

## **Advanced Clean Trucks Workshop**

August 21, 2019

1

## Today's Overview

- Background
- Manufacturer sales requirement
- Large entity reporting
- Next steps
- CPUC meeting update



# Major NOx Reductions Needed

- Nearly all trucks to have 2010 model year engines by 2023
- Action beyond current programs needed by 2031
  - Mobile source emissions reduced more than 50%
  - Truck and bus emissions reduced by nearly 70%
- Heavy-duty trucks and federal sources remain largest contributors







### California's Climate Change Targets – Transportation Remains Largest GHG Source

✓ Achieve 1990 GHG levels by 2020 40% below 1990 levels by 2030 80% below 1990 levels by 2050 Cleaner electricity targets (SB 100) 60% renewable by 2030 • Zero carbon by 2045 • Carbon neutrality by 2045





4

### Suite of Mobile Source Measures



#### **Incentives Support Early Markets**

HVIP		VW	Ca	rl Moyer	AB 617	
Low NO <sub>x</sub> engines, ZEVs plus infrastructure, advanced technology	Zero-emi bus re	ssion truck and placements	Cleaner e plus fuelin	ngines & ZEVs g infrastructure	Engine replacement & infrastructure in DAC	
FY 18-19 \$125 M		\$423 M	FY 18-19 \$79 M		FY 18-19 \$245 M	
Truck Loans Helps small businesses with 10 or fewer trucks upgrade to newer trucks		Utility Pro	grams	LCF	S	
		Charging infra service upgra electricity rates	structure des and s (SB350)	Credits for using low carbon transportation fuels		
		>\$579	M	Offsets Mo Electricity C Trucks and	ost/All osts for Buses	

More information at: <u>https://ww2.arb.ca.gov/our-work/topics/incentives</u>



ZEV: Zero-Emission Vehicle DAC: Disadvantaged Community LCFS: Low Carbon Fuel Standard

## Medium- and Heavy-Duty ZEV Model Availability Expanding



## SB350 Transportation Electrification for Medium and Heavy Duty

- California utilities supporting site upgrades and design
  - \$686 million approved through 2023 (PG&E, SCE, SDG&E)
    - Can fund charging of 18,000 ZE MD, HD, and off-road vehicles
- Publicly-owned utilities developing programs
- New rates being designed to encourage electric vehicles





# Total Cost of Ownership (TCO)<sup>1</sup> **Comparable in Right Duty Cycles**

- By 2024, BEVs\* have favorable TCO versus diesel vehicles in many local or vocational applications without rebates
- By 2030, FCEVs\* could approach TCO parity with diesel without rebates .



#### Example: Stepvan TCO over 12 Years

## ZE Truck and Bus Purchases Required

- Innovative Clean Transit (adopted)
  - Transit buses, cutaway shuttles
  - Mobility with lighter ZE vehicles
- Zero-Emission Airport Shuttle Bus (adopted)
  - Transit buses, cutaway shuttles, passenger vans
- Port's Clean Air Action Plan (adopted)
  - Class 7 and 8 tractors
- AB 739 (signed)
  - Class 6-8 vocational trucks









### Summary of Advanced Clean Trucks Proposed Regulation

## **Regulatory Strategy**

Goal is to align interests of all parties



Zero Emission Future

belling the second states of the second seco 1000 the sease Soler north



## **Advanced Clean Trucks Summary**

- Manufacturer sales requirement
  - ZEVs as a percentage of sales
  - 2024-2030 model year
  - Revisit in 2025 for post-2030 action
- Large company and fleet reporting requirement
  - Information about vehicles and contracted services
  - Reporting in 2021
  - Future fleet rules, ZE truck standard, and/or other



### **Manufacturer Requirements**

- Applicability
- ZEV sales percentage
- Deficit/credit tracking for compliance
- Banking and trading
- Reporting



# Applicability

- Large manufacturers
  - >500 average annual sales volume
- Small manufacturer exemption
  - Cannot exceed 500 average annual sales volume
- Average annual sales volume
  - All vehicles with GVWR over 8500 lbs. including ZEVs/PHEVs
  - Average of prior 3 MY sales



## Manufacturer ZEV Sales Requirement

- Percent of California chassis/vehicle sales must be zero-emission
- Use new Zero-Emission Powertrain Certification procedure starting 2024 MY
  - Does not apply to PHEVs
  - Excludes complete vehicles below 14,001 lb. GVWR

Model Year (MY)	Class 2B-3 <sup>1</sup>	Class 4-8	Class 7-8 Tractors						
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 <sup>2</sup>	15%	50%	15%						
1. Excludes pickups until 2027 MY 2. 2030 MY requirements continue after 2030									



# **Deficit/Credits System for Flexibility**

- Allows for more ZEVs in one weight class and fewer in another
  - Based on emissions differences
- Deficits accrue based on sales and must be offset with credits
- Credits generated with ZEV sales, partial credits for PHEV
- Weight Class Modifier accounts for emission differences among weight classes for credit and deficits

	Class 2B to 3	Class 4 to 5	Class 6 to 7*	Class 8*	Class 7 to 8 Tractors
Weight Class Modifier	0.6	1	1.5	2	2

• Credit banking and trading



## Additional Deficit/Credit Provisions

- Tractor deficits must be met with tractor credits
- Deficits may be carried forward up to 1 year
- Deficit fulfillment sequence
- PHEV credits limited to 50% of total deficits in each of non-tractor and tractor categories



# 2025 ZEV Credit Example



19

## 2025 ZEV Credit Example

			2025 MY Z	ZEVs Sold 🗦	e Weig Mo	ght Class odifier	Z	2025 ZEV Credits	
	Clas	ass 5 10				1		10	
	Class 8	Tractor	50	)		2			
	25					- Pomaini	n ~ 7 <b>Γ</b> \/	Adjusted	
	55	D	eficits <mark>–</mark>	ZEV Cre	edits 📕	Crec	lits	Remaining Z Credits to Ba	EV ank
Non 1	Fractors	D	eficits	ZEV Cre	edits	Crec	lits	Remaining Z Credits to Ba	EV ank

# **PHEV** Credits

- PHEV Credits = # PHEVs Sold \* Weight Class Modifier \* PHEV Factor PHEV Factor = <u>0.01 \* Usable Energy Capacity (kWh)</u> Weight Class Modifier
- Error in Draft PHEV factor did not divide by Modifier
  - Too much credit to heavy vehicles and too little to lighter vehicles.



- Maximum of 75% of a ZEV credit.
- Minimum All-Electric Range to earn credit.



## 2025 PHEV Credit Example

	2025 MY PHEVs Sold	< <sup>\</sup>	Weight Class Modifier	\$	PHEV Factor	2025 PHEV Credits
					0.17	5.1
Class 3	50		0.6	0.58		17.4
					0.75	22.5
			Usable Energy (kWhr)		Weight Class Modifier	PHEV Factor
			10			0.17
	0.01	≫	35	$\approx$	0.6	0.58
			75			<del>1.25</del> 0.75



# Banking, Trading, Credit Life

- Credits may be banked for future use
- Credits may be traded amongst manufacturers
- Limited credit lifetimes
  - Early action credits expire end of 2030 MY
  - Credits generated 2024 MY+ have 5 year life
  - PHEV credits can be earned until end of 2030 MY



## Manufacturer Reporting

- Must report annually by March 31:
  - Sales volumes in California
    - ZEV, PHEV, conventional, other
    - Tractor vs. non-tractor
    - Pickup vs. non-pickup for Class 2B-3
  - Credit trades/transfers
  - Statement how much of Class 2B 3 sales will be used for ACC vs. ACT
  - Retain records 8 years





### **Proposed Reporting Requirement**

## **Zero Emission Fleet Directive**

- Governor issued directive to assess viability of ZEV fleet requirements August 2018
- Consider opportunities in a broad range of fleets:
  - Public and private
  - New mobility fleets
  - Large employer fleets
  - Rental fleets
  - Delivery fleets
  - Transportation Network Companies (TNCs)



Governor's letter regarding ZE Fleet rules: <u>https://ww2.arb.ca.gov/resources/documents/governors-letter-regarding-zero-emission-fleet-rules</u> ZEV Fleet Website: <u>https://ww2.arb.ca.gov/our-work/programs/zero-emission-vehicle-fleet</u>



# **Principles for Developing Future Rules**

- Match ZEV availability with individual fleet operational needs
  - Initial focus on urban, short-haul, return to base
- Provide benefits in disadvantaged communities
- Expand infrastructure availability to enable new markets
- Ensure level playing field between types of fleet operators
- Maximize use of ZEVs where suitable



### **Regulatory Concepts to Explore**

- Percent of fleet purchases must be ZEVs
- Fleets must meet a ZE truck standard
- Zero-emission zones (cities, or other boundary)
- Large entities to hire fleets that meet a ZE truck standard





## **Point of Clarification**

- Goal to primarily ask for information that is already collected
- Questions about contracts limited to agreements for one year or more
- Seeking to simplify by categorizing responses with range bins
- Need feedback on how to minimize requesting information about infrequent or occasional use of trucks
- Reporting in 2021 for prior year data



# Large Entity Reporting Applicability

- Entities with gross annual revenues greater than \$50 million in 2019 tax year
  - Subsidiaries, subdivisions, or branches
- Fleets with more than 100 vehicles
  - Operated in California in California in 2019
- Any person, broker or entity that dispatched more than 100 vehicles in California in 2019
- Government agencies
  - State, local municipalities, federal agencies
- Exemptions
  - School Districts, school bus fleets, Transit Agencies, and Transportation network companies



## **Reporting Summary**

- All regulated entities, including the corporate parent and each subsidiary, subdivision, or branch under the control of the corporate parent
  - Complete Forms A and B.
- All regulated entities with truck/vans domiciled in California
  - Complete Form C
- Reporting deadline April 2021
  - For facility contracts and operation in 2020
  - For fleet operated in 2020 as it exists on January 1, 2021



# **General Entity Information**

- All regulation entities
- Name, mailing address, contact information, corporate parent name,
- Business category description
  - Select: Construction, Farming, Financial, Hauling freight (for hire), Government, Non-profit, Passenger/Bus service, Retail/Wholesale, Other
- Six digit NAICS code
- Tax ID
- Total annual revenue for prior year (except government)
  - Select: (millions <\$10, \$10-\$49, \$50-\$99, \$100-\$499, \$500-\$999, >1,000)
- # of subhauler or subcontractor trucks dispatched/directed prior year
- Percent of subhaulers/subcontractors that operated under your authority
- Motor carrier ID numbers
- Transportation charter permit



# California Facility Type Categories

- Store
- Restaurant
- Distribution Center/Warehouse
- Manufacturer/Factory/Plant
- Multibuilding Campus-Base
- Service Center
- Hotel, Motels, and Resort
- Medical/Hospitial/Care
- Adminstrative/Office Building
- Truck/Equipment Yard



#### **Basic Establishment Characteristics**

For questions 1-12, enter the number of facilities in each category in response to each question.

- 1. How many facilities for each category type do you operate in California?
- 2. How many of these facilities have dock-height loading bays?
- 3. How many of these facilities have cold storage rooms?
- 4. How many of these facilities have EV charging available to the public?
- 5. How many of these facilities have EV charging for employees?
- 6. How many of these facilities are on properties shared with other tenants?
- 7. How many of these facilities do you own?
- 8. At how many of these facilities do you provide shuttle van or bus service to or from the facility?
- 9. At how many of these facilities do your own/lease cars or pickups as part of the operation?
- 10. At how many of these facilities do you own/lease vans or trucks as part of the operation?
- 11. How many of these facilities have cars or light pickups domiciled there?
- 12. How many of these facilities have vans/trucks/buses domiciled there?



### **Transportation Needs**

**Describe how you meet your ground transportation needs (excluding rail)** Select (With Own Vehicles, Year or greater contract, Both, NA)

- 13. How do you ship your items out of these facilities to out of state locations?
- 14. How do you ship your items into these facilities from out of state locations?
- 15. How do you ship your items out of these facilities to California port or rail locations?
- 16. How do you ship your items into these facilities from California port or rail locations?
- 17. How do you ship your items into these facilities from other California warehouses you operate?
- 18. How do you ship your items into these facilities from other California (non-warehouse) facilities you operate?
- 19. How do you ship goods you sell from these facilities to residential homes?
- 20. How do you ship goods you sell from these facilities to non-residential locations?
- 21. How do you transport your intermediate products from these facilities to residential homes?
- 22. How do you transport your intermediate products from these facilities to non-residential locations by truck?



### **Contracting Practices**

Answer how you enter into year or greater contracts for any of the following.

Select (By Facility, Company Wide, Both, NA)

- 24. For linen/uniform delivery to/from these facilities
- 25. For parcel delivery to/from these facilities.
- 26. For maintenance and repair of the facilities.
- 27. For passenger shuttle bus service to/from the facilities.
- 28. For armored cash transport service to/from the facilities.
- 29. With suppliers to deliver food items (non-refrigerated) to the facilities.
- 30. With suppliers to deliver food items (refrigerated) to the facilities.
- 31. With suppliers to deliver non-food items to your facilities.



### **Representative Facility Characteristics**

Select a single facility from each category and respond to the following:

- 1. What is the location of the representative facility for each category? Enter (City, Zip code)
- 2. What is the total building square footage?

Select (NA, <10,000, 10,000 to 100,000, 100,000 to 500,000, more)

- 3. How many dock-height loading bays at this facility?
- 4. What is the square footage of cold storage rooms?

Select (NA, <10,000, 10,000 to 100,000, 100,000 to 500,000, more)

- 5. How many pickups <8,500 lbs. GVWR do you own/lease that are associated with the operation at this facility?
- 6. How many cars do you own/lease that are associated with the operation at this facility?



## **Representative Facility Trips**

Estimate number of trips to the facility in a typical week based on pickup and deliveries? Select bins (<1, 1-10, 11-20, 20-99, 100-500, >500)

- 7. Linen/uniform cleaning service trucks
- 8. Parcel delivery vans/trucks.
- 9. Armored cash transport trucks
- 10. Beverage/water delivery trucks.
- 11. Food delivery (non-refrigerated) Straight truck.
- 12. Food delivery (refrigerated) Straight truck.
- 13. Goods delivery (non-food) Straight Truck.
- 14. Food delivery (non-refrigerated) Tractor Trailer.
- 15. Food delivery (refrigerated) Tractor Trailer.
- 16. Goods delivery (non-food) Tractor Trailer.
- 17. All other truck or van deliveries.



## **Representative Facility Suppliers**

How many different suppliers shipped items to your facility last year? Select bins (1, 2-10, 11-20, >20)

- 18. Food delivery
- 19. Beverage delivery
- 20. Linen/uniform cleaning service
- 21. Goods delivery (non-food)
- 22. All other supplies, tools, equipment (non-goods)



# Vehicle Usage by Facility

- Complete Form C if vans and trucks domiciled or assigned at locations in California
  - Facility Address
  - Facility Type Category
  - Contact Name
  - Email Address
  - Do you own or lease this facility?
  - How many cars/SUVs are assigned to this facility?
  - How many light pickup trucks (GVWR <8500 lbs.) are assigned to this facility?
  - If you have tractors or truck and trailer combinations select what types of trailers you pull?
    - Select all that apply (Van Dry, Van Reefer, Dump, Tanker, Flat bed, Garbage, Lowbed, Curtain side, Container\*, Other)



## Vehicle Usage by Facility Table

Vehicle body type	Weight class bin	ight class bin -3, 4-6, 7-8) Number of vehicles of each body type and weight class bin	What percent of the fleet operates within these daily mileage bins? (round estimates to nearest 10%)			Select the best estimate on what percent of vehicles of each group fit the description (<25%, 25-50%, 50-75%, >75%)					What percent are	How many years are		
(2)	(2B-3, 4-6, 7-8)		<50	51-100	101-200	>200	Regularly fuel on-site	Return to base daily	Has electronic tracking	Stay within 50 miles of this site on a given day	Regularly tow a trailer	Commonly operate at their weight limit	registered out of state?	vehicles kept in the fleet?
Body type 1														
Body type 2														
Body type 3														
										2				

Tractor Body Type: Tractor Day Cab, Tractor Sleeper Cab

Truck Body Type: Beverage, Boom/Bucket, Box Reefer, Box Dry Van, Bus, Bus School, Bus Shuttle, Car Carrier, Concrete Mixer, Concrete Pump, Crane, Drill Rig, Dump, Farm Truck, Flatbed/Stakebed, Garbage Packer, Garbage Rolloff, Pickup Bed, Service Body, Sweeper, Tank, Tow, Vacuum, Water, Van - Cargo, Van - Step, Van - Passenger, Yard Goat

What percent are at facility > 8hr daily?\*



## **Next Steps**

- Submit informal comments by September 21, 2019 at: https://www.arb.ca.gov/lispub/comm2/bcsubform.php?listname=cleantrucksws&comm\_period=1
- Staff report available October 2019
  - 45 day formal comment period
- First of two board hearings in December 2019
  - Final decision at second hearing mid-2020



# New Vehicle to Grid (VGI) Working Group

- In December 2018, the California Public Utilities Commission launched a new rulemaking (R.18-12-006), directing a new interagency VGI working group to:
  - 1. Identify what VGI use cases can provide value now, and how that value can be captured, scaled, and distributed to those providing grid services
  - 2. Evaluate how the value of VGI use cases compare to other storage or distributed energy resources
  - 3. Provide policy recommendations to the CPUC if any changes are to allow additional use cases to be deployed in the future
- Costs and benefits of V1G and V2G use cases will be evaluated

More input is needed from medium- and heavy-duty stakeholders



# More Information and How to Participate in the VGI Working Group

- All information from the August 19, 2019 launch meeting is available at <a href="https://gridworks.org/initiatives/vehicle-grid-integrationwg/">https://gridworks.org/initiatives/vehicle-grid-integrationwg/</a>
- The next VGI Working Group workshop is on September 26, 2019 in the Bay Area (location TBD)
- Email <u>aspreen@gridworks.org</u> to be added to the email list
- Contact Carrie Sisto at the CPUC with any questions about the working group scope (<u>cs8@cpuc.ca.gov</u> or 415-703-2872)



## **Additional Information**

- Advanced Clean Trucks website
  - ww2.arb.ca.gov/our-work/programs/advanced-clean-trucks
- Contacts
  - Craig Duehring <u>craig.duehring@arb.ca.gov</u>
  - Paul Arneja paul.arneja@arb.ca.gov

