

Proposed Prohibitions on High-GWP HFCs in New Refrigeration and Air-conditioning

January 30, 2020



For Remote Attendees:



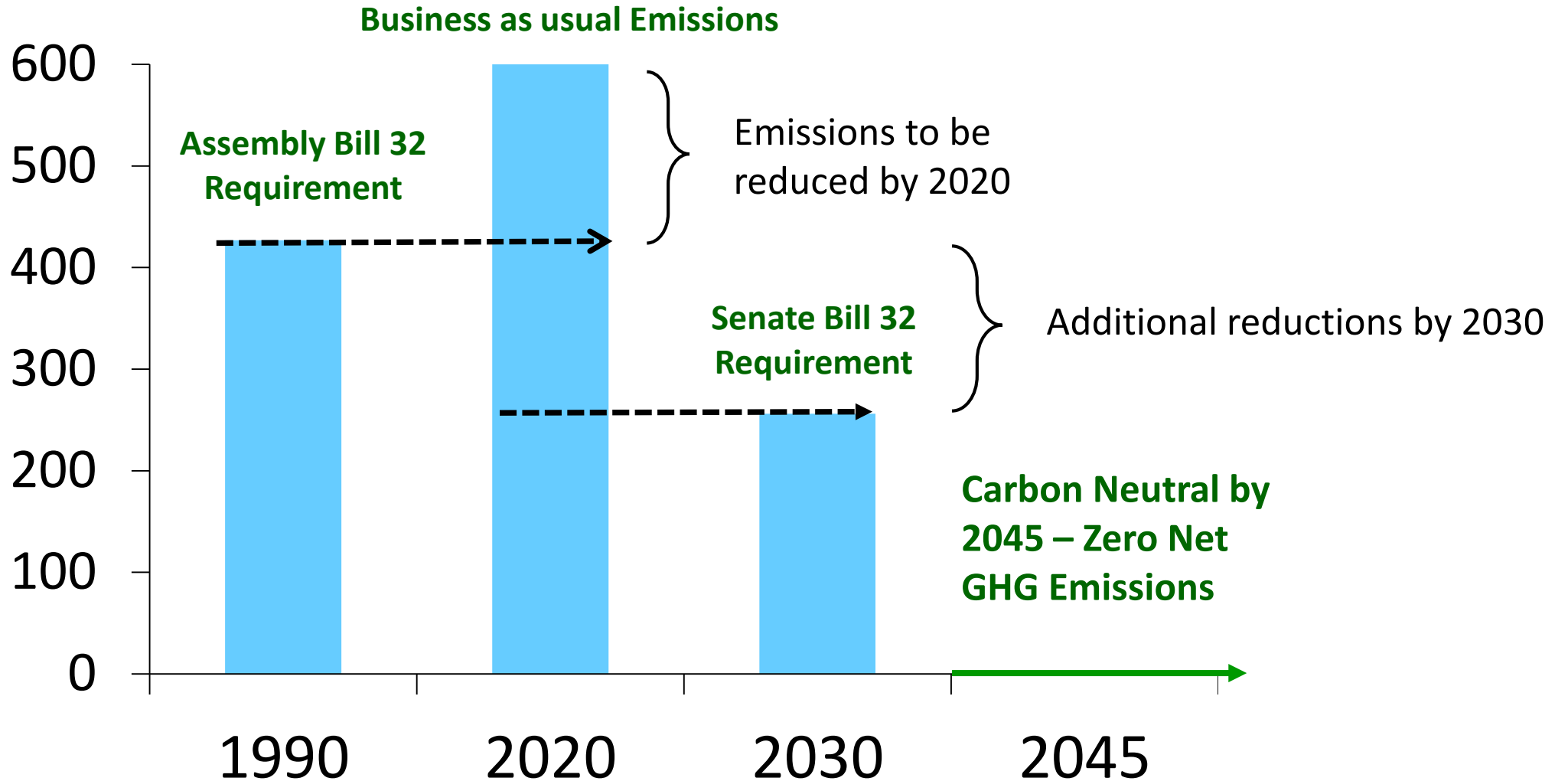
Please email your questions to:

Auditorium@CalEPA.ca.gov

Why HFC reductions? Part of Comprehensive GHG Emissions Reductions Goals in CA, from All Sources



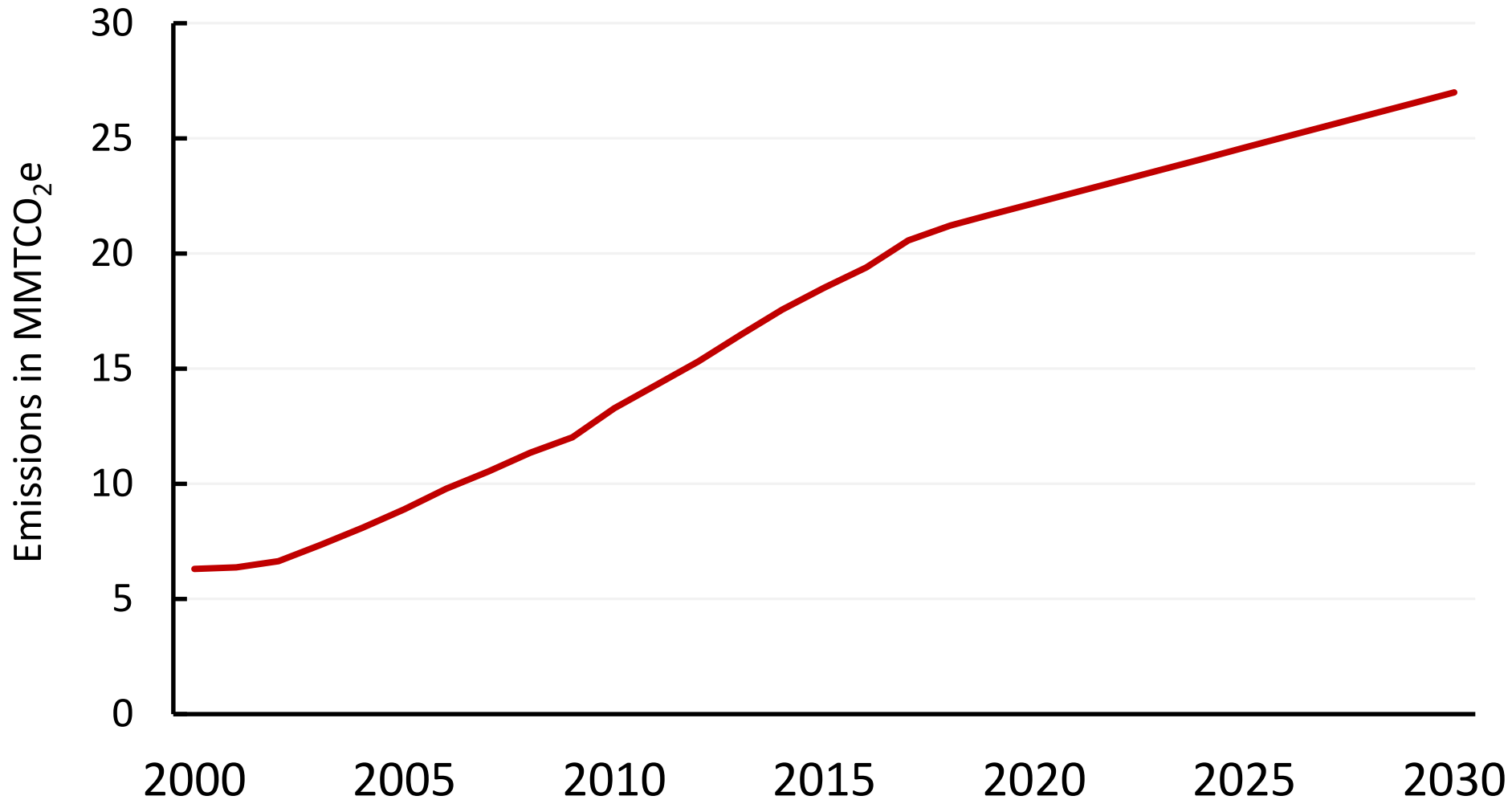
Total GHG
Million
Metric
Tonnes CO₂-
equivalents
(MMTCO₂e)



SB 1383 Requires a 40% reduction in HFCs



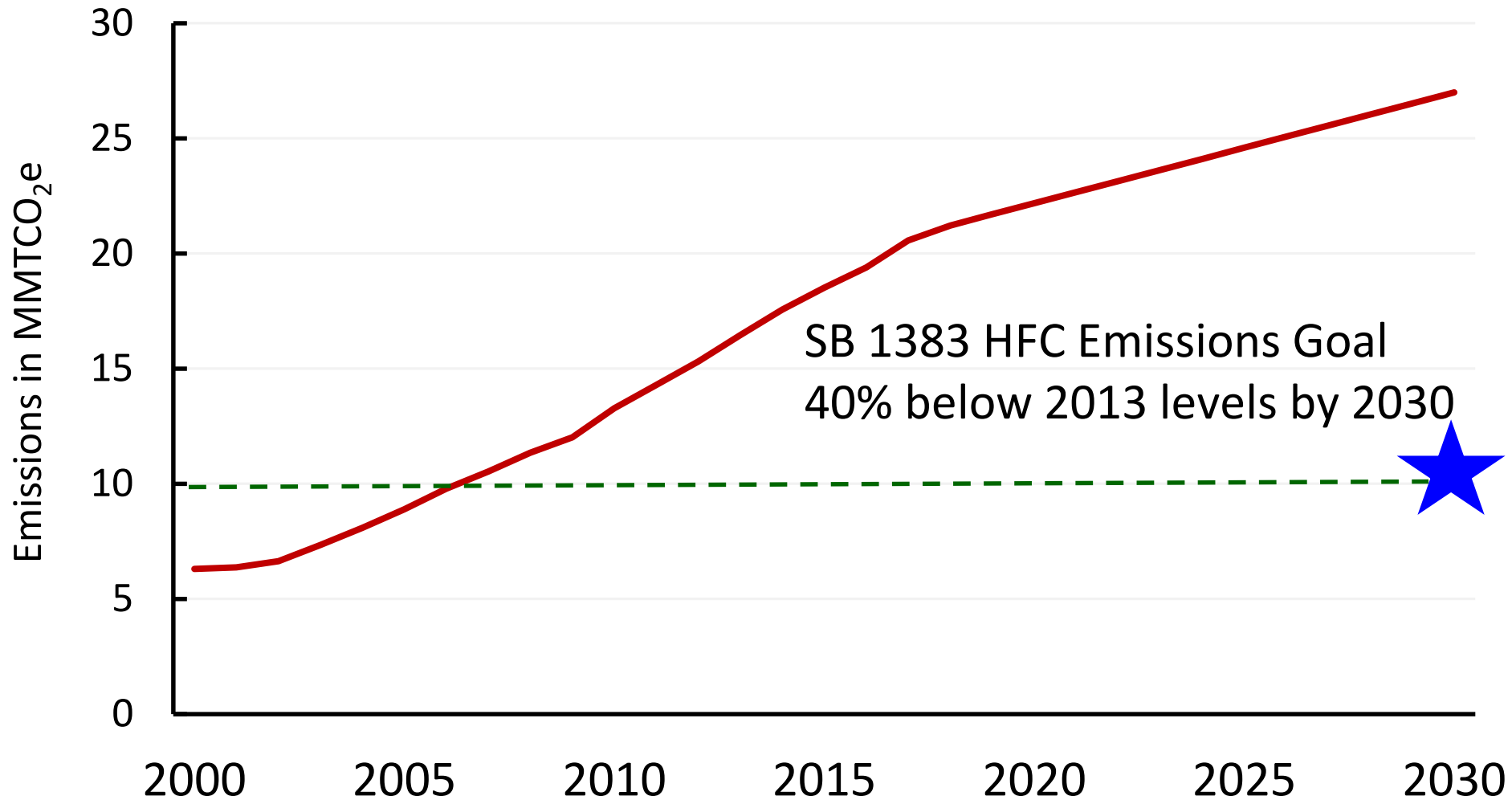
HFC Emissions in California 2000-2030 (BAU)



SB 1383 Requires a 40% reduction in HFCs



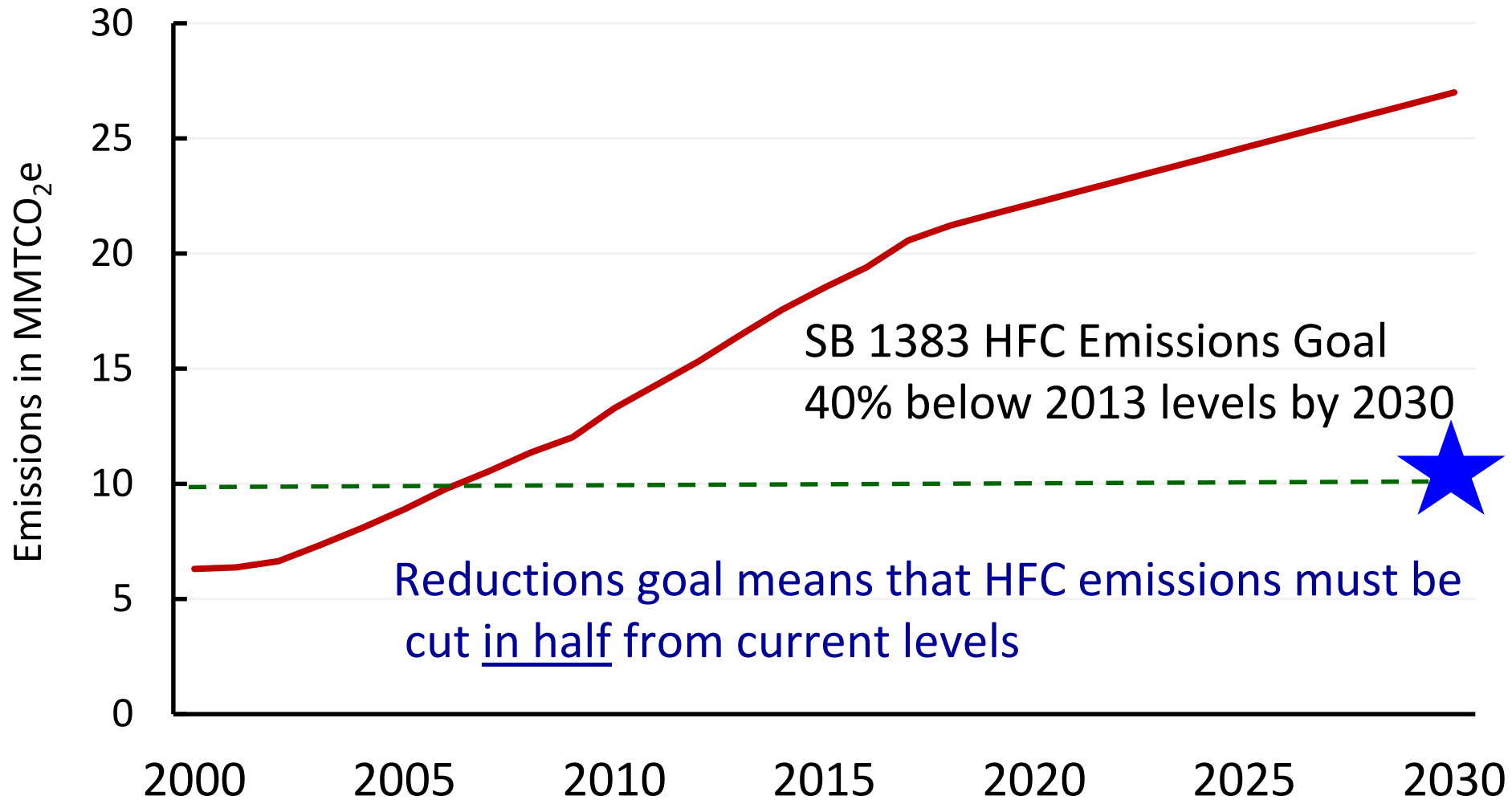
HFC Emissions in California 2000-2030 (BAU)



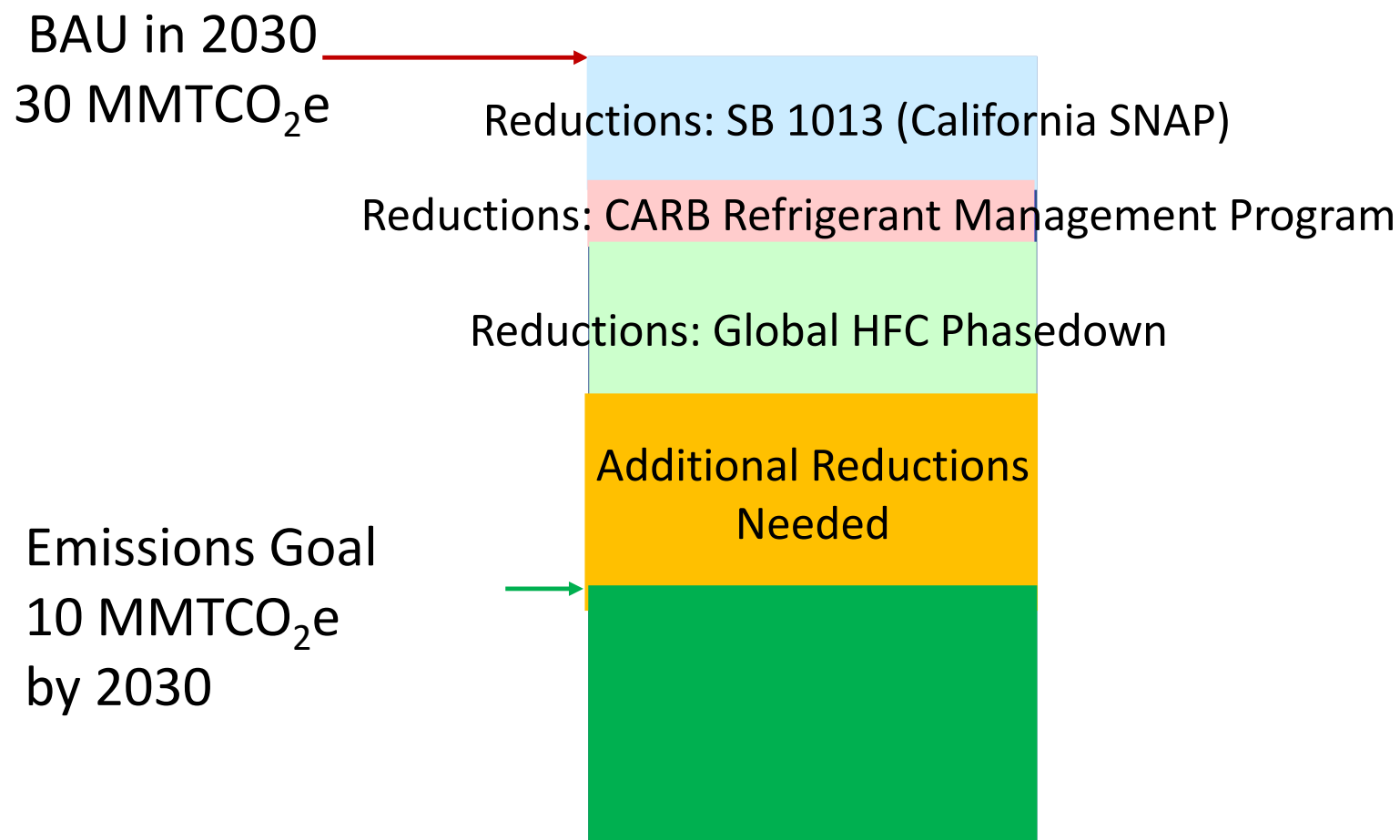
SB 1383 Requires a 40% reduction in HFCs



HFC Emissions in California 2000-2030 (BAU)



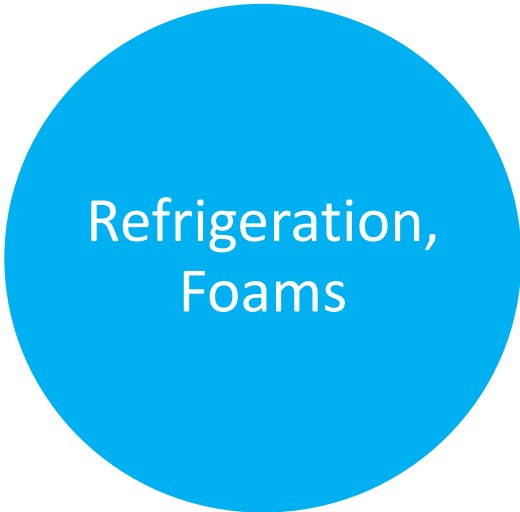
Four HFC Reductions Strategies in California: All four are needed to meet SB 1383 reductions goal



Administrative Updates to HFC Regulation



Initial HFC
Regulation
Adopted
March 2018



SB 1013
Signed
September
2018



Administrative Update to
California SNAP Regulation now
includes SB 1013 prohibitions
January 2020 (Section 100)

- March 2018 requirements have not changed.
- SB 1013 requirements have not changed.
- They are now one regulation in one place.
- Proposed regulations (to be discussed today), will be added to the 'California SNAP' regulation.

Questions?

Webinar: email questions to:
Auditorium@CalEPA.ca.gov

Draft regulation text:

<https://ww2.arb.ca.gov/our-work/programs/hfc-reduction-measures/meetings-workshops>

Public Workshop

Proposed GWP Limit for New Stationary Air Conditioning Equipment

January 30, 2020

Greenhouse Gas Reduction Strategy Section
Research Division
California Air Resources Board
kathryn.kynett@arb.ca.gov
Phone: (916) 323-8598

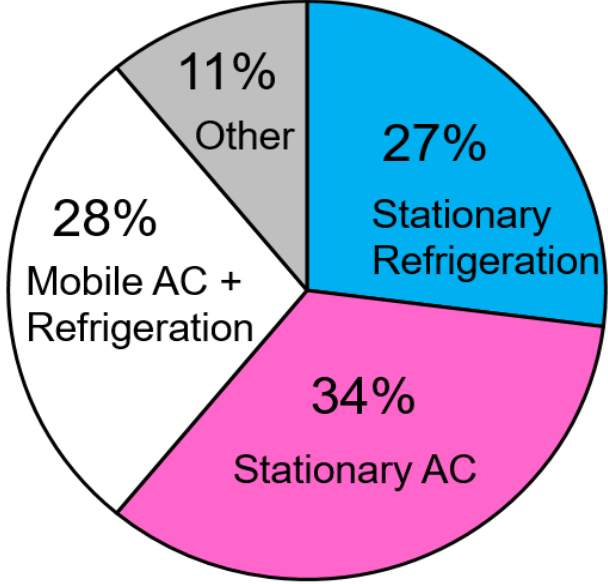


Today's Presentation

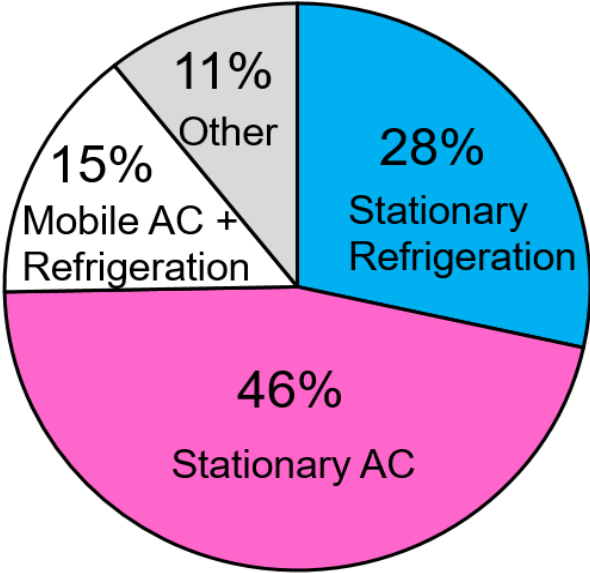


- Background
- Draft Regulatory Text
- Next Steps and Anticipated Timelines
- Discussion

HFC Emissions in California



Year 2018



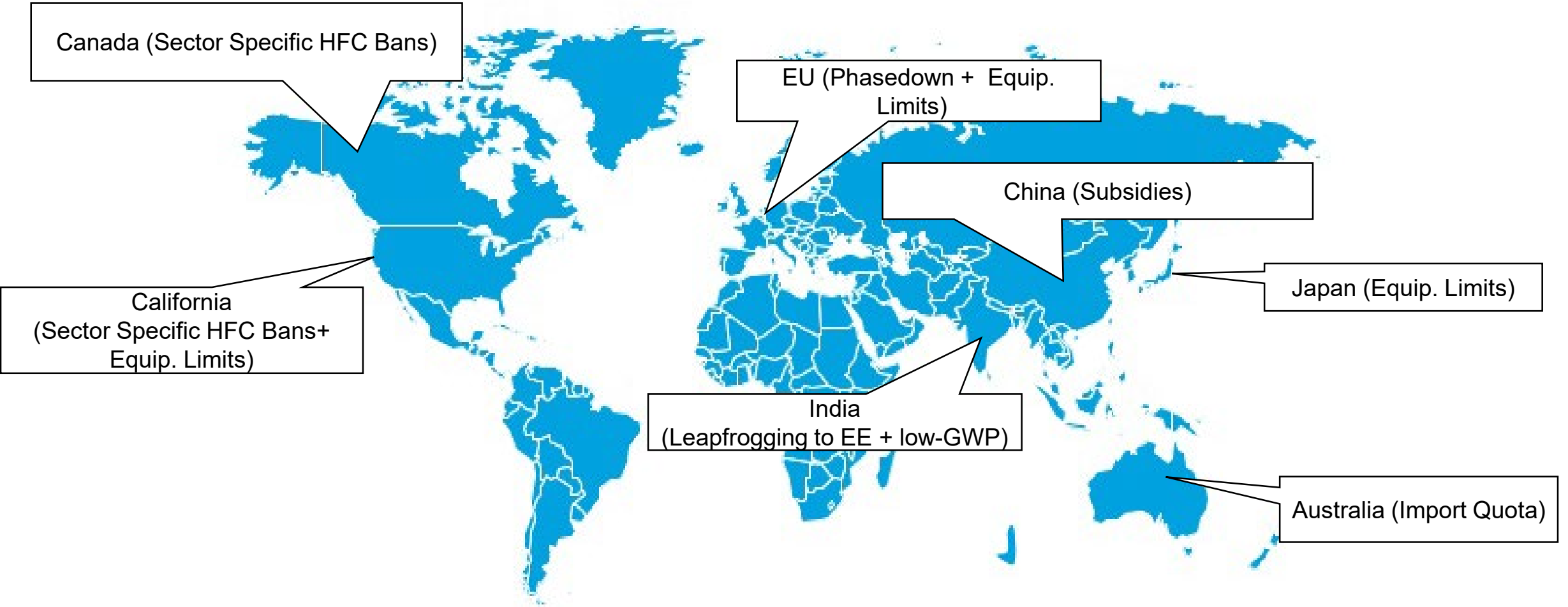
Year 2030 (Projected)

[Source: CARB F-Gas Inventory, 2017]

Effective January 1, 2023, new air conditioning systems must use a refrigerant with a global warming potential (GWP) value < 750

Background

How does California fit in with Policies Driving Refrigerant Changes in AC Globally?



Status of <750 GWP Alternatives



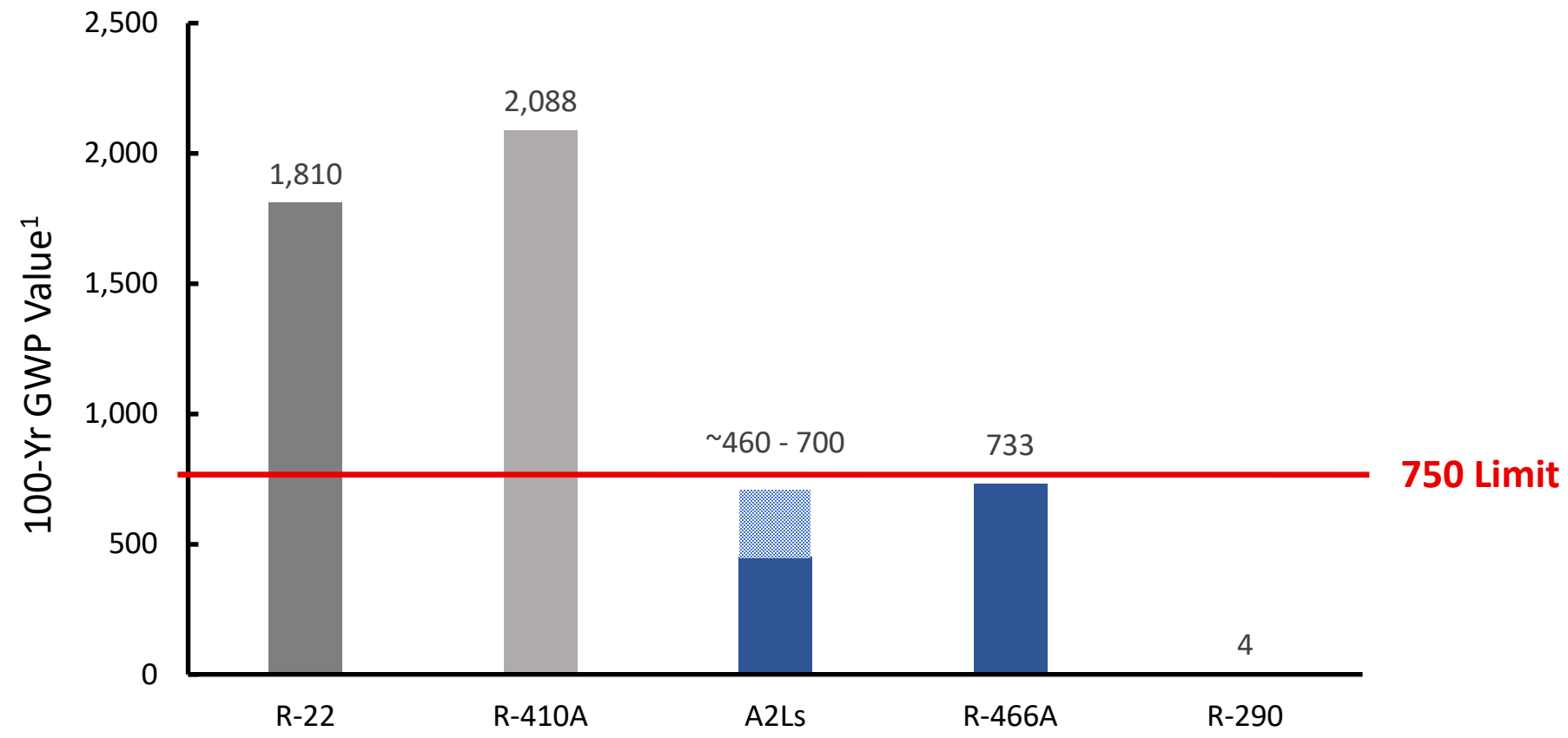
Category	Global Status	California Status
Room AC (window/wall + portable)	●	●
Ductless split systems	●	◐
Ducted split + package systems	◐	◐
Small VRV/VRF	●	◐
Larger VRV/VRF	◐	◐

● commercially available

◐ Product under development or pending codes/standards updates

[Source: Adapted from "The Future of Air Conditioning for Buildings, 2016]

R-410A Refrigerant Alternatives <750 GWP

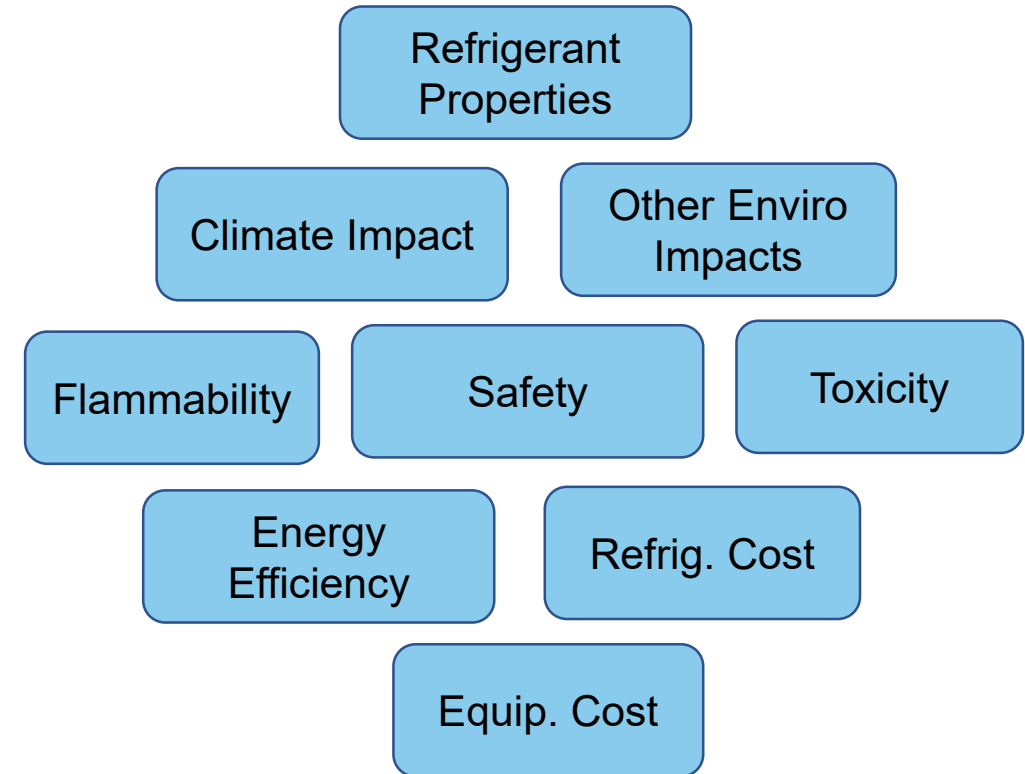


¹100-Year GWP Values are from the 4th IPCC Assessment Report (AR4)

- Being phased out under the Montreal Protocol
- Refrigerants under 750 GWP

How are refrigerants evaluated?

- Product and Application Safety Standards
- U.S. EPA SNAP
- California Building Code



Evaluation Criteria

Regulatory Text

GWP Limit for Stationary AC



§ 95374. List of Prohibited Substances.

Part of Table 3 in the draft regulatory text

General End-Use	Specific End-Use	Prohibited Substances	Effective Date
Air-conditioning			
Air-conditioning equipment	Air-conditioning equipment (new), residential and non-residential	Refrigerants with a GWP of 750 or greater	Prohibited as of January 1, 2023

§95377. Requirements Applicable to Table 3 of Section 95374(c).

(a) *Prohibitions.* No person shall sell, lease, rent, install, use, or enter into commerce in the State of California, any end-use equipment or product manufactured after the effective date, that does not comply with Table 3 of section 95374(c) of this

AC Equipment Categories

residential + non-residential

Room AC + Dehumidifiers



portable



window and through-the-wall



packaged terminal AC (PTAC)
packaged terminal HP (PTHP)



dehumidifiers

Ducted/Ductless



smaller ductless, ducted split and packaged systems used in residences



ductless and ducted systems used in commercial/nonresidential applications



**GWP <750
beginning
2023**

§ 95373. Definitions.

“Air-conditioning Equipment” or “Air-conditioning System” means equipment that cools enclosed spaces in residential or non-residential settings, including room air conditioning such as window units, packaged terminal air conditioners (PTAC), packaged terminal heat pumps (PTHP), and portable air conditioners; central air conditioners (i.e., ducted); non-ducted systems (both mini and multi splits); packaged rooftop units; water-source and ground-source heat pumps; and other products. Air-conditioning also includes computer room and data center cooling. Chillers are defined separately from “air-conditioning equipment.”

§ 95373. Definitions.

“New Air-conditioning Equipment” means any air-conditioning equipment that is first installed using new or used components, or a new condensing unit in an existing system, or a new evaporator unit in an existing system.

Requirements that Support Enforcement



- Recordkeeping (manufacturers)
- Labeling: date, refrigerant type + amount



§95377. Requirements Applicable to Table 3

❖ Recordkeeping: Any person who manufactures new AC equipment shall maintain for five years and make available, upon request:

- Contact details of purchaser (name, address, telephone, email).
- Model and serial number of the equipment and / or components where applicable.
- Date of manufacture of the equipment.
- Date of sale of the equipment.
- The refrigerant type(s) the equipment is designed to use.
- The refrigerant and full charge capacity of the equipment, where available.

§95377. Requirements Applicable to Table 3

- ❖ Labeling: Display a label on the equipment that clearly and visibly indicates:
 - The type of refrigerant.
 - The refrigerant charge size in ounces, pounds, or kilograms; and
 - The date of manufacture, indicating at a minimum, the four digit year of manufacture in standard format.
 - Existing labels meeting these requirements may be used.

Next Steps

Next Steps and Anticipated Timelines



Stationary AC Equipment	
Public workshops and Stakeholder meetings	October 2017, October 2018
	Technical Working Group: March 6, 2019
	Technical Working Group: August 6, 2019
	2 nd Workshop: January 2020
45-Day Notice	June 5, 2020
Board Meeting	July 23/24, 2020
Regulation Effective Date	January 1, 2023

Rulemaking Overview



Stakeholder Meetings
and Public Workshops
2017 – 2020

45-day Comment Period
June 2020

Board Hearing
July 2020



Staff present regulatory
concepts

↓
“Major”
Regulation
Econ
Analysis -
SRIA

Staff publishes proposal,
costs and impacts in the
“Initial Statement of
Reasons” (ISOR or staff
report)

Staff present proposal to Board

Board may accept proposal or
direct staff to make changes

**Solicit stakeholder
input**

**Public may submit written or verbal comments on
staff proposal to Board**



Feedback and Questions – Contact Us

Richie Kaur, Proposed HFC Regulation on Refrigeration
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For more information, please visit:

<https://ww2.arb.ca.gov/our-work/programs/stationary-hydrofluorocarbon-reduction-measures>

Discussion

Proposed Regulatory Language for Refrigeration Equipment

January 30, 2020



Today's Presentation

- Background on Rulemaking Development
- Updated Proposed Rules for Refrigeration Equipment
- Draft Regulatory Text
- Next Steps and Anticipated Timelines

Background on Rulemaking Development

Original Proposal

Stationary Refrigeration: New equipment containing more than 50 lbs. of refrigerant, GWP < 150, starting January 1, 2022

All new equipment would be subject to this, irrespective of whether installed in new facilities / remodels / existing facilities

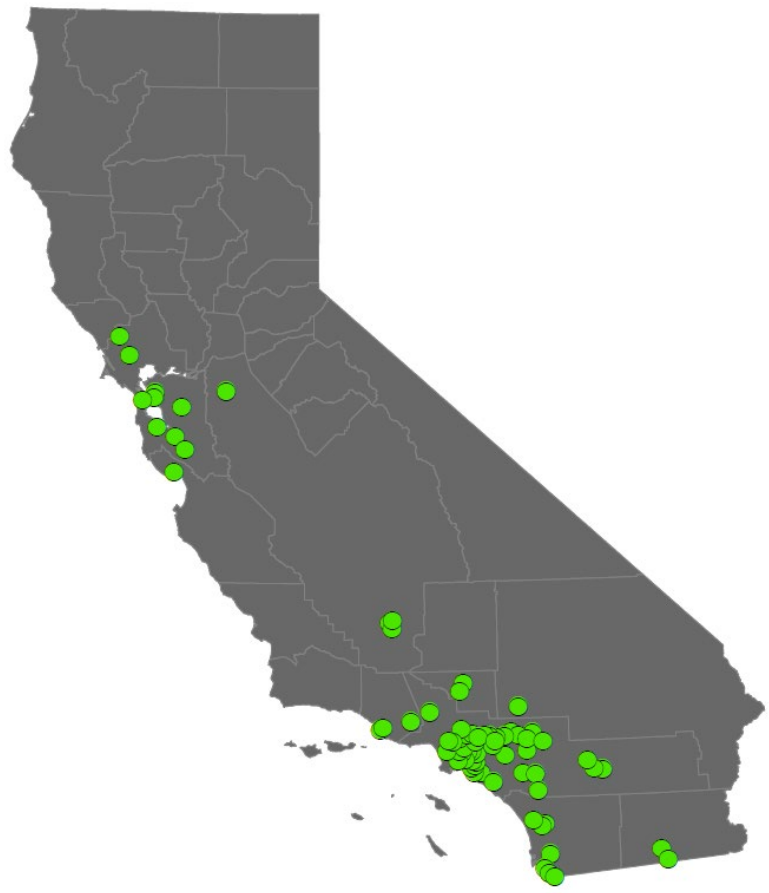
- Commercial Refrigeration
- Industrial Process Refrigeration
- Cold Storage

Currently subject to RMP

Refrigeration Technologies GWP < 150



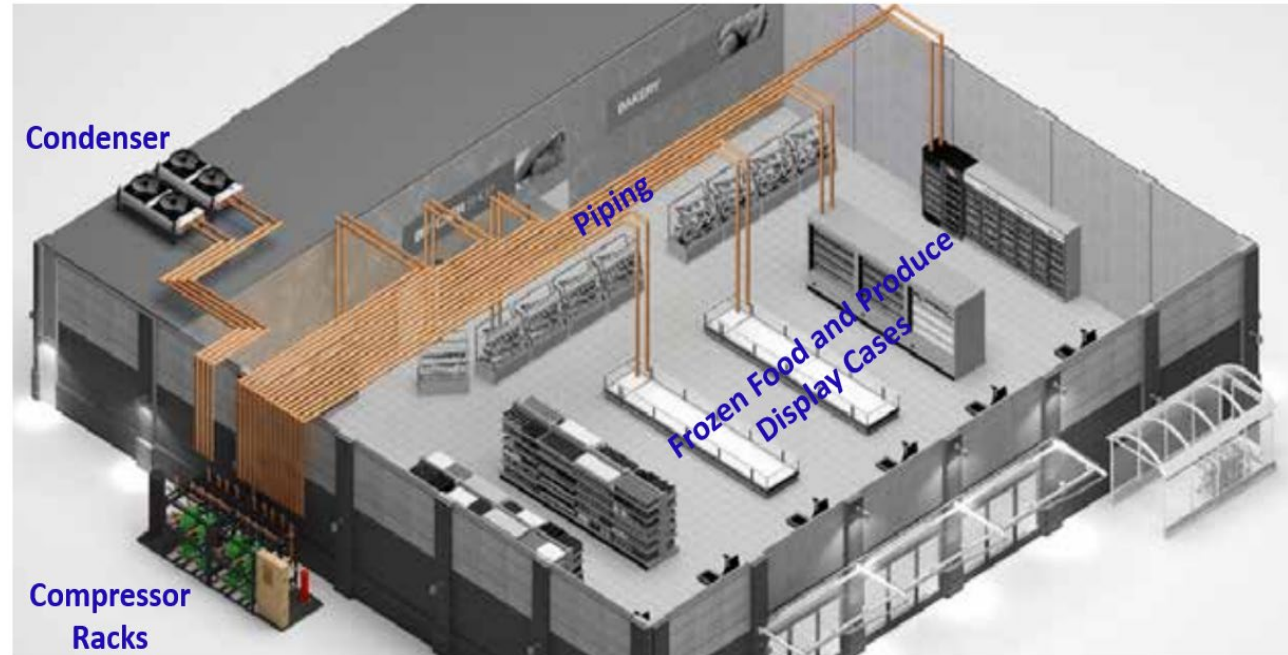
End-Use Sector	Low-GWP Options Currently Available
Retail Food Refrigeration (e.g., Supermarkets and grocery stores)	<ul style="list-style-type: none"> • Transcritical CO₂ • Ammonia/CO₂ cascade • Propane/CO₂ cascade • Micro-distributed Propane systems • HFO/CO₂ or HFOs-based systems
Industrial Process Refrigeration and Cold Storage	<p><i>Majority already use ammonia</i> others: Transcritical CO₂, NH₃/CO₂, Low-charge ammonia, HFO-based systems</p>



80+ supermarkets in California using low-GWP refrigerants in 2019

Stakeholder Input to CARB about GWP < 150

- GWP < 150 feasible in new construction and remodels
- Currently, in existing facilities:
 - GWP < 150 is expensive and logistically challenging

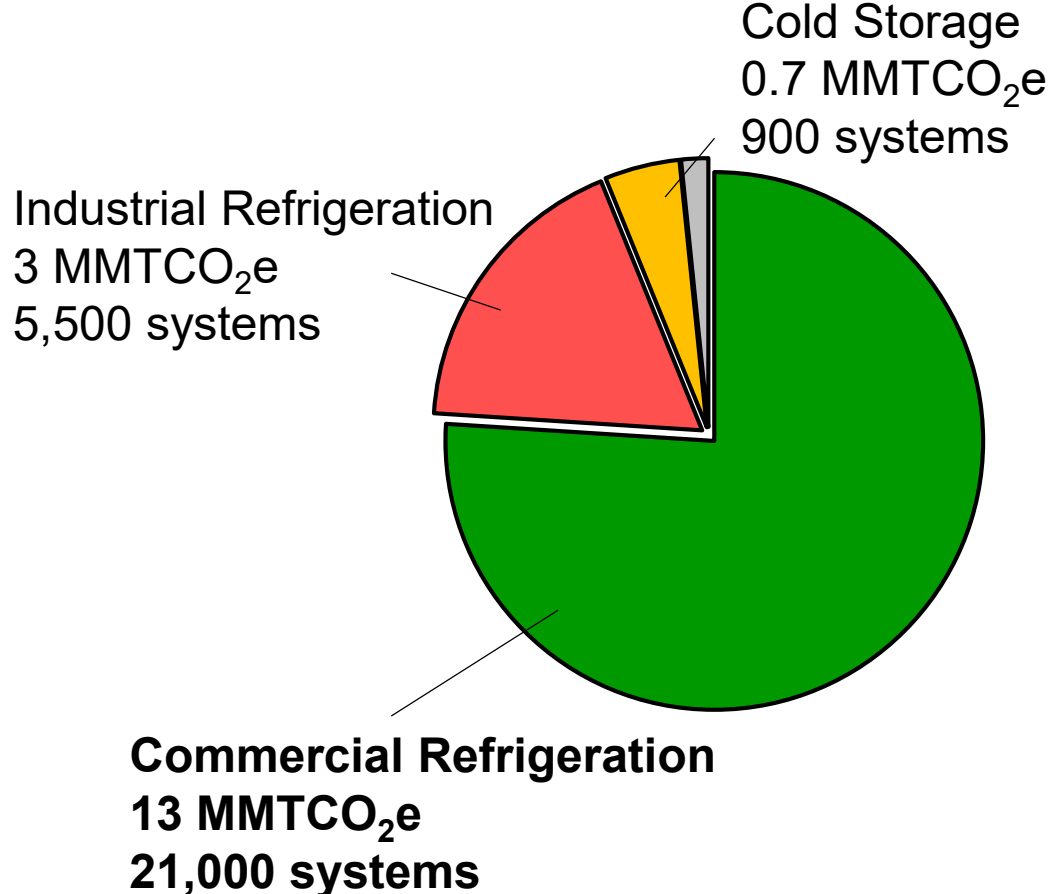


Original Image Source: Kysor Warren

Challenge: Feasibility of GWP < 150 in Existing Facilities



- Only 1 – 2% new facilities + remodels annually
- Most of the new systems will go into existing facilities
- Existing facilities / stores have the highest potential for emissions and reductions



Source: CARB Refrigerant Management Program, 2018

HFC emissions (in CO₂ equivalents) =

System charge × Refrigerant GWP × Leak Rate

Ways to guarantee emissions reductions:

- GWP reduction
- Charge reduction (verification can be complicated)

(Leak rates factored under RMP)



CARB Proposed HFC Reduction Measure

New Systems
<150 GWP
(in new construction / remodels / existing facilities)



Hurdles

In Existing Stores
<150 GWP
Cost, Logistics,
Capital cost
threshold



End-User Alternative Proposals

New Systems
<150 GWP in New Construction / Remodels

Existing Stores Option 1:
Prescribed Retrofits

Existing Stores Option 2:
GHGp Reduction

CARB "Hybrid" Option

Existing Stores Option 3:
Weighted GWP Reduction

Prescribed Retrofits to GWP < 1,400

- Existing systems retrofit to GWP < 1,400 by 2030
- Certainty of emissions reductions, straightforward implementation
- Lacks flexibility – potentially every system (above 50 pounds) using high-GWP refrigerants would be affected

Greenhouse Gas Emission Potential (GHGp) Reduction

- **$GHGp = \Sigma(\text{Charge} \times GWP)$**
- Reduce GHGp by 55% below 2018 baseline by 2030
- A per-company target, not per-system or per-store
- Flexible – don't have to convert / retrofit every single store or system
- Credit for charge and GWP reduction

Potential Challenges

- Tracking and reporting each company's baseline (sales, transfers etc.)
- Charge reduction – verification is difficult, needs additional recordkeeping / reporting
- No credit for “nominal” charge reduction; must accompany significant changes

Weighted-Average GWP Reduction

- **Weighted-Average GWP** = $\frac{\Sigma(\text{charge} \times \text{GWP})}{\Sigma \text{ charge}}$
- Target: Weighted GWP of each company < 1,400 by 2030
- Fixed target, no need for tracking company baselines
- Fixed target but still per-company, not per system
- Flexible – don't have to convert / retrofit every store or system
- Rewards conversion to lower and low-GWP refrigerants in existing stores

Updated Proposed Rules for Stationary Refrigeration

Current (Updated) CARB Proposal for Refrigeration Equipment



- I. New equipment in newly constructed facilities / major remodels, GWP < 150
- II. For existing retail food facilities – Two compliance pathways:
 - (1) weighted-average GWP reduction, (2) GHGp reduction
 - Flexibility to plan over 8 – 10 years
 - Prepares sector for future HFC phase-down / sales ban

Draft Regulatory Text

In the draft regulatory text -

- Existing CA SNAP / SB 1013 prohibitions are listed in Tables 1 and 2.
- New requirements are listed in Tables 3 and 4.

I. New Refrigeration Equipment

§ 95374. List of Prohibited Substances.

Part of Table 3 in the draft regulatory text

General End-Use	Specific End-Use	Prohibited Substances	Effective Date
Refrigeration Equipment	Refrigeration equipment (new), non-residential, containing more than 50 pounds refrigerant	Refrigerants with a GWP of 150 or greater	Prohibited as of January 1, 2022

- Chillers and Ice Rinks have separate GWP limits (covered later)

§ 95373. Definitions (This definition applies to Table 3 only)

“*New Refrigeration Equipment*”: Any refrigeration equipment that is first installed using new or used components or a combination of new and used components in the following:

- (A) New construction; or
- (B) In an existing facility not previously used for retail food, commercial, cold storage, or industrial refrigeration; or
- (C) In an existing facility, replacement of 75 percent or more of: compressors, condensers, and connected evaporator loads.

Question: Does (C) adequately cover “major remodels”?

§95377. Requirements Applicable to Table 3

- ❖ Labeling: Display a label on the equipment that clearly and visibly indicates:
 - The type of refrigerant.
 - The refrigerant charge size in ounces, pounds, or kilograms; and
 - The date of manufacture, indicating at a minimum, the four digit year of manufacture in standard format.
 - Existing labels meeting these requirements may be used.

Question: Do existing labels meet the above requirements?

§95377. Requirements Applicable to Table 3

- ❖ Recordkeeping: Any person who manufactures new motor-bearing refrigeration equipment shall maintain for five years and make available, upon request:
 - Contact details of purchaser (name, address, telephone, email).
 - Model and serial number of the equipment and / or components where applicable.
 - Date of manufacture of the equipment.
 - Date of sale of the equipment.
 - The refrigerant type(s) the equipment is designed to use.
 - The refrigerant and full charge capacity of the equipment, where available.

[Similar requirements as under the original 2018 “CA SNAP” regulation \(Section § 95375\)](#)

II. Existing Retail Food Facilities

Requirements for Existing Retail Food Facilities

§ 95374. Table 4: Compliance Requirements for Companies with Retail Food Facilities.

Retail Food Facilities	Requirement	Effective Date
Companies owning or operating 20 or more retail food facilities	Attain a company-wide weighted-average GWP of 2,500 or a 25% reduction in GHGp below 2018 levels	January 1, 2026
	Attain a company-wide weighted-average GWP of 1,400 or a 55% reduction in GHGp below 2018 levels	January 1, 2030
Companies owning or operating fewer than 20 retail food facilities	Attain a company-wide weighted-average GWP of 1,400 or a 55% reduction in GHGp below 2018 levels	January 1, 2030

Weighted-average GWP and GHGp calculated based on refrigeration systems > 50 pounds of refrigerant only

§ 95373. Definitions.

- ❖ “*Company*” means all businesses, affiliates, brands, subsidiaries, or franchises, owned under the same parent company.
- ❖ “*Retail Food Facility*” means a facility that sells food and uses at least one retail food refrigeration equipment or refrigeration system with more than 50 pounds of a refrigerant with a GWP of 150 or greater. Retail food facility includes supermarkets, grocery stores, convenience stores, restaurants and other food service establishments.

Retail food facilities subject to CARB’s RMP will be subject to these requirements.

§ 95373. Definitions.

- ❖ *Weighted-Average GWP* = $\frac{\Sigma(\text{charge} \times \text{GWP})}{\Sigma \text{ charge}}$
- ❖ *GHGp* = $\Sigma(\text{Charge} \times \text{GWP})$
- ❖ *Baseline Greenhouse Gas Potential* or “Baseline GHGp” means the greenhouse gas potential (GHGp) of a company’s retail food facilities in calendar year 2018.
- ❖ The ‘Baseline GHGp’ will be revised when any of the following occur:
 - (A) Retail food facilities that are sold, transferred, or closed will be removed from the baseline GHGp.
 - (B) Acquired retail food facilities will be added to the baseline GHGp using their 2018 GHGp levels, and the current GHGp of acquired stores will be used to calculate the current GHGp.

§95378. Requirements Applicable to Table 4

- ❖ *Choosing a Compliance Requirement for Retail Food Facilities.*
 - Weighted-average GWP Reduction by default.
 - Opt-in for GHGp Reduction by March 1, 2022, via R3

- ❖ One-time registration for GWP < 150 facilities (systems > 50 pounds)
 - No implementation fee
 - Same system details as given currently under CARB's RMP

(RMP: Refrigerant Management Program)

§95378. Requirements Applicable to Table 4

- Starting 2022, annually report company's weighted-average GWP or GHGp if opted-in, along with RMP annual reports
 - Via R3, by March 1 of the following calendar year

NOTE: Additional reporting requirements for verification of charge reduction are being considered.

§95378. Requirements Applicable to Table 4

- ❖ Records showing your GHGp / weighted-average GWP calculations for each year (spreadsheets etc.)

- ❖ When any changes are made to GWP of the refrigerant and / or charge of a system, keep records:
 - Full charge, before and after
 - Means by which full charge was determined, before and after
 - Type of refrigerant, before and after
 - Amount of refrigerant removed, amount stored / sent, where it was sent
 - Date of system retirement / removal
 - For retired systems - amount of refrigerant removed, where it was sent afterwards
 - The records must include documentation such as, invoices, receipts, records of shipments, plans, or work details, that are generated from a third party, such as a service technician or refrigerant reclaimer.

III. Chillers

§ 95373. Definitions.

“*Chiller*” means a water or heat transfer fluid chilling equipment package custom built in place, or a factory-made and prefabricated assembly of one (1) or more compressors, condensers and evaporators, with interconnections and accessories including controls, designed for the purpose of cooling or heating water or a heat transfer fluid. A chiller is a machine specifically designed to make use of a vapor compression refrigeration cycle or absorption refrigeration cycle to transfer heat from a cold water or heat transfer fluid circulating system to the air, a heat transfer fluid, or other heat exchange media. Chillers can be water-cooled, air-cooled, or evaporatively cooled. Chillers include rotary chillers, centrifugal chillers, and positive displacement chillers, including reciprocating, scroll, and screw chillers. For the purpose of this regulation, “chiller” includes those used for comfort cooling, or space and area cooling, or industrial process cooling.

[Question: Input on the definition?](#)

§ 95374. List of Prohibited Substances.

Part of Table 3 in the draft regulatory text

General End-Use	Specific End-Use	Prohibited Substances	Effective Date
Chillers – Air conditioning, Industrial Process Cooling			
Chillers	Chillers (new) designed for minimum evaporator temperature > -15 °F (-26 °C)	Refrigerants with a GWP of 750 or greater	Prohibited as of January 1, 2024
Chillers	Chillers (new) designed for minimum evaporator temperature -15 °F (-26 °C) through -58 °F (-50 °C)	Refrigerants with a GWP of 2200 or greater	Prohibited as of January 1, 2024

§ 95373. Definitions.

“*New Chiller*” or “*New Chiller Equipment*” means any of the following:

- (A) First installed using new or used components, or a combination of new or used components; or
- (B) Modified such that:
 - (i) The capacity is increased through the addition of motor-bearing components, including evaporators, compressors, or condensers, or
 - (ii) The system has experienced replacements of motor-bearing components in full or exceeding 50 percent of the capital cost of replacing all the motor-bearing components in the entire chiller system.



§ 95374. List of Prohibited Substances.

Part of Table 3 in the draft regulatory text

General End-Use	Specific End-Use	Prohibited Substances	Effective Date
Ice Rinks			
Ice Rinks	Refrigeration Equipment (new) and Chillers (new) used in Ice Rinks	Refrigerants with a GWP of 750 or greater	Prohibited as of January 1, 2024

Next Steps and Anticipated Timelines

Next Steps and Anticipated Timelines



Stationary Refrigeration Equipment	
Public workshops and Stakeholder meetings	October 2017, October 2018
	Technical Working Group: August 6, 2019
	2 nd Workshop: January 2020
45-Day Notice	June 5, 2020
Board Meeting	July 23/24, 2020
Regulation Effective Date	January 1, 2022

Please provide feedback on the draft regulatory text by Friday, February 21st by emailing us at HFCReduction@arb.ca.gov

❖ New Refrigeration Equipment

- Definition of “New Refrigeration Equipment” part (C) adequately cover “major remodels”?
- Do existing labels meet the labeling requirements?

❖ Existing Retail Food Facilities

- Reporting requirements to verify charge reductions

❖ Any other topics?

Thank you for listening!

CARB welcomes your feedback.





Feedback and Questions – Contact Us

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For more information, please visit:

<https://ww2.arb.ca.gov/our-work/programs/stationary-hydrofluorocarbon-reduction-measures>

SB 1013 Incentive Program

F-Gas Reduction Incentive Program (FRIP)



January 30, 2020

FRIP Workshop Agenda



- GGRF Requirements and Guidelines
- Process and Timeline of Funding Program
- Eligible Technologies and Funding Amounts
- Agency and Utility Announcements
- Stakeholder Feedback

- SB 1013 established an incentive program to “promote the adoption of new refrigerant technologies to achieve short- and long-term climate benefits, energy efficiency, and other cobenefits...”
- \$1 million allocated in the FY 2019-20 budget from the Greenhouse Gas Reduction Fund (GGRF) (AB 74, Budget Act of 2019)
- GGRF appropriations fall under the umbrella of California Climate Investments

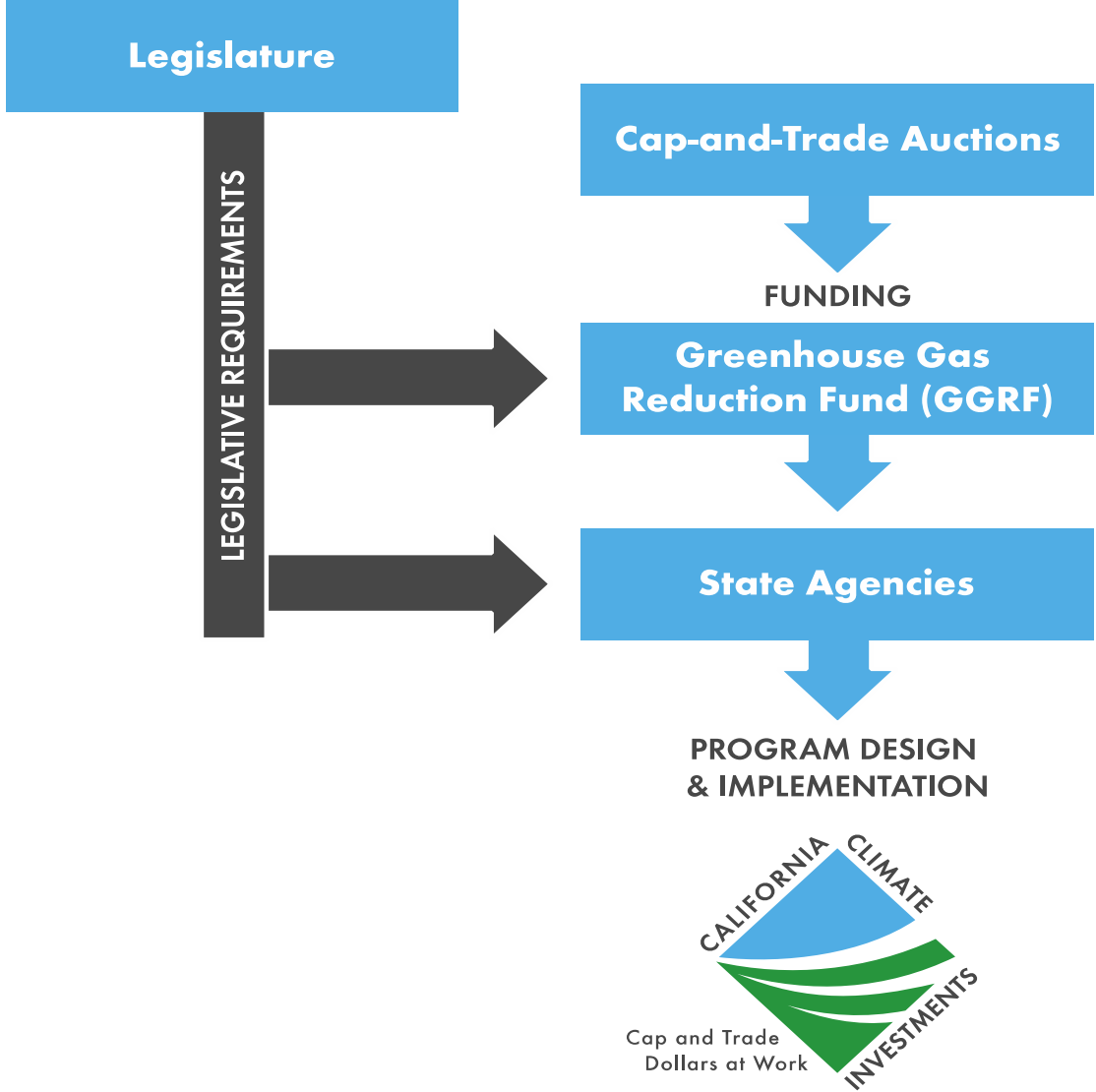




What is California Climate Investments?

A statewide initiative that puts billions of Cap-and-Trade dollars to work reducing greenhouse gas emissions, strengthening the economy and improving public health and the environment—particularly in disadvantaged communities.

California Climate Investments



California Climate Investments



Requirements	Recommendations
GHG emission reductions	Encourage projects that contribute to other State goals
Benefit priority populations	Coordinate investments to provide multiple benefits and maximize benefits
Maximize economic, environmental, and health co-benefits	Conduct outreach to help applicants access funding
Foster job creation and job training	
Avoid burdens to priority populations	
Ensure transparency and accountability	

CCI Program Steps and Resources



Step	Purpose
Expenditure Record	Legal document that describes how the program will meet the statutory requirements of California Climate Investments.
Program Guidelines	Provide applicants information on the program structure and requirements, who and what technologies are eligible, funding amount available, project selection criteria, application procedures and key deadlines.
Quantification Methodology	Excel-based tool provided by CARB for applicants to quantify GHG emission reductions from project.
Solicitation/Application Materials	Materials that need to be submitted by potential applicants

FRIP Program Timeline




1 st Public workshop	January 30, 2020
Expenditure Record	January 2020 (complete)
Stakeholder input on Program Structure	January-March 15, 2020
Draft program guidelines release	April 2020
2 nd Public Workshop/Webinar	May 2020
Program Solicitation Open	Summer 2020 (8 weeks)
Awards Announcement	Fall 2020
Funds disbursement	Reimbursement system
Encumbrance Deadline	June 30, 2021
Liquidation Deadline	June 30, 2025

Proposed Application Process

- Open solicitation period 8 weeks in summer 2020
- Technical assistance before and during application process
- Applicants expected to submit the following materials:
 - Project Narrative
 - GHG Emission Reductions and other co-benefits using Quantification Methodology
 - Plan for training contractors in low-GWP technologies
 - Other materials

<https://ww2.arb.ca.gov/our-work/programs/f-gas-reduction-incentive-program>



F-gas Reduction Incentive Program [< BACK TO ALL PROGRAMS](#)

F-gas Reduction Incentive Program

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In the 2019-2020 budget (AB, 74 Budget Act of 2019) CARB received \$1 million to reduce emissions from the use of fluorinated refrigerants as directed by Senate Bill (SB) 1013. CARB staff is currently seeking input from stakeholders to develop the Fluorinated Gases Emission Reduction Incentive Program (also known as the F-gas Reduction Incentive Program, or FRIP) guidelines.

[MORE ABOUT THIS PROGRAM >](#)


Email Updates

Keep up to date with the latest information regarding the F-gas Reduction Incentive Program (FRIP).


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[Meetings & Events](#)

- “Eligible applicants shall be users of systems of refrigerant technologies (SB 1013)”
- Open funding only to the retail food sector (i.e. owners and operators of refrigeration systems)
- Discussion of Funding eligibility
 - Retail food sector only
 - Systems > 50 lbs. only

Preliminary Ideas for Eligible Technologies and Funding Amounts

Tier I – Innovative Technologies (\$500,000)

- Partial or full installations of systems using ultra-low GWP refrigerants (GWP <10) in new and existing stores

Tier II – Conventional Technologies (\$500,000)

- Refrigerant Retrofits from R-404A/R-507A to R-448A/R-449A
- Refrigerant retrofits from R-404A/R-507A to R-448A/R-449A accompanied by permanent charge reduction of 25% (or greater) through system architectural changes

Proposed Tier I Funding (\$500,00)

- Funding amount available - Maximum amount of \$150,000 per applicant or 100% of the cost premium, whichever is lower
- Examples of eligible technologies for partial or full retrofits/new installations
 - CO₂ condensing units
 - HFC-free HVAC integrated refrigeration systems
 - CO₂ transcritical with ejectors or other enhancements
 - NH₃ or propane or HFO/CO₂ cascade systems
 - R-290 microdistributed systems

Proposed Scoring Criteria for Tier I Funding



- Competitive solicitation
- Technical Merit for technology type
- GHG reductions possible through refrigerant reductions and energy efficiency
- Requirements for funding recipients
 - Training in low-GWP technologies open to contractors in the area
 - Prepare case study after 6 months of operation
- Extra Points
 - Match funding from utility
 - Existing store
 - Facility located in disadvantaged community or independently owned

Tier I Funding Discussion

- Match funding requirement
- Prescriptive about eligible technologies
- Connecting OEMs with eligible technologies to retailers
- GHG Emission Reduction Baseline
 - Refrigerant baseline: R-448A/R-449A
 - Energy efficiency baseline: R-448A/R-449A with/without adiabatic condenser
- One incentive/company and potentially two incentives/company for CO₂ condensing units

Proposed Tier II (\$500,000)

- Refrigerant retrofit cost estimated at \$45/lb.
- Incentives offered for:
 - 25% of refrigerant retrofit cost (~\$11/lb.)
 - 50% of refrigerant retrofit cost if also accompanied by a permanent charge reduction of 25% or greater? (~\$22/lb.)

Proposed Scoring Criteria for Tier II Funding



- Rolling basis with some scoring criteria
- GHG reductions with refrigerant retrofit and charge reduction relative to baseline (R-404A/R-507A → R-448A/R-449)
- Requirements:
 - Guidance documents for retrofits included in the grant agreement
 - Reclaimed refrigerant must be properly managed
- Extra points:
 - Match funding from utility
 - Located in disadvantaged community or independently owned

Tier II Funding Discussion

- 25% of retrofit costs
- Is a 25% or higher permanent charge reduction reasonable?
- What about 50% of the refrigerant retrofit cost for a 25% charge reduction and refrigerant retrofit?
- Leak management after retrofits
- Prescriptive guidance documents for retrofits
- Management of recovered refrigerant
- Factoring in energy efficiency of retrofits

- GGRF funds are disbursed on a reimbursement system
- Reimbursement:
 - Paying for engineering design services rather than equipment cost (although that amount may not be enough for the funding award)
 - Paying for partial equipment
 - Paying for the wholesale refrigerant purchase and/or valves for the refrigerant conversion, which should cover 25% of the cost of a refrigerant retrofit

Timeline and Supermarket Planning



- Solicitation period (8 weeks) and supermarket planning over the next few months

- California Public Utilities Commission (CPUC)
- Southern California Edison (SCE)
- Los Angeles Department of Water and Power (LADWP)
- Sacramento Municipal Utility District (SMUD)

Stakeholder Feedback

Please provide feedback by
March 15, 2020

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