

# Clean Heating & Cooling: Opportunities and Incentives

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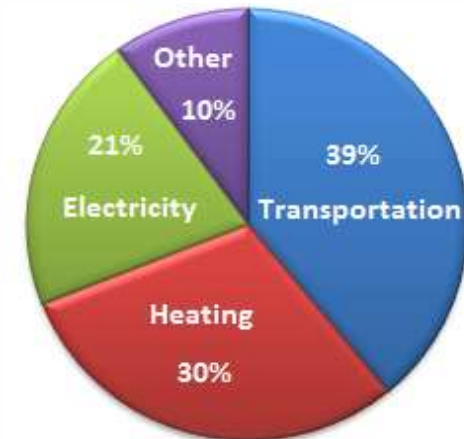
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# Motivation for Clean Heating & Cooling

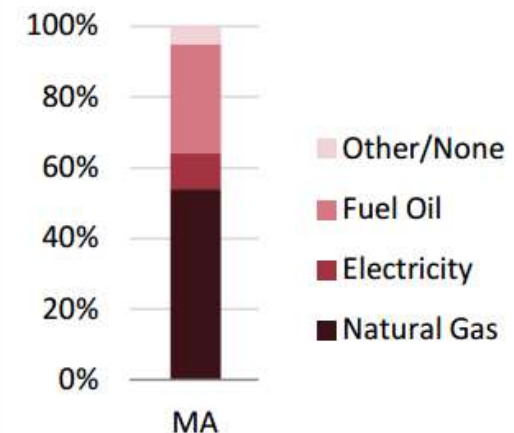
## MA Background

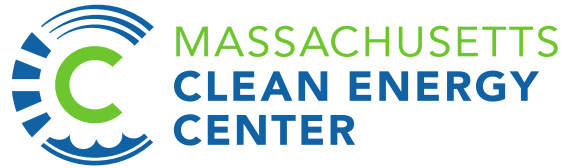
- Heating: 30% of MA GHG emissions
- MA GHG reduction goals:
  - 25% by 2020
  - 80% by 2050
- Average MA household spends \$1,700 on home heating annually
- Areas without natural gas spend about \$2,400

Massachusetts GHG



Primary Heating Fuel Used





## MassCEC Clean Heating Strategy

Achieving MA GHG goals requires tens of thousands of new clean heating systems per year – starting now

- August 2015: 5-year, \$30 Million commitment
  - Incentives for residential and commercial-scale clean heating
  - Additional incentives for low- and moderate-income
- Outreach, marketing, education, addressing industry barriers, infrastructure
- Coordinating with other state agencies & utilities
- Goal: support growth of industry into self-sustaining, mature market

# CH&C Technologies

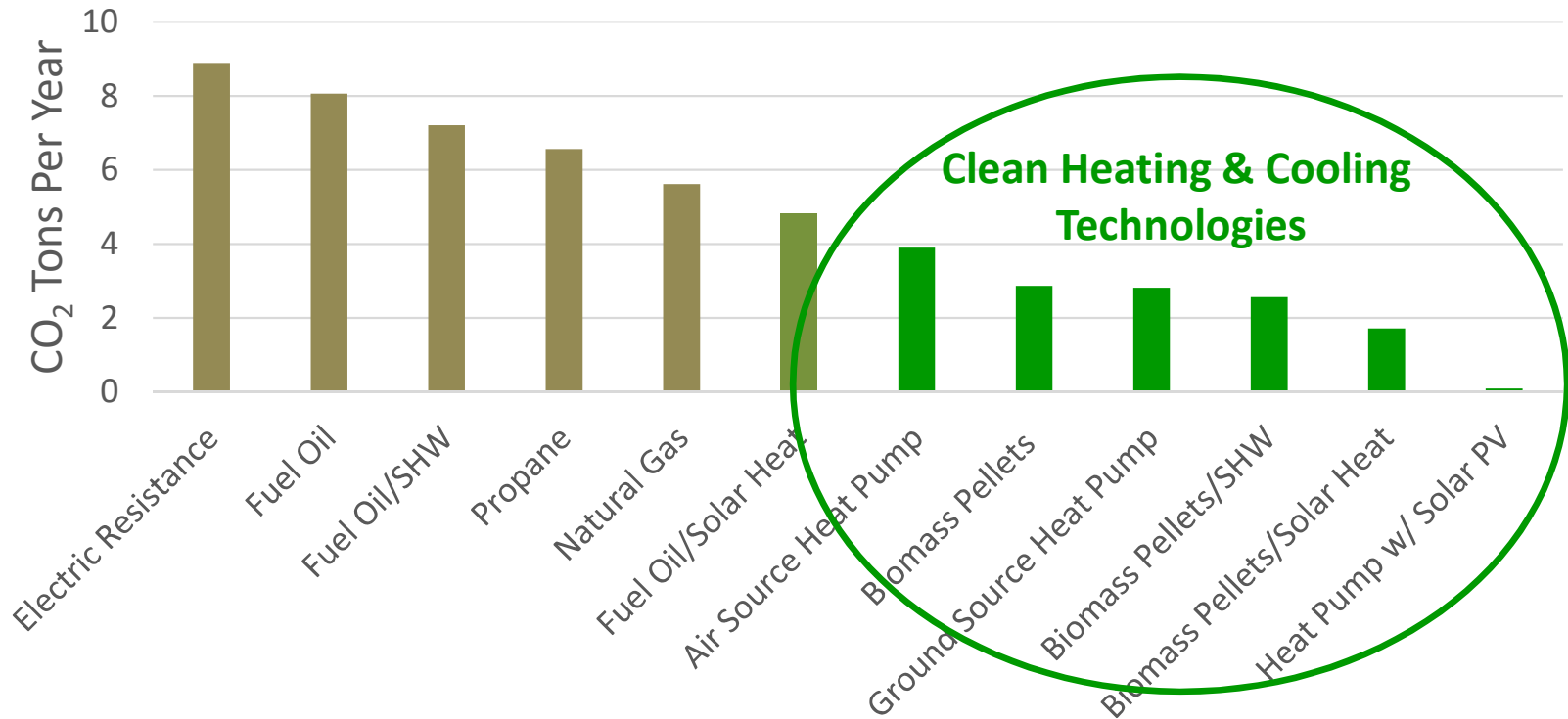
## Technologies

- Solar Thermal
- Biomass Heating
- Cold-Climate Air-Source Heat Pumps
- Ground-Source Heat Pumps



# Renewable Heating & GHG

Estimated Annual GHG Emissions – Example Residence



## Air-Source Heat Pumps

### Residential Program:

- Rebates up to \$6,000
- Highest efficiency, cold-climate ASHPs
- Typically “mini-splits”



### Commercial-Scale Program:

- Rebates up to \$225,000
- Currently, residential-scale technologies
- Expanding to large-scale technologies soon
- Flexible distribution system applications

# Ground-Source Heat Pumps

## Residential Program:

- Rebates up to \$16,500, depending on size, efficiency
- Highest EPA efficiency ratings required

## Commercial-Scale Program:

- Rebates up to \$250,000
- Highest efficiency technologies
- Typically forced air or VRF distribution



# Central Biomass Heating

## Residential Program:

- Rebates up to \$16,500, depending on cost
- Strict PM emissions and efficiency requirements
- Currently only pellet boilers

## Commercial-Scale Program:

- Rebates up to \$250,000
- Strict PM emissions, efficiency, and fuel requirements
- Pellet and wood chip boilers
- Replacement for hydronic heating systems





# Solar Hot Water & Solar Heating

## Residential Program:

- Rebates up to \$6,000, depending on size, efficiency
- Typically for domestic hot water, sometimes supplementing heating

## Commercial-Scale Program:

- Rebates up to \$100,000
- Domestic hot water
- Also process, agricultural applications





## Massachusetts Clean Energy Center *Clean Heating & Cooling Programs*

[www.masscec.com/programs/clean-heating-and-cooling](http://www.masscec.com/programs/clean-heating-and-cooling)

- Air-Source Heat Pumps: [ASHP@masscec.com](mailto:ASHP@masscec.com)
- Central Biomass Heating: [biomassthermal@masscec.com](mailto:biomassthermal@masscec.com)
- Ground-Source Heat Pumps: [GSHP@masscec.com](mailto:GSHP@masscec.com)
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