

What's New at the Massachusetts Clean Energy Center

Programs and Initiatives for Municipalities

Elizabeth Youngblood, Senior Project Manager, Solar Programs



November 15, 2017

Agenda

- Introduction
- Updates to 2018 Solarize Mass, Solarize Mass Plus, and HeatSmart Mass programs
- Current MassCEC RFPs
 - Clean Energy Activity Day
 - Waste Water Treatment Plant Innovative Technology
- Clean Heating and Cooling incentives for municipalities
- Updates to Deploy Mass
- Questions

MassCEC Mission

MassCEC is a quasi-public state agency whose mission is to support the growth of the clean energy economy in Massachusetts.

ADOPT

Spur deployment of renewable energy technologies

CONNECT

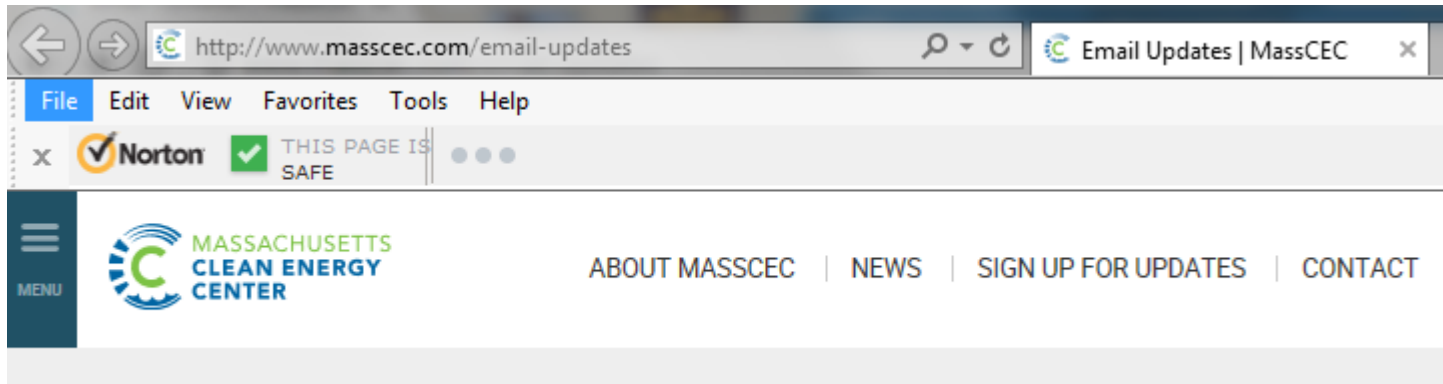
Connect employers, job seekers, students, communities, and investors to the clean energy industry.

INNOVATE

Promote innovation through infrastructure, funding, and other support.

Funded primarily by a system benefit charge on electricity bills (separate from MassSave).

Sign Up for MassCEC Email Updates



Email Updates

To receive email updates from Massachusetts Clean Energy Center, please enter your email address below:

**Required*

Please select the type of updates you would like to receive:

- Massachusetts Daily Clean Energy News Digest**
A daily newsletter of local, national and international clean energy news.
- Events Calendar and Announcements**
Receive occasional major MassCEC announcements and a newsletter of local and regional clean energy events highlighted twice monthly.

Receive periodic updates on these program areas:

- Careers, Workforce and Internships**

Request for Proposals

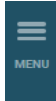
2018 Clean Energy Activity Day



Clean Energy Activity Day

- **Purpose:** *K-8 MA schools plan and host a clean energy activity day in the spring for their students!*
- **Proposals Due By:** December 8, 2017
- **Anticipated Award Amount:** *\$8-10,000/school for up to 10 awardees*
- **Anticipated Award/Project Start Date:** *Awards will be announced at the end of January 2018 with events occurring between February – June 2018.*
- **Other:** *In 2017 we awarded 6 schools and reached ~1,100 students – we aim to beat this number in 2018.*
- *Go to the below link for extended webinar on the RFP*
<https://www.youtube.com/watch?v=iju6ysbBVLo&feature=youtu.be>

Clean Energy Activity Day



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Clean Energy Activity Day

[EDUCATOR / TRAINER](#)



[Home](#) > [Clean Energy Activity Day](#)

MassCEC partners with Massachusetts elementary and middle schools to provide students with a day dedicated to clean energy and STEM education and hands-on activities.

[▶ Who's Eligible?](#)

[▶ How Do I Apply?](#)

[▶ Frequently Asked Questions](#)

[▶ Program Background](#)

[▶ Program Contact](#)



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<http://www.masscec.com/clean-energy-activity-day>

Request for Proposals

Wastewater Treatment Plant (WWTP)
Innovative Technology Pilots



Goal of WWT Innovative Technology Pilots

The **primary goal** of the program is to:

Assist Massachusetts WWT utilities by funding the piloting of innovative water technologies that (1) **increase facility energy efficiency**

Secondary goals include:

- (2) **recover reusable resources** (*i.e.*, heat, clean water, nutrients, or electricity) and/or;
- (3) **remove/remediate nutrients** (*i.e.* nitrogen, phosphorus)

General RFP Information

- ❖ Total Funding Available: \$800,000
- ❖ **Maximum Award: \$150,000**
- ❖ Release Date: September 26, 2017
- ❖ **Deadline to Submit: December 8, 2017 4PM EST**
- ❖ Duration of Pilots: Not to exceed 12 months
- ❖ Required Cost Share: At least 50% (combination of in-kind and cash)
- ❖ **Anticipated Total Awards: 5-8 awards**

DeployMass Program



DeployMass Program Goals

- (1) Support the growth and development of Massachusetts-based clean energy and water technology companies
- (2) Cut operating costs, reducing greenhouse gas emissions and/or provide other energy benefits for public entities via the deployment of de-risked, commercially-ready clean energy technologies

Public Entity Challenges

Procurement challenges



Difficult to evaluate new technologies



Cost of adoption often prohibitive



MassCEC Opportunities

Act as a liaison between public entity and companies

Third party evaluation of technologies

Grants to buy down product costs

XL Hybrids

Product: Hybrid vehicle up-fit

Project: 27 Mass DCR & Environmental Police vehicles

Support: \$145,000 grant with \$57,000 in cost share from XL Hybrids



2018 Solarize Mass, Solarize Mass Plus, and HeatSmart Mass Programs

Solarize Mass and Solarize Mass Plus

- **Background:** *Communities collaborate with DOER and MassCEC to conduct an outreach and education campaign, coupled with a competitive installer selection process that offers reduced pricing to community members*

Over 18% of Massachusetts communities have participated to date

Over 3,200 contracts signed representing over 21MW of capacity

Participants see 20% average savings

- **Proposals:** *Seeking communities and community groupings to participate in 2018 program. Rolling solicitation, deadline for 2018 round is May 31, 2018, or when funds are reserved.*
- **Anticipated Award Amount:** *up to \$5,000 per community.*
- **Solarize Mass Plus:** *Pairs solar PV with complementary technologies*
- See www.solarizemass.com for program results, community best practices and how your municipality can apply

2018 and 2019 HeatSmart Mass

- *Pilot based off of successful Solarize Mass program seeking to increase the adoption of small-scale clean heating and cooling technologies through competitive installer selection and reduced pricing for participants*
- *Technologies include solar hot water, air source heat pump, ground source heat pump, and high efficiency wood pellet boilers*
- *2018 program closed, intending to launch a second round in Spring/Summer 2018*
- *See <http://www.masscec.com/heatsmart-mass> for more information, and sign up for email updates*

Program Differences

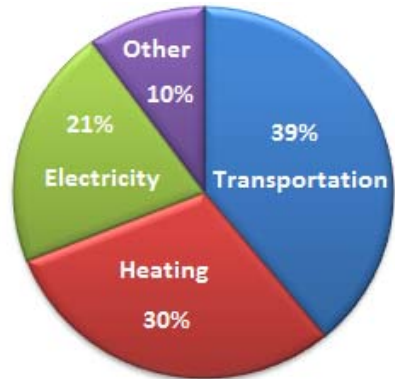
	Solarize Mass	Solarize Mass Plus	HeatSmart Mass
Technologies	Solar PV	Solar PV, and one or more complementary technologies (solar hot water, air source heat pump, ground source heat pump, electric vehicles, etc.)	Solar hot water, air source heat pump, ground source heat pump, high efficiency wood pellet boiler
Community Application Process	Rolling		Limited application timeline per program round
Who can apply	Municipalities in investor owned utilities (Eversource, National Grid, Unitil), or Municipally operated utilities (MLP's) that pay into the Renewable Energy Trust		All municipalities in Massachusetts*

*HeatSmart Mass is funded through Alternative Compliance Payment (ACP) funds

Clean Heating and Cooling

Case for Clean Heating

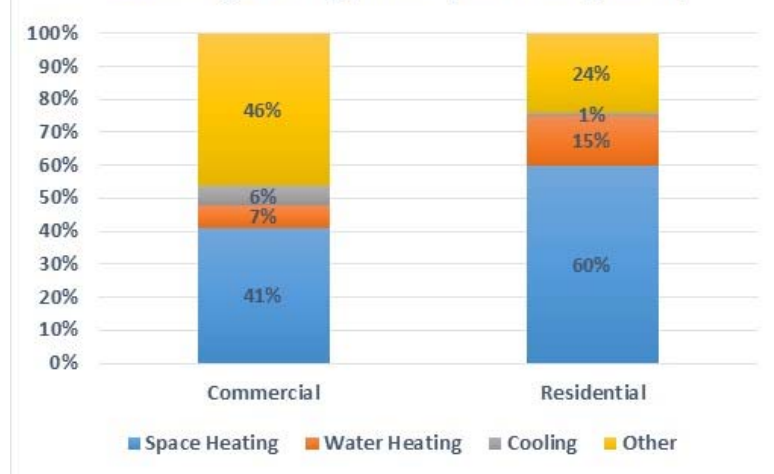
GHG Emissions (MA)



MA GWSA reduction targets:

- 25% by 2020
- 80% by 2050
- Does not specify how to do it

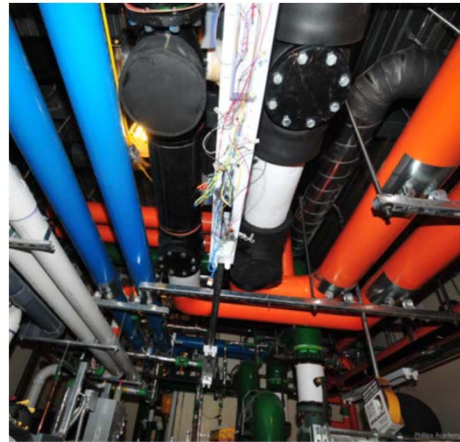
Building Energy Use (New England)



Clean Heating & Cooling: a multi-benefit solution

1. Superior quality and comfort
2. Much lower GHG emissions
3. Decreased operational costs

Technologies Supported



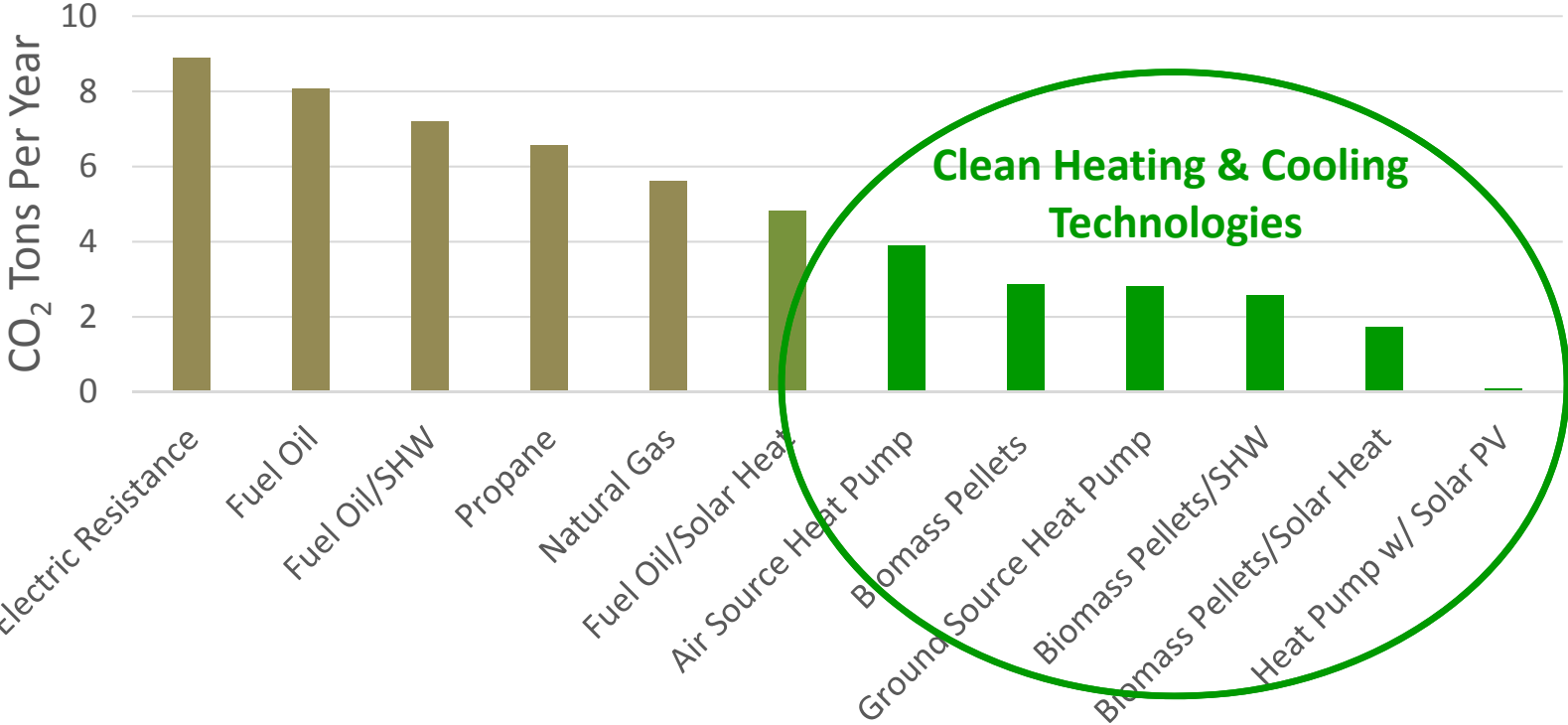
- Cold-Climate Air Source Heat Pumps
- Ground Source Heat Pumps



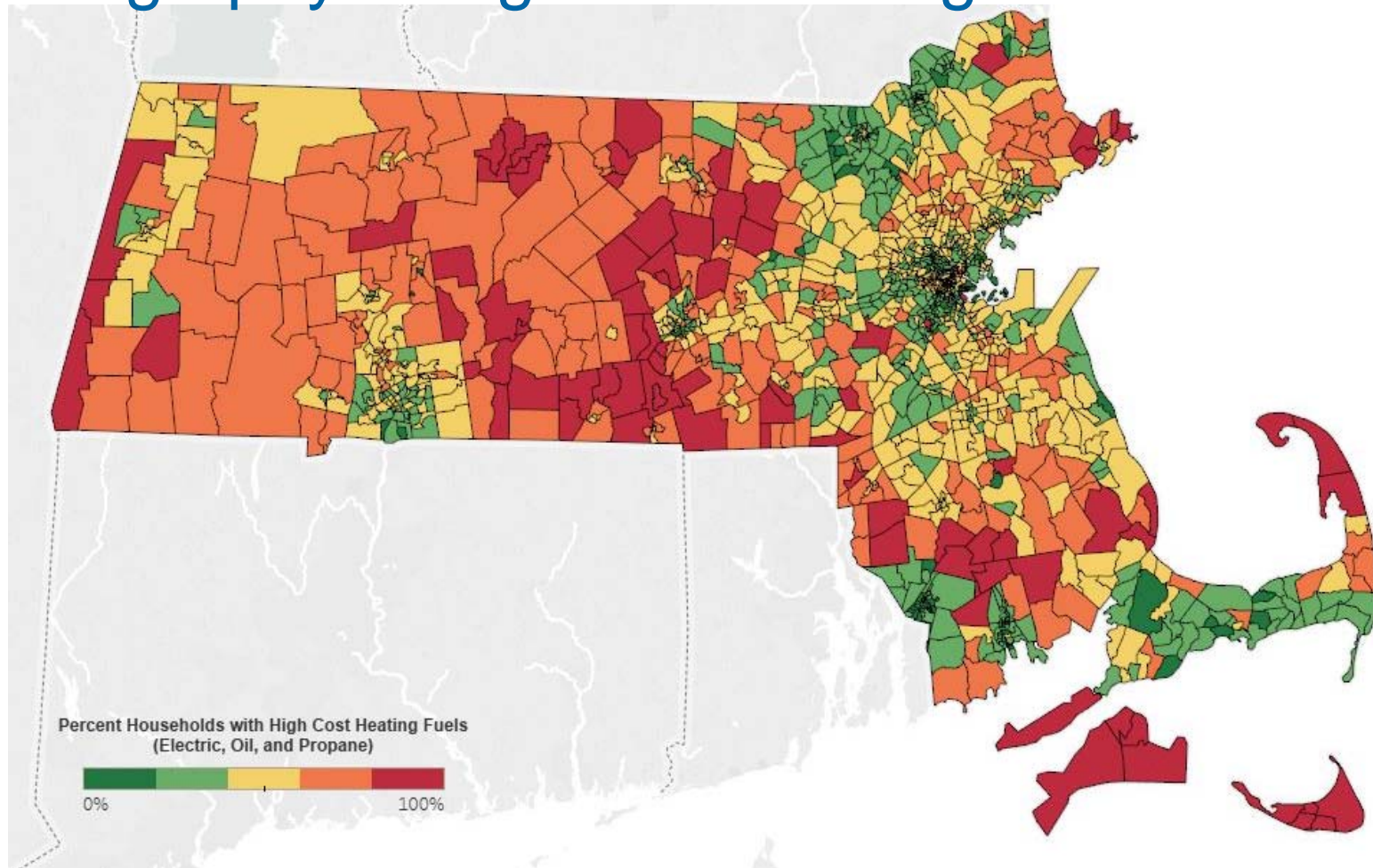
- Solar Hot Water
- Modern Wood Heating

Renewable Heating & GHG

Estimated Annual GHG Emissions – Example Small Building



Geography of high cost heating fuels



MassCEC Clean Heating & Cooling Incentives

Technology	Maximum Incentive
VRF Air-Source Heat Pumps	\$250,000
Other Air-Source Heat Pumps	\$225,000
Ground-Source Heat Pumps	\$250,000
Central Wood Heating	\$250,000
Solar Hot Water	\$101,500

Details in Appendix and at:

<http://www.masscec.com/business/clean-heating-and-cooling>

How your community can take advantage

- Employ at new or retrofitted municipal facilities
 - Increase comfort, save money, reduce GHG footprint
 - Combine with MassSave and/or other incentives for additional savings
- Spread the word to businesses in your community
- Advise project developers of clean heating & cooling options
- Contact us to:
 - Talk about projects
 - Ask questions
 - Give us feedback, suggestions

Questions?

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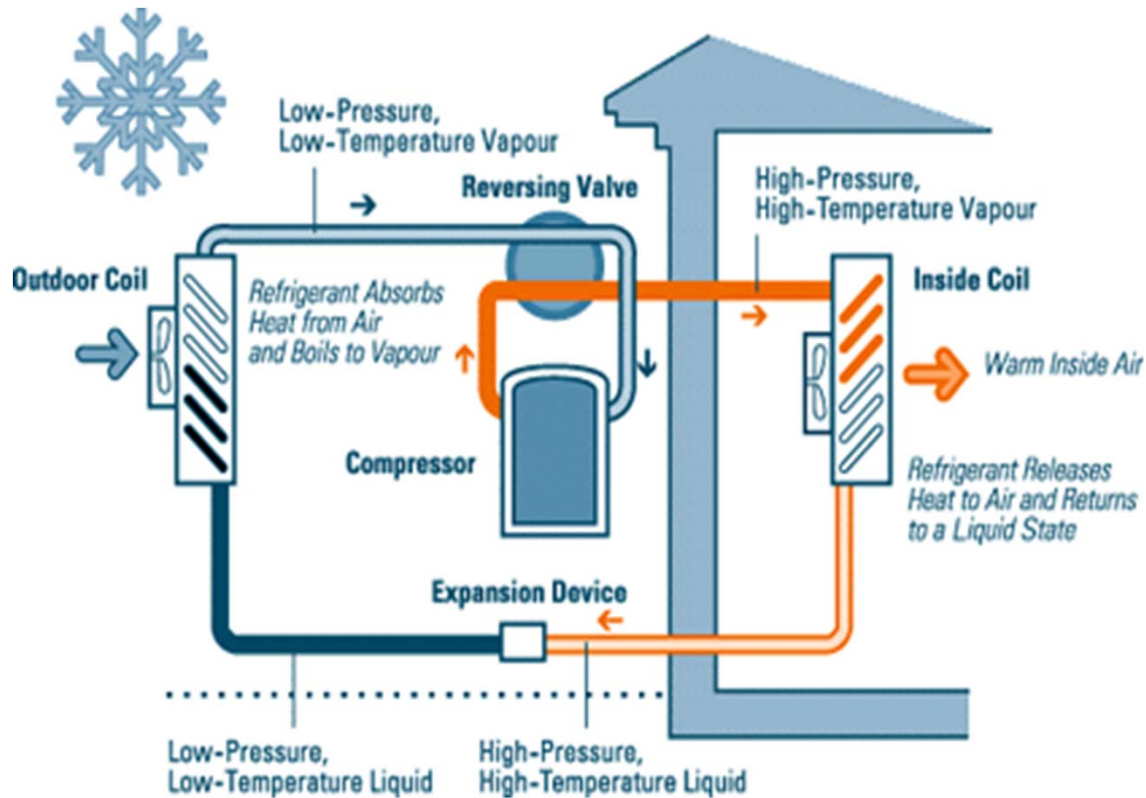
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Appendix:
Clean Heating & Cooling Types and
Incentives

Air Source Heat Pump

How Does it Work?



ASHPs use a refrigerant loop to extract and move heat between spaces. Systems can provide both heating AND cooling.

Variable Refrigerant Flow (VRF) vs. Mini-Splits: What's the difference?



CHARACTERISTIC	MINI-SPLIT	VRF
LEVEL OF CUSTOMIZATION	Low	High; flexible options
UNIT CAPACITY (BTU/HR)	Up to 65,000	65,001 – 500,000
# INDOOR HEADS PER OUTDOOR COMPRESSOR	Up to 8	Up to 60
SIMULTANEOUS HEATING & COOLING	Not available	Available

Clark University Alumni Center

- 35,000 sf building (event spaces, offices)
- 100% heated and cooled by air-source VRF
- Advanced controls optimize energy savings



Ground-Source Heat Pumps

- Highest efficiency clean heating technology
- Most common in new construction or full renovations
- Vertical or horizontal wells
 - 50+ year heating asset
- Distribution typically by forced air or low-temperature hydronic
- Best applications:
 - Space heating & cooling
 - Lower temperature process loads



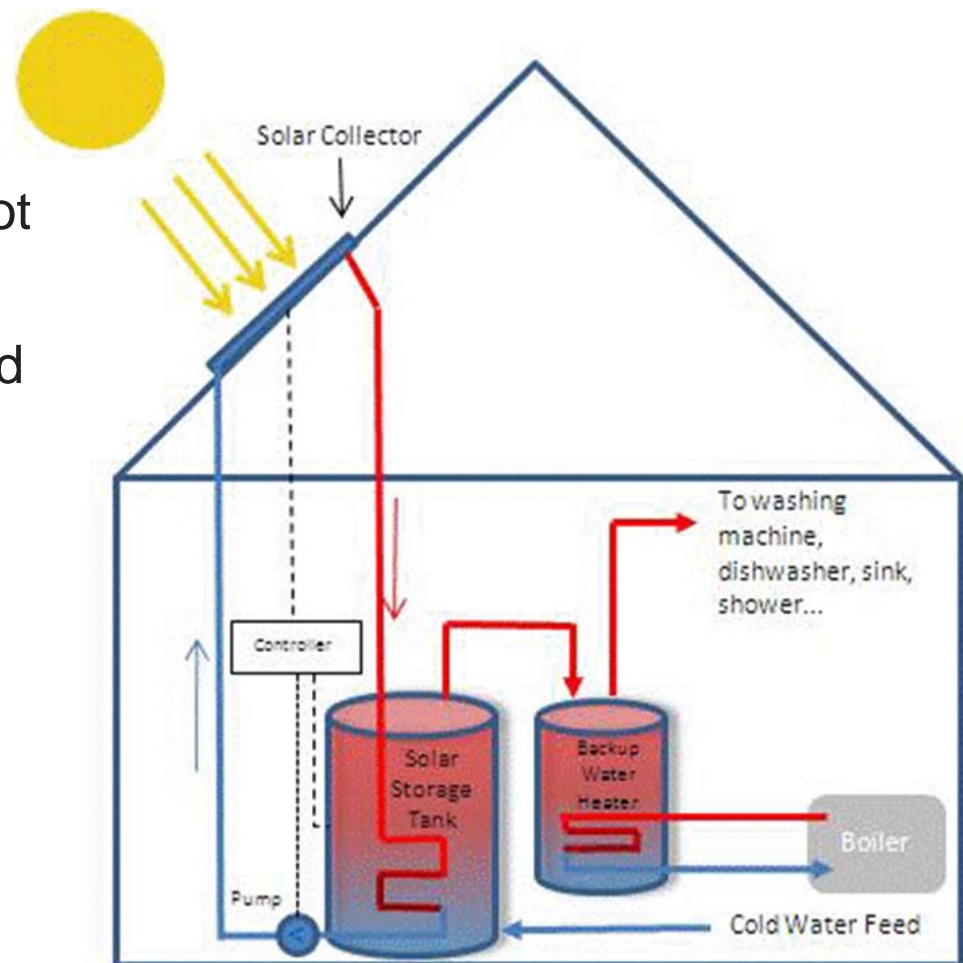
Alden Court Nursing Care & Rehab Center

- 11 ground-source heat pumps
- 58 tons of capacity
- 35 separately controllable zones
- Greatly improved occupant comfort
- ~70% savings on heating and cooling bills
- ~65% reduction in CO₂ emissions



Solar Hot Water & Solar Heating

- Ties in with most domestic hot water systems
- Roof or ground space needed
- Excellent applications:
 - Housing
 - Indoor swimming pools
 - Washing processes
 - Food production



Wheaton College



- Flat-plate solar collectors on Haas Athletic Building roof
- Heats water for pool and locker rooms
- Saves over 3,900 therms/yr, or 40% of facility's demand for water heating

Air-Source Heat Pump Incentives

VRF Incentive Calculation

(\$ per 12,000 BTU/hr of rated heating capacity @ 17°F)

Owner Type	No Heat Recovery	Heat Recovery	Max. Grant (HR / no HR)
Private	\$800	\$1,200	\$120,000 / \$180,000
Public/Non-Profit	\$1,000	\$1,400	\$150,000 / \$210,000
Affordable Housing	\$1,600	\$2,000	\$240,000 / \$250,000

Mini-Split Incentive Calculation

(\$ per 12,000 BTU/hr of rated heating capacity @ 5°F)

Owner Type	\$ per unit <u>or</u> per 12 kBTU/hr	Max. Grant
Private	\$625	\$93,750
Public/Non-Profit	\$800	\$120,000
Affordable Housing	\$1,500	\$225,000

Other Incentives

- Mass Save
- Alternative energy credits

Ground-Source Heat Pump Incentives

- Maximum incentive: \$250,000
- Incentive based on system capacity, with adders for
 - Higher efficiency
 - Publicly owned buildings
 - Affordable housing

Other incentives: Alternative energy credits

Modern Biomass Heating Incentive

Incentive Calculation
Based on % of eligible project costs

Incentive Component	% of Project Costs	Max. Value
Base	35%	\$175,000
Thermal Storage Adder	5%	\$25,000
Cascading Systems Adder	2.5%	\$12,500
Distribution System Efficiency Adder	2.5%	\$12,500
Public/Non-Profit/Affordable Housing Adder	5%	\$25,000
Maximum Incentive	50%	\$250,000

MassCEC Solar Hot Water Incentives

Incentive Calculation

Incentive based on SRCC OG-100 efficiency rating, # of collectors, and adders

Component	Standard	Non-Profit/ Public	Affordable Housing
Base Incentive = Rating * # of Collectors * Constant	Constant = \$100	Constant = \$150	Constant = \$200
PV Co-Location Adder	\$500		
Maximum Incentive before Metering	40% of cost, up to \$100,000	65% of cost, up to \$100,000	80% of cost, up to \$100,000
Metering Adder	100% of metering equipment cost, up to \$1,500		
Maximum Total Incentive	\$101,500		

Other Incentives

- 30% federal tax credit
- Alternative energy credits