

Southern California Zero Emission Truck Infrastructure (ZETI) Study

July 13, 2023



WWW.SCAG.CA.GOV

Welcome



Kome Ajise
Executive Director



Technical Advisory Committee Kick-Off Meeting



Agenda

- Welcome and Introductions
- Project Overview
- Role of the TAC
- Open Dialogue and Q&A
- Next Steps

Introducing the Project Team



Relation to CALSTART/EPRI eTRUC Study



Co-funded by
California Energy
Commission



Statewide study of
high-power charging
infrastructure for
medium- and
heavy-duty vehicles



ETruc does not
include hydrogen
fuel cells, SCAG –
ZETI does



Projects are coordinated:

- Data from SCAG-ZETI project will be incorporated into the eTRUC study
- Stakeholder knowledge shared across both projects
- Member of SCAG-ZETI TAC is from eTRUC study



EPRI

eTRUC





PROJECT OVERVIEW



Study Goals and Objectives

- Create a regionally-supported roadmap for medium/heavy duty zero emission truck fueling infrastructure
 - Includes battery electric and hydrogen fuel cell trucks
 - Leads to improved AQ and reduced GHG
 - Responds to regulatory drivers
- Understand and address stakeholder concerns and needs
- Understand site level needs for station development



Project Overview



PHASE 1

**Literature Review
and
Outreach Programs**



PHASE 2

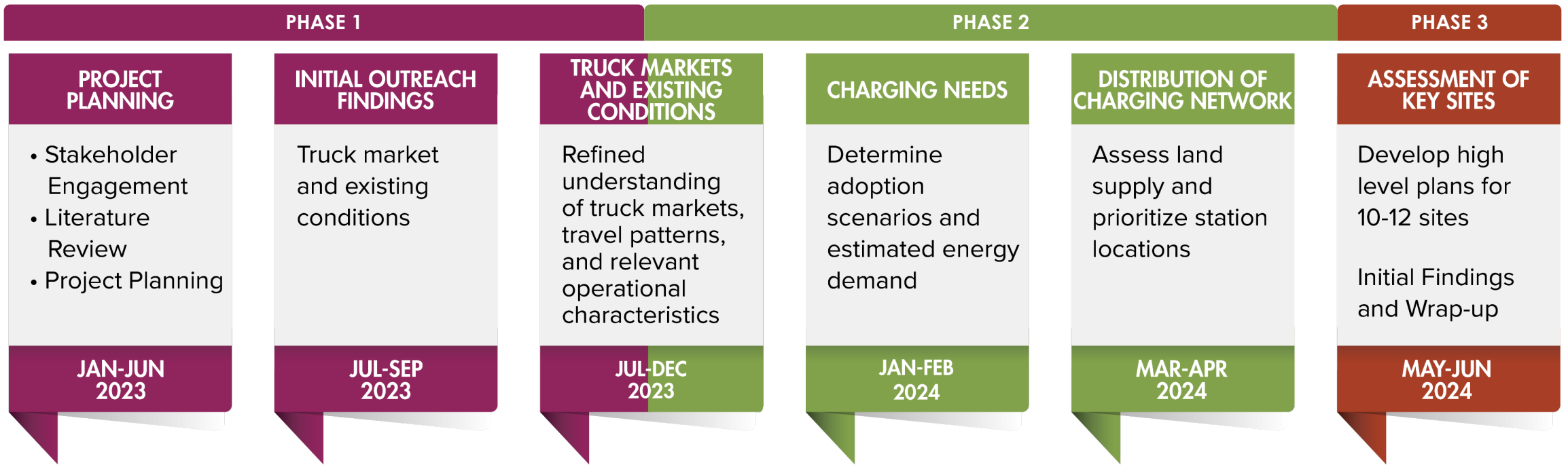
**Technical
Work**



PHASE 3

**Identity Locations
for ZETI and develop
Regional Plan**

Project Overview



TAC



Surveys



Interviews



Focus Groups



PHASE 1

Literature Review and Outreach Programs



Outreach & Building an Understanding

- **Capture diverse viewpoints** agency, utility, community, and industry to understand current ZETI plans



TAC



Surveys



Interviews



Focus Groups

Stakeholders

- State Government
Regional Government
- County Transportation Commission
- Ports
- Shipping/Logistics
Parcel Storage
Associations
- Trucking:
Distribution
Services
Manufacturing
Associations
- Truck OEMs
- Energy Utilities/Fuel
- Private Developers
Real Estate
- Community/CBOs

California Measures to Accelerate MD-HD ZEV Adoption

2018
Innovative
Clean Transit



2020
Advanced
Clean Trucks



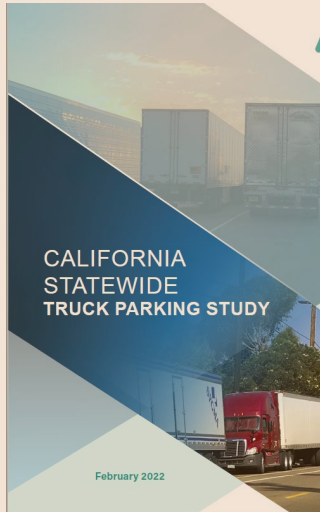
2028
(Tentative)
Zero-Emission
Truck Measure



2019
Zero-Emission
Airport Shuttle

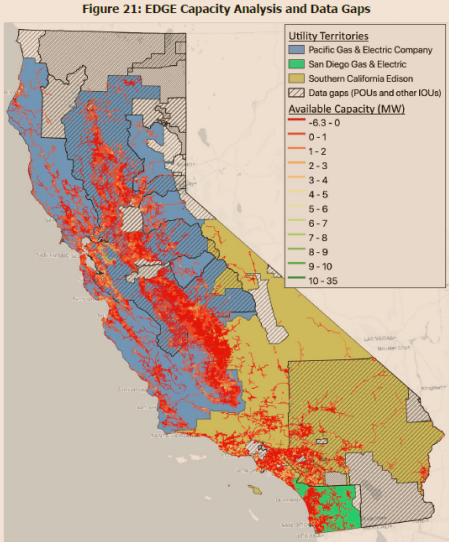
2023
Advanced
Clean Fleets





CALIFORNIA STATEWIDE TRUCK PARKING STUDY

February 2022



Statewide Efforts



MULTI-STATE MEDIUM- AND HEAVY-DUTY ZERO EMISSION VEHICLE

MEMORANDUM OF UNDERSTANDING

ZEROING IN ON ZERO-EMISSION

Incentives to Support the Transition to Zero Emissions for Medium- and Heavy-duty Sectors in Oregon

December 2022

National Efforts

UCLA Luskin Center for Innovation

Zero-Emission Drayage

Challenges and Opportunities for

James Di Filippo | Collin

October | 2019

JANUARY 2020

CONCEPT WHITE PAPER

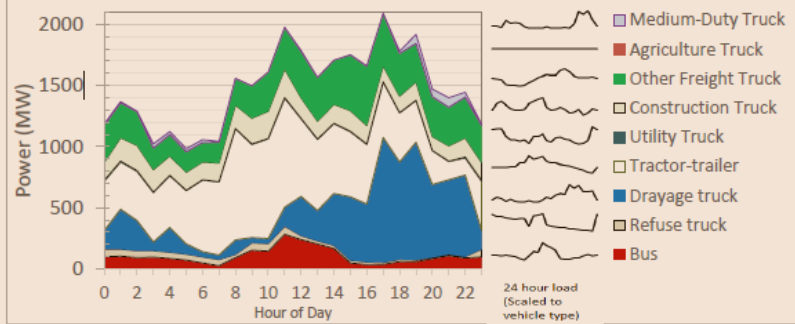
ZERO-EMISSIONS LARGE-SCALE DRAYAGE TRUCK PILOT PROGRAM

An implementation strategy for a zero-emission 50-100 Drayage Truck Pilot Program to assess the challenges

Southern California



Figure 20: Projected On-Road Medium- and Heavy-Duty Vehicle Charging Load



CARB's Draft 2020 Mobile Source Strategy scenario of the Medium- and Heavy-Duty Electric Vehicle Infrastructure Load, Operations, and Deployment (HEVI-LOAD) Tool illustrates the wide variation in the on-road vehicle duties and the potential for two gigawatts of evening charging requirements.

Source: CEC and Lawrence Berkeley National Laboratory

THE ADVANCED TECHNOLOGY TRUCK INDEX: A U.S. ZET INVENTORY REPORT

January 2022

A CALSTART Report By: Baha M. Al-Alawi, Owen MacDonnell, Ross McLane, and Kevin Walkowicz

www.calstart.org

Oregon Department of Transportation

State of Oregon

DEQ Department of Environmental Quality

West Coast Clean Transit Corridor Initiative

Interstate 5 Corridor Background Research Technical Memorandum

California, Oregon, Washington

June 2020

Colorado Medium- and Heavy-Duty (M/HD) Vehicle Study

Colorado Energy Office



MJB & A

an ERM Group company

ERM

SEPTEMBER 2021

The Path to Net Zero

A DECARBONIZATION ROADMAP FOR CALIFORNIA

APRIL 2022

SDGE BCG BLACK & VEATCH

TRANSPORTATION ELECTRIFICATION PARTNERSHIP



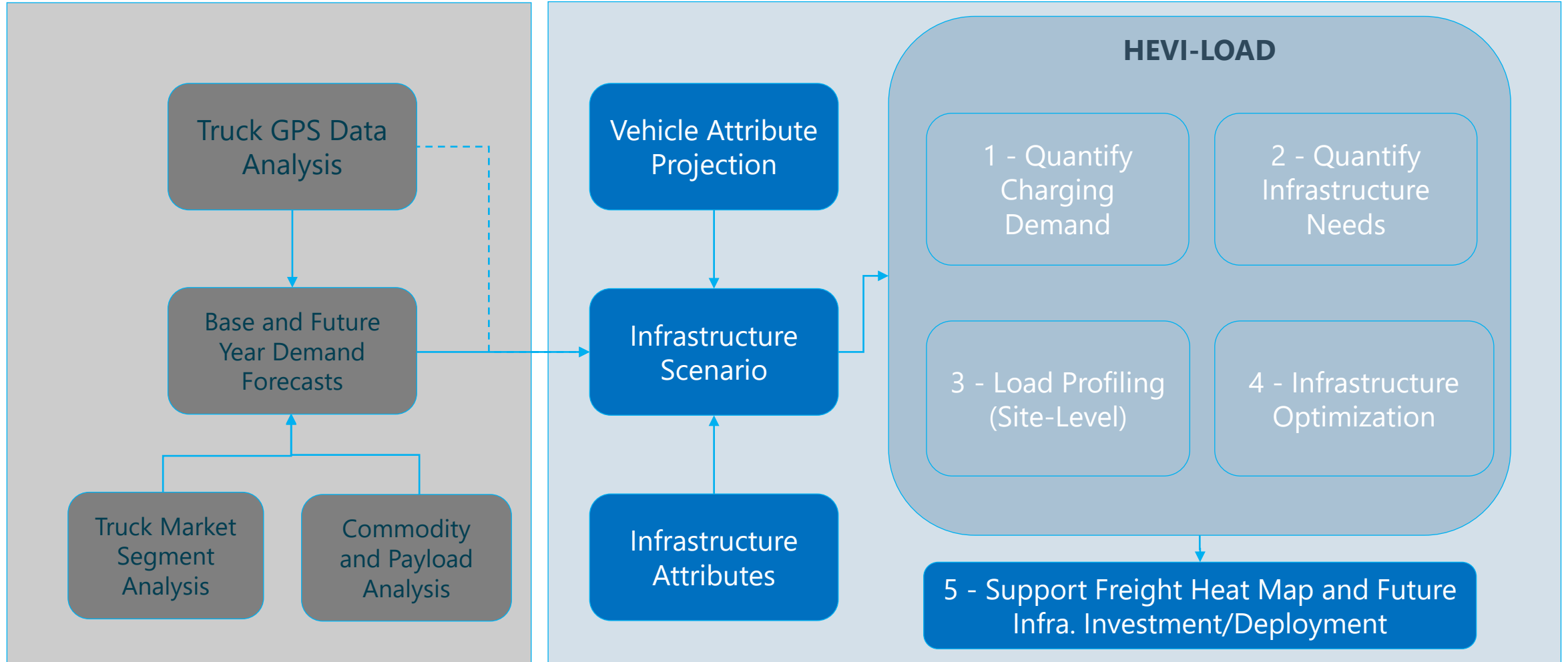


PHASE 2

Technical Work



Truck Travel Demand and Charging Requirements



Technical Approach – Truck Travel Demand

Truck GPS Data (Step 1)

Process
Disaggregate Truck
GPS Data

Generate Truck
Trips and Daily
Travel Patterns

Trip Expansion (Step 2)

National Commercial
Vehicle Surveys

Traffic Counts

Market Segmentation (Step 3)

Observed Truck
GPS Data Patterns

Land Use Data

Payloads (Step 4)

FAF

CA-VIUS

Caltrans and SCAG
Truck Models

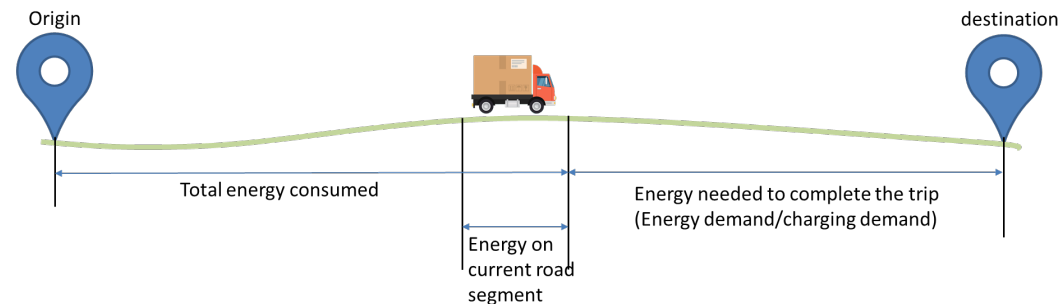
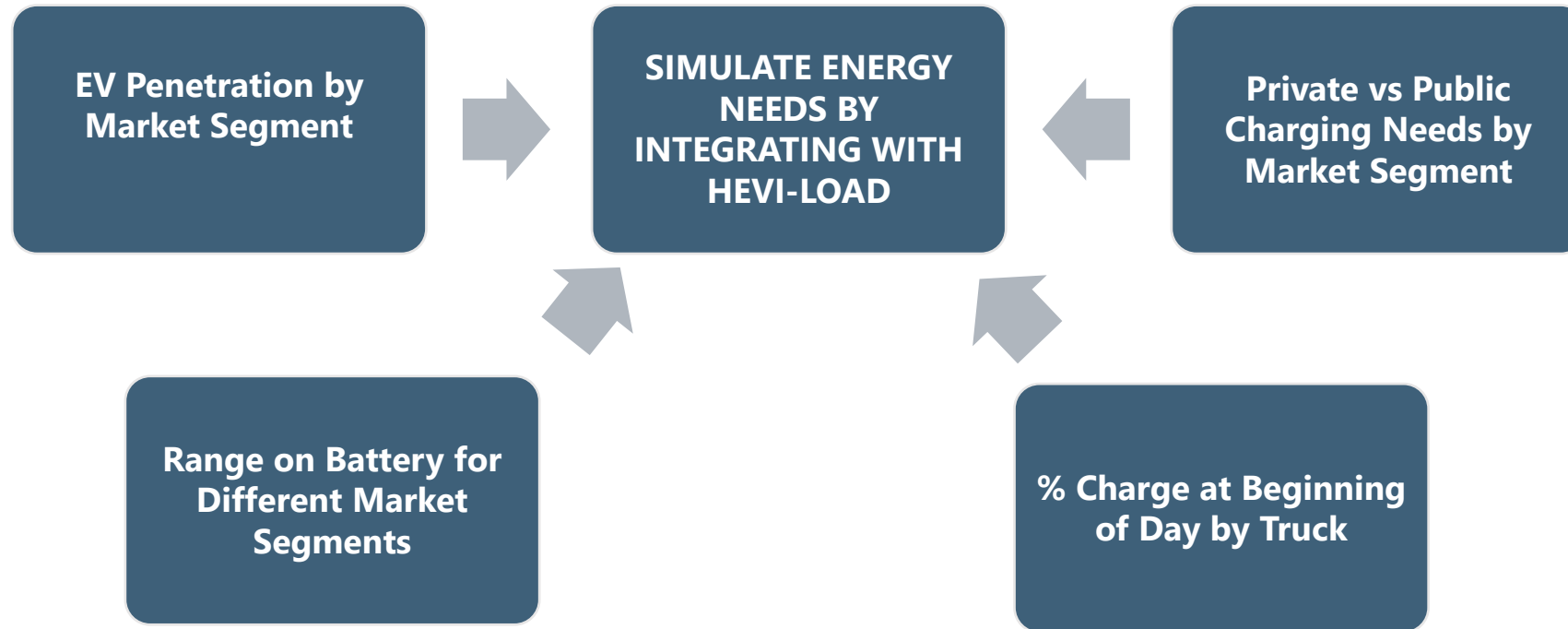
**Preliminary Truck
Flow Data**

**Expanded Truck
Flow Data**

**Linked Trip Travel for
Different Segments**

**Truck Travel w/
Commodity and Payload
Allocation**

Technical Approach – Charging Requirements



Example energy consumption and charging selection strategy



PHASE 3

**Identify locations for ZETI and develop
Regional Plan**



Primary Charging Models for Medium- & Heavy-Duty Vehicles

Depot Charging

Used for vehicles with shorter, regional routes that return to a "home base" to charge.



On-Route Charging

Used for vehicles with longer, interregional routes or point-to-point travel



Siting Criteria



Existing Parking

Is there existing truck parking?



Land Space

Is there enough space?



Scalability

Can the site be expanded in the future?



Land Price/ Economic Vitality

How does the land price compare to other locations?



Land Use & Zoning

Are there any zoning constraints?



Proximity to ZEV Infrastructure

Are there other ZEV infrastructures in the proximity?



Amenities

Are there essential amenities for truckers?



Access, Congestion, Safety

Is the site accessible? Will it impact congestion and community safety?



Proximity to Utilities and Hydrogen Chains

How close is the site to electric utility sites and H2 supply?



Repurpose for Hydrogen Fueling

Potential Location for Charging Stations

Amenities

Potential Charging & Hydrogen Fueling Infrastructure Layout

Roadmap for the Region

- Identify phased priority locations for stations
- Implemented by regional partners
- Inclusive of BEV and H2 technologies
- Responsive to community and industry needs
- Meet or exceed state and regional goals



Progress to date



LITERATURE REVIEW AND SURVEY



Started the literature review



Developed a fleet survey and are working to implement the effort



Finalizing interview and focus group plans

PHASE 1



TECHNICAL WORK



Obtained new anonymized truck GPS dataset



Created a multiple layered approach for data processing and model development



Developing a framework for model implementation

PHASE 2



BREAK

Role Of The TAC



**Primary Charge
from SCAG**



**TAC
Charter**



**TAC
Responsibilities**

TAC Responsibilities

Represent



Attend



Advise



Respond



Review



Inclusive



**Please don't
share DRAFTs**



Introducing TAC Member Organizations

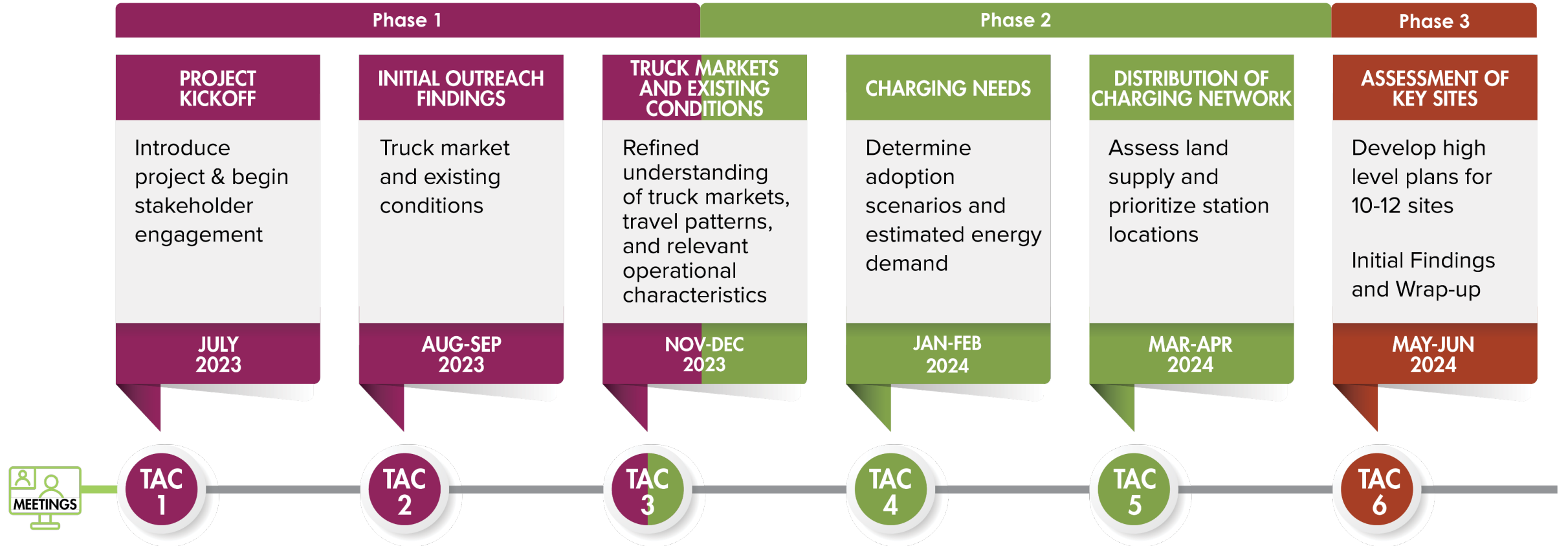


COMMUNITIES FOR A BETTER ENVIRONMENT
*Building Community Power to Achieve Environmental Justice,
Clean Energy and Healthy Communities*

East Yard Communities for
Environmental Justice



TAC Schedule





POLL



TAC Member Discussion



What is your role or experience with ZETI?




What most excites you about this project?




What most concerns you about this project?

Member Discussion Continued



Who else should we involve in this project?



Other ongoing efforts and coordination needs?



Any final questions/comments?



NEXT STEPS



Next Steps



- Project Team to pursue outreach to TAC member-recommended organizations/persons



- Continue technical work; data analytics and modeling



- Integrate outreach findings with technical approach to strengthen model results, takeaways, and insights



- TAC Meeting #2: Describe technical framework and preliminary literature review and outreach findings

Contact



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THANK YOU!

For more information, please visit:

<https://scag.ca.gov/socalzeti>

SCAG-ZETI@cramobility.com

SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

OVERVIEW

The Southern California Association of Governments (SCAG) has launched the Southern California Zero Emission Truck Infrastructure (ZETI) study to help envision a regional network of zero emission truck charging and fueling infrastructure. Planning and construction of medium- and heavy-duty truck charging stations strategically located throughout Southern California is needed to improve air quality, reduce greenhouse gas (GHG) emissions, and meet state and federal goals and requirements, while supporting the goods movement industry. This study will create a blueprint and action plan towards realizing this goal and answer key questions about how stations in the region may operate to serve different truck markets and how charging infrastructure may operate business functions.

There are multiple opportunities to be part of the conversation about a ZE medium- and heavy-duty vehicle charging network infrastructure in Southern California. The project process will be informed by a Technical Advisory Committee (TAC) as well as broader stakeholder outreach. Stakeholder outreach includes interviews and focus groups with industry experts and public agencies, conversations with community members and organizations, and surveys.

PROJECT GOALS

This study will:

- Develop a regional plan for charging and fueling infrastructure for zero emission trucks based on an extensive study of needs throughout Southern California
- Include a truck market study to calculate the expected energy demand for charging and fueling stations for future year scenarios
- Perform phased mapping of proposed station locations
- Consider existing public and private sector plans from around the region
- Include engagement with truck drivers, fleet operators and warehouse operators, developers, operators of terminals and intermodal facilities, and community organizations
- Create high-level plans for 10-12 site specific station locations

This study's findings and products will be incorporated into the Electric Truck Research and Utilization Center (eTRUC) Project, funded by the California Energy Commission (CEC) Research Hub for Electric Technologies in Truck Applications (RHETTA) Program and led by the Electric Power Research Institute (EPRI).

TIMELINE

PROJECT KICKOFF	INITIAL OUTREACH FINDINGS	TRUCK MARKETS AND EXISTING CONDITIONS	CHARGING NEEDS	DISTRIBUTION OF CHARGING NETWORK	ASSESSMENT OF KEY SITES
Introduce project & begin stakeholder engagement	Truck market and existing conditions	Refined understanding of truck markets, travel patterns, and relevant operational characteristics	Determine adoption scenarios and estimated energy demand	Assess land supply and prioritize station locations	Develop high level plans for 10-12 sites Initial Findings and Wrap-up
JULY 2023	AUG-SEP 2023	NOV-DEC 2023	JAN-FEB 2024	MAR-APR 2024	MAY-JUN 2024
TAC 1	TAC 2	TAC 3	TAC 4	TAC 5	TAC 6

If you are interested in participating in our surveys, interviews, or focus groups, please contact: linder@scag.ca.gov

PROJECT WEBSITE: scag.ca.gov/socalzeti