CALIFORNIA
AIR RESOURCES BOARD

Transport Refrigeration Unit Regulation Staff Concept Workshops

August 28, 2019: Fontana
September 3, 2019: Fresno
September 11, 2019: Sacramento

Agenda

- Introduction & Background
- Health Analyses
- Regulation Concept
- Infrastructure
- Enforcement and Compliance
- Solicitation for Regulatory Alternatives
- Environmental Analysis (CEQA)
- Funding Opportunities
- Next Steps

Introduction

CARB Freight Actions Designed to Meet Multiple Objectives

Cut community health risk (support AB 617 emission reductions)

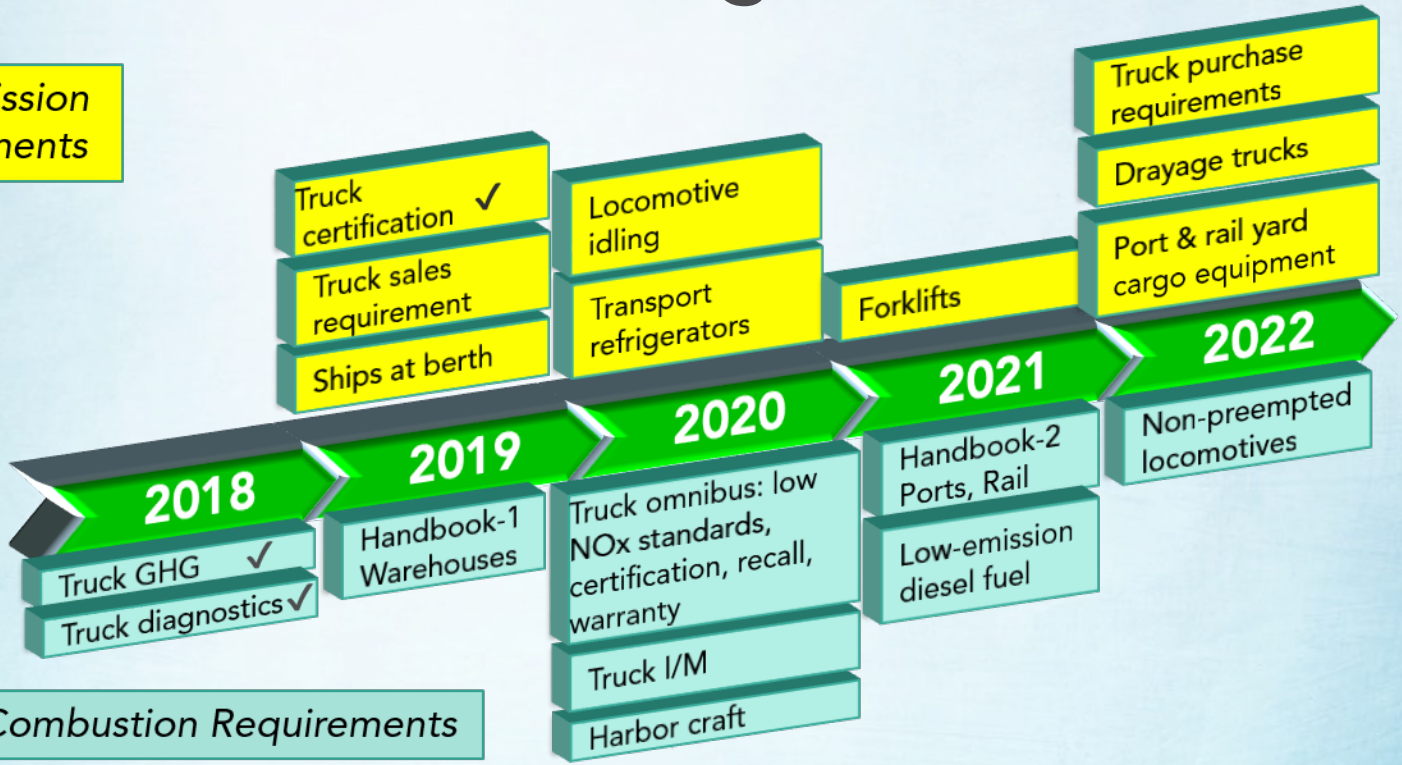
Attain regional air standards (support State Implementation Plan)

Mitigate climate change (support Scoping Plan and SLCP Plan)

New CARB Freight Actions

(1st Board hearing dates shown)

Zero Emission Requirements



Cleaner Combustion Requirements

CARB

Near Source Impact of Transport Refrigeration Units

CALIFORNIA
AIR RESOURCES BOARD

Background

TRU Types

Truck TRU

Trailer TRU

Domestic Shipping Container TRU

Railcar TRU

CARB

TRU Generator Sets

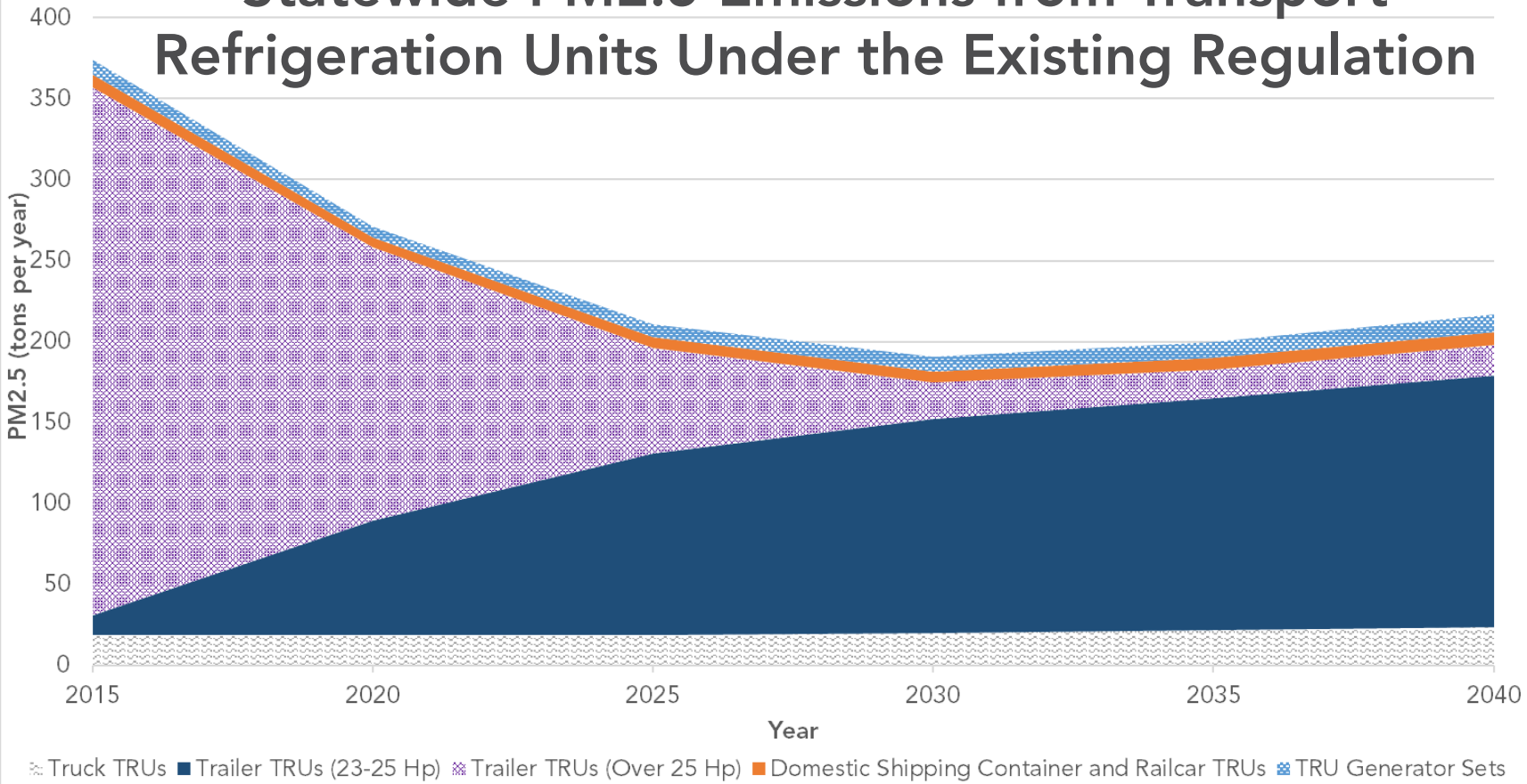
TRU and TRU Generator Set Operations in CA (2018)

	# TRUs that Operate in CA	Average # TRUs Operating in CA/Day	Emissions		
			NOx (tpy)	PM2.5 (tpy)	CO2 (tpy)
Truck TRU	7,400	7,150	370	20	58,870
Trailer TRU	166,000	42,600	6,520	270	843,180
Domestic Shipping Container TRU and Railcar TRU	9,100	1,700	180	8	24,700
TRU Generator Set	20,600	5,200	210	8	31,420
Total	**203,100**	**56,700**	**7,280**	**310**	**958,170**

Existing TRU Regulation

- Adopted in 2004 (amended in 2010 and 2011)
  - Requires TRU and TRU generator sets to meet in-use performance standards
  - Requires California based units to register with CARB

Statewide PM2.5 Emissions from Transport Refrigeration Units Under the Existing Regulation



Need for New TRU Regulation

- Despite progress made under existing TRU Regulation
  - Elevated health risk to nearby communities
  - SIP attainment (South Coast, San Joaquin Valley)
  - Increase in <25 hp units
  - Does not address refrigerant emissions
- In addition, need to transition to zero-emission to help meet multiple air quality, climate mitigation, and risk reduction goals

Commercial Availability of Advanced Technology TRUs

	Zero-Emission Operation	Full Zero-Emission Technology		
Technology	eTRU	Battery-Electric	Cryogenic	Hydrogen Fuel Cell
Commercially Available?	Yes, >7,000 units in CA	Yes, ~50 units in CA	Yes, ~65 units in CA	Not yet – in demonstration

CALIFORNIA
AIR RESOURCES BOARD

Health Analyses

Health Impacts

- **Health Risk Assessment**

  Near source impacts for individual resident and off-site workers around refrigerated warehouses and grocery stores

  - *Potential Cancer Risk*
  - *Noncancer Chronic Health Impacts*

- **Regional Analysis**

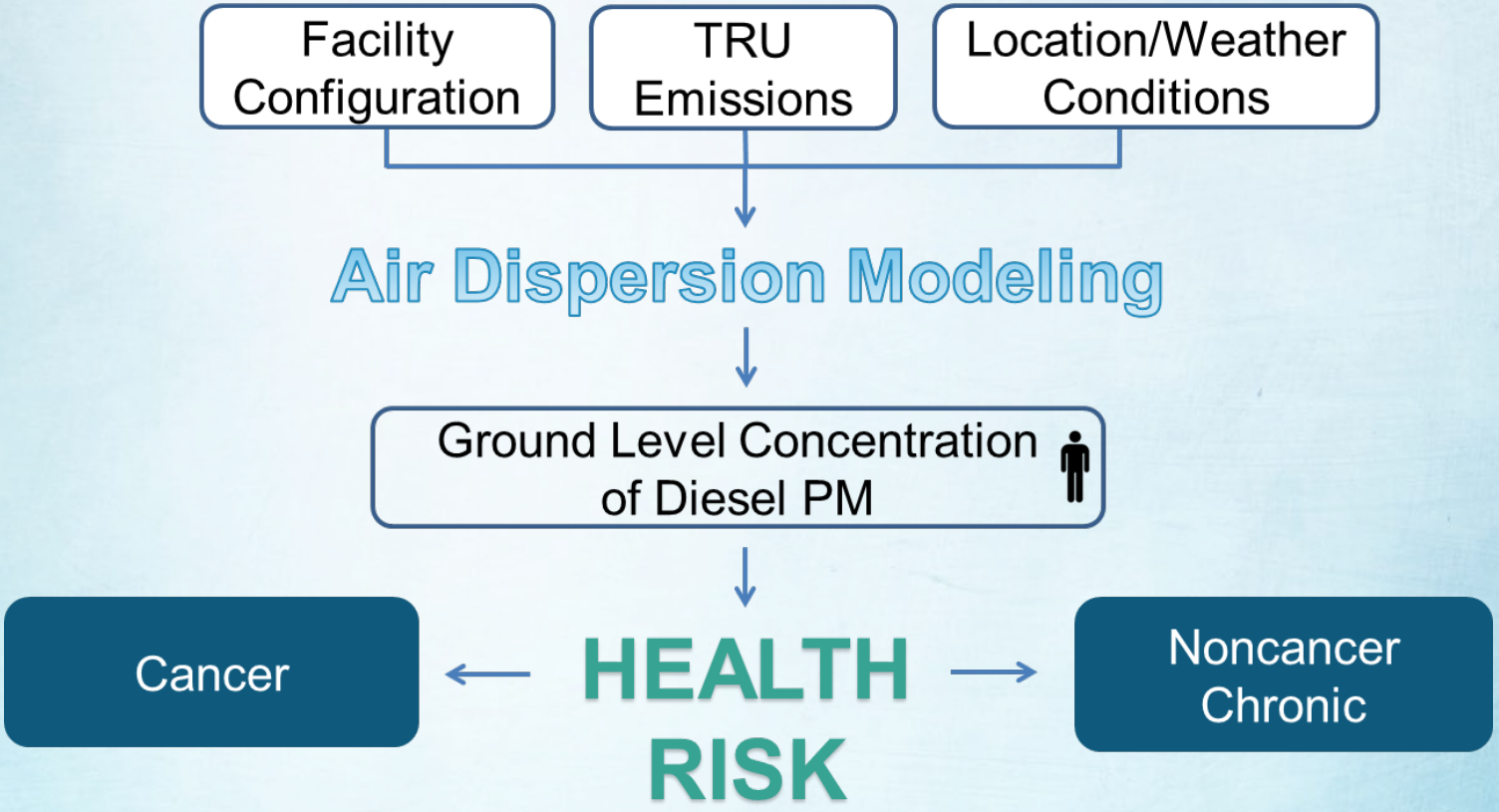
  Staff will estimate and monetize regional impacts due to emissions from TRU operations

Facility Types

- Cold Storage Warehouses
- Grocery Stores
- Truck Stops

CARB

Health Risk Assessment - Overview



Potential Cancer Risk – Baseline Cold Storage Warehouse

Total Hours of TRU Engine Operation	Downwind Distance (m) from Facility				
Per Week	**25**	**100**	**500**	**1000**	**1500**
8,000	1770	1140	310	150	100
5,000	1110	710	200	95	63
3,000	670	430	120	57	38
1,000	220	140	39	19	13

- When two or more cold storage warehouses operate near one another, the potential cancer risk and the area of exposure significantly increase

Notes:

1. Represents the average risk from three meteorological data sets: Banning, Fresno, Watsonville
2. Residential Receptor. 30-year exposure duration. FAH = 1 for ages less than 16

Potential Cancer Risk – Baseline Grocery Store

Scenario	Total Hours of TRU Engine Operation Per Week	Downwind Distance (m) from Facility			
		0	50	100	400
1 Daily Truck 1 Daily Trailer 1 Seasonal Trailer	**202**	190	56	28	5
7 Daily Trucks 2 Daily Trailers 1 Seasonal Trailer	**274**	320	97	49	9
10 Daily Trucks 6 Daily Trailers 1 Seasonal Trailer	**402**	610	180	92	16

Notes:

1. Residential Receptor. 30 year exposure duration. FAH: = 1 for ages less than 16
2. Represents the average risk from three meteorological data sets: Banning, Fresno, Watsonville
3. Results includes associated on-site and off-site transiting

Questions or Comments?

Regulation Concept

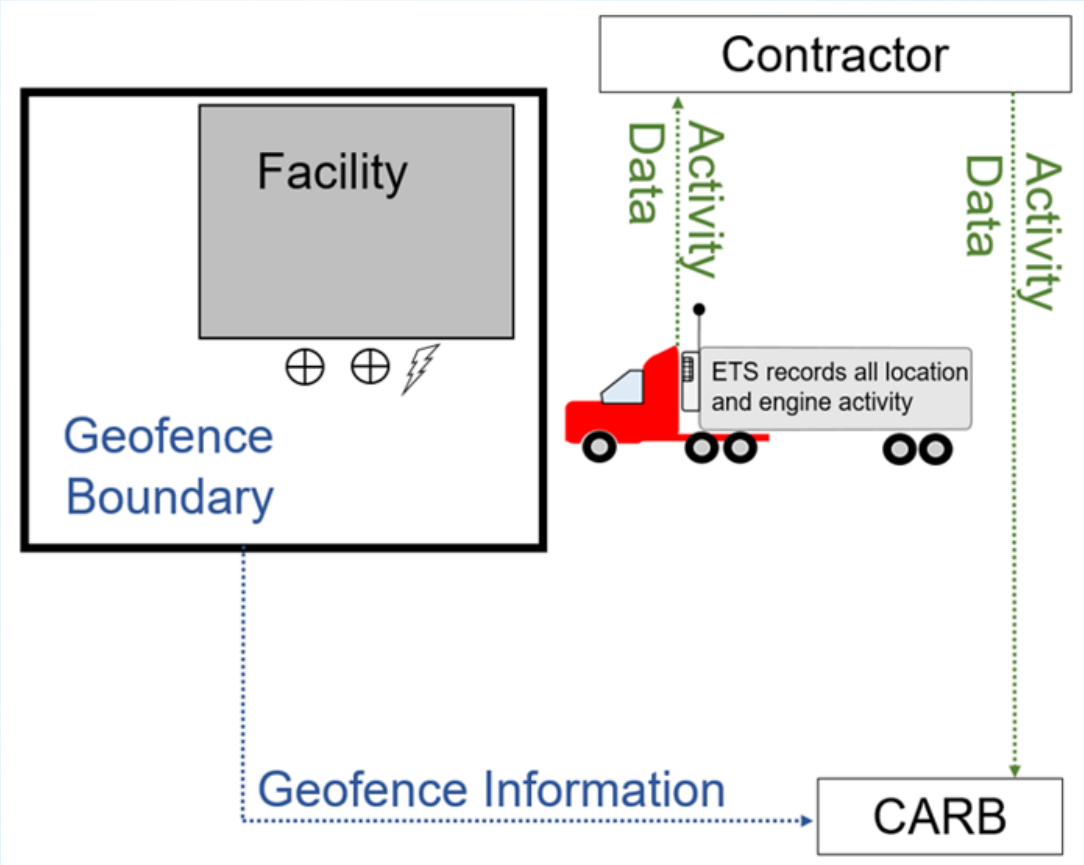
Concept: Truck TRUs

- Starting in 2022:
  - Register with CARB
  - All newly manufactured use refrigerant with a global warming potential ≤ 2,200
- Starting in 2025:
  - Fleets phase in full zero-emission at 15% per year (over 7 years)

Concept: Trailer TRUs and Domestic Shipping Container TRUs

- Starting in 2022:
  - Register with CARB
  - All newly manufactured use refrigerant with a global warming potential ≤ 2,200
- Starting in 2025:
  - Zero-emission operation when parked or stationary for >15 minutes at an applicable facility
  - Equipped with electronic telematics system
  - Meet U.S. EPA Tier 4 final emission standards for 25-50 hp engines

Electronic Telematics System (ETS)



Concept: Railcar TRUs

- Starting in 2022:
  - Register with CARB
  - All newly manufactured use refrigerant with a global warming potential ≤ 2,200
- Starting in 2025:
  - Meet U.S. EPA Tier 4 final emission standards for 25-50 hp engines
  - Staff is exploring options for zero-emission operation of railcar TRUs

Concept: TRU Generator Sets

- Starting in 2022:
  - Register with CARB
- Starting in 2025:
  - Zero-emission operation when parked or stationary for >15 minutes at an applicable facility
  - Equipped with electronic telematics system
  - Meet U.S. EPA Tier 4 final emission standards for 25-50 hp engines

What is an Applicable Facility?

Facility Type	Proposed Threshold
Refrigerated Warehouses and Distribution Centers	>20,000 square feet and has trailer TRU activity
Grocery Stores	>15,000 square feet and has trailer TRU activity
Truck Stops	>8 acres (property area)
Seaports/Intermodal Railyards	All in

Concept: Applicable Facilities

- Starting in 2023, register with CARB and provide geofence information
- Starting in 2024, complete installation of electric charging or fueling infrastructure to support zero-emission operation of TRUs (report available infrastructure type and capacity to CARB)
- Starting in 2025, report or turn away non-compliant TRUs on-site

Concept: Registration Fees

- CARB to collect a TRU and/or applicable facility registration fee to offset program costs
- Frequency and amount to be determined
- Authority – Health and Safety Code Section 43019.1(a)(1)

Questions or Comments?

CALIFORNIA
AIR RESOURCES BOARD

Infrastructure

Audience Polls

Zero-Emission Infrastructure at Facilities

Complete process can take up to 3 years
Dependent on facility

Step 1. Planning Process

- Technology
- Supply chain
- Costs

ZE TRU

- Determine needs
- Fuel provider coordination

Fuel

- Site improvements
- Equipment
- Permits

Scope

Step 2. Design Elements

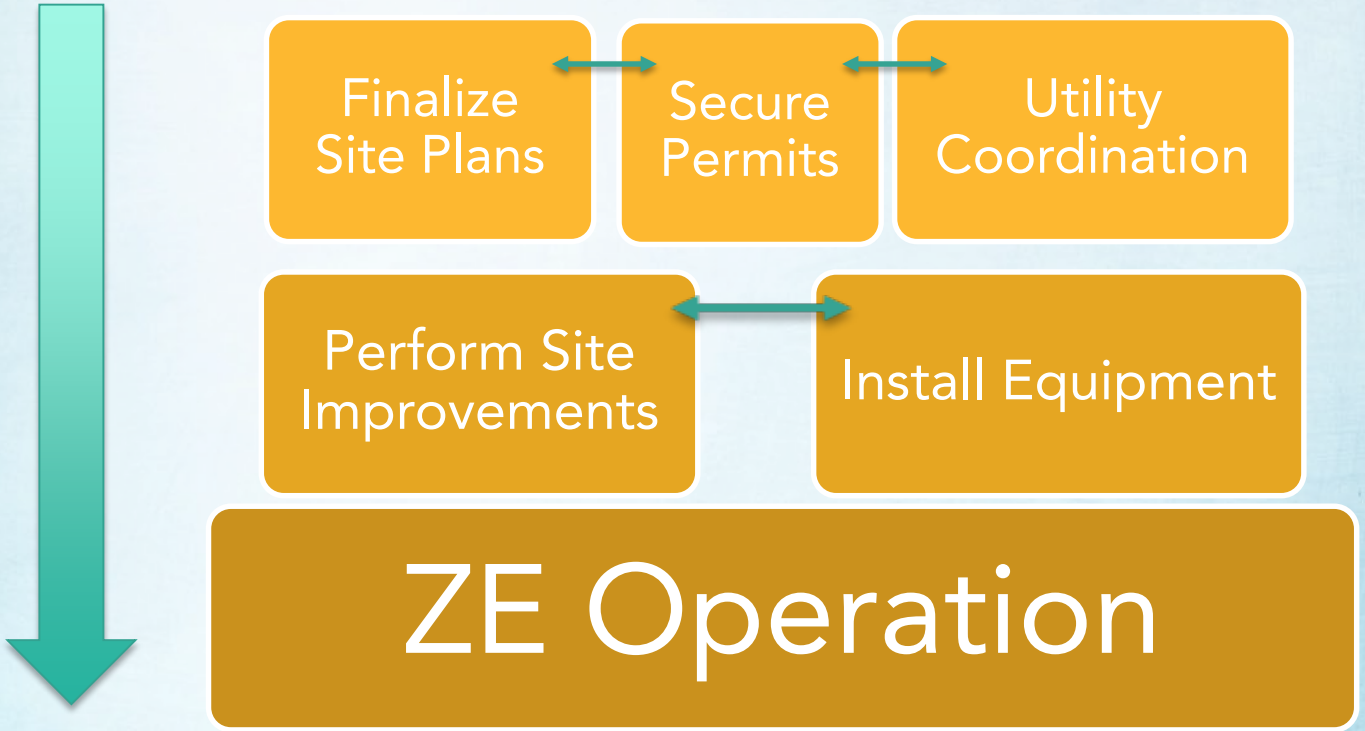
- Identify changes to dock doors and staging area for zero-emission operation
- Specify if utility upgrades will happen off site (upstream of your utility service pole)
- Include site electrical improvement (service pole forward)

Step 2. Design Elements (cont.)

Consider ways to reduce costs:

- Fuel meters for collecting Low Carbon Fuel Standard credits
- Reduce amount of trenching
- Consideration now for future expansion needs
- Energy site management: site generation, storage
- Smart equipment that manages fuel costs

Step 3. Installation Process



Questions or Comments?

Enforcement and Compliance

Enforcement and Compliance

- Increased Field Inspections
- Fleet and Applicable Facility Audits
- Expanded Registration Requirements
- Electronic Telematics System Requirements
- Applicable Facility Requirements

Questions or Comments?

Solicitation for Regulatory Alternatives Environmental Analysis (CEQA) Funding Opportunities Next Steps

Regulatory Alternatives Solicitation

- Pursuant to SB 617 and the California Environmental Quality Act (CEQA), CARB welcomes public input on alternatives to the regulatory concept for the following:
  - Standardized Regulatory Impact Assessment
  - Environmental Analysis
- CARB encourages public input on alternative approaches that:
  - May yield the same or greater benefits than those associated with the proposed regulation, or
  - May achieve the goals at lower cost
- Please submit alternatives to Lea.Yamashita@arb.ca.gov by October 11, 2019

Environmental Analysis

- Environmental Analysis (EA) to:
  - Analyze potentially significant adverse impacts caused by reasonably foreseeable actions
  - Meet requirements of CARB's certified program under CEQA
- The CEQA Environmental Checklist (CEQA Guidelines Appendix G) is used to evaluate potential impacts
- The EA will be an appendix to the Staff Report

Environmental Analysis to Include

- Description of reasonably foreseeable actions taken in response to the proposed regulation
- Programmatic level analysis of potential adverse impacts caused by reasonably foreseeable actions
- Beneficial impacts
- Feasible mitigation measures to reduce/avoid significant impacts
- Alternatives analysis

- Input invited at this early stage on appropriate scope and content of the EA
- Draft EA will be released for 45 day public comment period

Funding Opportunities

Funding programs for advanced technology TRUs and supporting infrastructure include:

- Active
  - Prop 1B
  - Carl Moyer
  - Low Carbon Fuel Standard (LCFS) Credits
  - Electric Utility Transportation Electrification Programs
  - U.S. EPA Clean Diesel Programs
- Coming Soon
  - Clean Off-Road Equipment (CORE) Voucher Incentive Project
  - AB 617 Community Air Protection Incentives
  - California Energy Commission Food Production Investment Program

Next Steps

- Release preliminary Emissions Inventory and Health Analyses Documents in Fall 2019
- Receive public comments on the concept (send to Freight@arb.ca.gov by October 11, 2019)
- Refine concept based on comments received
- Develop draft regulatory language (workshops in early 2020)
- Present Regulation to the Board in late 2020

Additional Information

- New TRU Regulation website: https://www.arb.ca.gov/newTRU
- Contacts:

Lea Yamashita, Lead Staff
Lea.Yamashita@arb.ca.gov
(916) 323-0017

Cari Anderson, Chief, Freight Transport Branch
Cari.Anderson@arb.ca.gov
(916) 324-0247

Questions or Comments?