

MASSACHUSETTS CLEAN HEAT STANDARD

TECHNICAL SESSION:
DRAFT FRAMEWORK REVIEW

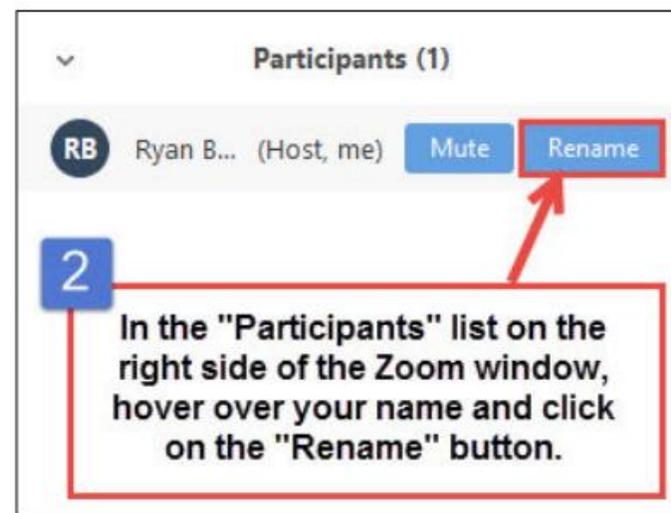
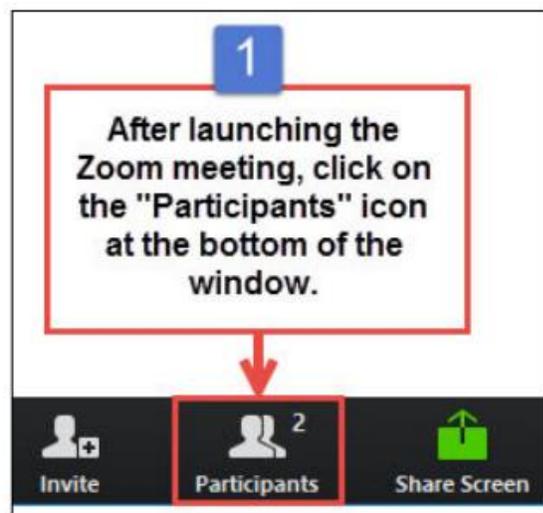
DECEMBER 7, 2023

MassDEP



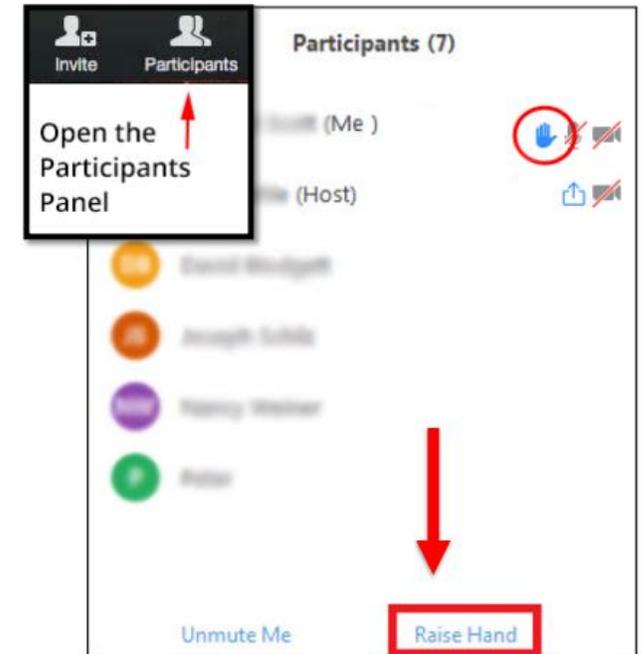
ZOOM MEETING LOGISTICS

- This meeting is being recorded
- To minimize background noise, attendees are on mute
- Please enter your full name, and affiliation if relevant, in the Participants panel



HOW TO PARTICIPATE VIRTUALLY

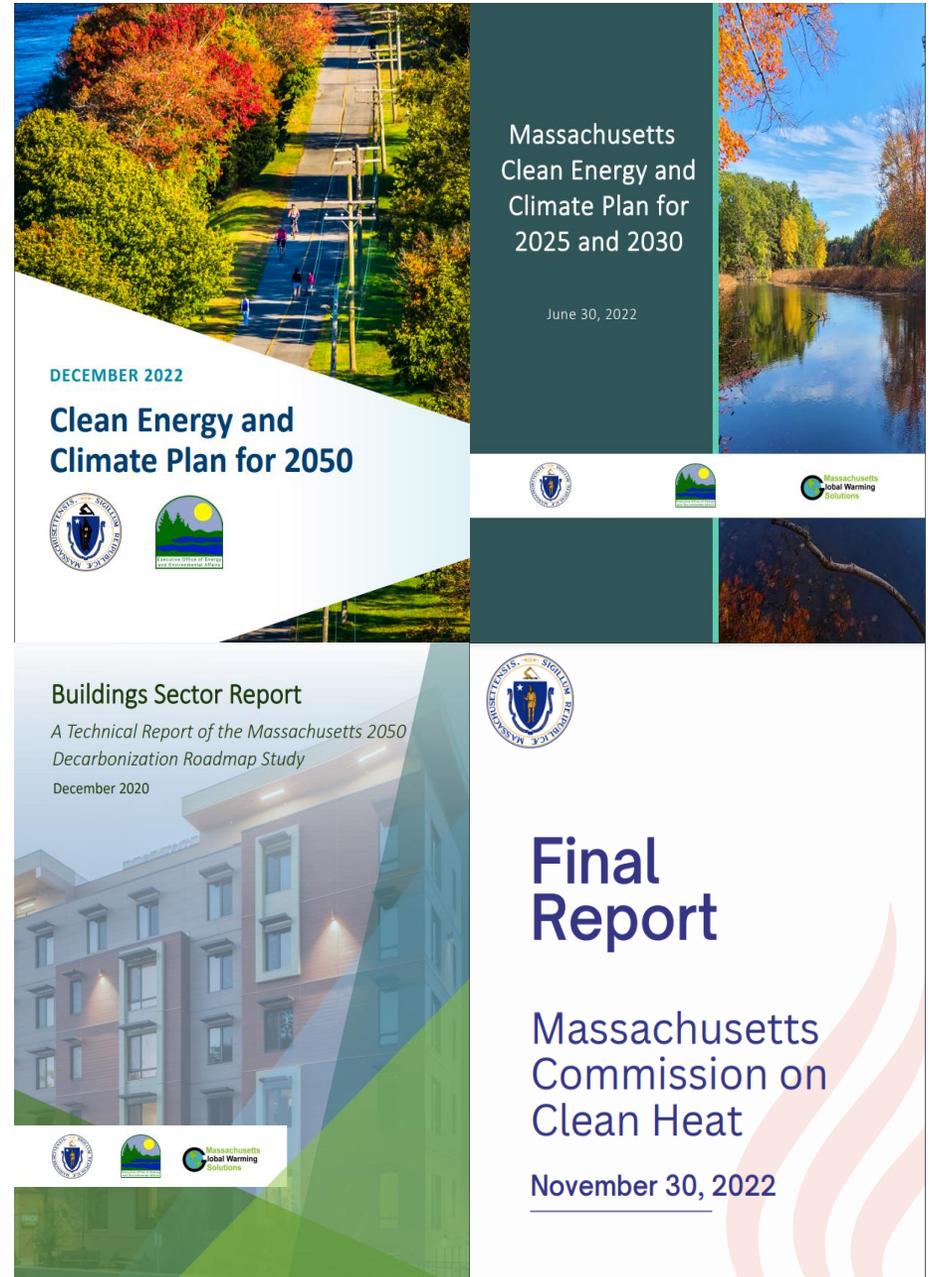
- The latter half of the presentation will be dedicated to answering both clarifying and substantive questions
- To ask a question or provide a comment, raise your hand
- When it is your turn, we will:
 - Notify you by chat
 - Announce your name
 - Unmute you and lower your raised hand



AGENDA

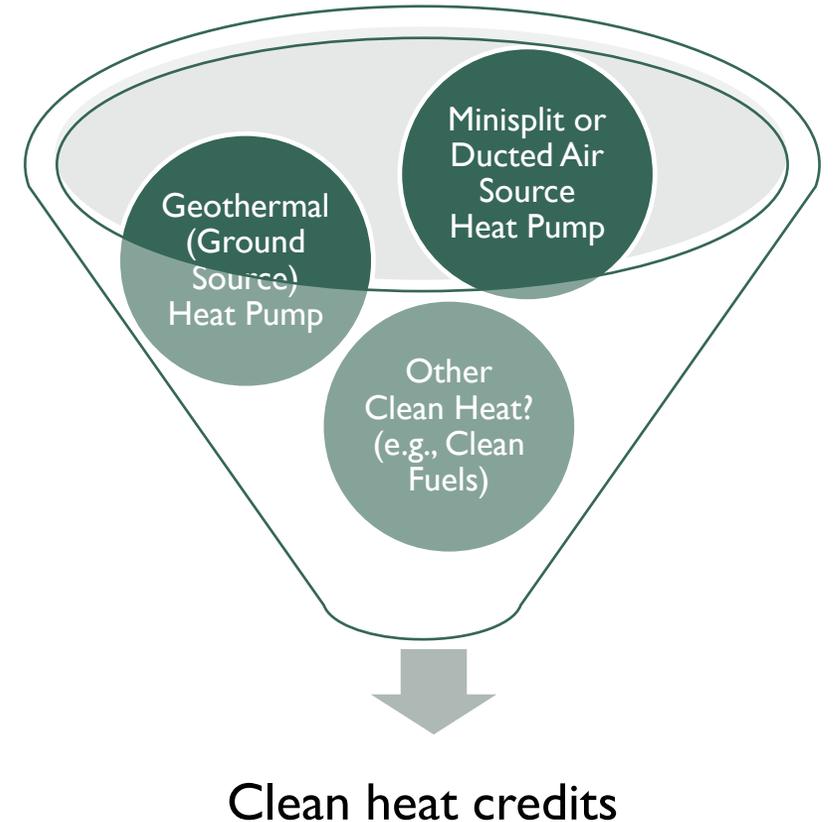
- Meeting logistics and updates (10 min.)
- Overview of Clean Heat Standard Draft Framework for Stakeholder Review (50 min.)
- Questions and comments (30 min.)

MassDEP is tasked with developing a Clean Heat Standard: “a **practical and cost-effective policy tool** to meet emissions reduction goals for the thermal sector, and it could be **implemented in a progressive, equitable manner.**”¹



WHAT IS A CLEAN HEAT STANDARD?

- A Clean Heat Standard is a regulatory program that requires heating energy suppliers to reduce their GHG emissions over time by acquiring clean heat credits
- Regulated companies (suppliers) would include suppliers of heating oil, propane, natural gas, and electricity
- Suppliers would demonstrate emissions reductions through clean heat credits
- Suppliers could implement clean heat themselves or purchase credits from third parties, such as heat pump installers
- Clean heat credits would be generated by implementing clean heat, such as electric heat pumps



MassDEP is seeking stakeholder input on the draft program framework by December 21, 2023

STAKEHOLDER INPUT PROCESS

■ Regular Virtual Community Meetings

- Two sessions, every 4-6 weeks
- Content for a general audience
- Built-in time for questions and comments
- Next meetings:
 - December 11 and 14 at 6 PM



■ Technical sessions on program design

- July agendas included background, review of comments received, Q&A, and comment period
- Today: review draft CHS framework



Send us an email with questions, suggestions, or comments any time at climate.strategies@mass.gov

RESOURCES FOR STAKEHOLDERS

The Clean Heat Standard webpage includes

- Links to descriptions of the CHS concept (including 2-page summary)
- Translations of the 2-page summary into 5 languages
- White papers on 1) costs and emissions associated with different heating technologies; 2) existing crediting schemes for consumer-level actions, such as rooftop solar; and 3) which entities are obligated to comply
- Comments received during Spring 2023 and a brief summary of themes from those comments
- Comments received during Summer 2023 and a brief summary of themes from those comments*
- Slides and videos from June, July, and August meetings*
- Voluntary CHS Early Registration Program Discussion Draft Regulation*
- CHS Stakeholder Process Frequently Asked Questions*
- Draft Framework for Stakeholder Review*

Massachusetts Clean Heat Standard

Learn about and participate in the MassDEP initiative to develop a regulatory standard for reducing greenhouse gas emissions from fossil heating fuels.

TABLE OF CONTENTS

- ▼ What is a Clean Heat Standard?
- ▼ Stakeholder Input
- ▼ Background ←
- ▼ Contact
- ▼ RELATED

Background

See **Additional Resources** below for:

- An April 2023 discussion document that includes a general description of the CHS concept, additional background information, and specific questions for stakeholders to consider.
- "Straw" regulatory language for heating fuel supplier reporting requirements in support of the CHS.
- Comments received as of May 10, 2023.
- A summary of themes from the comments received as of May 10, 2023.
- A short explanatory video on the CHS concept by the authors of the CHS Appendix to the 2025/2030 CECP
- A technical memorandum on costs and emissions associated with different heating technologies.
- A technical memorandum on existing crediting schemes for consumer-level actions.
- A technical memorandum on which entities are obligated to comply with a CHS.

(* = new material since previous meeting)

NEXT STEPS

- Currently accepting comments on:
 - CHS Draft Framework for Stakeholder Review
 - Deadline: **December 21, 2023**
 - Voluntary Early Registration Program Discussion Draft Regulation
 - Stakeholder meetings and comment deadline to be announced in early 2024
- Propose fuel supplier emissions reporting regulation
- Update the CHS FAQ document as needed
- Continue holding regular Virtual Community Meetings and Technical Sessions



REVIEW OF
CLEAN HEAT STANDARD
DRAFT FRAMEWORK

DRAFT FRAMEWORK OVERVIEW

- The draft CHS framework is a document outlining key elements of the CHS to support further stakeholder discussion and refinement of the projected program
- The CHS framework is **not** a regulation or a proposed regulation
- The draft CHS framework contains four sections:

Setting the
Standards

Regulated
Heating Energy
Suppliers

Credit
Generation

Compliance
Flexibility and
Revenue

DRAFT FRAMEWORK OVERVIEW

Setting the Standards

- Includes separate standards for “full electrification” projects (including a low-income “carve-out”), and annual emission reductions for clean heat.
- The full electrification standard phases in gradually over time, starting at a level consistent with the current pace of heat pump deployment in Massachusetts.

Regulated Heating Energy Suppliers

- Includes annual requirements for electricity, natural gas, heating oil, and propane suppliers.
- The electricity supplier obligation starts small but increases over time as more customers electrify.

Credit Generation

- Limits crediting to electrification and liquid biofuels at program startup, with a scheduled 2028 program review to evaluate revising eligibility based on specific criteria.
- Full electrifications are limited to residences that install electric heat pumps capable of meeting 100% of space heating needs.

Compliance Flexibility and Revenue

- Includes credit banking, an alternative compliance payment (ACP) option with revenue dedicated to supporting future clean heat projects, and a “just transition fee” on the initial sale of certain credits to support equitable outcomes.

DRAFT FRAMEWORK OVERVIEW

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Compliance Flexibility and Revenue

Clean Heat Standard

Annual GHG emission reductions

Full electrification of buildings

- The CHS would require **annual emission reductions** from the thermal sector while ensuring ongoing progress toward **full electrification of buildings**

- The **emission reduction standard** would require that GHG emission reductions increase by an additional 1 MMT of GHG emissions each year from 2026 through 2050

Annual GHG emissions reductions standard in million metric tons (MMT)

2026	2027	2028	2029	2030	2035	2040	2050
1	2	3	4	5	10	15	25

DRAFT FRAMEWORK OVERVIEW

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Clean Heat Standard

Annual GHG emissions reductions

Full electrification of buildings

- The CHS would require **annual emission reductions** from the thermal sector while ensuring ongoing progress toward **full electrification of buildings**

- From 2026 to 2030, the **full electrification standard** would require full electrification of an increasing number of residences each year
- After 2030, the standard would remain at 100,000 per year
- A certain portion of the electrifications would support equity

Annual full electrification standard in number of residences

2026	2027	2028	2029	2030	2035	2040	2050
20,000	40,000	60,000	80,000	100,000	100,000	100,000	100,000

DRAFT FRAMEWORK OVERVIEW

Setting the Standards

Regulated Heating Energy Suppliers

Credit Generation

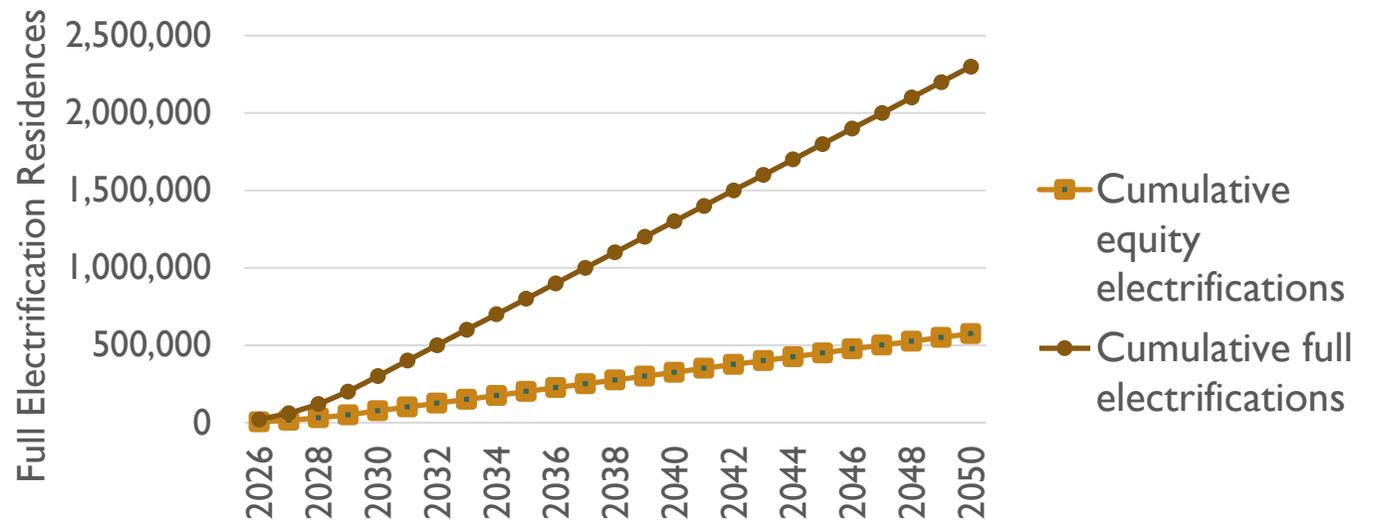
Compliance Flexibility and Revenue

Full electrification of buildings

Equity Carve Out

At least **25%** of **full electrifications** must serve customers who are eligible for low-income discount electricity rates

Full Electrifications through 2050



Annual number of full electrifications that must serve low-income customers

2026	2026	2028	2029	2030	2035	2040	2050
5,000	10,000	15,000	20,000	25,000	25,000	25,000	25,000

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Setting the
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Full electrification of
buildings

- The standards would be inclusive of clean heat supported by other programs, such as

Inflation
Reduction Act
tax rebates

Alternative
Portfolio
Standard

Mass Save

Other
programs

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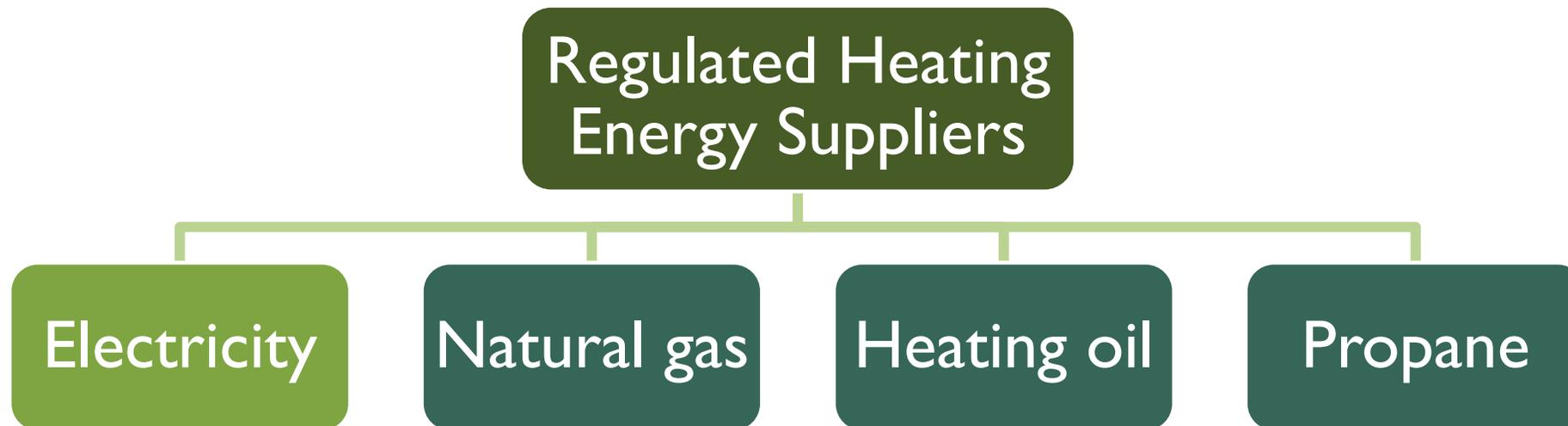
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- Regulated entities would include retail sellers of electricity, natural gas, heating oil, and propane
- Each regulated entity would need to acquire both full electrification and emission reduction credits each year



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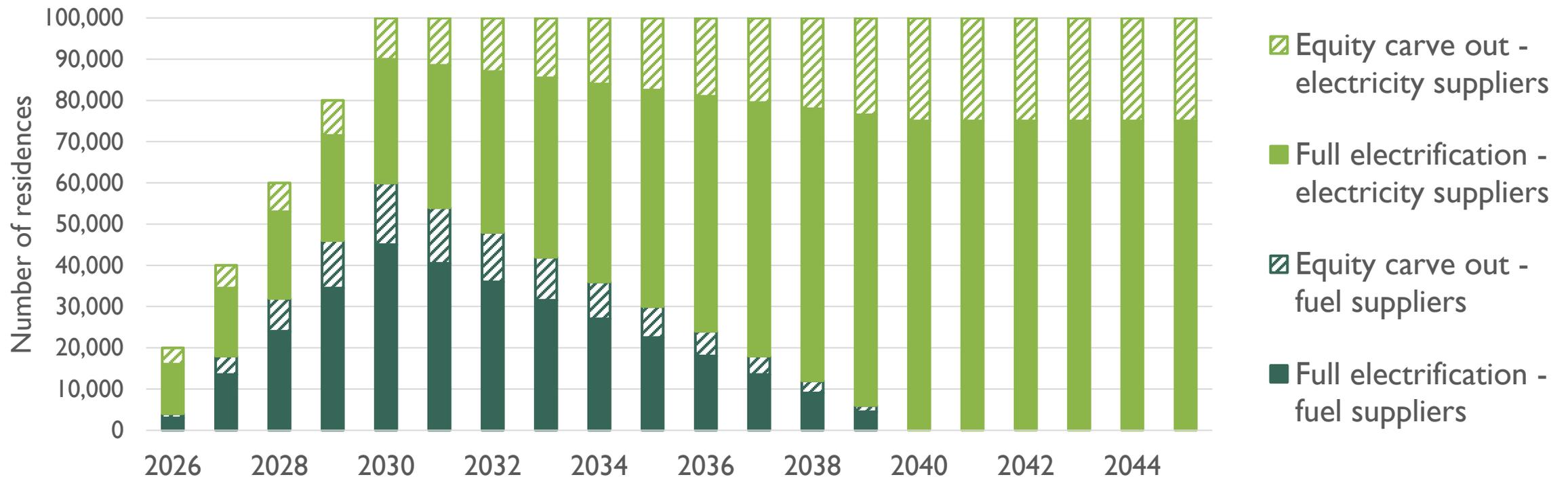
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Full Electrification Standard for All Heating Energy Suppliers 2026-2045



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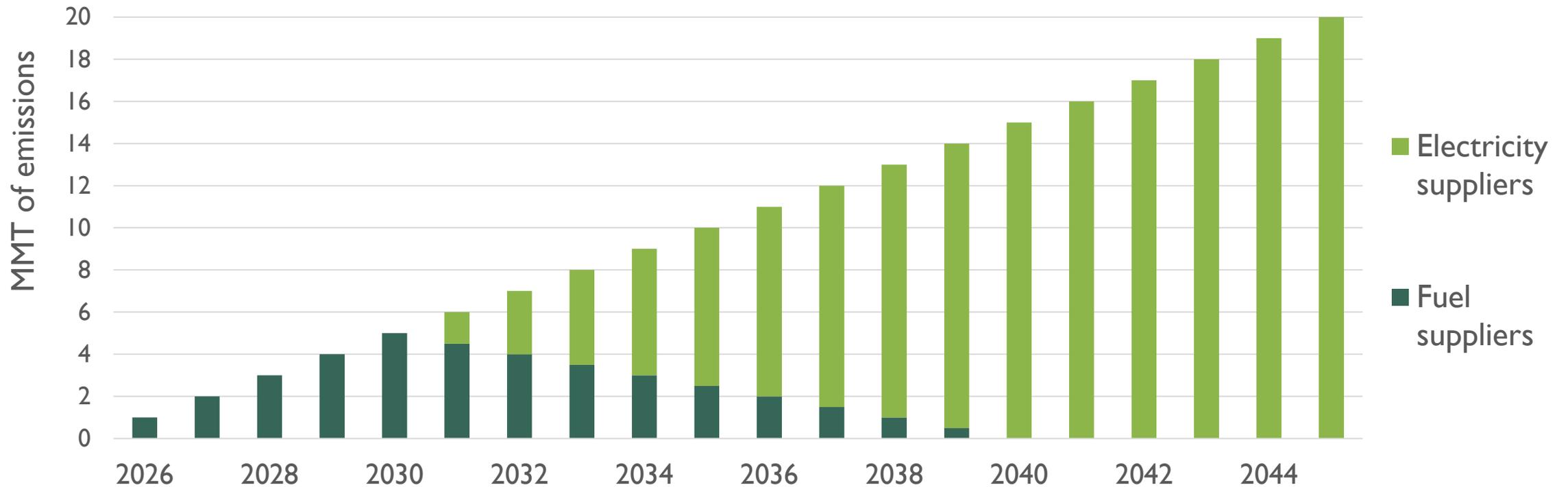
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Emission Reduction Standard for All Heating Energy Suppliers 2026-2045



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Determination of Compliance Obligations for Full Electrification Standard

- **Fuel suppliers:** the CHS regulation would specify the number of full electrifications required per MT emissions reported for each year
- **Electricity sellers:** the CHS regulation would specify the number of full electrifications required per MWh of electricity sold for each year
- Each company would determine its **compliance obligation** by multiplying the specified number by their MT emissions reported (fuel suppliers) or MWh of electricity sold (electricity suppliers)
- The requirements for each year are based on the overall full electrification standard and estimates of future building sector emissions and electricity sales in MA, and could be recalibrated during program reviews

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Determination of Compliance Obligations for Emission Reduction Standard

- **Fuel suppliers:** the CHS regulation would specify the amount of emission reductions required per MT emissions reported for each year
- **Electricity sellers:** the CHS regulation would specify the amount of emission reductions required per MWh of electricity sold for each year
- Each company would determine its **compliance obligation** by multiplying the specified amount by their MT emissions reported (fuel suppliers) or MWh of electricity sold (electricity suppliers)
- The requirements for each year are based on the overall emission reduction standard and estimates of future building sector emissions and electricity sales in MA, and could be recalibrated during program reviews

DRAFT FRAMEWORK OVERVIEW

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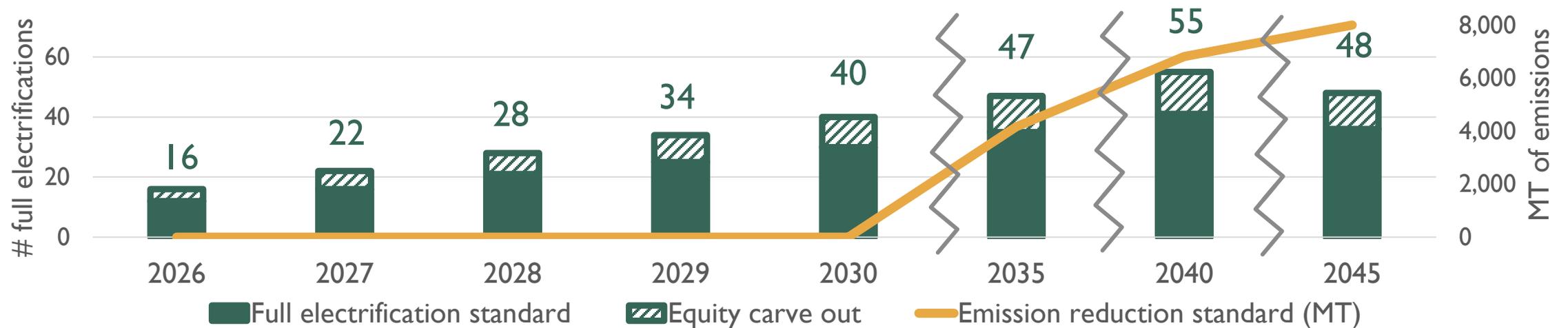
Electricity

Natural gas

Heating oil

Propane

Example Compliance Obligation for an Individual Retail Electricity Seller with 10,000 Customers



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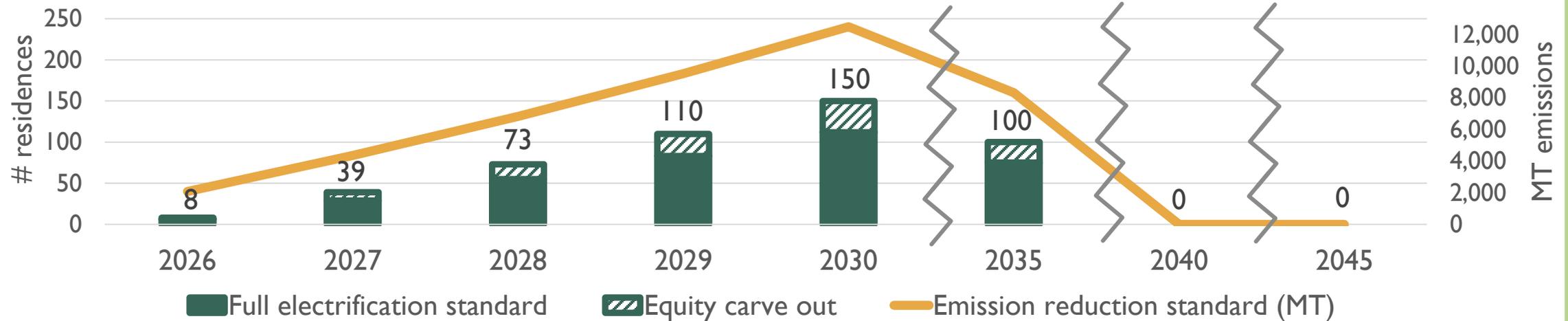
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Example Compliance Obligation for an Individual Fuel Seller with 10,000 Customers



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Clean Heat Standard

- Entities can demonstrate compliance using **Clean Heat Credits** (CHCs or “checks”)

Annual GHG
emissions reductions

Emission Reduction
CHCs

- Emission reduction CHCs** could be generated each year on an ongoing basis from using clean heat

Full electrification of
buildings

Full Electrification
CHCs

- Full electrification CHCs** could be generated one time upon installation of a clean heat project

- Regulated energy suppliers would create/obtain CHCs by
 - Implementing clean heat themselves, or
 - Purchasing credits from third parties, such as heat pump installers

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Voluntary Early Registration Program

- Would encourage early action by registering full electrifications that are completed before the final CHS regulations are in place
- Participation limited to **residential full electrifications** that:
 - Install **electric heat pumps** capable of meeting **100% of space heating needs**; and
 - **Remove all combustion space heating equipment** or commit to limiting utilization of remaining combustion equipment to backup or emergency use
- Administrative support would be available to early action full electrifications, with resources targeted toward registering equity carve out full electrifications

Electric heat pumps



Removal of combustion
heating



Early action crediting

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Eligible Actions for CHS Crediting

- **Full electrifications** would receive full electrification CHCs on installation
- **Full electrifications** would receive emission reduction CHCs annually beginning the first year of operation
- **Hybrid systems** that retain fossil backup systems would receive annual emission reduction CHCs by demonstrating use of a heat pump, such as via billing records showing winter peaking
- **Documented delivery of eligible liquid biofuels** would earn annual emission reduction CHCs toward compliance obligations of heating oil suppliers
- Weatherization and energy efficiency measures **would not be eligible** to earn CHCs to avoid unnecessary complexity and redundancy with the Mass Save program
- Credits would include information to address equity, such as low-income identifiers and locations

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General Principles of Emission Reduction Crediting

1. **5 MT per fully electrified home:** Replacing combustion heating with clean heat in a single residence would be credited for 5 MT of reduced emissions per year, regardless of home size or whether it was an apartment or single-family home
2. **2.5 MT per hybrid home:** Heat pump systems used for home heating that are not eligible for full electrification CHCs would be credited for 2.5 MT of reduced emissions per year
3. **Commercial clean heat:** Non-residential commercial clean heat would receive emission reduction CHCs based on demonstrated implementation of clean heat and emission reductions. Crediting would be consistent with methods used by other programs
4. **Eligible biofuels:** Eligible waste-based liquid biofuels would be credited based on the assumed avoidance of emissions from the combustion of an equivalent quantity of heating oil; other liquid biofuels eligible for the federal Renewable Fuel Standard would receive 1/2 credit through 2030

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Ownership of Credits

CHC type	Action type	Default CHC owner
Full Electrification	Electrification	Property owners would own CHCs by default, unless they transfer ownership
Emission Reduction	Electrification	Property owners would own CHCs by default, unless they transfer ownership
	Blended fuels delivered by obligated entities	Credits would be owned by the company delivering the fuel

For example: MassDEP expects property owners to assign full electrification CHCs to heat pump installers or other intermediaries, and these entities would reflect the credit value in the prices offered for their services

Note: Credits completed under Mass Save would be assigned to retail electricity or natural gas sellers in proportion to their compliance obligations

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Evaluating Other Actions for Crediting

- The final CHS regulation would require MassDEP to consider expanding eligibility to other fuels in the 2028 program review.
- Fuels may be evaluated based on the following considerations:
 - **Lifecycle analysis** of greenhouse gas emissions associated with producing and utilizing the fuel, including the time frame of the assessment
 - **Detailed analysis of fuel availability**, including the status and potential timeline for production products and analysis of alternative uses of the fuel
 - Any **local air pollution impacts** from production or combustion of the alternative fuel
- Additional program reviews would occur every 5 years thereafter to recalibrate the general requirements, evaluate equity outcomes, and assess all aspects of program design and implementation

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Verification

- Verification measures would draw on existing programs (the Alternative Portfolio Standard, Mass Save) to ensure credit integrity while minimizing administrative burden

Data Storage

- MassDEP would contract for the development and hosting of an electronic Clean Heat and Emissions Tracking System (CHETS) to provide for efficient program implementation

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The CHS would include several
compliance flexibility mechanisms

Credit
banking

Weather
normalization

Alternative
Compliance
Payments

Several CHS provisions could result in
revenue, creating the opportunity to
promote equitable outcomes

Alternative
Compliance
Payments

Just transition
fee

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Credit banking

- Full electrification CHCs earned in one year could be banked for use in future compliance years without limit
- Banking would:
 - Ensure an adequate supply of credits in the early years of the program
 - Support development of a durable and liquid market for credits

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Weather
normalization

- Colder weather drives higher emissions, and electrification of heating systems avoids more emissions during colder winters
- A credit multiplier would be used to assess compliance obligations after particularly cold winters
- As a result, the value of annual **emission reduction CHCs** earned by electrification projects would be weather adjusted before compliance deadlines

DRAFT FRAMEWORK OVERVIEW

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Alternative Compliance Payments (ACPs)

- Alternative Compliance Payments (ACPs) would allow heating energy suppliers to make a payment instead of holding CHCs
- The CHS would allow compliance through ACPs without limit
- The ACPs would be set as follows:

	2026	2027	2028	2029	2030
Full electrification (per residence)	\$6,000	\$7,000	\$8,000	\$9,000	\$10,000
Equity full electrification (per residence)	\$12,000	\$14,000	\$16,000	\$18,000	\$20,000
Emission reductions (per MT)	\$190	\$190	\$190	\$190	\$190

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Alternative Compliance Payments (ACPs)

- ACP revenue would primarily support additional clean heat and CHCs in future years
- All ACP funds from the equity carve out would support future low-income full electrifications

Just transition fee

- Full electrifications not eligible for the equity carve out would pay a just transition fee of 10% of the full electrification ACP value for the first transfer of each CHC
- Funds would be used to assist low-income consumers during the clean heat transition

Other support

- MassDEP would consider offering additional support to low-income households
- This support could be funded by ACP or just transition fee revenue, other MassDEP revenue, or programs implemented with other state agencies

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- Includes separate standards for “full electrification” projects (including a low-income “carve-out”), and annual emission reductions for clean heat.
- The full electrification standard phases in gradually over time, starting at a level consistent with the current pace of heat pump deployment in Massachusetts.

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Compliance Flexibility and Revenue

- Includes credit banking, an alternative compliance payment (ACP) option with revenue dedicated to supporting future clean heat projects, and a “just transition fee” on the initial sale of certain credits to support equitable outcomes.



ANY QUESTIONS OR COMMENTS ON THE
CLEAN HEAT STANDARD
DRAFT FRAMEWORK?



GENERAL QUESTIONS AND COMMENTS



MassDEP [CHS web page](#)



Submit comments and questions to
climate.strategies@mass.gov



[Sign up](#) for the CHS email list

GLOSSARY OF TERMS

- **Alternative Compliance Payments (ACPs):** in the CHS, the ACP would be a payment of a certain dollar amount per required number of full electrifications or MT of emission reductions as appropriate, which a retail heating energy supplier may submit to MassDEP in lieu of providing CHCs required under the CHS.
- **Carve out:** a requirement that a certain percent of a compliance obligation falls into a specified category. In the CHS, 25% of homes electrified by energy suppliers must serve low-income households.
- **CHC:** Clean Heat Credits or “checks” would be used to count the implementation of clean heat in a uniform manner.
- **CHETS:** An online platform designed to track CHC generation and ownership under a CHS.
- **CHS:** The Clean Heat Standard is a potential future program from MassDEP to reduce GHG emissions from the building sector and increase the implementation of clean heat throughout the state.
- **CHS Draft Framework:** a document outlining key elements of the CHS to support further stakeholder discussion and program refinement.
- **Compliance flexibility mechanisms:** features of a regulatory program that allow obligated entities to comply in different ways, allowing for variability in circumstance and resources.
- **Credit banking:** storing credits earned or purchased in one year to use for compliance in a different, future year
- **Full electrification:** full displacement of fossil heating with electric heat pumps.
- **Hybrid systems:** heating systems where an electric heat pump is supplemented by a secondary fossil system.
- **Just Transition Fee:** a fee on credit transfers that supports an equitable outcome for the program.
- **Lifecycle analysis:** an analysis that considers GHG emissions occurring throughout the lifetime of a substance or object. In the CHS, a lifecycle analysis would consider emissions associated with fuel production and use.
- **Liquid biofuel:** a liquid fuel produced from biomass that has analogous chemical properties to a liquid fossil fuel.
- **Obligated entities:** the parties that must comply with a regulatory program. In the CHS, obligated entities would be electricity, natural gas, propane, and fuel oil suppliers.
- **Residence:** a permanent dwelling unit, including, but not limited to, single-family homes, apartments, condos, duplexes, and triple-deckers.
- **Weather normalization:** incorporating the effect of weather fluctuations into CHC values, such as by using a credit multiplier.