



MassCEC ASHP Program: Lessons from Year 1

**NEEP Air Source Heat Pump Workshop
October 6, 2015**

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Motivation for Clean Heating

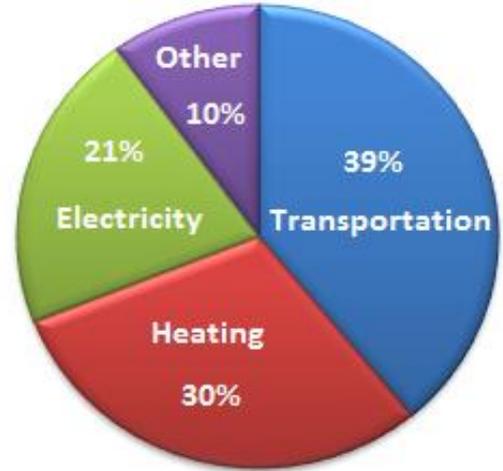
MA Background

- 50% heat with oil, electric, or propane
- Heating comprises 30% of GHG emissions
- GHG reduction goals: 25% by 2020, 80% by 2050

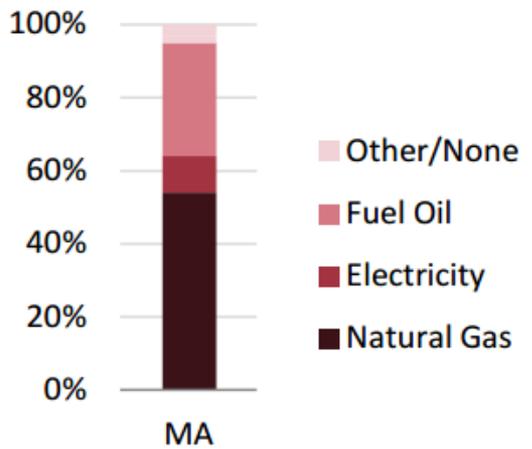
Clean Heating Strategy

- MassCEC supports clean heating: ASHPs, GSHPs, central biomass, solar thermal
- ASHPs can reduce household heating emissions by ~50% now
 - As electricity continues to become cleaner, so do heat pumps
 - “*The electric car of heating and cooling*”

Massachusetts GHG



Primary Heating Fuel Used



MassCEC ASHP Experiences: One Year In

- Partnered with NEEP in 2014
 - MassCEC has 9 participating manufacturers, 50+ models
- ASHPs have dominated clean heating program volume
 - Anticipating 4,000 this fiscal year
- Strong demand and potential for clean heating and cooling

Projects:	1900
Total rebates:	\$2.7 Million
Avg. rebate:	\$1400
Avg. # of units:	1.7
Single unit installs:	40%
Multi-head installs:	14%

August 2015: MassCEC makes 5-year, \$30 Million commitment to support clean heating and cooling in MA.

- Goal is to support rapid growth of industry into self-sustaining, mature market

Components of a mature market

1. **Technologies:** higher efficiencies, improved cold-climate capacity, more indoor configurations, increased reliability
 - Maintaining aggressive product improvement trajectory
2. **Installations:** improved quality, reliability, performance, and cost reductions
 - Growing positive customer experiences, remaining competitive given fuel price volatility
3. **Increased Share of Heating:** potentially having ASHPs offset more of a home's heat load, possibly all of it
 - Cold temperature efficiency plus capacity and low-temp operation

Ultimately, state GHG emissions goals can only be met if tens of thousands of households implement renewable heating annually

- Must access rentals, low-income, and commercial buildings

Take-Aways and Challenges from MA Market

Design

- ASHPs largely remain supplemental heating
 - Homeowners still must maintain back-up system
 - Provides cost-effective but more limited GHG reductions
 - Adds cost in long-run, challenges perception of technology
- Cold-temp capacity requirements have been controversial
 - MassCEC requires heating capacity, not just efficiency, to be delivered
 - 100% of rated capacity at 5° F in addition to NEEP spec
- Rapid maturation of technologies
 - NEEP list has proliferated to many manufacturers
 - Much wider range of capacities, configurations, and brands available
 - Efficiencies continue to improve

Take-Aways and Challenges from MA Market

Market

- Lower oil, natural gas prices alongside spikes in electricity prices are not favorable for ASHPs
 - Customer interest remains, but economic message changing
 - Additional reasons for adoption beyond economics
- Clean heating technologies are great solution for natural gas moratoria (Cape Cod and western MA)
 - Roughly half of state has no natural gas regardless
- MassCEC has not conducted significant outreach or marketing
 - Market demand appears strong
- Strong network between manufacturers, distributors, and installers
 - Messages move quickly

Take-Aways and Challenges from MA Market

Growth Constraints and Opportunities

- Increased manufacturer, product diversity would help market
- With strong market growth, demand for skilled installer workforce has often outstripped supply
- Tens of thousands of installs can impact electrical grid
 - However, offsetting electric resistance heat brings benefits
- Solar PV is a complementary technology with high uptake in MA
- Quality control and program standards still required

Take-Aways and Challenges from MA Market

Administrative Challenges and Scaling

- Need to continue working with NEEP, manufacturers to set efficiency targets and structure gradual tightening
- Strive for consistent, clear program requirements across MA programs
- Maintain stable program while implementing changes gradually

Thank you!

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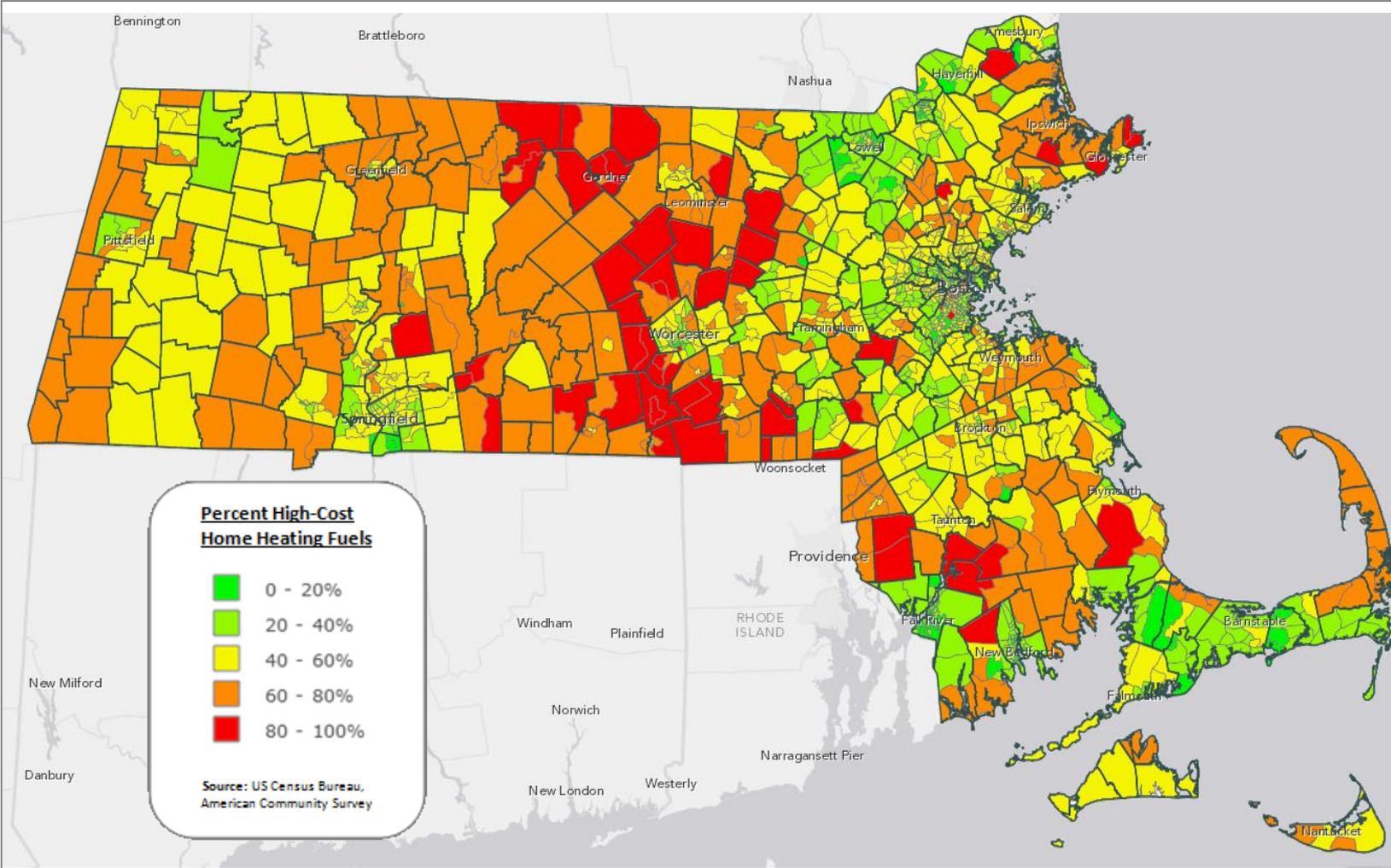
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