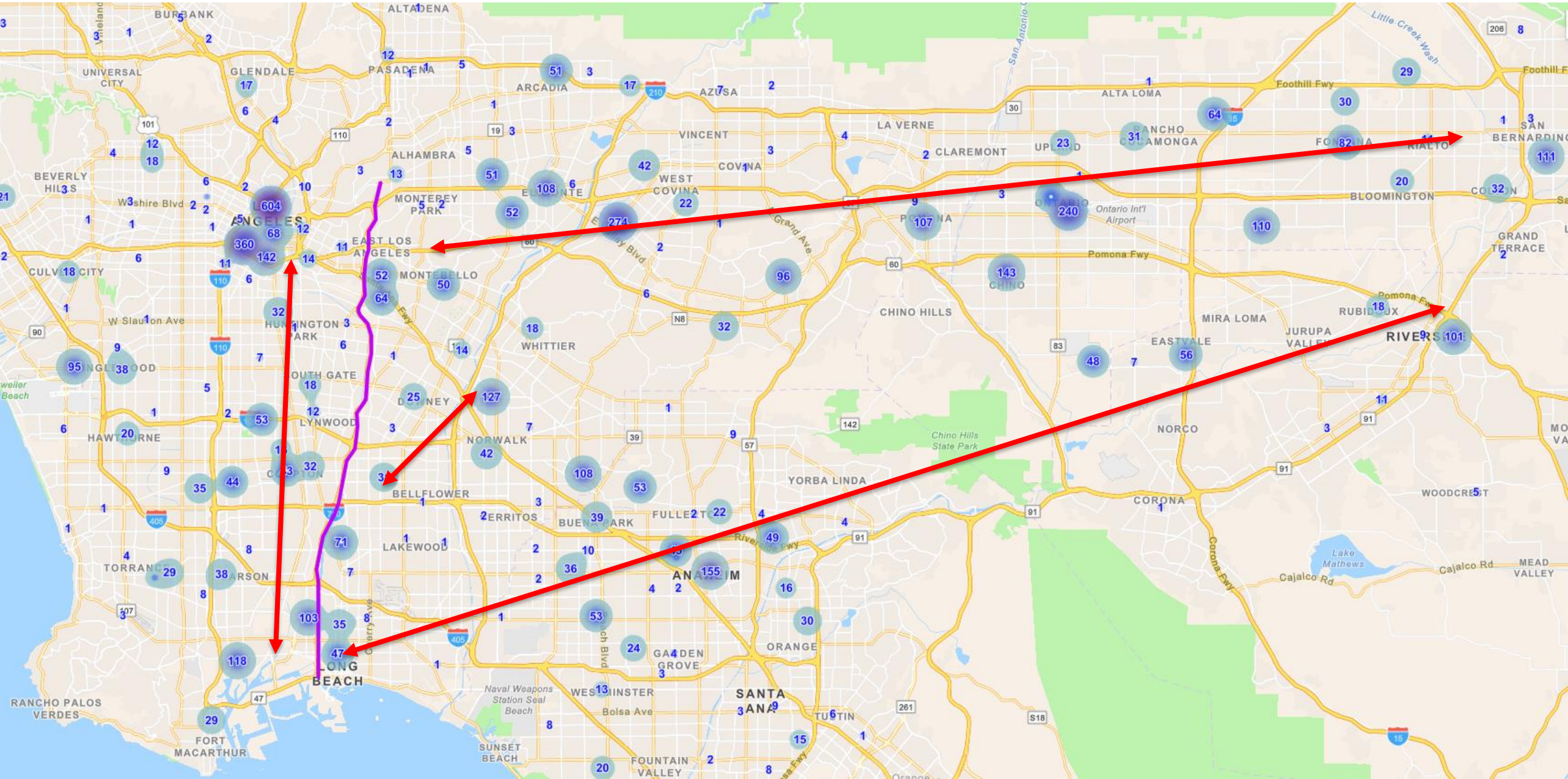
- **Utility investment regulatory framework** - Plan for, invest in and take an active role in installing ZE-MHDV infrastructure at the pace required to meet rapid market growth.
- **Utility rate structure** – Encourage and require utilities and power providers to design competitive and conducive rate structures to users of zero emission commercial vehicles. Addressing electrical rate cost, time of day considerations, demand charges and other utility rate design structures and refining them for commercial vehicle success is critical.
- **Roadmapping and anticipating demand** – Establish strong ZE-MHDV market demand roadmaps to assist utilities, transport ministries, municipalities and industry in preparing for and anticipating demand for charging and refueling assets needed to accommodate the rapid growth of ZECVs. An overlay of utility distribution grid capacity showing stronger and weaker zones for energy delivery, will highlight areas that can accommodate immediate demand and those needing capacity expansion investments.
- **Spurring Early Markets and Investments** – Support the initial market for ZE-MHDV infrastructure and in establishing attractive conditions for private investment and capital to quickly scale these markets and assume their primary role in funding this expansion.

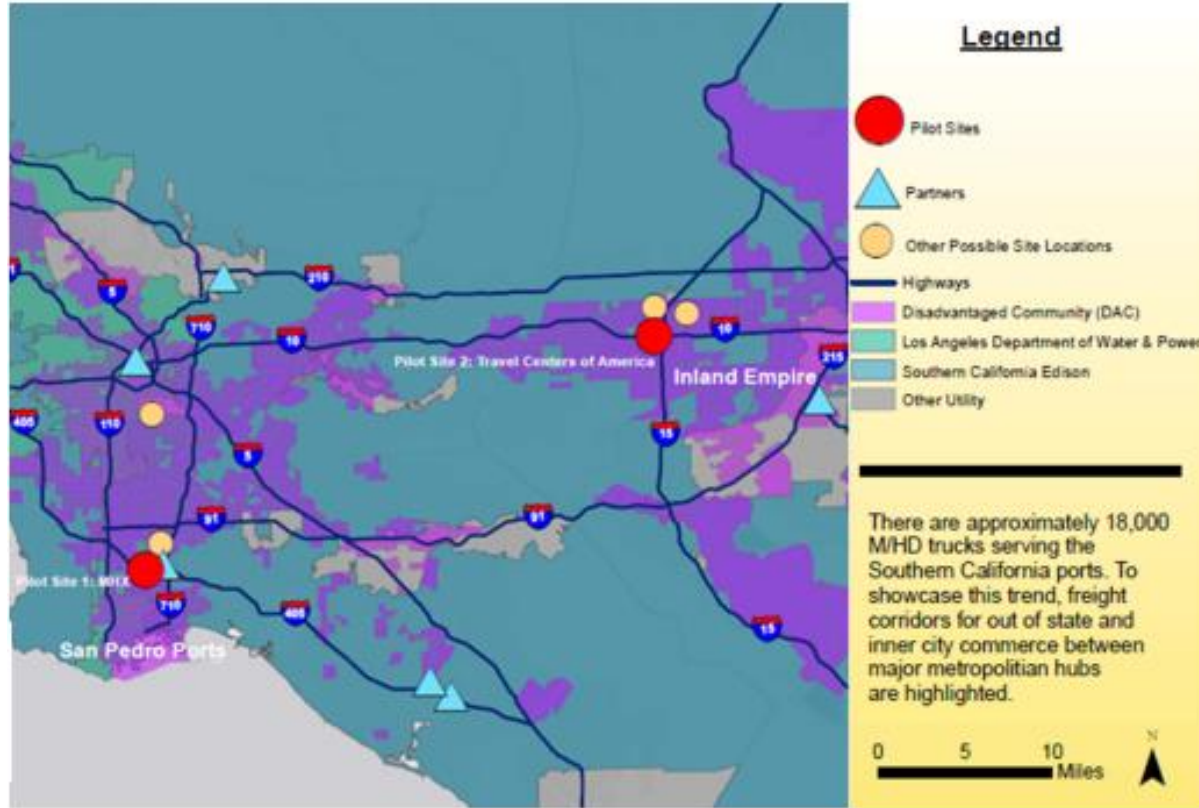


From: HVIP data



Regional Approaches Support Better Local Decisions





STEPS TO GET STARTED



1 CONSIDERATION OF ELECTRIC TRUCK DEPLOYMENT

- Decide if fleet electrification will require electrical upgrades to your facility
- Engage your utility and identify needed technical support.
- Confirm charging requirements, needs and costs from vehicle manufacturer and EVSE supplier.
- Identify energy requirements for various truck types
- Determine fleet scaling potential.

BASELINE PATHWAY (1-5 TRUCKS)

ADDITIONAL CONSIDERATIONS FOR BUILDING TO SCALE

These additional considerations are aimed to help fleets that plan on deploying more than 5 trucks initially or in the future. Following these additional considerations will help your depot be built to scale for fleets larger than 5 trucks.

2

FLEET ELECTRIFICATION

- Plan for phasing and timeline for deployment.
- Understand truck duty cycles and how to integrate new vehicle into rotation.
- Understand Projected energy needs (daily kWh, charging times, and speed).

3

DEPOT YARD ANALYSIS

- Evaluate site infrastructure and utility grid infrastructure needs.
- Identify space availability.
- Consider charging placement and electrical upgrades that allow for addition of electric trucks in the future.

ADDITIONAL CONSIDERATIONS FOR BUILDING TO SCALE

Evaluate renewable energy options.
Evaluate energy storage options.

4

DECIDE CHARGING SPECIFICATIONS

- Identify charger type (AC or DC/Level 2 or 3).
- Develop charging schedule (best window for charging).
- Drawing of EVSE location.

ADDITIONAL CONSIDERATIONS FOR BUILDING TO SCALE

If power needs are significant, discuss electrical rates with your utility.

5

DEVELOPMENT OF ELECTRIC SERVICE PLAN

- Detail requested service voltage and load schedule.
- Identify service drop and transformer locations.
- Develop conceptual electric single line diagram.
- Determine costs for infrastructure requirements & development.

6

BEGIN INSTALLATION PROCESS

Deployment Timeline

It is important that you factor in the time it will take to plan, develop and deploy your electric charging infrastructure. Full deployment can take up to 1-4 years based on fleet size and needed upgrades. The timeline below is based on deployment best practices.

PLANNING:
Steps 1- 5
3 - 12 Months

DEVELOPMENT:
Electric Upgrades & Construction
6 - 48 Months

DEPLOYMENT:
Integrating Electric Trucks
1 - 3 Months

Engage Utilities

- Evaluate existing infrastructure incentive programs.
- Determine EV rate structure.
- Plan charging times.
- Evaluate load sharing options.
- Understand utility application requirements.

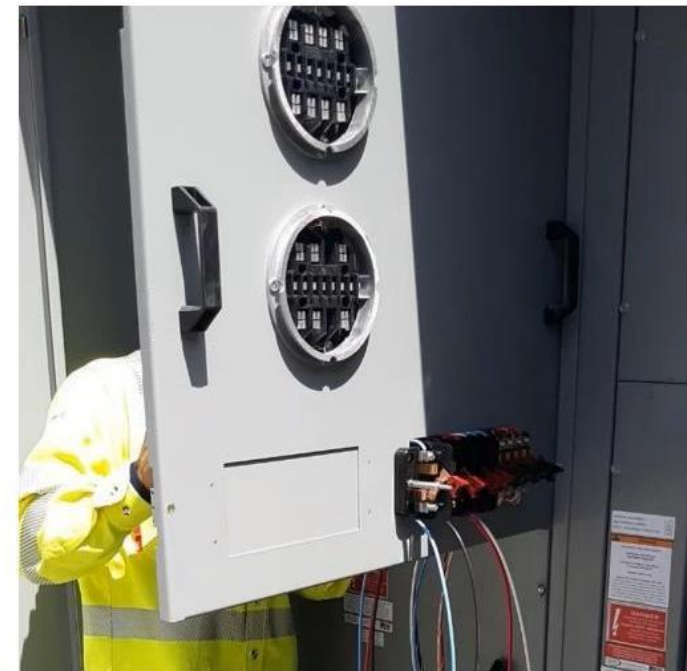
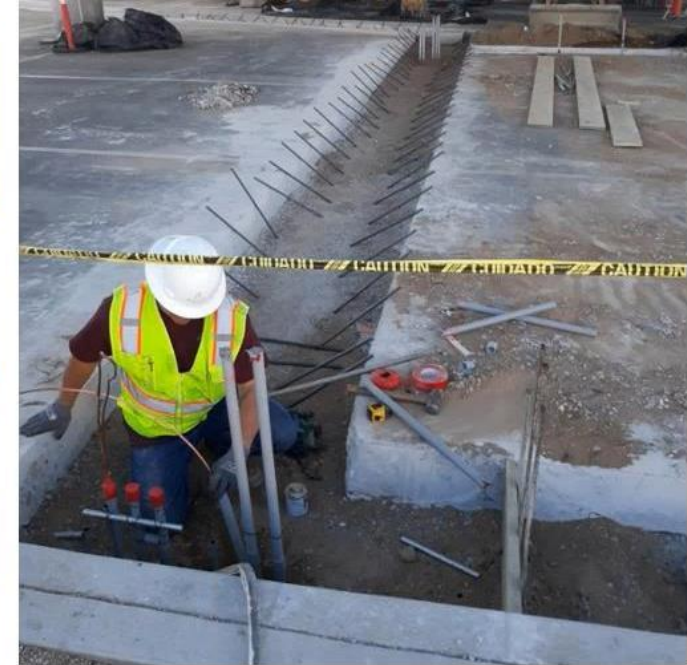
Technical Support

- ID Electric Engineer (Internal or External).
- Evaluate options for contractor support.
- Build partnership between OEM, EVSE supplier, utility, engineer and fleet and operational staff.

<https://www.californiahvip.org/infrastructure/>

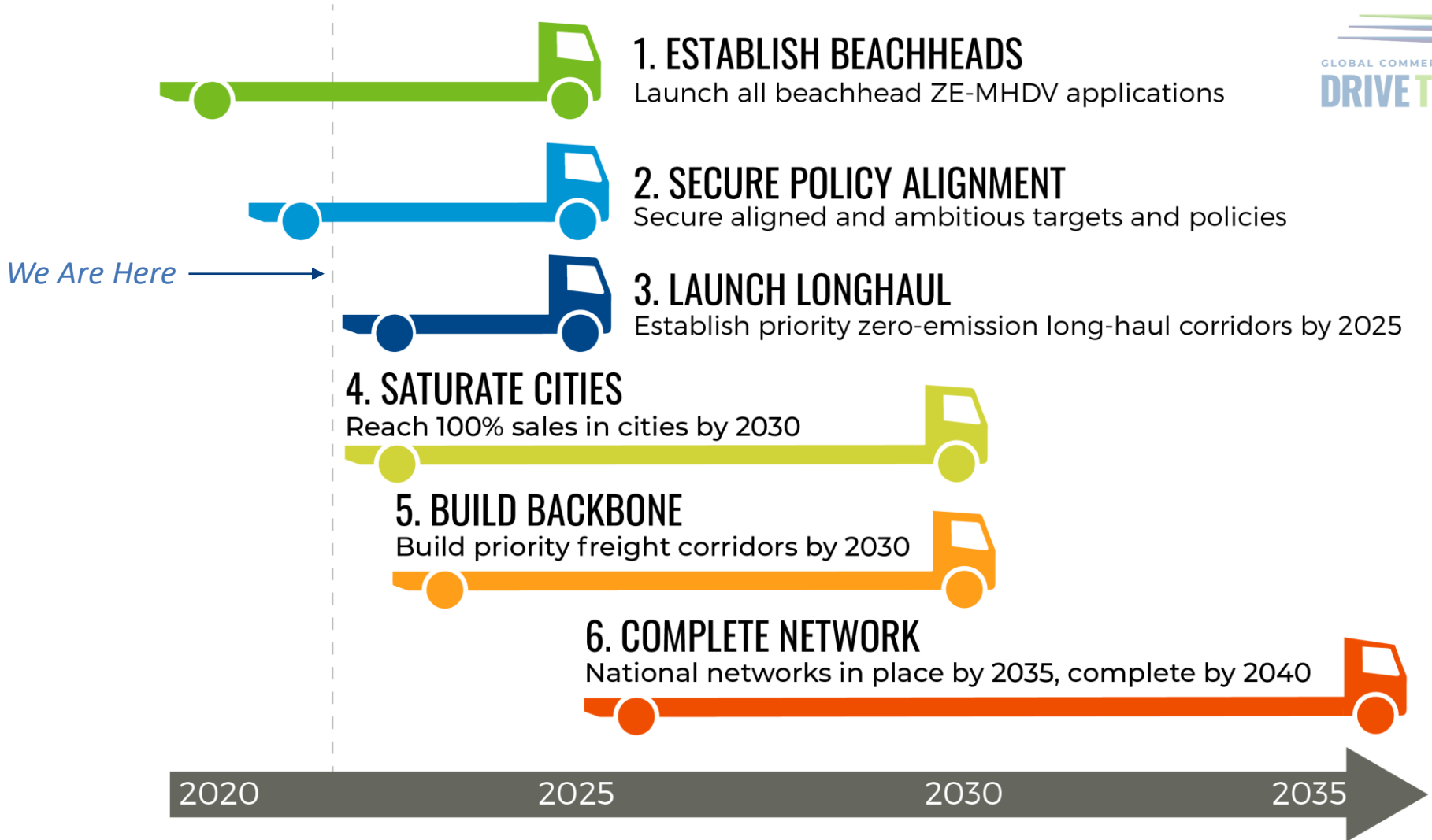
Engage With the Utility Early in The Planning Process

- Partner with the utility and inform them of your short, medium and long term electrification plans
- Utility can plan distribution upgrades in parallel with EV fleet expansion
- Where possible, install a dedicated service feed for the EV equipment allowing for more attractive TE rates and increased resiliency
- Size equipment based on immediate and anticipated needs
- Perform minor and major upgrades concurrently



The Road Ahead

6-STAGE STRATEGY TO ENABLE 100% ZE-MHDVS BY 2040 (AND 30% BY 2030)





Bill Van Amburg
Strategic Advisor to CALSTART/Drive to Zero
bvanamburg@calstart.org

Alycia Gilde
Vice President, Clean Fuels and Infrastructure,
CALSTART
agilde@calstart.org

Cristiano Façanha
Global Director, CALSTART/Drive to Zero
cfacanha@calstart.org

Thank you!

For more information:

www.calstart.org;
www.globaldrivetozero.org



@TeamDriveToZero

Agenda Item #4: Regional Roadmap for Zero-Emission Vehicle Infrastructure

*Overview by Alison Linder, Senior Regional Planner,
Southern California Association of Governments (10 minutes)*

Question and Answer (5 minutes)



Alison Linder, Phd

Accelerated Electrification Team and Clean Technology Program
Southern California Association of Governments



Supporting Infrastructure for Medium and Heavy Duty Zero Emission Trucks

Metro ZE Truck Working Group

September 2022

Alison Linder, PhD

linder@scag.ca.gov

WWW.SCAG.CA.GOV

ABOUT SCAG

The SCAG Region

191
CITIES

6
COUNTIES

19.1M
RESIDENTS



36,618
SQUARE MILES

\$1.2T
REGIONAL GDP

15TH
LARGEST
ECONOMY
WORLDWIDE

48.1%
OF STATE
POPULATION

Clean Technology Vision

- Connect SoCal 2020 included the *Accelerated Electrification Key Connection*, creating a holistic and coordinated approach to de-carbonizing or electrifying passenger, transit and goods movement vehicles and a *vision* for a zero-emission transportation system or using cleaner mobility options where zero emission options are not feasible.



INNOVATING FOR A BETTER TOMORROW

SCAG is the nation's largest metropolitan planning organization, representing six counties, 191 cities and more than 19 million residents. SCAG undertakes a variety of planning and policy initiatives to encourage a more sustainable Southern California.

Supporting Infrastructure for Medium and Heavy Duty Zero Emission Trucks

Goals and Objectives

- Plan for Zero Emission Supporting Infrastructure focused on both Battery Electric and Hydrogen Fuel Cell trucks
- Understand and address stakeholder concerns and needs
- Understand site level needs for station development
- Create a Regionally Supported Roadmap for MD/HD ZE Fueling Infrastructure



Supporting Infrastructure for Medium and Heavy Duty Zero Emission Trucks

Expected Tasks and Deliverables

- Refined understanding of truck markets, travel patterns, and relevant operational characteristics
- Define demand of Charging Network by Market
- Assessing the potential supply of land for stations
- Distribution of Charging network; based on
 - Travel demand
 - Existing stations
 - Power and fueling supply
 - Potential Impacts to Surrounding Communities
 - other TBD



Supporting Infrastructure for Medium and Heavy Duty Zero Emission Trucks – Expected Outreach

- TAC
- What are the characteristics of the drive?
 - Shift lengths, drive times, stop times, load size
- What are current and future plans for infrastructure provision?
- Stakeholder Surveys and Interviews
 - Fleet operators
 - Warehouse operators
 - Industry associations
 - Truck drivers
 - Terminal operators
 - Intermodal facilities
 - Truck stop owners/operators
 - DCFC network providers

Supporting Infrastructure for Medium and Heavy Duty Zero Emission Trucks

Expected Tasks and Deliverables (Continued)

- Stakeholder Engagement and Outreach
 - Fleet Survey
 - Interviews
 - TAC
- Assessment of 10 key sites
- A regionally vetted action plan



Collaboration with Metro and Regional Stakeholders

- Overlap with Metro Task 1
- Our plan covers key routes and locations in 6 counties

Preliminary Tasks

Task 1: Identify physical infrastructure needs to support the full deployment of ZE heavy-duty trucks along I-710 South Corridor.

- 1.1 Estimate the number of charging and fueling stations to support the number of ZE drayage trucks over the next 10 years, both regional and small in scope.
- 1.2 Develop an energy supply plan to ensure that sufficient energy will be provided without compromising other energy uses along the corridor.
- 1.3 Develop a methodology and evaluation criteria **in collaboration with the Task Force, CLC, Equity Working Group and other representatives living in the corridor** for ZE infrastructure location and types of infrastructure being deployed.
- 1.4 Identify existing legislative and regulatory barriers that hinder the deployment of physical support infrastructure
- 1.5 Collaborate with regional partners to chart a regional path for ZE infrastructure development

Timeline and Next Steps

- Kick-off
- Convene Project TAC
- Determine Data Plan to Define Truck Network
- Anticipate 24 month project
- Initial findings in 2024 Connect So Cal
- (Potentially) Supplemental work on Power Supply





THANK YOU!

For more information, please visit:

<https://scag.ca.gov/alternative-fuels-vehicles>



*Everything you buy
touches a truck at some point!*

Agenda Item 5:

If EV's are the Future, Is the Grid Ready?

Moderator: Micah Wofford, Energy Commission Specialist, California Energy Commission

Panel Discussion

- Sean Wilder, Energy and Environmental Services, LA County Internal Services Department
- Salim Youssefzadah, CEO, Watt EV
- Quintin Sumabat, Deputy Executive Officer, Vehicle Engineering and Acquisitions, LA Metro

Moderator and Panelists



Micah Wofford (*Moderator*)
Energy Commission Specialist
California Energy Commission



Sean Wilder (*Panelist*)
Energy and Environmental Services
Los Angeles County Internal Services
Department



Salim Youssefzadah (*Panelist*)
Chief Executive Officer
WattEV



Quintin Sumabat (*Panelist*)
Deputy Executive Officer
Vehicle Engineering and
Acquisitions
LA Metro

Agenda Item #6:
**2019 Electric Vehicle Charging Guidebook for
Medium-Duty and Heavy-Duty Commercial Fleets**

Presentation by Patrick Couch, SVP, Gladstein, Neandross, and Associates

Speaker



Patrick Couch

Senior Vice President, Technical Services, & Partner
Gladstein, Neandross, and Associates

MD/HD Fleet Charging Guidebook Overview

Patrick Couch, Senior Vice President

I-710 ZET Working Group
September 20th, 2022

GNA Introduction & History

North America's leading full-service clean transportation consulting firm.

Nearly 30 years of experience in:

- Medium and heavy-duty transportation
- Ports and goods movement
- EV, hydrogen, natural gas, propane, biofuels, renewable fuels
- Infrastructure and corridor development
- Grant funding
- Stakeholder education



Over the past 29+ years



Managed the design and development of more **clean fleet deployment projects** than any other firm in North America



Overseen the development of some of the largest **alternative fuel stations and corridors** in the world



Secured more than **\$1 billion in grant funding** for our clients with a +90% application success rate



Supported hundreds of clients in expanding brand reach, **building market share**, and achieving outreach goals

GNA's Best In Class Client Roster: Leading Fleets, OEMs, Energy Companies, and Other Stakeholders



Some Electrification Challenges Facing Fleets



Diesel fueling deals in relatable units and fueling times are consistent.

The terminology for EVs is new to fleet managers/buyers.



Fleets understand diesel fuel and infrastructure design.

But they are “learning by doing” EV infrastructure.



Fleets are built around diesel fueling, where price is independent of fueling time and speed.

When, where, and how fast electricity is delivered affects price significantly.



Fleets are not static. Customers and requirements change over time.

Flexible infrastructure solutions are key for large scale fleet adoption.

To make EV infrastructure work, fleets need education, flexibility, and price stability

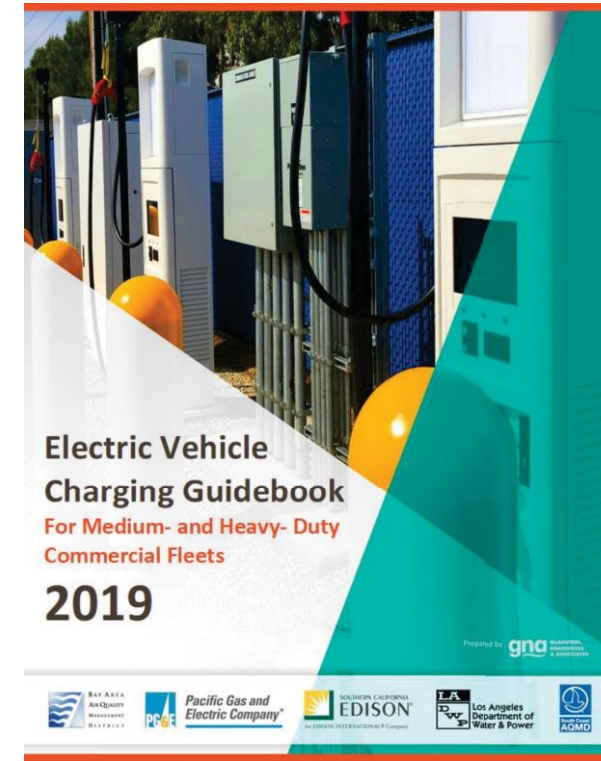
EV Charging Guidebook

Purpose

- Charging 101 for fleet operators
- Focus on MD/HD Commercial fleets, but applicable to many MD/HD fleet applications

Goal

- Estimate fleet's energy needs and charging time requirements.
- Identify the charging equipment options.
- Evaluate charging station configurations that work with existing space, support current and future operations, maximize equipment lifecycles, and control costs.
- Identify which entities to engage for project design, permitting, and construction.
- Discuss important details of the fleet's electric service and electricity price bands with your utility.

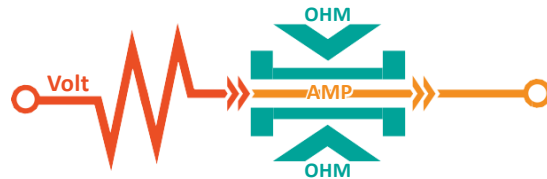
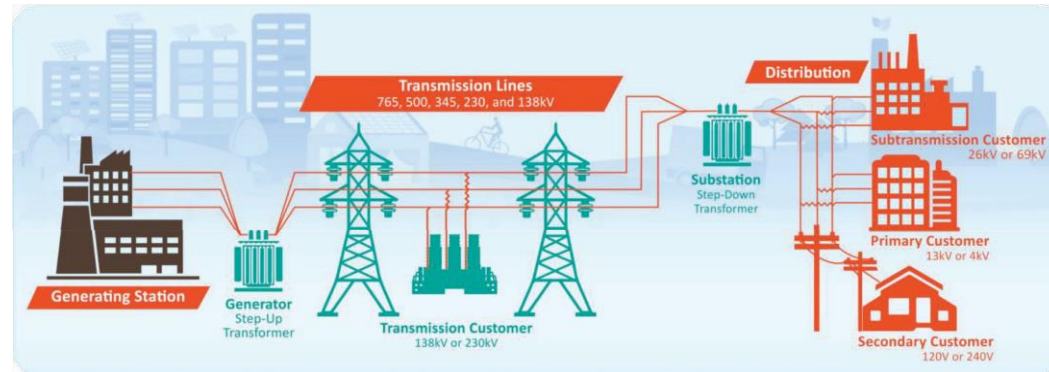


<http://www.gladstein.org/research>

EV Charging Guidebook

Terminology and Definitions

- Basic terminology and definitions related to EVSE and charging
- Overview of electrical grid structure and major market participants (CA-focused)



KEY TERMS

Average Power: The amount of power that your fleet requires while charging, averaged over the charging window.

Charge Rate: The rate at which a BEV is charged, measured in kilowatts (kW).

Charging Window: The period of time in your fleet's duty cycle when vehicles can charge.

kWh: Kilowatt-hour, a unit of measure for electrical energy. 1 kWh is the energy delivered by 1 kW of power for 1 hour.

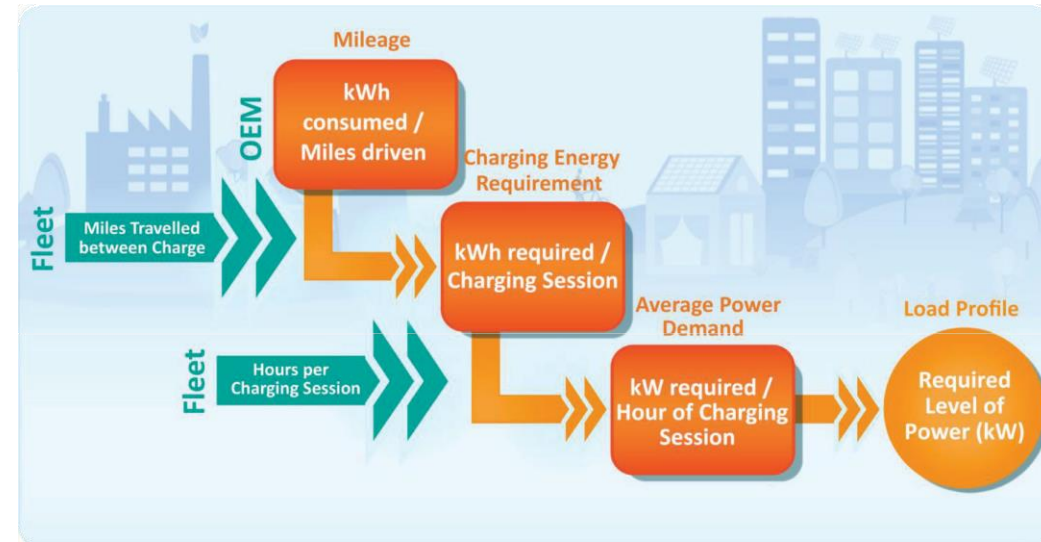
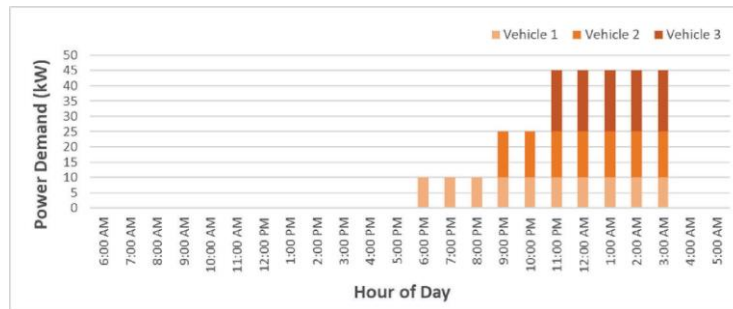
Load profile: A graph showing the amount(s) of power that your fleet requires over the course of a day.

Watt: A unit defining the speed at which electrical energy is consumed (energy per second).

EV Charging Guidebook

Estimating EV Charging Loads

- Process for estimating EV energy use based on vehicle type and “fuel” efficiency.
- Worked examples translating energy use to power demand



EV Charging Guidebook

Understanding EVSE Options

- Overview of EVSE interface types and capabilities
- Worked examples translating load profiles into EVSE selections
- Example equipment costs

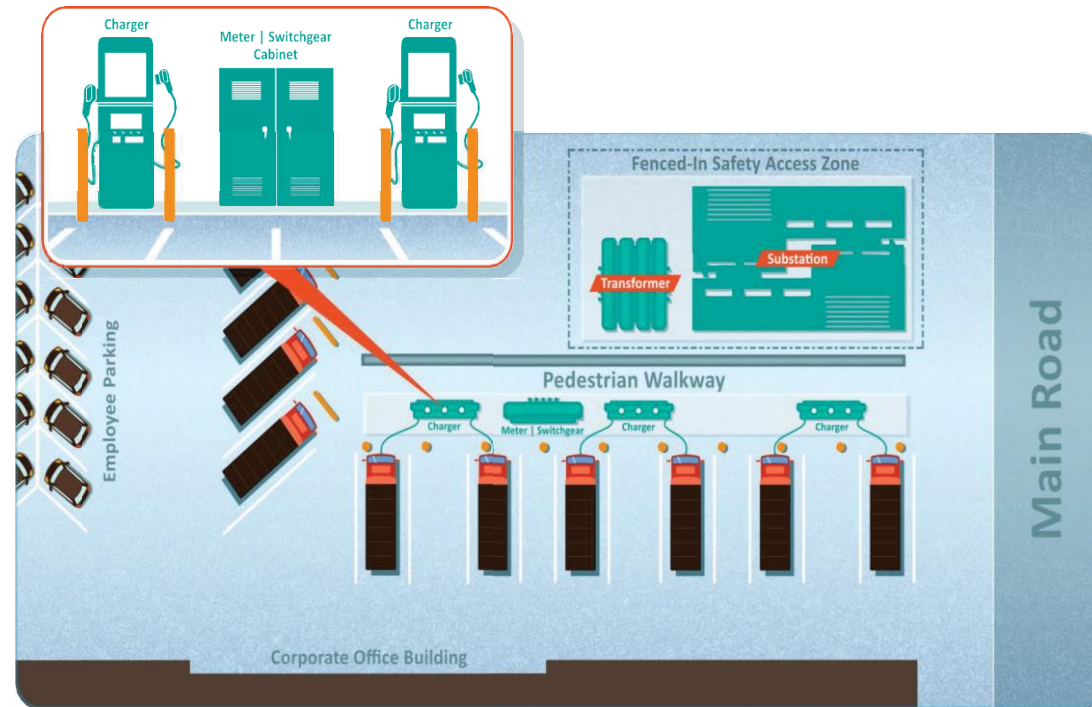
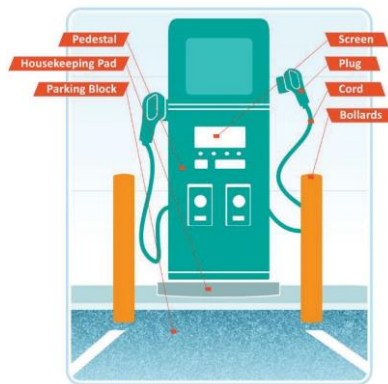
Charging Type	Power Level	Networkable	Price Range (\$)
Level 1 AC	<2 kW	No	500-1,000
Level 2 AC	<8 kW	No	500-1,000
Level 2 AC	10-20kW	No	700-1,500
Level 2 AC	<8 kW	Yes	500-1,000
Level 2 AC	10-20kW	Yes	3,000-6,500
Level 3 DCFC	20-30kW	Yes	10,000-40,000
Level 3 DCFC	50-150kW	Yes	50,000-100,000
Level 3 DCFC	>150 kW	Yes	150,000+

	AC	DC	AC + DC
SAE J1772	 SAE J1772 AC Charging Rate: Up to 20 kW Supply Voltage: 120/240V/208V Supply Amperage: Up to 80A	 Combined Charging System (CCS Type 1) Charging Rate: Up to 350 kW (DC) Supply Voltage: 480V Supply Amperage: Up to 500A	 Combined Charging System (CCS Type 1) Charging Rate: Up to 20 kW (AC) or 350 kW (DC) Supply Voltage: 480V Supply Amperage: Up to 500A
SAE J3068	 SAE J3068 AC _c Charging Rate: Up to 133 kW Supply Voltage: 208-480V 3P Supply Amperage: Up to 160A	 SAE J3068 DC _c Charging Rate: Up to 200 kW (DC) Supply Voltage: 480V 3P Supply Amperage: Up to 200A (DC)	 SAE J3068 AC/DC _c Charging Rate: Up to 133 kW (AC) or 200 kW (DC) Supply Voltage: 208-480V 3P Supply Amperage: Up to 160A (AC) or 200A (DC)
CHAdeMO	 NOT AVAILABLE	 CHAdeMO Charging Rate: Up to 400 kW (DC) Supply Voltage: 208-480V 3P Supply Amperage: Up to 500A	 NOT AVAILABLE
GB/T 20234	 GB/T 20234 AC Charging Rate: Up to 40 kW Supply Voltage: 240V/480V Supply Amperage: Up to 63A	 GB/T 20234 DC Charging Rate: Up to 400 kW (DC) Supply Voltage: 208-480V 3P Supply Amperage: Up to 300A	 NOT AVAILABLE

EV Charging Guidebook

Siting and Permitting EVSE

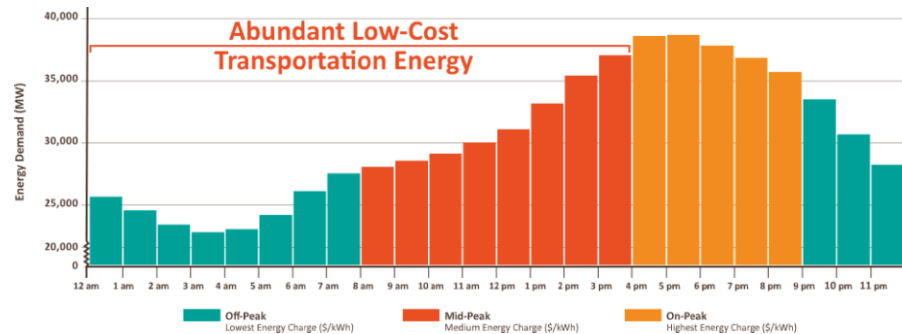
- Anatomy of an EVSE
- Considerations for siting EVSE equipment
- Basic permitting process and timeline expectations



EV Charging Guidebook

Electricity Costs

- Basic utility billing terms and concepts
- Worked examples of EV charging cost calculations and impacts of charging behavior



Flat Rate: A rate structure under which you are billed at a single price per kilowatt-hour consumed regardless of time, season or application.

Time-of-Use (TOU): A rate structure under which you are billed different prices for power you consume according to the time and season when it is consumed.

Fixed Charge: A fee covering the regulator-approved costs that the utility pays to supply your power such as distribution and transmission (\$/month).

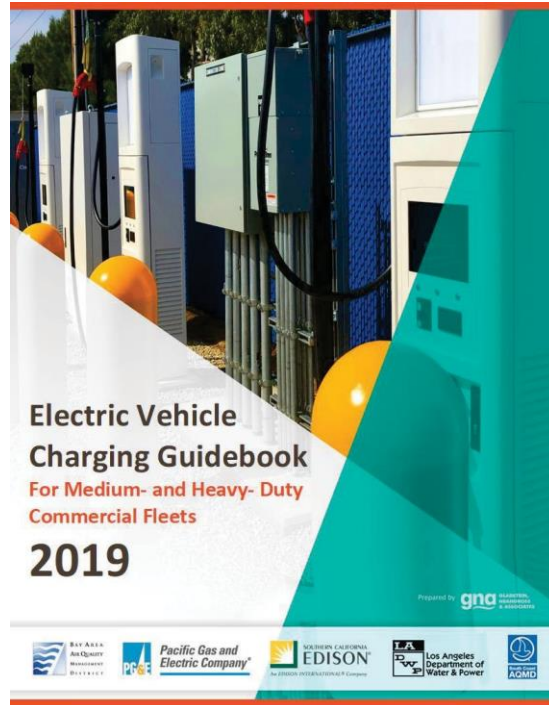
Energy Charge: Your baseline price of electricity, charged based on the amount of energy you consume (\$/kWh).

Demand Charge: A fee applied to your greatest power draw during peak periods, on top of the rate that you pay for the energy (\$/kW).

Seasonal Rates: Additional distribution fees covering the costs of addressing weather stressors on the electric grid during winter or summer.

Power Factor Adjustment: An adjustment to your demand charge according to how efficiently your facility consumes power.

Summary



<http://www.gladstein.org/research>



In theory there is no difference between theory and practice. In practice, there is.
~ Yogi Berra

THANK YOU!

Patrick Couch

Sr. Vice President, Technical Services

(310) 279-9150

patrick.couch@gladstein.org



Agenda Item #7:
**Electric Vehicle Charging Infrastructure
for Southern California**

Report by Carlo Bertani, MAERSK



Carlo Bertani

Environment, Sustainability and Decarbonization

MAERSK North America



MAERSK



PERFORMANCE TEAM
A Maersk Company

Maersk Transportation Decarbonization



Carlo Bertani, Maersk, Inland Decarbonization Lead



Our decarbonization focus within **Transportation**



Current Class 8 BEV and Infrastructure

- ✓ 16 BEV's operational in **Southern California (SFS → Port → SFS)**
- ✓ 8 Dual port chargers constructed in **Santa Fe Springs, CA**
- ✓ 11 Dual port chargers under construction in **Commerce, CA**

Future Roadmap

- ✓ Future expansion rollout in **SoCal ,Chicago, New Jersey (+others)**
- ✓ 420 additional Class 8 BEV on order (2023-2025)
- ✓ 18 Terminal Tractors starting Q4 2023
- ✓ Leveraging Partnerships for shared charging infrastructure

Challenges & Complications

Lead times and delays for infrastructure

Grid reliability

Inspector knowledge

Cost disparity vs. diesel

Lack of off-site charging infrastructure for HD trucks

Obtaining landlord approval for infrastructure builds



Solutions

Plan ahead – choose facilities wisely

Work with your utility provider upfront

Participate in regulatory workshops

Develop partnerships with other industry players

Work with landlord and determine if there is overlap with their sustainability goals



Closing Remarks and Next Steps

710 Task Force Information Hub

<http://www.metro.net/710-hub>

- > Extension of the current Metro.net website
- > User-friendly site for additional content
- > Graphics, meeting materials, calendar of meetings, maps, future surveys, and interactive tools



710 Task Force Information Hub

Welcome to the 710 Task Force information hub! Here you can review project information, explore an interactive map, view [project resources](#) and past meetings' videos/materials. Get involved in the planning process by attending upcoming [Task Force and Public Meetings](#).

Process and Goals



710 Task Force Information Hub

Tool Features:

- > **Infographics on TF process** and decision-making process
- > **Meeting Materials**
 - Task force meetings, Community meetings, Working groups & CLC meetings
- > **StoryMap**
 - Demographics, transit and environmental info
- > **Online Surveys** (launching soon)
 - Project Naming Poll
 - Interactive Mapping & Survey Tool
- > **Contact form**
- > **Calendar of Events**

Meeting Resources

Missed a meeting? No problem! In this page you can review video recordings, presentations and materials for past meetings.

Click on any of the images below to view the content.



Check out the graphic below for a breakdown of each meeting type.

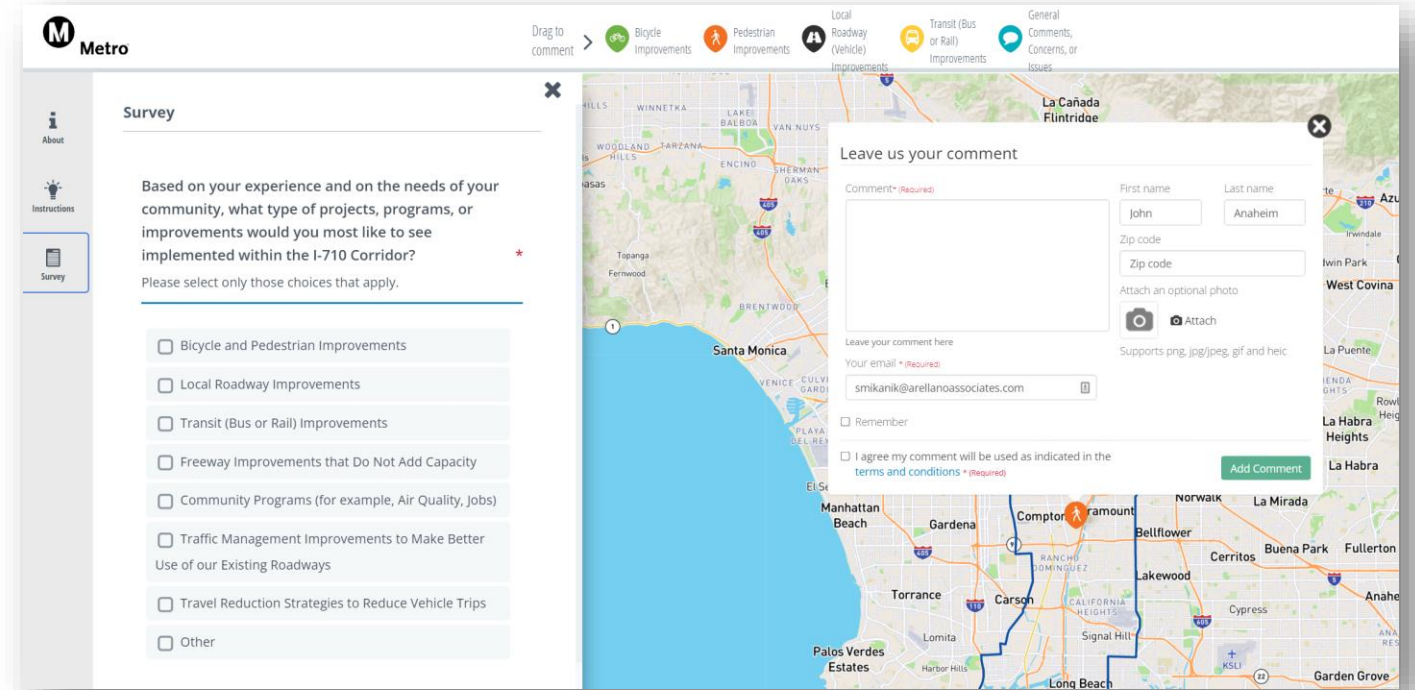


Interactive Mapping Tool and Survey

- > **Beta test:** July 18 available for input from CES and Coordinating Committee
- > **Full launch:** August 2
- > **Close survey:** October 15

Tool Objectives

- > **Engage the public** in the decision-making process
- > **Gather public input** on projects and programs
- > **Gather geo-coded data** (location-centric) comments on project map



English



Español



Key Dates

Working Group Meetings

- > Equity Working Group #7
Thursday, September 29, 5-7pm
- > Zero-Emissions Truck Working Group #9
Tuesday, October 18, 1-3pm

Task Force Meeting

- > Task Force Meeting #13
Tuesday, October 11, 5-7:30pm

Community Leadership Committee Meeting

- > Meeting #7
Thursday, September 22, 5-7pm

Coordinating Committee Meeting

- > *Wednesday, September 28, 3-5pm*

Metro I-710 South Corridor Mapping Tool and Survey

- > [Metro I-710 South Corridor Mapping Tool and Survey](#)
Open until Saturday, October 15th

For the most updated list of meeting dates, visit
<http://www.metro.net/710-hub>

Can't attend the meeting? Reach out to us!



Michael Cano, *Executive Officer (Interim)*

LA Metro

Federal/State Policy & Programming

Countywide Planning & Development

One Gateway Plaza, MS 99-13-1

Los Angeles, CA 90012



213.418.3010



710corridor@metro.net



metro.net/projects/i-710-corridor



@metrolosangeles



losangelesmetro

Thank you!