



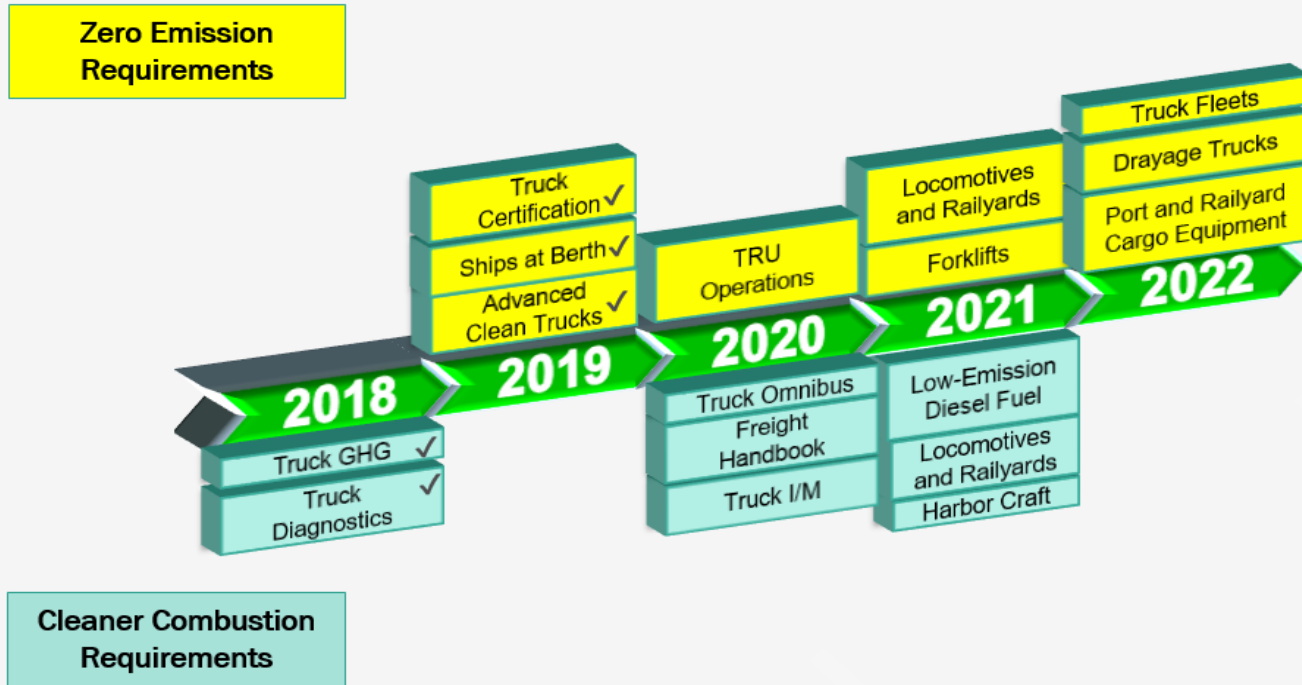
Transport Refrigeration Unit Regulation Updated Concept Webinar

March 19, 2020

Agenda

- Introduction & Background
- Updated Concept
- Draft Regulatory Language
- Emission Inventory Updates
- Health Analyses
- Preliminary Cost Analysis
- Next Steps

New CARB Freight Actions (1st Board hearing dates shown)



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

Outreach Activities to Date

- 7 Public Workshops
- 2 Workgroup Meetings
- Mailed 40,000 postcards to facilities
- Over 90 stakeholder calls and meetings with TRU manufacturers, fleets, facilities, trade associations, and utilities

Recap of Staff Concept from August/September 2019 Workshops

Year	Requirement	Truck TRU	Trailer TRU	DSC TRU	Railcar TRU	TRU Genset	Applicable Facility
1/1/2022	TRU and TRU genset registration	✓	✓	✓	✓	✓	
	All new TRUs must use refrigerant with GWP ≤2,200	✓	✓	✓	✓		
1/1/2023	Applicable facility registration (with geofence information)						✓
1/1/2024	Complete applicable facility electric charging/fueling infrastructure installation (report type and capacity to CARB)						✓
1/1/2025	Full zero-emission (15% per year)	✓			tbd		
	Zero-emission operation when stationary >15 minutes at an applicable facility		✓	✓	tbd	✓	✓
	Electronic telematics system		✓	✓	tbd	✓	
	Diesel emission standards	(N/A – Full ZE)	✓	✓	✓	✓	

Public Comments Received

- No stranded assets
- Diesel emission standards only
- Infrastructure by 2024 is challenging
- Implementation of zero-emission TRUs should be sooner



Updated Concept

Summary of Updated Concept

Year	Requirement	Applicable Facility	Truck TRU	Trailer TRU	DSC TRU	Railcar TRU	TRU Genset	Electric Utilities
12/31/2021	Register with CARB	✓	✓	✓	✓	✓	✓	
	New TRUs use refrigerant with GWP ≤2,200		✓	✓	✓	<u>tbd</u>		
12/31/2022	Applicable Facility compliance plan submittal	✓						
	Electric Utility reporting							✓
12/31/2023	Applicable Facility compliance plan completion	✓						
	Full zero-emission (15% per year)		✓					
	In-use meet diesel emission standard (PM only)			✓	✓	✓	✓	
	New use zero-emission operation when stationary >15 minutes at an applicable facility, equipped with an electronic telematics system, and meet diesel emission standards (NOx, PM, CO)	✓		✓	✓		✓	
12/31/2027	All use zero-emission operation when stationary >15 minutes at an applicable facility and equipped with an electronic telematics system	✓		✓	✓		✓	
12/31/2030	All meet diesel emission standards (NOx, PM, and CO)			✓	✓	✓	✓	

Updated Concept: Applicable Facilities



- December 31, 2021:
 - Register with CARB
- December 31, 2022:
 - Submit SOTL compliance plan
- December 31, 2023:
 - Complete implementation of SOTL compliance plan

Updated Concept: Applicable Facilities

Facility Type	Description	Estimated Statewide Population
Refrigerated Warehouses or Distribution Centers	Size \geq 20,000 sq ft and has trailer TRU or TRU genset activity	2,175
Grocery Stores	Size \geq 15,000 sq ft and has trailer TRU or TRU genset activity	3,900
Intermodal Ports or Railyards	Ports or railyards with trailer TRU or TRU genset activity	25
Total	All Applicable Facilities	6,100

Updated Concept: Truck TRUs

New

- December 31, 2021:
 - Lower global warming potential refrigerant
- December 31, 2023:
 - Full zero-emission

In-Use

- December 31, 2023:
 - Fleets phase in full zero-emission at 15% per year (over 7 years)



Updated Concept: Trailer, Domestic Shipping Container TRUs, and TRU Gen Sets

New

- December 31, 2021:
 - Lower global warming potential refrigerant (doesn't apply to TRU Gen Sets)
- December 31, 2023:
 - Zero-emission operation when stationary >15 minutes at an applicable facility
 - Electronic telematics system
 - NO_x, PM, and CO emission standards

Updated Concept: Trailer, Domestic Shipping Container TRUs, and TRU Gen Sets (Cont.)

In-Use

- December 31, 2023:
 - PM emission standard
- December 31, 2027:
 - Zero-emission operation when stationary >15 minutes at an applicable facility
 - Electronic telematics system
- December 31, 2030:
 - NO_x, PM, and CO emission standards

Updated Concept: Railcar TRUs

New

- December 31, 2023:
 - NO_x, PM, and CO emission standards

In-Use

- December 31, 2023:
 - PM emission standard
- December 31, 2030:
 - NO_x, PM, and CO emission standards



Updated Concept: Electric Utilities

- December 31, 2022:
 - Report to CARB on number of Applicable Facilities requesting service, increased electricity demand, and schedule for completion





Draft Regulatory Language

Draft Regulation Language

- Supersede existing TRU ATCM in 2021
- Responsibilities for Applicable Facility Owners and Operators, TRU Owners and Operators, TRU Manufacturers, Electric Utilities, Freight Contractors, Vehicle Owners, and Drivers

Draft Regulation Language: Applicable Facility Owner Requirements

- Report facility to CARB
- Submit compliance plan
- Complete compliance plan implementation
- Report all TRUs to CARB or certify that non-compliant TRUs are not allowed to operate onsite
- Liable for SOTL violations within Applicable Facility Geofence

Draft Regulation Language: Applicable Facility Compliance Plan

- Demonstrate how facility will ensure required TRUs use zero-emission operation when stationary >15 minutes
 - Daily average and maximum trailer TRU or TRU gen set activity
 - Operational and Efficiency Strategies
 - Zero-Emission Fueling Infrastructure
 - Implementation schedule

Draft Regulation Language: Applicable Facility Compliance Extension

- A compliance extension may be granted if certain circumstances prevent the installation of Zero-Emission Fueling Infrastructure
 - Delay in manufacture or shipment of infrastructure equipment
 - Delay in obtaining construction permit(s)
 - Delay in installation of infrastructure
 - Delay in obtaining power from a utility
 - Delay in obtaining private financing

Draft Regulation Language: TRU Owner Requirements

- Ensure TRU meets all regulatory requirements
- Register TRU with CARB
- Ensure TRU has valid CARB registration sticker
- Liable for Trailer TRU and TRU Gen Set SOTL violations

Draft Regulation Language: TRU Operator Requirements

- Ensure TRU meets all regulatory requirements
- Ensure TRU has valid CARB registration sticker
- Liable for Trailer TRU and TRU Gen Set SOTL violations

Draft Regulation Language: Freight Contractor Requirements

- Ensure TRU meets all regulatory requirements
 - Verify TRU has a valid CARB compliance label (or)
 - Check TRU CARB identification number against information contained within CARB's website

Draft Regulation Language: Vehicle Owner and Driver Requirements

- Ensure TRU meets all regulatory requirements
 - Verify TRU has a valid CARB compliance label (or)
 - Check TRU CARB identification number against information contained within CARB's website
- Liable for Trailer TRU and TRU Gen Set SOTL violations
- Do not tamper with ETS
- Allow CARB personnel to inspect TRU when requested
- Provide information to CARB when requested

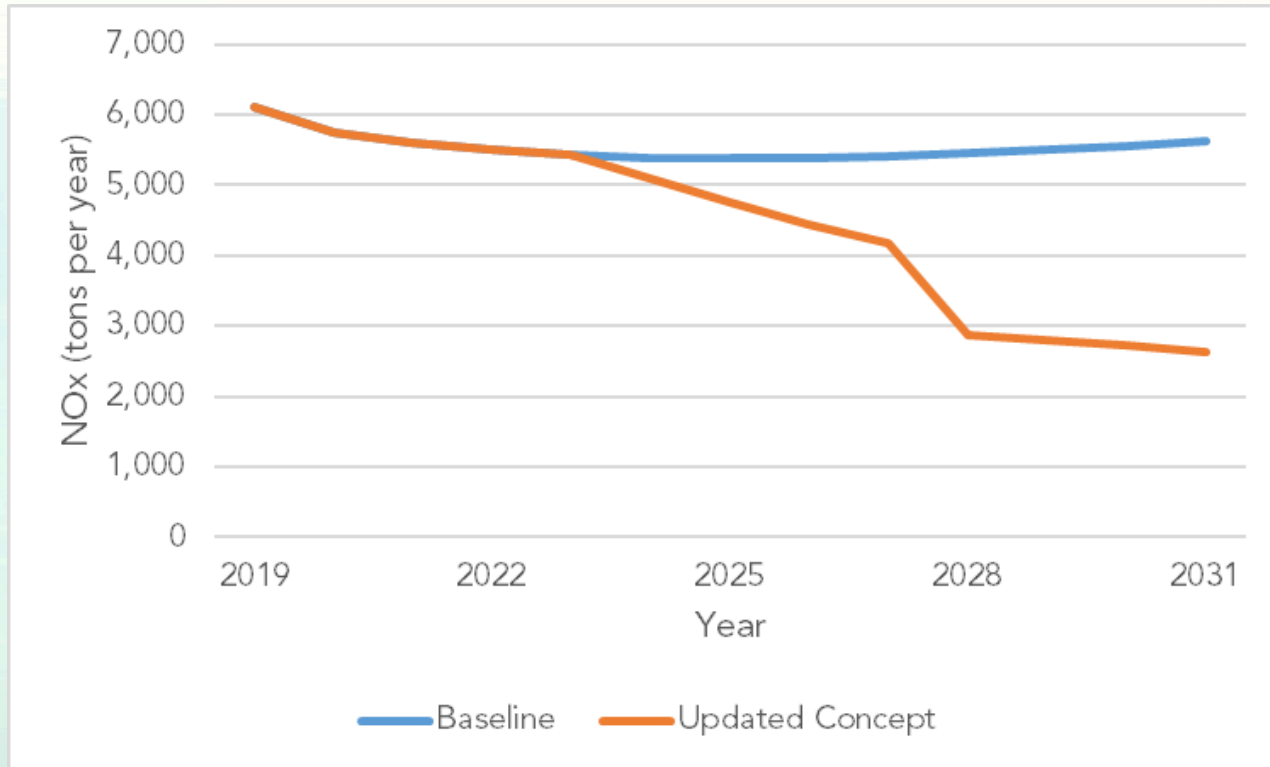


Emission Inventory Updates

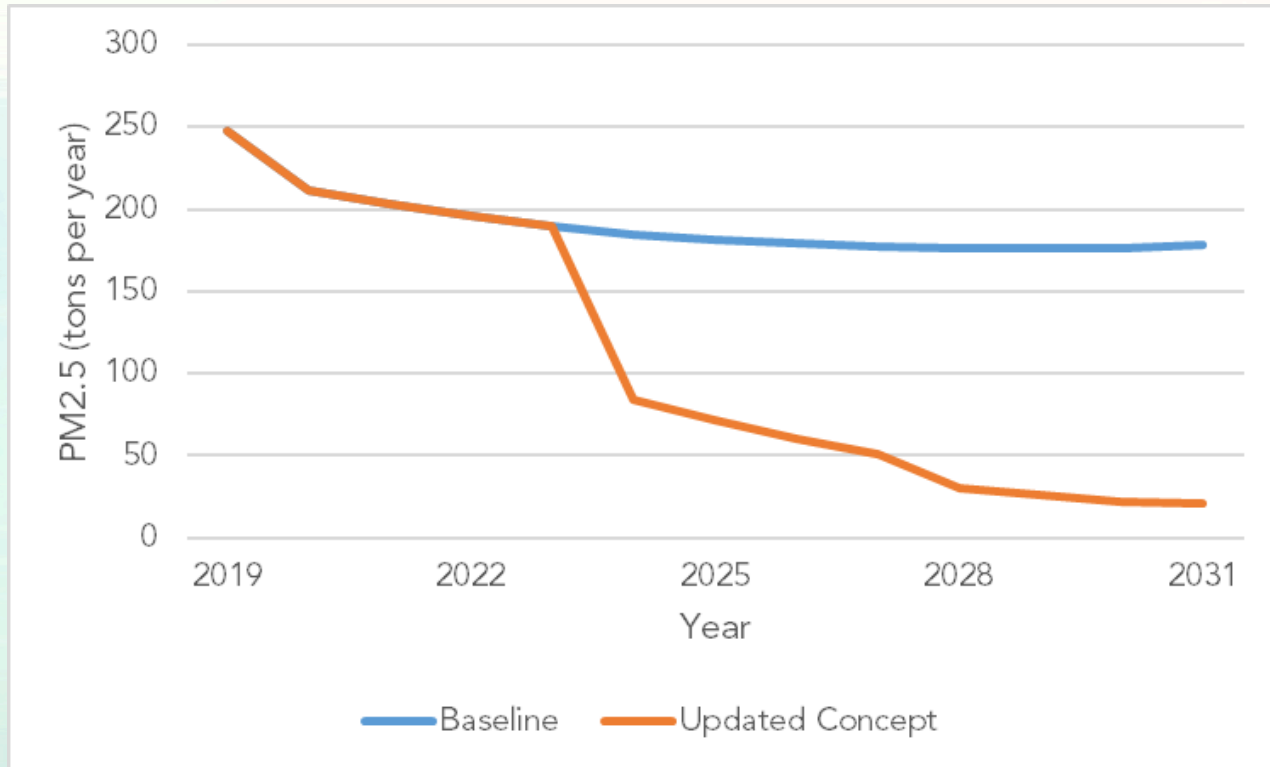
Emission Inventory Updates

- TRU inventory documentation was released in October 2019
 - https://ww3.arb.ca.gov/cc/cold-storage/documents/hra_emissioninventory2019.pdf
- Subsequent updates include revisions to:
 - TRU populations
 - Number of TRUs currently using Alternative Technology

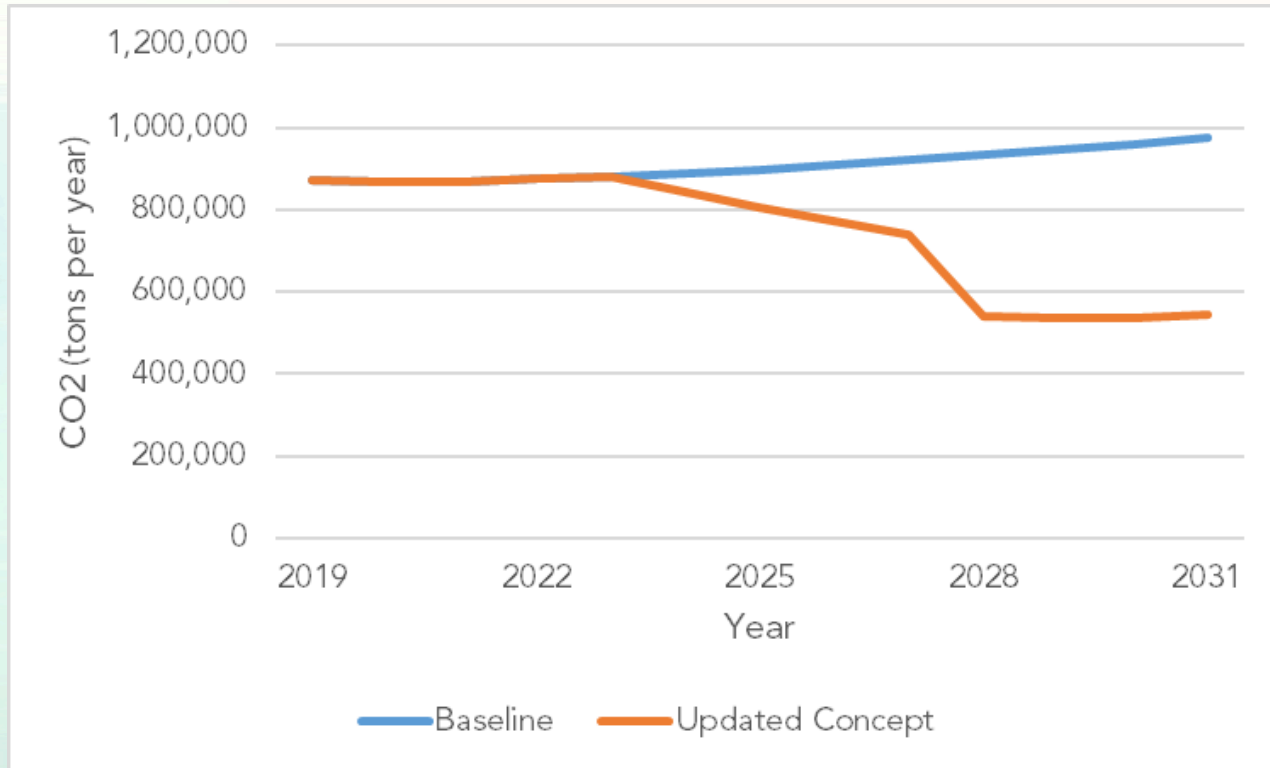
TRU Statewide NOx Emissions



TRU Statewide PM2.5 Emissions



TRU Statewide GHG Emissions

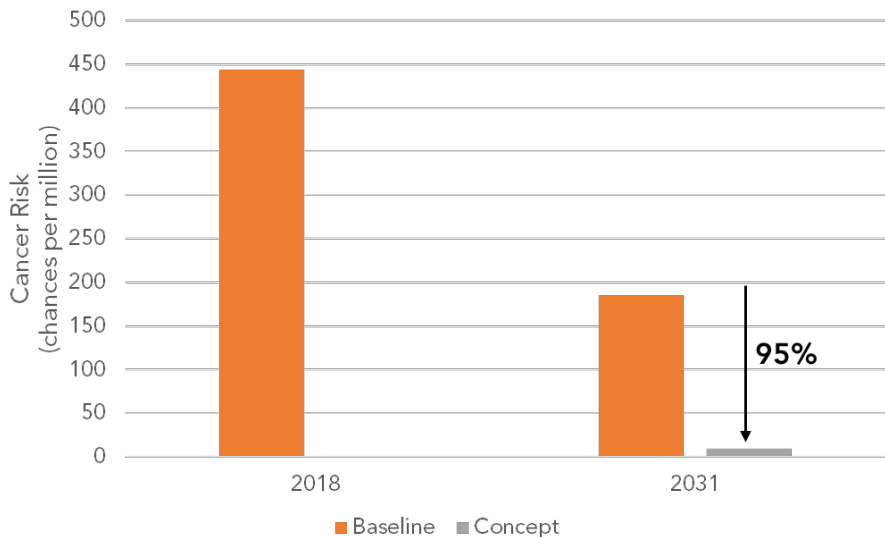




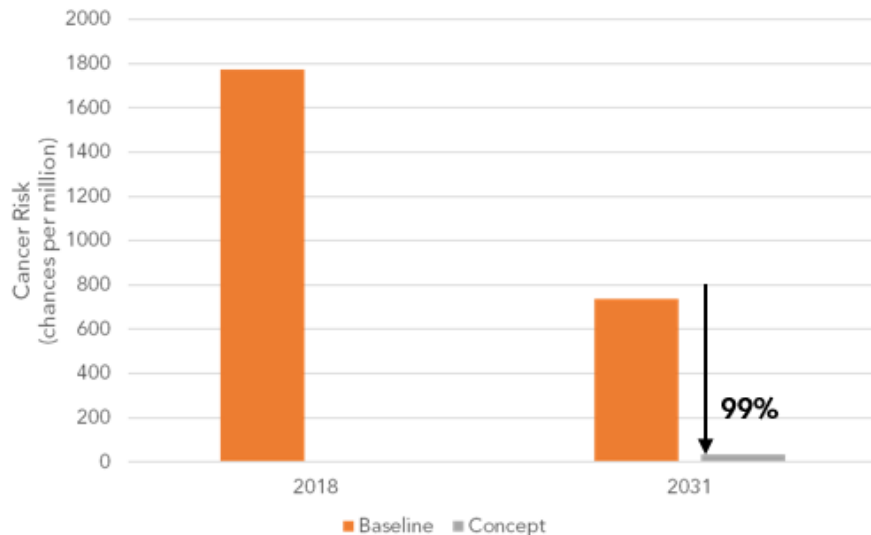
Health Analyses

Potential Cancer Risk and Risk Reduction at Cold Storage Warehouse

2,000 TRU engine hours/week



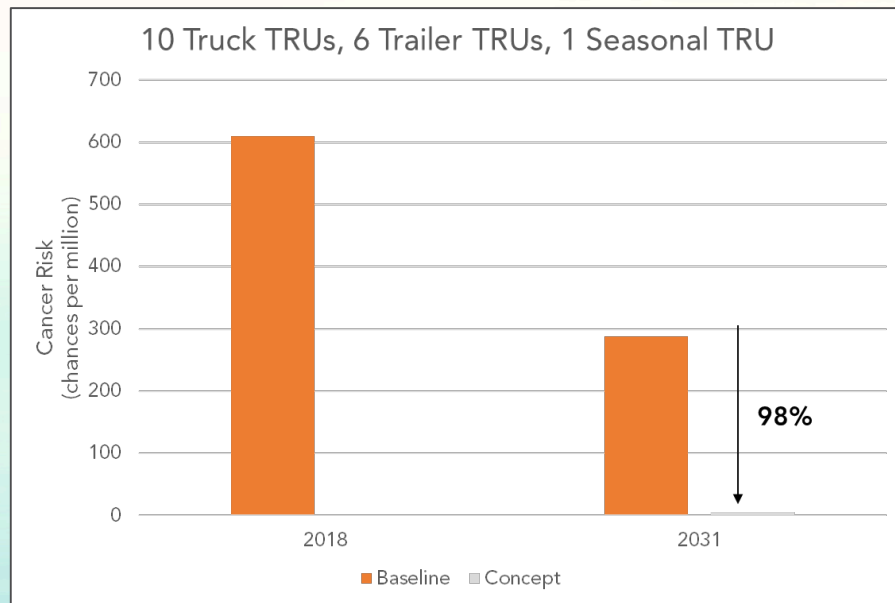
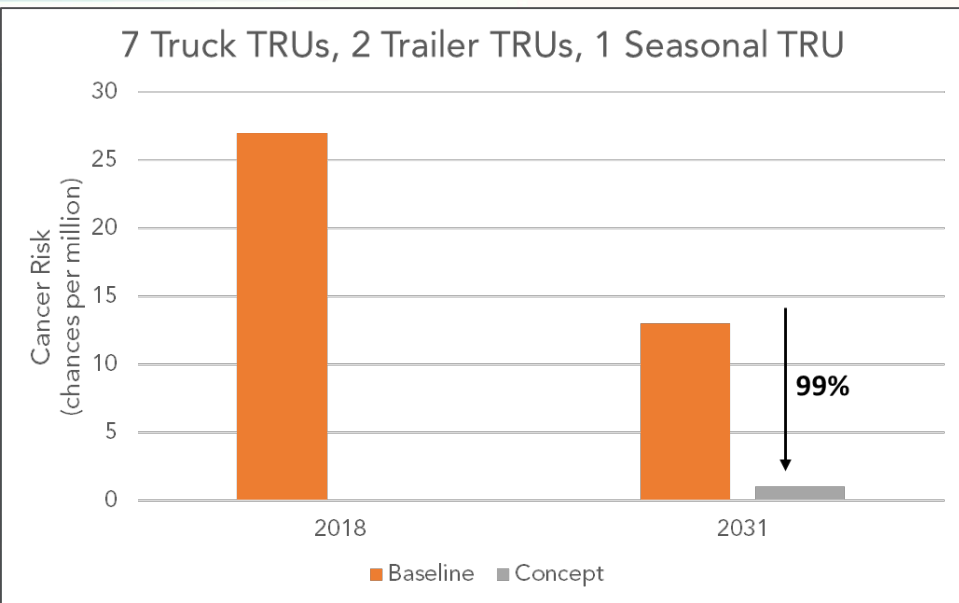
8,000 TRU engine hours/week



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 represent maximum values at the property boundary.

Potential Cancer Risk and Risk Reduction at Grocery Store



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 represent maximum values at the property boundary.



Preliminary Cost Analysis

Supplemental Economic Document

- Upcoming Supplemental Cost Document for updated concept for the new TRU Regulation
- Intent is to provide stakeholders with staffs current cost related assumptions for facilities and equipment owners
- Feedback related to cost assumptions is welcome

Assumptions: Equipment

- Trailer and domestic shipping container TRUs will opt to comply with stationary operating time limit requirement by using electric plug-in technology
- Trailer and domestic shipping container TRUs with the ability to comply with the diesel TRU emission standard using a verified emission control strategy (VDECS) will do so until final compliance date

Assumptions: Infrastructure

- Applicable facilities and truck TRU home bases have same electricity cost currently, this will be updated in the future
- Assumption: infrastructure will be added at a 15% increment annually at home bases for truck TRUs

Assumptions: Infrastructure (con't)

- Current Cost per plug at applicable facility: \$12,300
 - Value for both dock door/ parking spot
 - Same # of parking lot plugs will be installed as dock doors at refrigerated warehouse or distribution centers
 - Based on the assumption that the facility would need no additional infrastructure (i.e. substation or transformer)
 - No parking lot infrastructure at grocery and supercenters assumed

Cost Questions: TRU Owners/ Operators

- Are TRUs currently plugging in at ports?
- Current operators of trailer TRUs that are less than 25 hp, which compliance path is more realistic:
 - Install a level 3 verified diesel emission control strategy and wait until 2028/2031 to purchase a new unit
 - Purchase a new compliant unit and avoid level 3 VDECS

Cost Questions: Facilities

- Consideration of cryogenic or fuel cell technology
- TRUs idling?
 - What percent of visits occur during: off-peak, peak and super-peak
- Ports: Current plug in system
- Percent of the time facility is at full capacity infrastructure operation
- Cost Effectiveness/ Return on Investment Figures?

Next Steps

- Submit comments on draft regulatory language by March 27th
 - https://www.arb.ca.gov/lispub/comm2/bcsubform.php?listname=truregulation-ws&comm_period=1
- Staff report available October 2020
 - 45-day formal comment period
- December 2020 board hearing

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