DOCKETED	
Docket Number:	21-lEPR-06
Project Title:	Building Decarbonization and Energy Efficiency
TN #:	239481
Document Title:	Presentation - California HFC Refrigerant Policy & Regulations
Description:	SUPERSEDES TN 239467 S2.3A_Aanchal Kohli, CARB_Updated
Filer:	Raquel Kravitz
Organization:	California Air Resources Board
Submitter Role:	Public Agency
Submission Date:	8/26/2021 8:15:24 AM
Docketed Date:	8/26/2021

IEPR Workshop on Building Decarbonization
Session 2: Refrigerants, August 26, 2021

California: HFC Refrigerant Policy & Regulations

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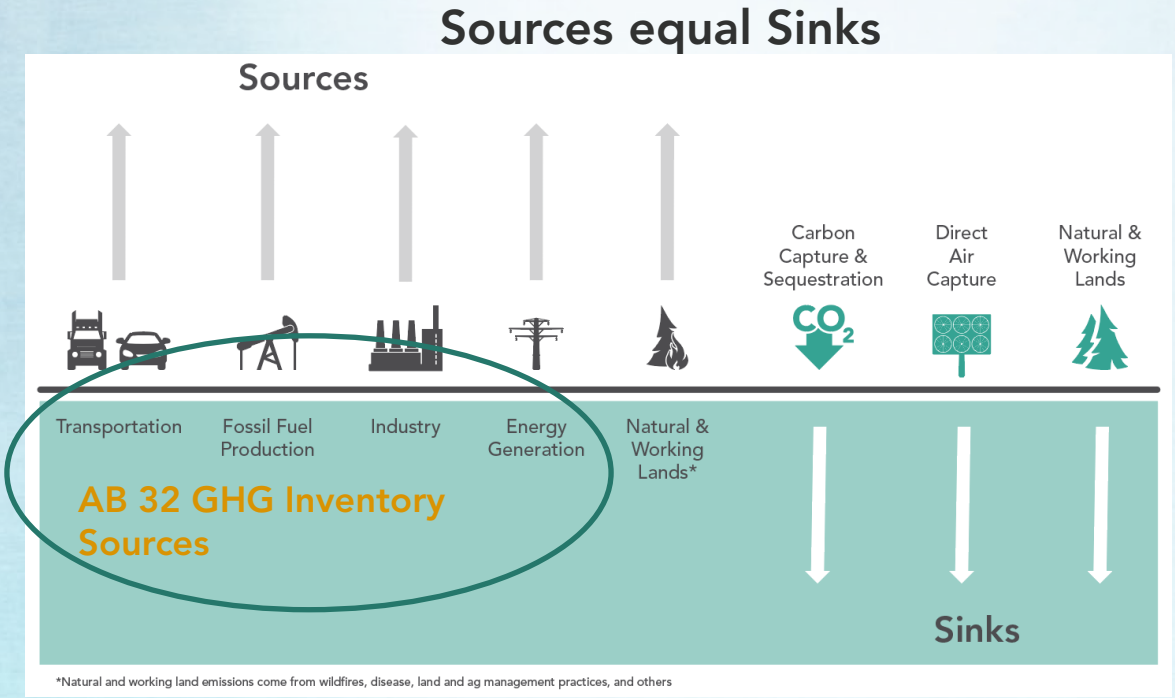
California Air Resources Board

AB 32 Climate Change Scoping Plan

- Scoping Plan(s) are action plans to ensure CA meets statewide GHG reduction targets (mandated in AB 32)
  - Scoping Plan(s) rely on a suite of climate policies to address emissions across all sectors
  - Required to be updated at least every 5 years
  - 2017 SP (most recent) – cost-effective and technologically feasible path to achieve the 2030 target
- Provide direct GHG emissions reductions and air quality benefits
- Minimize emissions "leakage" – increase to non-CA GHG emissions
  - Ensure high-road jobs remain
- Facilitate sub-national and national collaboration
- Support cost-effective and flexible compliance

Science-based Target: Achieve Carbon Neutrality (CO_2e) Mid-Century



- Continue to reduce emissions from sources in AB 32 GHG Inventory
- Reduce emissions and increase sequestration in Natural and Working Lands
- Maximize all sinks with goal of achieving net negative

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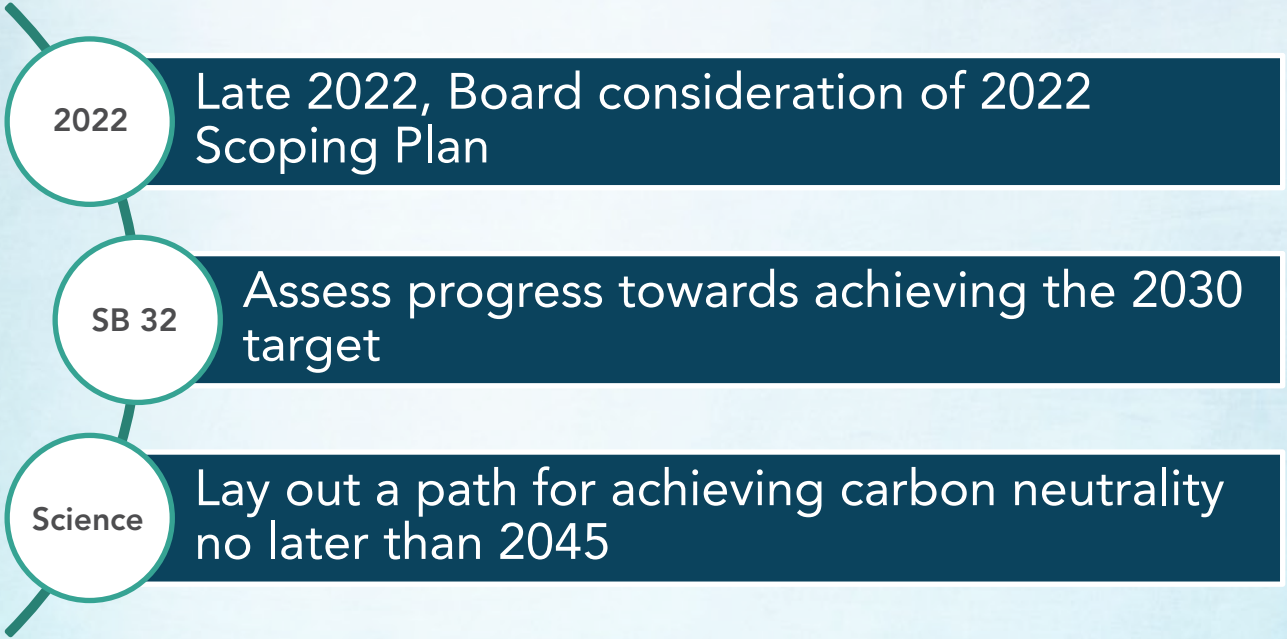
2022 Scoping Plan Update: Key Objectives



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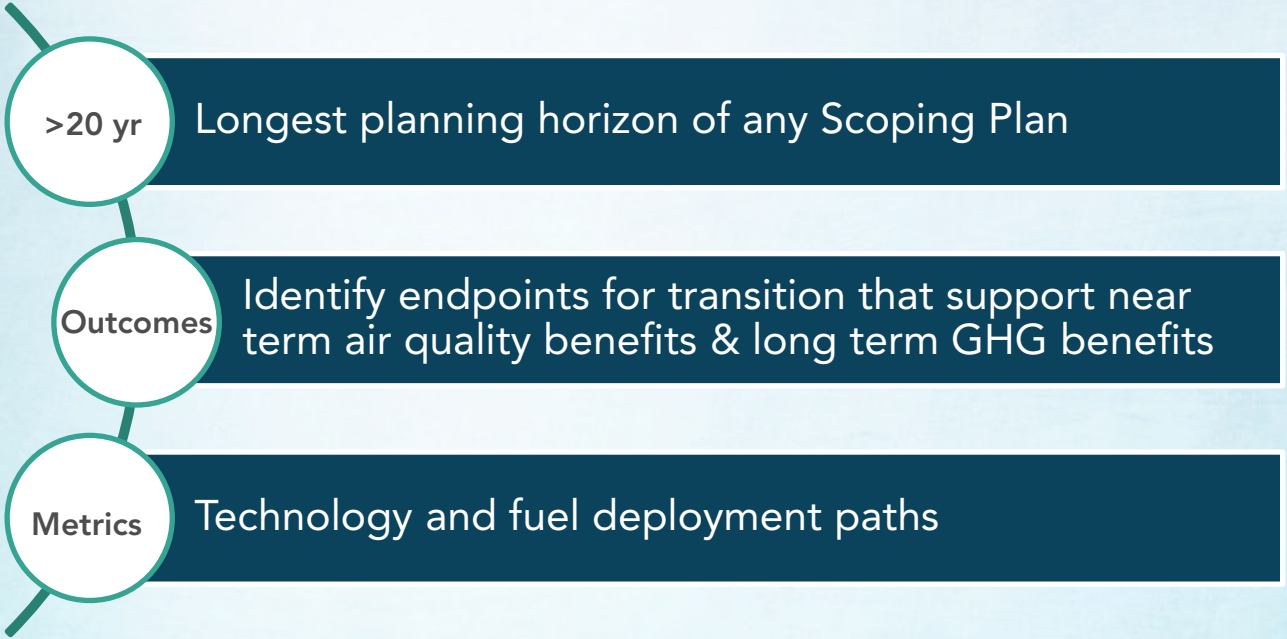
2022 Scoping Plan Update: Key Objectives, cont.



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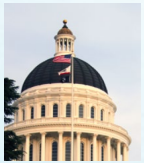
Background on Hydrofluorocarbons (HFCs)

Hydrofluorocarbons (HFCs) are potent Short-Lived Climate Pollutants

- HFCs used as refrigerants in air conditioning and refrigeration, and other uses
- HFCs fastest growing GHGs in California, nationally, and globally
- Common HFCs used today have very high global warming potentials (GWPs)

  1 lb of refrigerant R-507 (GWP 3,985) = 3,985 lb of CO_2

1,430 3,922 2,088 3,985 1,774



SB 1383 requires CARB to reduce HFC emissions 40% below 2013 levels by 2030

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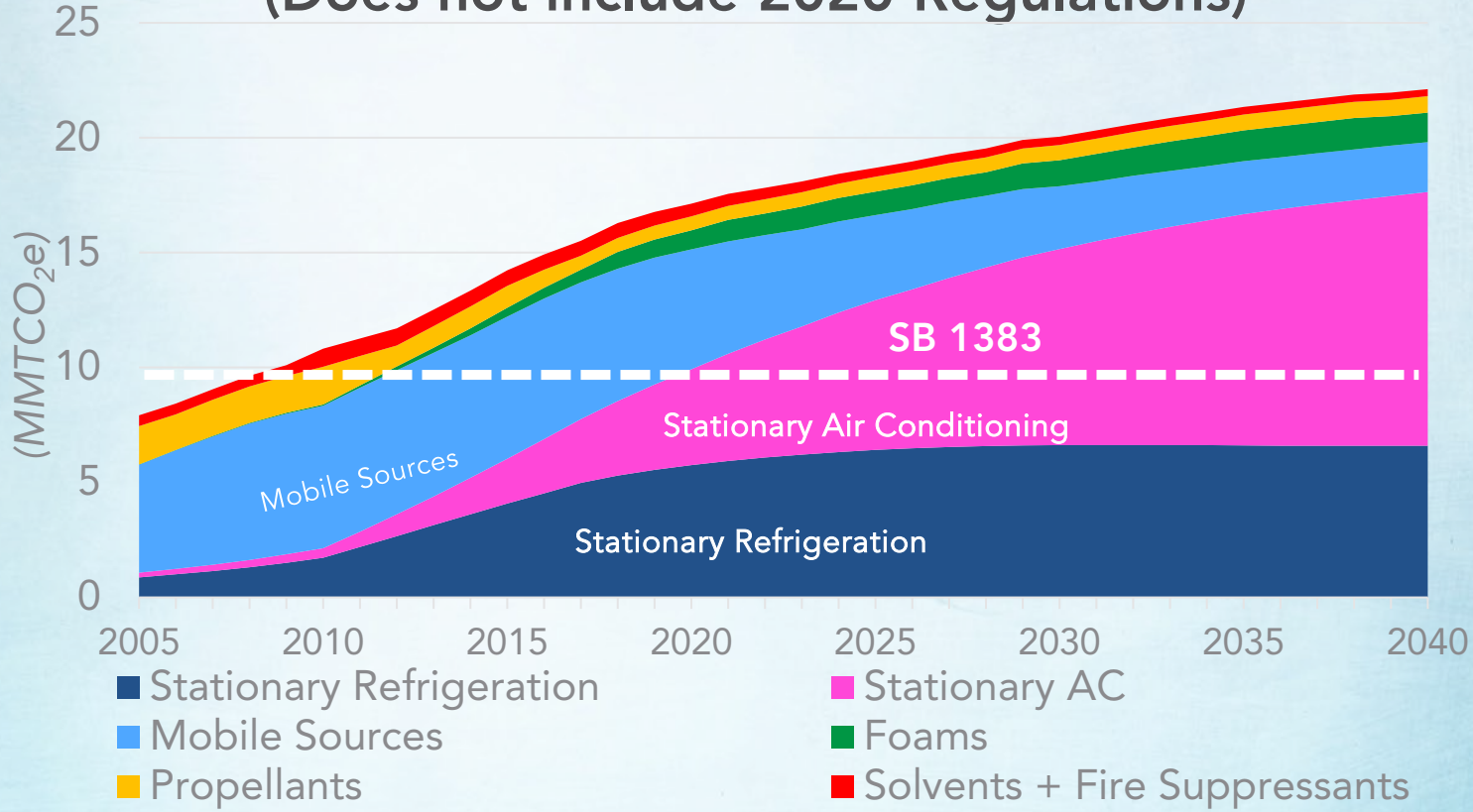
Baseline HFC Emissions Trends and Sources (Does not include 2020 Regulations)



[Source: CARB F-Gas Inventory]

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Existing and Proposed Regulations
National Action on HFCs

Refrigerant Management Program (RMP)

- Track refrigerant use in large commercial and industrial refrigeration systems
- Requires leak inspection and prompt leak repairs
- Largest refrigerant use database

Retail & Commercial

Cold Storage

Industrial Process

CA adopted Vacated Federal HFC Rules

- The California Cooling Act, SB 1013 (2018)
- High-GWP HFC prohibitions in new equipment for a range of end uses:

  Supermarket systems, Vending machines,
  Residential refrigerators, Cold Storage, Chillers,
  Foam Insulation, Aerosol Propellants

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HFC Regulation (2020)

Stationary Refrigeration

- New equipment containing more than 50 lb of refrigerant, GWP < 150, starting January 1, 2022 (>90% reductions per facility)
- Company-wide reduction targets for supermarkets and grocery stores by 2030 (>50% reductions statewide)

Retail & Commercial

Cold Storage

Industrial Process

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HFC Regulation (2020)
Stationary Air-Conditioning

- **New AC and Space Conditioning Heat Pumps, GWP < 750**
  - Room AC and other small equipment: January 1, 2023
  - Other residential and commercial AC: January 1, 2025
  - Variable Refrigerant Flow Systems: January 1, 2026

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HFC Regulation (2020)
R4 Program

- Refrigerant Recovery, Reclaim and Reuse (R4)
- AC manufacturers to use at least 10% reclaimed refrigerant
  - New equipment and/or servicing existing equipment
- First of its kind - promotes end-of-life recovery

International and National Action

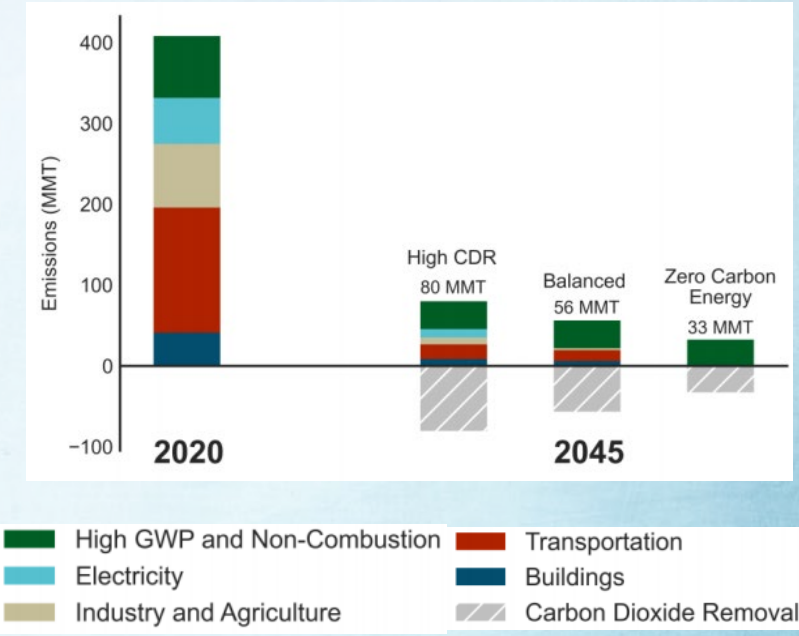
- American Innovation and Manufacturing (AIM) Act 2020
  - National HFC Phasedown
  - Refrigerant Management
  - Technology Transitions
- Global HFC Phasedown: Kigali Amendment to the Montreal Protocol, effective 2019

Building Decarbonization

Reducing HFCs is Critical for Carbon Neutrality

- By 2045, HFCs among the largest remaining GHG sources
- HFC reductions integral for achieving state's long-term climate goals
- HFC emissions expected to increase with building electrification through adoption of heat pump technologies

Greenhouse Gas Emissions by Sector in 2020 and 2045



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[Source: Energy and Environmental Economics, Inc., 2020, Achieving Carbon Neutrality in California.*]*

Incentives

Incentives for Low-GWP Refrigerant Technologies

- The California Cooling Act (SB 1013)
  - Established an incentive program for low-GWP refrigerant technologies
  - CPUC, CEC and CSD required to consider low-GWP refrigerants in existing programs

- Coordination on incentives for building decarbonization

Next Steps

- CARB is evaluating additional measures to meet CA's short-term and long-term climate goals
- Upcoming SLCP Scoping Plan Workshop on 9/8/2021

Register for the Scoping Plan Workshop: Registration (gotowebinar.com)
Subscribe to the HFC Listserv: California Air Resources Board (govdelivery.com)
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