



ARB Updates and Low Carbon Fuel Standard

North State Transit Symposium

July 12, 2023

Yachun Chow, Manager, Zero Emission Truck and Bus



Comprehensive Review on Program Readiness

- ZEB Comprehensive Review to evaluate the program readiness
 - Inform heavy-duty zero-emission policy and funding strategies
 - Identify status of ZEB technology
 - Ensure transit service not adversely impacted
- Contracted with National Renewable Energy Laboratory for an independent third-party assessment

Phase 1 Comprehensive Review Results

- The report shows California large transits are ready for 2023 ZEB purchase requirement on standard 40' buses
- Continued efforts are needed for 100% ZEB transition
 - Lower capital costs and provide financial support
 - Improve ZEB reliability and optimize ZEB performance
 - Enhance deployment flexibility and scalability
 - Establish a reliable supply chain and develop a highly skilled workforce

Phase 2 Comprehensive Review

- Include other types of buses (cutaway, over-the-road, double decker, and articulated buses) and an update to the 40 ft standard buses
- CARB collaborates with both CTA and CalACT on this review
- Anticipate to share the report in 2025
- First group meeting: July 18, 2023

Clean Truck and Bus Voucher Incentive Project (HVIP) Funding for FY 22-23

- As of July 1, 2023, \$46 M remaining from FY 21-22 and \$70 M allocated from FY 22-23
- Additional 15% base voucher amount adjustment for small public fleets with 10 or fewer medium and heavy-duty vehicles
- Additional 15% voucher amount for transit agencies
- Additional 15% voucher amount for public fleets in DAC
- Plus-ups can be stacked

Flexibilities for Transit Agencies

- Allow a letter of intent in lieu of a purchase order
 - Promote use of HVIP as local match
- Allow 36 months for transit bus voucher redemptions
 - This extension applies to previously issued vouchers
- Consider all transit agencies to be exceeding regulatory requirements and eligible for HVIP funding if the total number of ZEB purchased in the State exceeds the ICT requirements
- Additional details listed in the Implementation Manual (to be released in summer 2023 at <https://californiahvip.org>)

HVIP Funding Stackability

- Can be stacked with other State incentive programs
 - When stacking, HVIP will only fund the remaining cost up to the maximum voucher amount after the other incentives have been applied at their maximum allowable amounts
- Can be stacked with Carl Moyer if follows the Carl Moyer Guideline (e.g., vehicle scrappage)
- Can be stacked with VW mitigation trust
- As of July 1st, \$14.4 M still unrequested for transit and shuttle from VW mitigation fund

Clean Truck Check Program

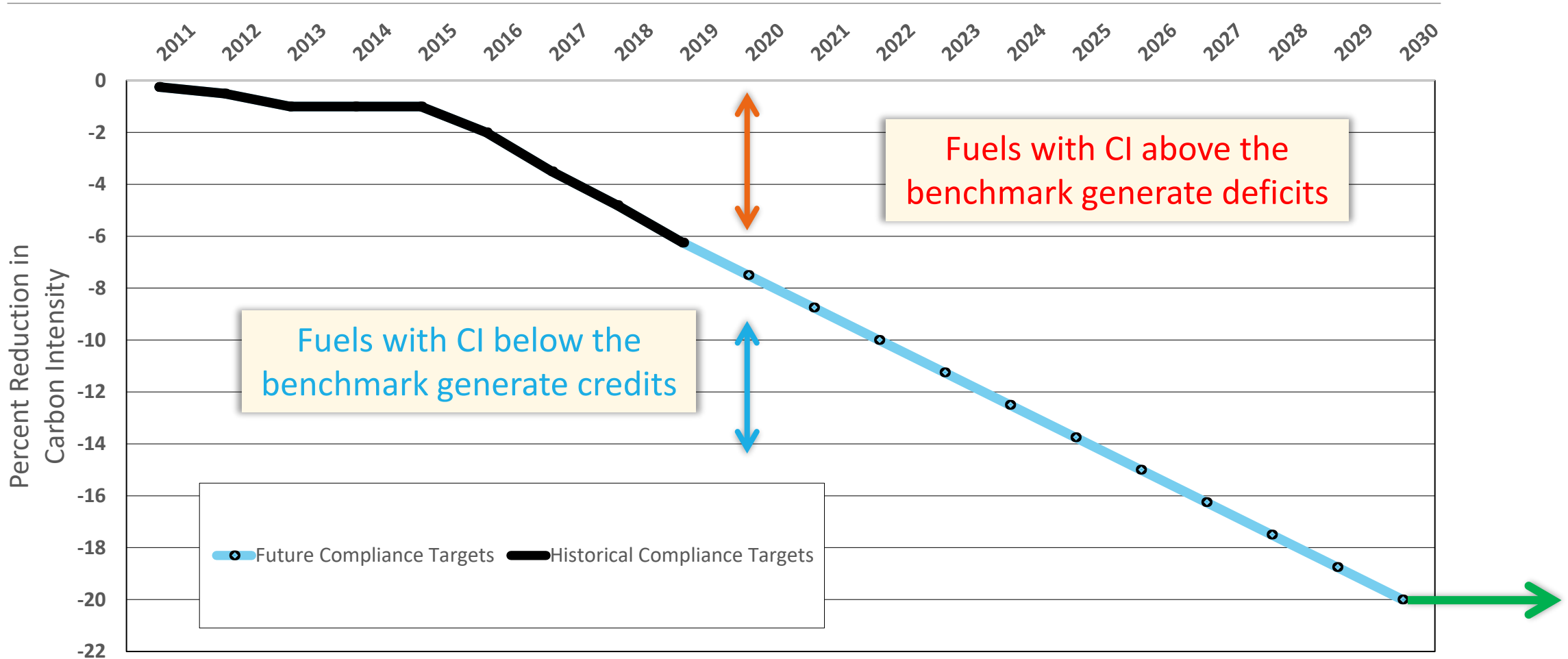
- Also known as Heavy-Duty Inspection and Maintenance (HD I/M) Regulation
- All non-gasoline heavy-duty vehicles operating in California with a GVWR >14,000 lbs.
 - All diesel, alternative fuel, and hybrid vehicles
- All California, out-of-state, and out-of-country registered vehicles that operate within California
- Single vehicle fleets are also subject to this regulation
- A webinar for transit agencies in this summer



Advanced Clean Fleet (ACF) Regulation

- Aim to accelerate medium and heavy-duty zero-emission vehicle purchases toward meeting a full transition to ZEVs by 2045
- Transit buses subject to the ICT regulation (GVWR > 14,000 lbs.) are exempt in ACF
- Other transit vehicles (buses with a GVWR ≤ 14,000 lbs. and other vehicles like tow trucks, snow plow) are exempt until January 1, 2030 with a 100% of ZEV purchase requirements starting in 2030

Low Carbon Fuel Standard (LCFS)



Hydrogen Reporting within the LCFS

- Reporting requirements for Hydrogen
 - Hydrogen is currently below a low volume exemption of 3,500 tonnes/year
 - Reported hydrogen is currently 2,600 tonnes/year and will likely cross the threshold by 2025
- The station owner is the default credit generator
 - Entities must report total dispensed fuel on a quarterly basis per station per pathway
 - Entities can designate reporting to a 3rd party

Key Steps for Generating LCFS Credits for Hydrogen as a Transportation Fuel

Step 1

Establish account in the LCFS Reporting Tool (LRT)

- In the quarter during which the H₂ fueling takes place
- *Example: For Fueling during Q1, register in the LRT by April 3rd. Reporting for Q1 occurs Apr-Jun.*

Step 2

Register Stations for reporting – Fueling Supply Equipment (FSE)

- Ideally by the end of quarter during which fueling takes place
- *Example: For Fueling during Q1, register in the LRT by April 3rd. Reporting for Q1 occurs Apr-Jun.*

Step 3

Identify and apply for a fuel pathway (Carbon Intensity) to use for reporting

- More details described in next slides

Step 4

Complete quarterly reporting for credit issuance

- Data upload deadline (45-day after end of quarter); quarterly report submission deadline (90-days after end of quarter)
- Credits are issued after the reporting deadline
- *Example: For Fueling taking place during Q1, upload data by May 15th and submit final report by June 30th. Credits will be issued on July 1st.*

Estimated LCFS Value for Fuel Cell Electric Vehicles

Application	LCFS Value* (\$/kg)				
	Gaseous H ₂ Fossil Natural Gas SMR	Gaseous H ₂ Landfill Gas SMR	Liquid H ₂ Fossil Natural Gas SMR	Liquid H ₂ Landfill Gas SMR	Electrolytic H ₂ with zero-CI electricity
Light-duty FCEV (EER 2.5)	\$0.89	\$1.04	\$0.61	\$0.80	\$1.79
Heavy-Duty FCEV (EER 1.9)	\$0.45	\$0.61	\$0.17	\$0.36	\$1.35

**Assuming LCFS credit price of \$70*

***Using Lookup Table Values for Fossil SMR and Landfill Gas SMR and electrolytic hydrogen*



Who Can Sell the Credits?

- Once credits are generated they can be sold directly to counterparties, sold through a broker, or transferred to another entity
- Any entity with an active LRT-CBTS (LCFS Reporting Tool-Credit Bank Transfer System) account can sell credits though entities with smaller quantities of credits typically work with a broker
- A broker has to be affiliated with an entity that has a Federal Employer Identification Number (FEIN)
- A broker cannot acquire credits

Contacts and Links

- Innovative Clean Transit Reporting Tool (<https://ictrt.carb.arb.ca.gov>)
 - ICT program email (ICT@arb.ca.gov)
- ACF (<https://ww2.arb.ca.gov/our-work/programs/advanced-clean-fleets>)
- Clean Truck Check (<https://ww2.arb.ca.gov/our-work/programs/heavy-duty-inspection-and-maintenance-program>)
 - HD I/M webinar (<https://ww2.arb.ca.gov/sites/default/files/truckstop/azregs/training.html>)
 - Guidance ([June 2023 Guidance to Vehicle Owners on Upcoming Requirements | California Air Resources Board](#))
- Funding information (<https://ww2.arb.ca.gov/our-work/programs/low-carbon-transportation-investments-and-air-quality-improvement-program/low-1>)
- Funding Finder Tool (<https://fundingfindertool.org>)
- LCFS Questions about account registration and fuel pathways – Jacob.Englander@arb.ca.gov