

Public Workshop: Amendments to California's HFC Regulation

July 22, 2020

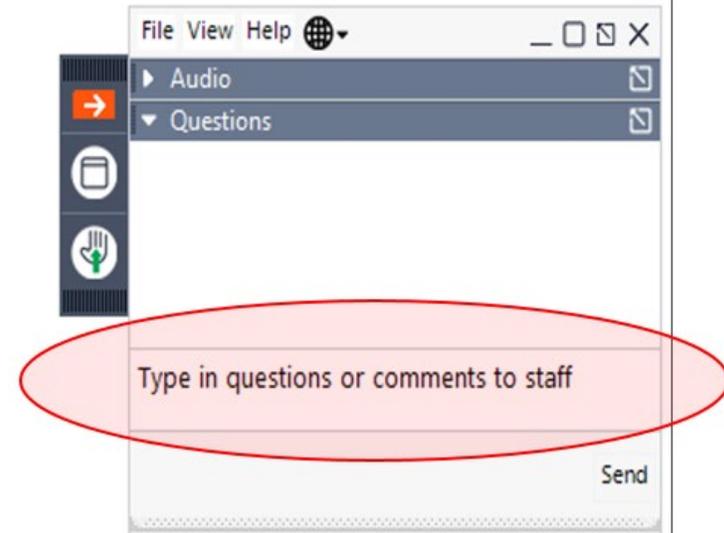
California Air Resources Board
Research Division
F-gas Reduction Strategy Section
HFCReduction@arb.ca.gov



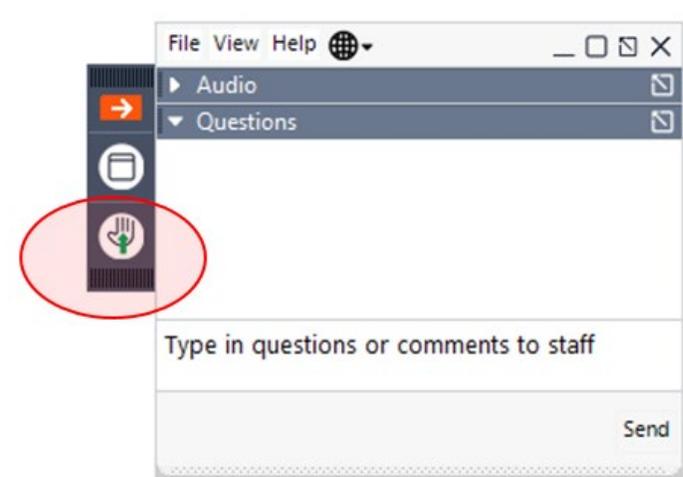
Webinar Logistics

Submit your questions and comments via GoToWebinar

- Use question box



- "Raise" your hand for follow up



9:00 am: Introduction, Discussion of Refrigeration Sections of Draft Regulatory Text

10:15 am: Discussion of Air Conditioning Sections of Draft Regulatory Text

11:30 am: Discussion of Other Changes in Draft Regulatory Text

12:30 pm: Concluding Remarks

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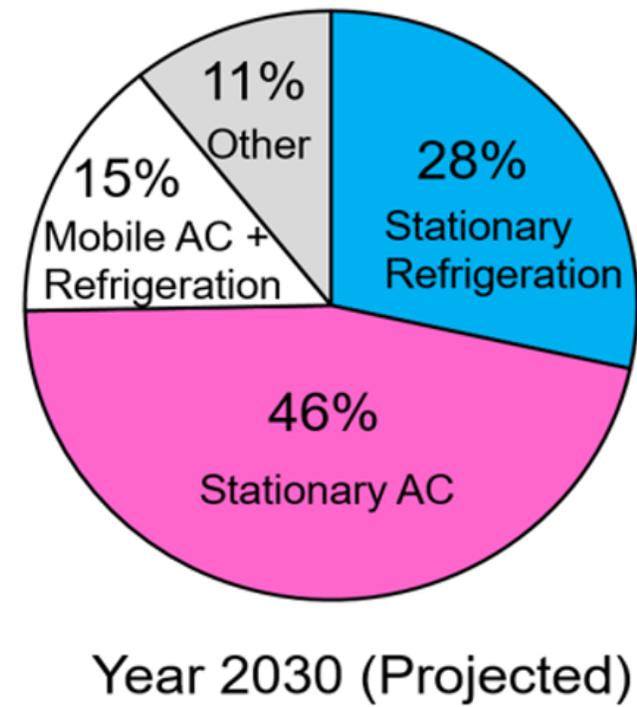
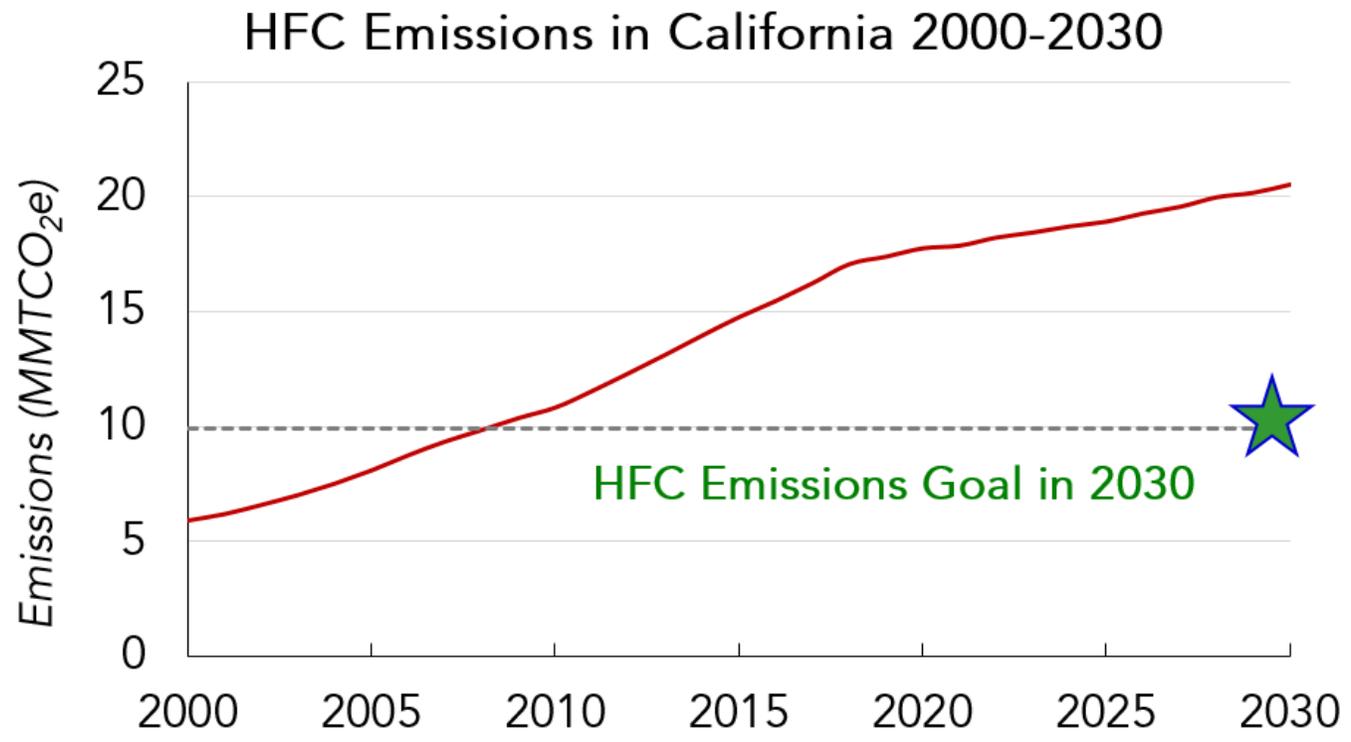
Shannon Dilley, Senior Attorney
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Introduction and Proposed Rules for Stationary Refrigeration



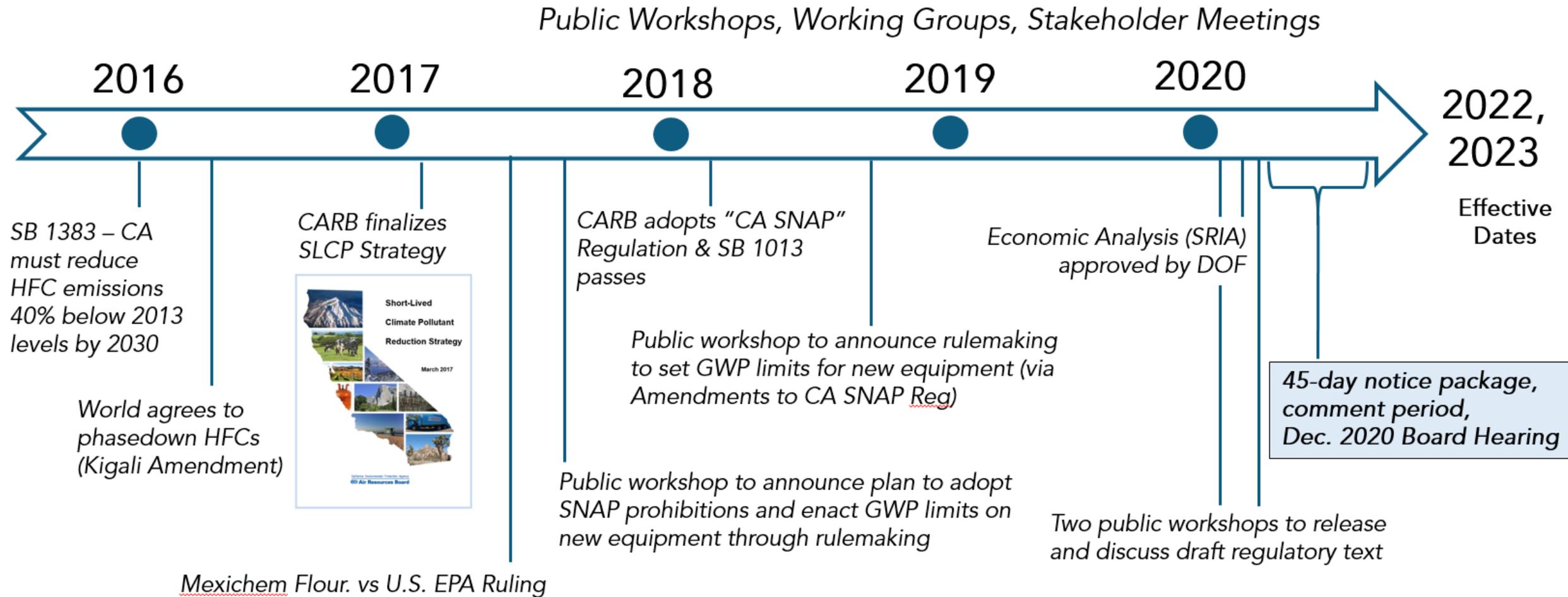
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Hydrofluorocarbons (HFCs) are the fastest growing greenhouse gases



Source: CARB F-gas Inventory, 2018

Regulation Timeline



Changes in the California HFC Regulation

Initial HFC
Regulation
Adopted,
March 2018

Refrigeration,
Foams



Aerosols,
Additional
Foams,
Chillers,
Cold Storage,
Refrigerator

SB 1013
Signed,
September
2018

"California
SNAP
Regulation"

Combined via
Administrative Process,
January 2020

Amendments to
California SNAP
Regulation

Amendments Include

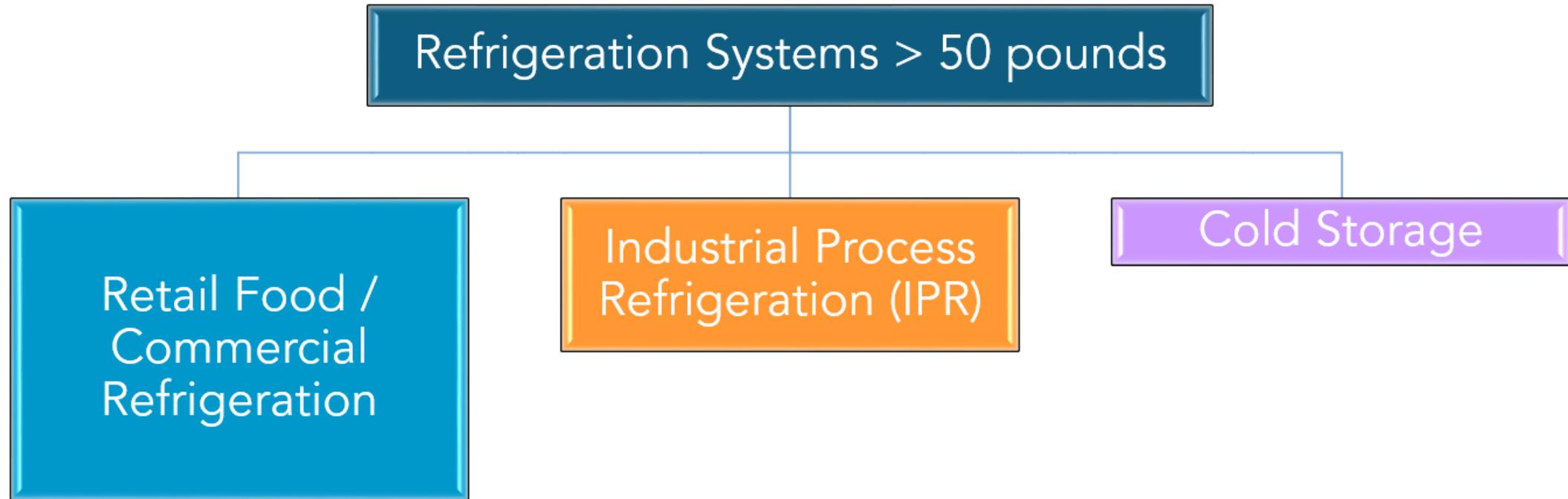
- Refrigeration systems > 50 lb
- New air conditioners
- Variance language, other updates

Today's Presentation on Refrigeration



- Overview: Affected End-Uses and Proposed Rules
- Draft Regulatory Text Updates
- Next Steps and Anticipated Timelines
- Discussion

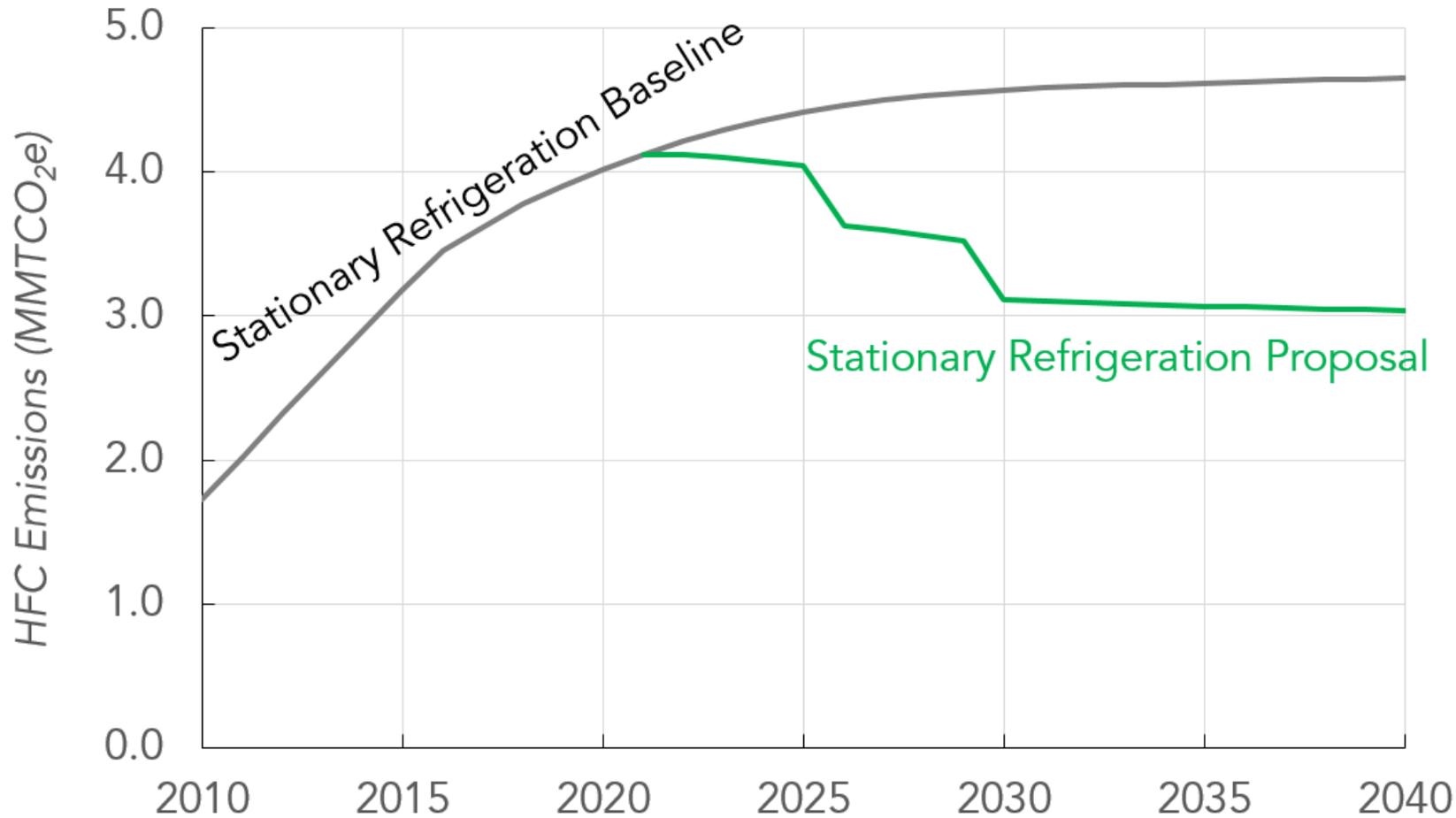
Overview



Proposed Rules:

- New facilities: systems > 50 lb, GWP < 150, starting 2022, irrespective of end-use
- Existing facilities: rules depend on the end-use

Expected Emissions Reductions from Proposed Refrigeration Rules



- Annual Emissions Reductions in 2030: 1.5 MMTCo₂e
- Cumulative Emissions Reductions by 2040: 22 MMTCo₂e

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 ([edited for clarity since January](#))

Refrigeration Rules by End-Use:

1. Retail Food Refrigeration

Requirements for New Retail Food Facilities



§ 95374. Table 4 in the draft regulatory text

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

What is a “New Facility”?

§ 95373. Part of Definitions

“New Facility” means any of the following:

- (1) New construction;
- (2) An existing facility not previously used for cold storage, or refrigeration used in retail food, commercial, industrial refrigeration; or
- (3) ...with a replacement of 75 percent or more of evaporators (by number) and, 100 percent of compressors racks, and 100 percent of condensers.

Exception: § 95375(c) and § 95375(d)

Approved Building Permits: The prohibitions do not apply to any facility with new refrigeration equipment that received an approved building permit before the effective date.

Proposed Rules for Existing Retail Food Facilities



- Supermarket stakeholder driven
- Guaranteed emissions reductions similar to CARB's original proposal

1. Greenhouse Gas Potential Reduction

$$\text{GHGp} = \Sigma(\text{Charge} \times \text{GWP})$$

2. Weighted-Average GWP Reduction

$$\text{WAGWP} = \frac{\Sigma(\text{Charge} \times \text{GWP})}{\Sigma \text{Charge}}$$

- Per-company targets, not per-system or per-store
 - Flexible – don't have to retrofit every single store or system
- Plan over 8 – 10 years; Prepares industry for future phase-down or sales ban
 - CARB incentive program designed to help with the transition

Requirements for Existing Retail Food Facilities



§ 95374. Table 4 in the draft regulatory text

Retail Food Facilities	Requirement	Effective Date
Refrigeration Equipment, Stationary (in Existing Facilities)		
Companies owning or operating 20 or more retail food facilities and national supermarket chains operating in California	WAGWP < 2,500 or GHGp reduction \geq 25% below 2019 levels	January 1, 2026
	WAGWP < 1,400 or GHGp reduction \geq 55% below 2019 levels	January 1, 2030
Companies owning or operating fewer than 20 retail food facilities	WAGWP < 1,400 or GHGp reduction \geq 55% below 2019 levels	January 1, 2030

Change: Baseline year for GHGp 2019 instead of 2018

Questions Received for Retail Food

Q. Are systems < 50 lb included in GHGp calculations?

A: Systems < 50 lb in 2019 – Not included.

Systems > 50 lb in 2019 but replaced by systems < 50 lb later – Included.

Q. Will new stores get credit under WAGWP?

A: Yes. Rewards low-GWP transitions.

Q. Do retailers have to choose between GHGp and WAGWP pathways?

A: Not anymore. Opt-in requirement removed.

Q. Which rules will apply to supermarket chillers?

A: GWP < 150 for new facilities, WAGWP/GHGp for existing facilities.

Note: chiller GWP limits for IPR are different.

Q. Which rules will apply to new remote condensing units?

A: If charge > 50 lb, GWP < 150 for new facilities, WAGWP/GHGp for existing facilities (in Table 4).

If charge < 50 lb, existing SNAP rules will apply (in Table 1).

Refrigeration Rules by End-Use:

2. Industrial Process Refrigeration (IPR) – chillers, non-chiller systems, ice rinks

Requirements for IPR: Chillers



§ 95374. Table 3

General End-Use	Specific End-Use	Prohibited Substances	Effective Date
Chillers – Air Conditioning, Industrial Process Refrigeration			
Chillers	Chillers (new) designed for minimum evaporator temperature > +35 °F (2 °C)	Refrigerants with a GWP of 750 or greater	Prohibited as of January 1, 2024
Chillers – Industrial Process Refrigeration			
Chillers	Chillers (new) designed for minimum evaporator temperature ≤ +35 and > -10 °F (-26 °C)	Refrigerants with a GWP of 1,500 or greater	Prohibited as of January 1, 2024
Chillers	Chillers (new) designed for minimum evaporator temperature ≤ -10 °F (-26 °C) and > -58 °F (-50 °C)	Refrigerants with a GWP of 2,200 or greater	Prohibited as of January 1, 2024

Change: Temperature ranges for IPR chillers modified based on stakeholder input

Requirements for IPR: Non-Chiller Systems



§ 95374. Table 3

General End-Use	Specific End-Use	Prohibited Substances	Effective Date
Refrigeration Equipment, Stationary (in New Facilities)			
Industrial Process Refrigeration excluding chillers	Refrigeration equipment (new), containing more than 50 pounds refrigerant	Refrigerants with a GWP of 150 or greater	Prohibited as of January 1, 2022
Refrigeration Equipment, Stationary (in Existing Facilities)			
Industrial Process Refrigeration excluding Chillers	Refrigeration equipment (new), containing more than 50 pounds refrigerant	Refrigerants with a GWP of 2,200 or greater	Prohibited as of January 1, 2022

Requirements for IPR: Ice Rinks

§ 95374. Table 3

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

Q. Does the IPR definition match the U.S.EPA definitions?

A: Yes, but edited to align even more closely with EPA definitions under Rule 608 and SNAP rules.

§ 95373. Definitions

“Industrial Process Refrigeration” means to cool process streams at a specific location in manufacturing and other forms of industrial processes and applications, and are complex, customized systems that are directly linked to the industrial process. Where one appliance is used for both industrial process refrigeration and other applications, it will be considered an industrial process refrigeration system if 50 percent or more of its operating capacity is used for industrial process refrigeration. Industrial process refrigeration or cooling using a chiller is regulated as a chiller. Industrial process refrigeration not using a chiller is regulated as industrial process refrigeration equipment.

Refrigeration Rules by End-Use:

3. Cold Storage

Requirements for Cold Storage

§ 95374. Table 3

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

Clarification: SB 1013 already had some prohibitions for cold storage. Those continue to apply for all other cases (see Table 2 of draft regulatory text)

Enforcement-related Requirements (Labeling, Recordkeeping, Reporting)




ARB RMP Home Page


[R3 Home](#) [Reports & Forms](#) [Contact](#) [FAQ](#) [Survey](#) [Test Your XML](#) [Help](#)

Welcome to Refrigerant Registration and Reporting System (R3)

Welcome to the Refrigerant Registration and Reporting System (R3). The R3 is a web-based tool for implementing the registration, reporting, and fee payment provisions of ARB's Refrigerant Management Program (RMP). In addition, the R3 offers the public a means to view select preformatted reports of refrigerant emissions. The R3 can be conveniently accessed on any computer with an internet connection.

The RMP is California's regulation for stationary, non-residential refrigeration systems using more than 50 pounds of a high global warming potential (high-GWP) refrigerant. The RMP seeks to reduce emissions of high-GWP refrigerants from leaking refrigeration equipment and the installation and servicing of refrigeration and air-conditioning appliances.

At the top of this page are links to the general ARB home web page and the home page of the RMP. Below that, on the red tab bar are links to preformatted reports and forms, important contacts for the RMP, and answers to frequently asked questions.

[RMP R3 Registration Check List](#) (information you will need before registering)

[RMP R3 Registration Worksheet](#)

[RMP R3 Leak Inspection Aid](#)

Important information

General Public Users: Information for the general public does not require a login or account. For reports available to the public select the Reports and Forms tab on the red bar above. For contacts about the program select the Contact tab on the red bar or one of the links below. Select the FAQ tab on the red bar for general information.

First Time Company Users: In order to use R3 you must first setup a user account. If no one in your company has established an Administrator type user account and begun the company registration process select the "Sign Up for New Registration" in the right column. If someone in your company has registered and has established an Administrator account, contact that person to create your account.

First Time ARB and AIR District Users: ARB and Air District users should contact their program administrator to setup an account login.

LOGIN

USERNAME :

PASSWORD :

(case-sensitive)

[Can't Access my Account?](#)

Companies with facilities with refrigeration systems, distributors, wholesalers, and reclaimers must first setup a user account and company profile in order to use R3.

[Sign Up for New Registration](#)

2019 Registration and Reporting Period: The 2019 registration and annual reporting period will open January 1, 2019. Deadline for submitting Annual Reports and making the fee payment is March 1, 2019.

Small facilities must complete their registration by March 1, 2019.

Contact Information

For general R3 questions, Send an email to mpo@arb.ca.gov , Phone Number: 916-324-2517

Program Web page: <http://www.arb.ca.gov/rmp/rmp.htm>
See the [Regulation Document](#)

§ 95375. Requirements Applicable to Table 3 and Table 4

For Equipment Manufacturers

- ❖ Labeling
- ❖ Recordkeeping

For Retail Food Facility Owner-Operators

- ❖ One-time, free registration in R3 for new GWP < 150 facilities
 - ❖ For current low-GWP stores, please register by January 1, 2022
- ❖ For GHGp/WAGWP compliance
 - ❖ Starting 2022, annually report/certify WAGWP and GHGp
 - ❖ Keep records for calculations
 - ❖ Update R3 with changes to systems

§95375. Requirements Applicable to Table 3 and 4

❖ Labeling: Display a label on the equipment that clearly and visibly indicates:

- Type of refrigerant
- Where available, the refrigerant charge size
- Date of manufacture (year)
- Existing labels meeting the above requirements may be used

§95375. Requirements Applicable to Table 3 and 4

- ❖ **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 \(Section § 95375\)](#)

§95375. Requirements Applicable to Table 4

- **Registration Requirements.** On or before January 1, 2022, retail food facilities shall register in the R3 database, refrigeration systems containing more than 50 pounds of refrigerant that use a GWP less than 150.

[Similar to current RMP registration, but one time, no fee](#)

- **Reporting Requirements.** Starting 2022, annually report company's WAGWP and GHGp **along with RMP annual reports**
 - Via R3, by March 1 of the following calendar year

§95375. Requirements Applicable to Table 4

Recordkeeping

- ❖ Records showing your GHGp / WAGWP 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
 - 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.

Next Steps and Anticipated Timelines

Stationary Refrigeration	
Public workshops and Stakeholder meetings	October 2017, October 2018, August 2019, January 2020, July 2020
45-Day Notice	October 23, 2020
Board Meeting	December 10 - 11, 2020

*Please provide comments and feedback regarding the regulatory text to HFCReduction@arb.ca.gov by **August 5th** to be considered ahead of the final 45-Day Notice Package.*

Feedback and Questions for Refrigeration – Contact Us

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Michael FitzGibbon, Branch Chief, Research Division
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For more information, please visit:

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



Thank you for listening!
CARB welcomes your feedback.

Discussion on refrigeration (until 10:15 AM)



Public Workshop

Proposed GWP Limit for New Stationary Air Conditioning Equipment

July 22, 2020

Kathryn Kynett

F-gas Reduction Strategy Section

Research Division

California Air Resources Board

kathryn.kynett@arb.ca.gov



Today's Agenda



- 9:00am: Introduction, Discussion of Refrigeration Sections of Draft Regulatory Text
- 10:15 am: Discussion of Air Conditioning Sections of Draft Regulatory Text
- 11:30 pm: Discussion of Other Changes in the Draft Regulatory Text
- 12:30 pm: Concluding Remarks

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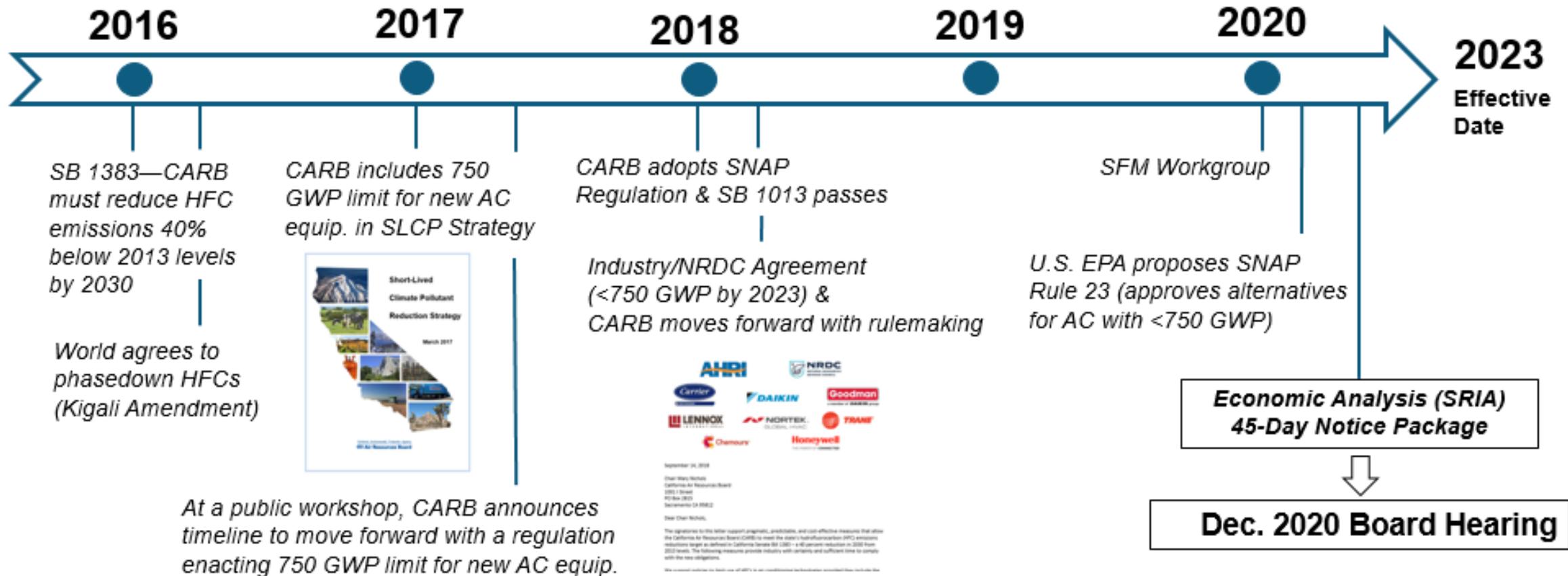


- Background
- Draft Regulatory Text
- Next Steps and Anticipated Timelines
- Discussion

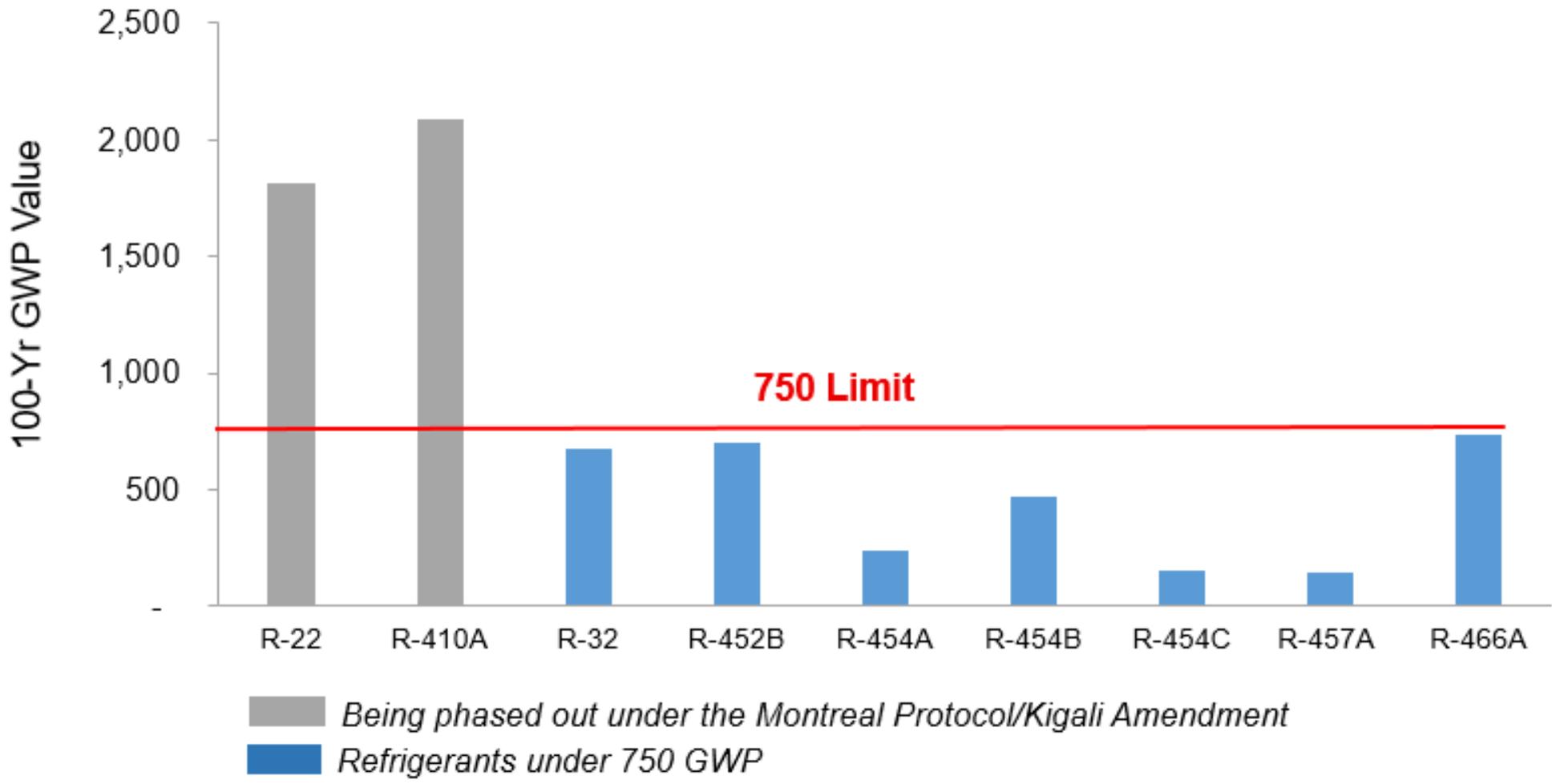
Background

AC Proposal Timeline

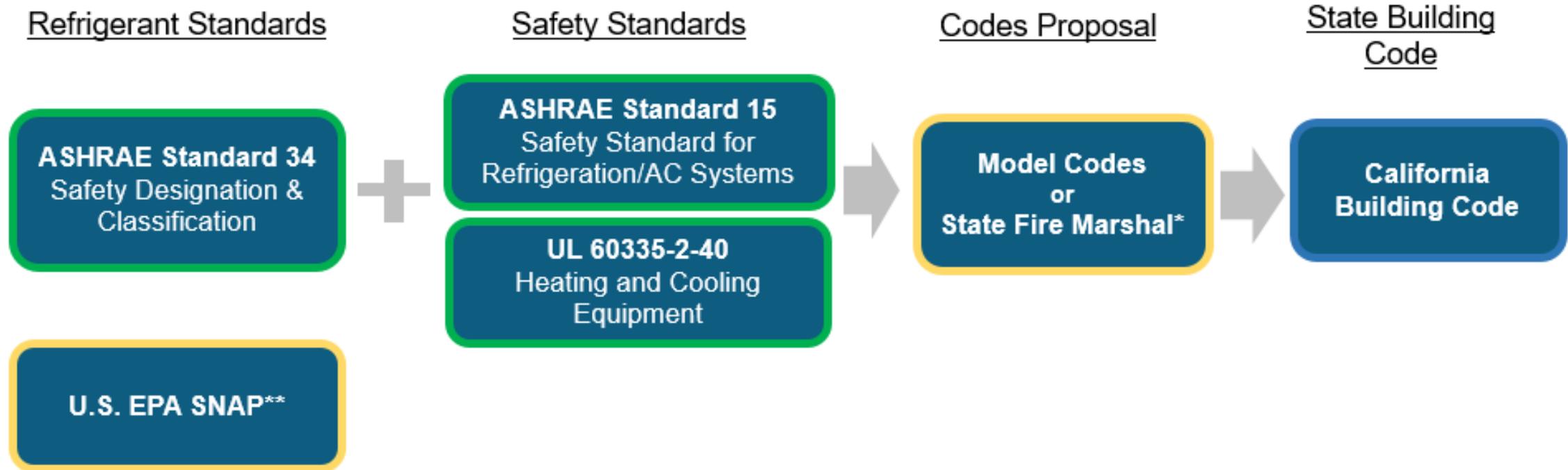
Public Workshops and Regulatory Development Activities



Refrigerant Alternatives <750 GWP



Refrigerant Standards & Codes



**State Fire Marshal has authority to make code changes proposals (convening workgroup)*

***Refrigerants must also be listed as "acceptable" under the U.S. EPA SNAP Program (Proposed Rule 23)*

Regulatory Text

§ 95374. List of Prohibited Substances.

(c) The following table lists prohibited substances as of their relevant dates:

Table 3: End-use and Prohibited Substances.

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

§95375. *Requirements Applicable to Table 3 of Section 95374(c).*

(1) *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 subarticle.

§95373. Definitions

“Air-conditioning Equipment” or “Air-conditioning System” equipment that cools or dehumidifies spaces in residential or non-residential settings, for comfort cooling and other purposes, including but not limited to...”

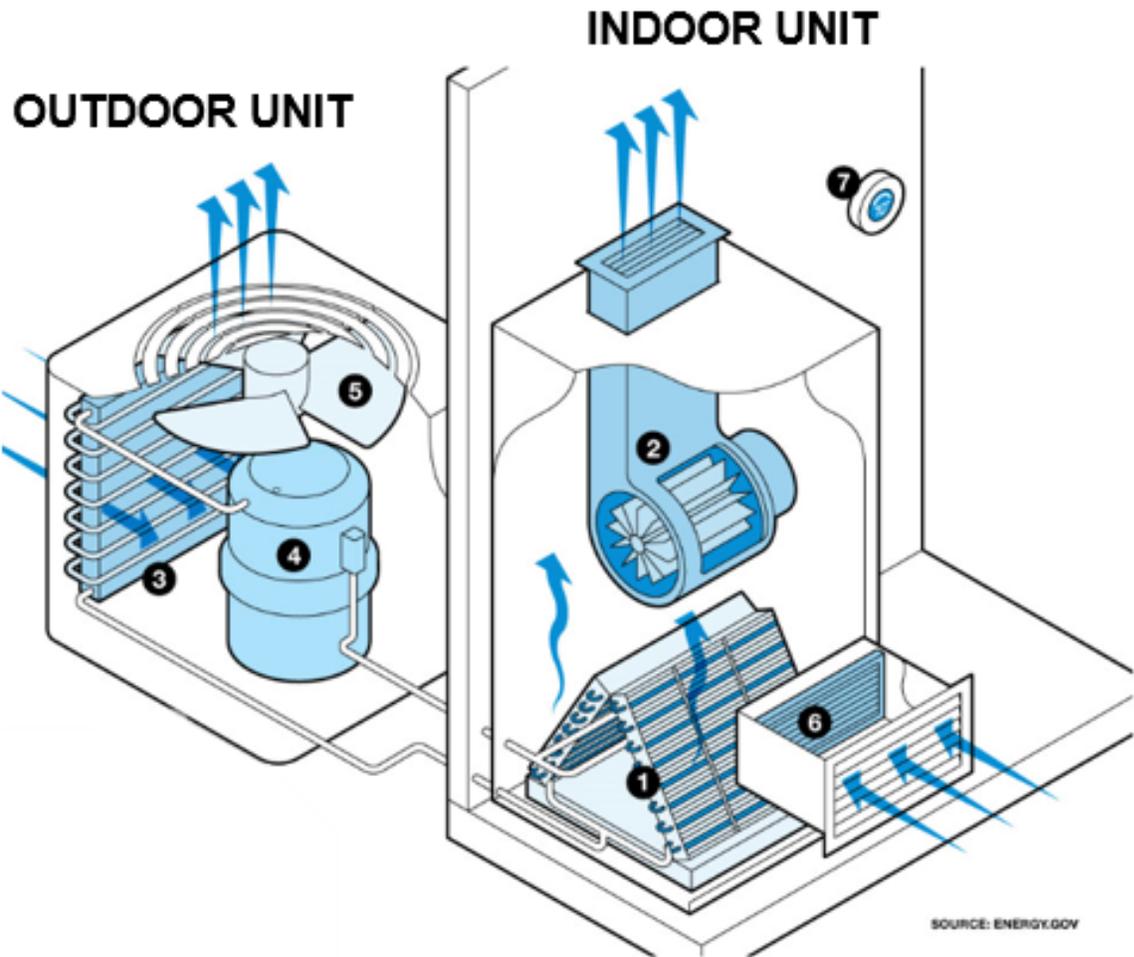
- Room AC
- Central AC (ducted and non-ducted)
- Heat pumps
- Dehumidifiers
- Computer room and data center cooling
- Remote condensing units for AC

§ 95373. Definitions.

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

Definition of New AC Equipment

- 3. Condenser**
Hot coils release collected heat into the outside air.
- 4. Compressor**
A pump that moves refrigerant between the evaporator and the condenser to chill the indoor air.
- 5. Fan**
A fan blows air over the condenser to dissipate the heat outside.



- 1. Evaporator**
Cooling coils remove heat and humidity from the air using refrigerant.
- 2. Blower**
A blower (or fan) circulates air over the evaporator, dispersing the chilled air.
- 6. Filter**
Located in the air conditioning unit to remove particles from the air.
- 7. Thermostat**
A control system to regulate the amount of cool air that is distributed.

SOURCE: ENERGY.GOV

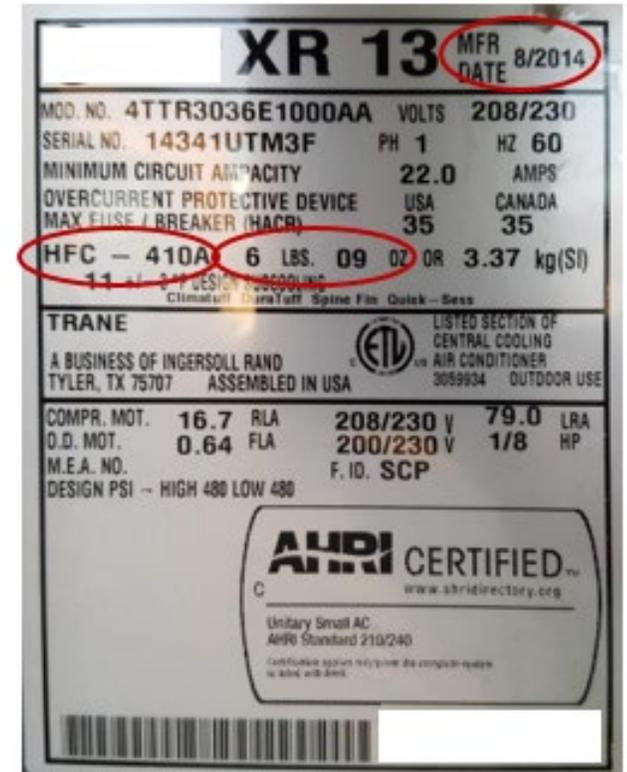
§95375. Requirements Applicable to Table 3 of Section 95374(c).

(3) Labeling and Recordkeeping.

➔ (i) Labeling.

- Type of Refrigerant
- Refrigerant charge size
- Date of manufacture (in standard format)

Existing labels may be used if they meet the requirements



§95375. Requirements Applicable to Table 3 of Section 95374(c).

(3) Labeling and Recordkeeping.

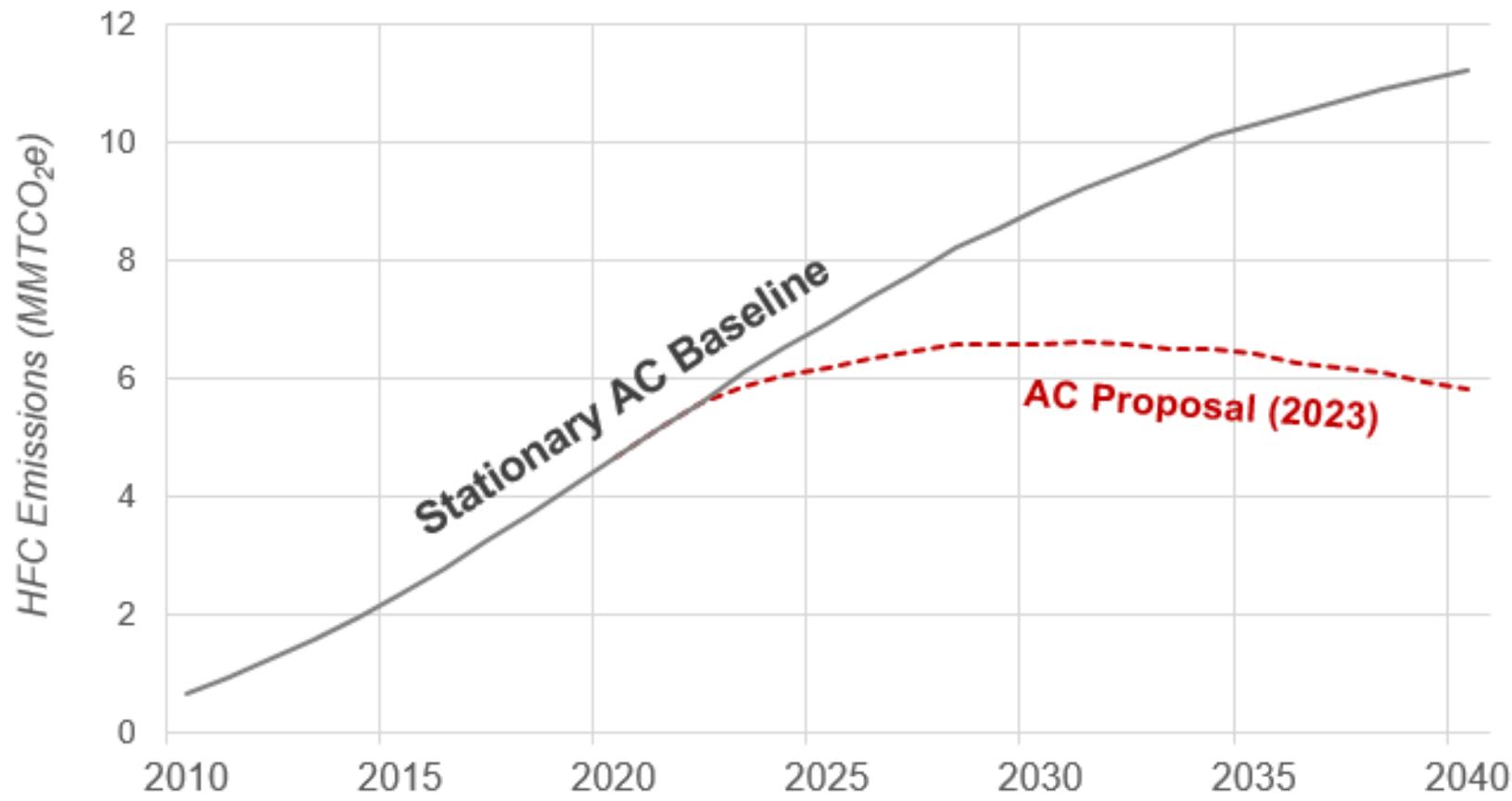
(i) Labeling

➔ (ii) Recordkeeping for Manufacturers.

- Name, address, telephone and email of purchaser
- Model and serial number of equipment
- Date of manufacture
- Date of sale
- Refrigerant type and amount



Expected Emissions Reductions from Proposed AC Rule



- Annual Emissions Reductions in 2030: 2.3 MMTCo₂e
- Cumulative Emissions Reductions by 2040: 50 MMTCo₂e

Next Steps

Stationary AC Equipment	
Public workshops and Stakeholder meetings	October 2017, October 2018, March 2019, August 2019, January 2020, July 2020
45-Day Notice	October 23, 2020
Board Hearing	December 10-11, 2020

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michael.fitzgibbon@arb.ca.gov

For more information, please visit:
[Stationary Hydrofluorocarbon Reduction Measures Website](#)



Public Workshop Proposed Updates to Other End Uses and Variance Provision

July 22, 2020

Elizabeth Brega

F-gas Reduction Strategy Section

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California Air Resources Board

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- Proposed Regulatory Updates
- Proposed Variance Provision:
 - Overview of variance criteria
 - Application process
 - Application materials

Proposed Regulatory Updates

§ 95373, Definitions

Several definitions related to Senate Bill 1013 end uses have been added and updated

Proposed Variance Provisions

§ 95377. Variance.

There are two types of variances:

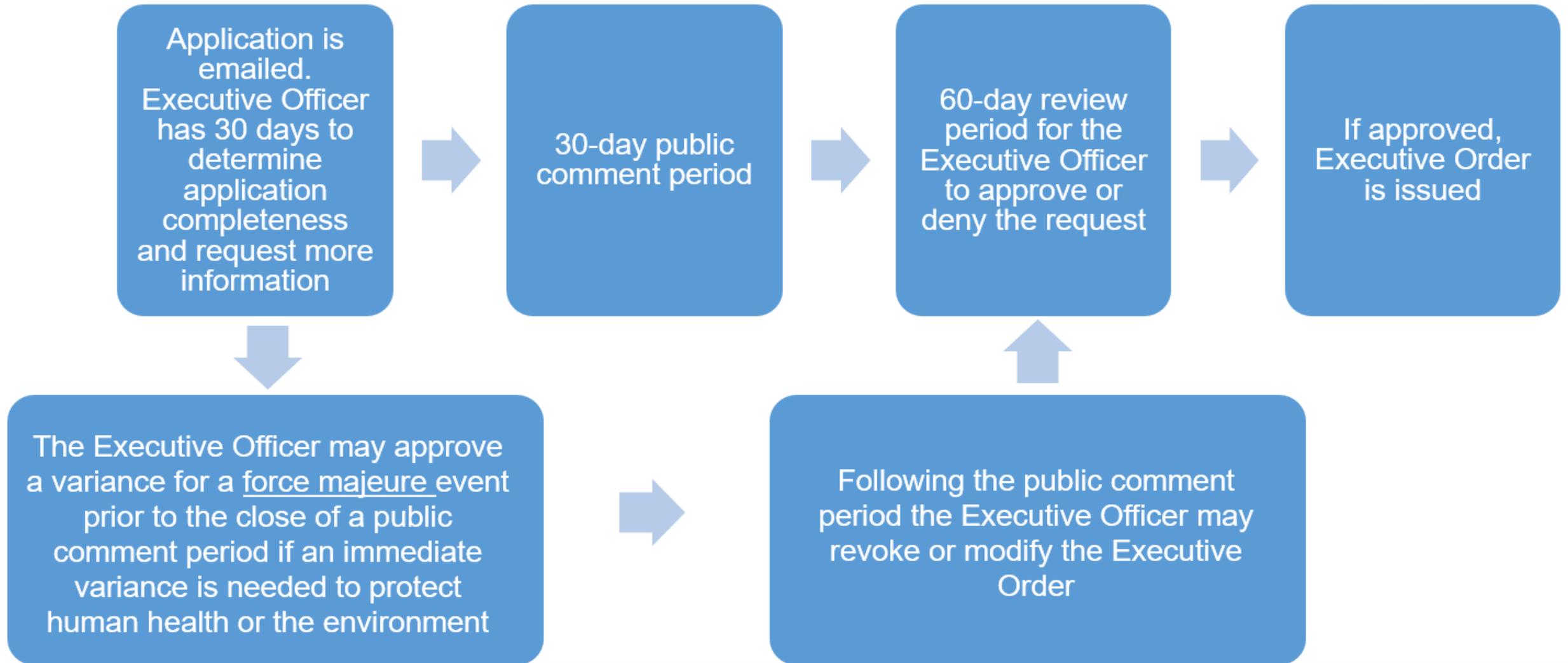
(1) Impossibility

- Criteria to apply for an Impossibility variance: A lower risk substitute is not currently or potentially available, an exemption will not increase the overall risk to human health or the environment, the Applicant has a niche end-use or circumstance, and the Applicant used best efforts to anticipate and address the Impossibility and any potential noncompliance

(2) Force Majeure

- Criteria to apply for a Force Majeure variance: Non-compliance is due to a Force Majeure event and the Applicant used best efforts to anticipate and address the Force Majeure and any potential noncompliance

Application Process



- A variance is only approved for the applicant and cannot be retroactively applied
- A variance may be modified or revoked if:
 - Any terms and/or conditions specified in the executive order are not followed
 - The applicant no longer meets the variance criteria

Key Application Materials

Evidence, rationale, and supporting documentation relating to the Impossibility or Force Majeure

A compliance plan

A description of the damage or harm that would result from compliance with the regulatory requirements

Quantification of GHG emissions (for Impossibility criteria only)

Information regarding any negative impacts to human health or the environment

A mitigation plan

Next Steps

Proposed Amendments	
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