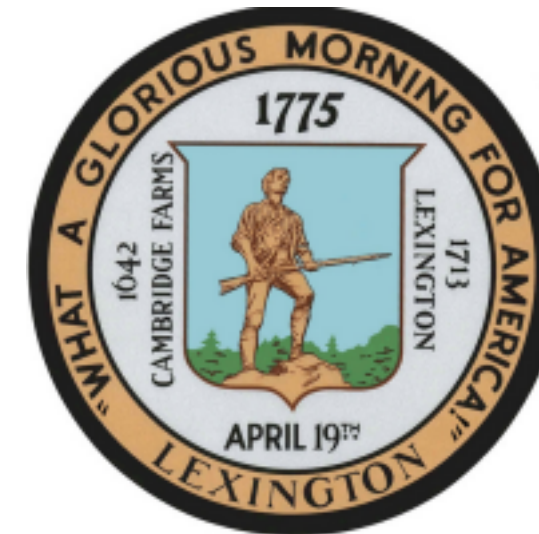




**Achieving Net Zero Emissions by 2050 will be a team effort**



# **Agenda**

**A Changing Climate**

**Clean Electricity is Key**

**Make a Plan To Electrify Weatherization**

**Heating & Cooling**

**Going Solar**

**Green Transportation**

# A Changing Climate

*Climate Change Is Speeding Toward Catastrophe. The Next Decade Is Crucial, U.N. Panel Says.*

A new report says it is still possible to hold global warming to relatively safe levels, but doing so will require global cooperation, billions of dollars and big changes.



Flooding in Montpelier, VT (July 2023)

Independent

Photo Credit: Reuters

Maui wildfires (August 2023) Photo Credit: The

# A Changing Climate

# Lexington's Community Choice Program

## **100% GREEN**

100% renewable  
electricity

(default)

## **NEW ENGLAND GREEN**

100% renewable  
electricity from  
New England

(option)

## **BASIC**

only the minimum  
amount of renewable  
electricity required

(option)



**Opt up to New England Green**

Get *all* of your electricity from renewable energy projects *in New England*



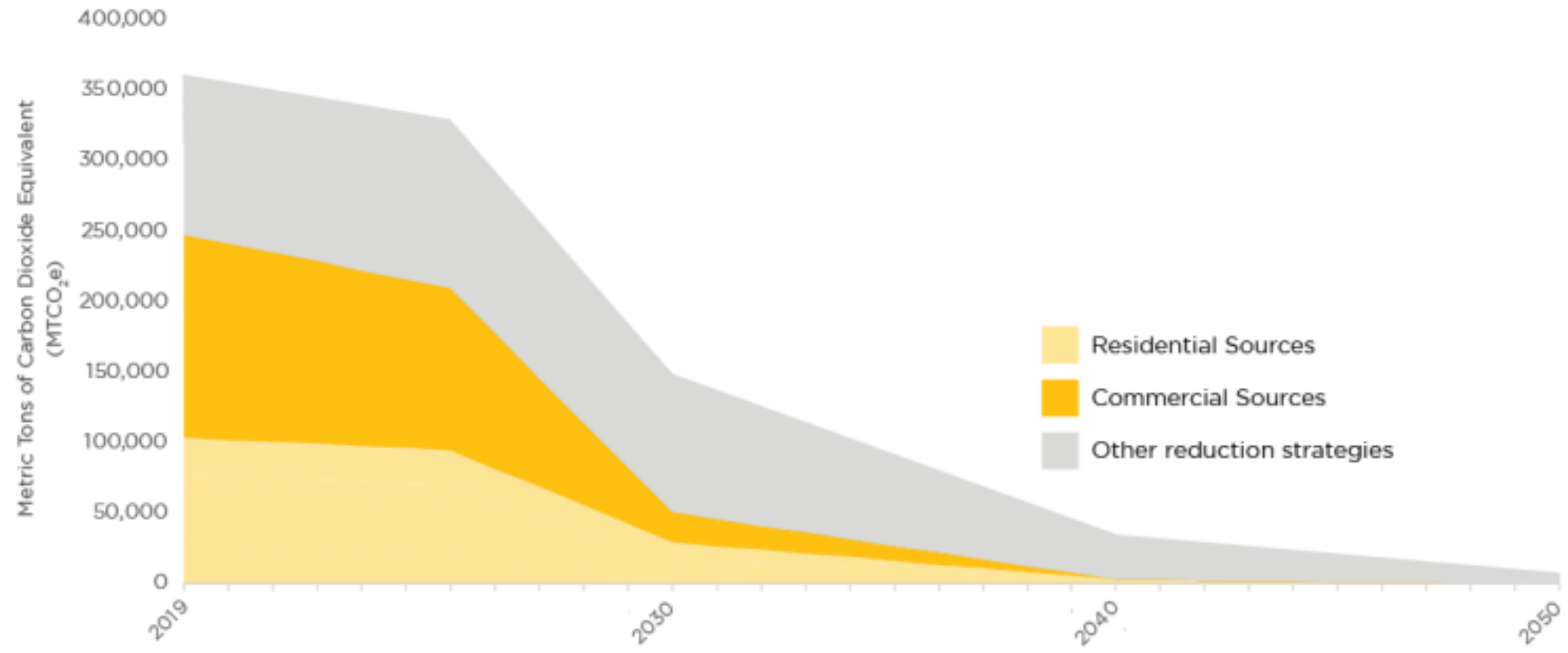
**Achieving Net Zero Emissions by 2050 will be a team effort**







### Building Efficiency & Electrification GHG Reduction Potential



# Start with Weatherization

Mitigate asbestos risk

Lower risks due to  
extreme heat or cold

Improve indoor air  
quality

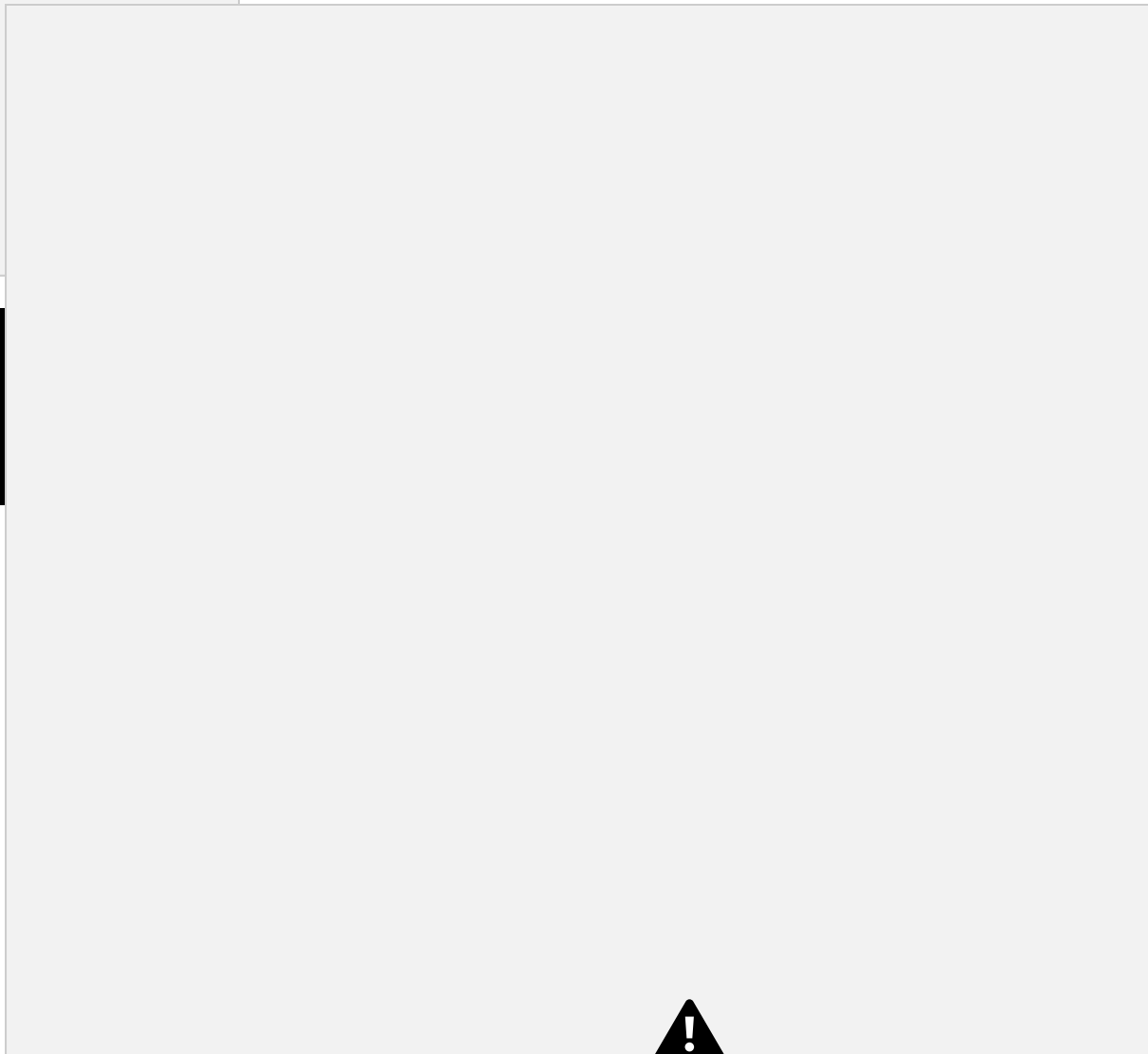
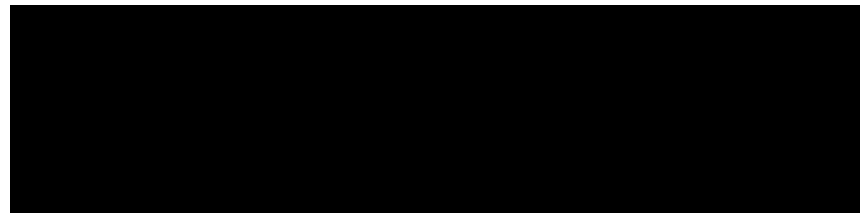
Reduce heating and  
cooling costs by an  
average of 20%

Fewer drafts

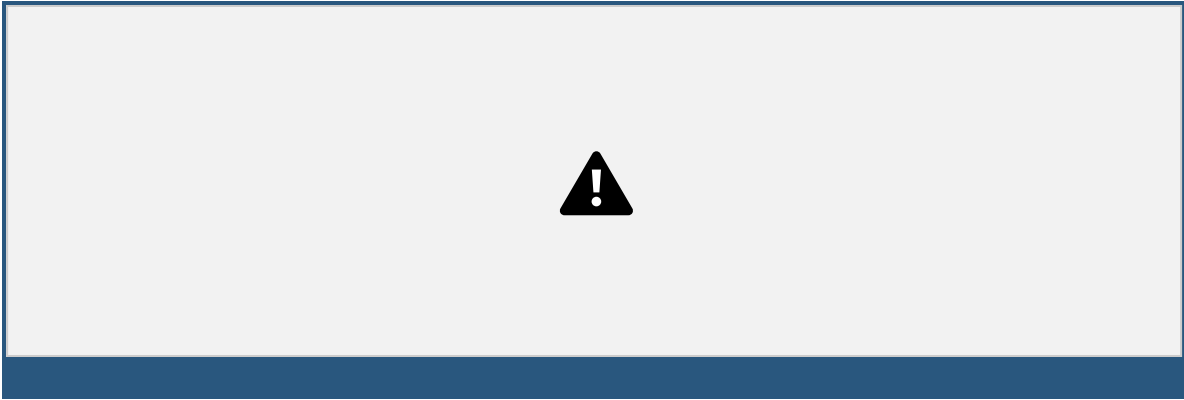
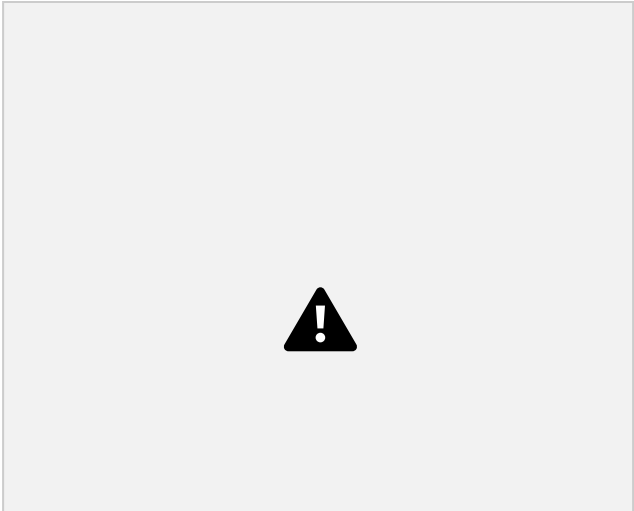
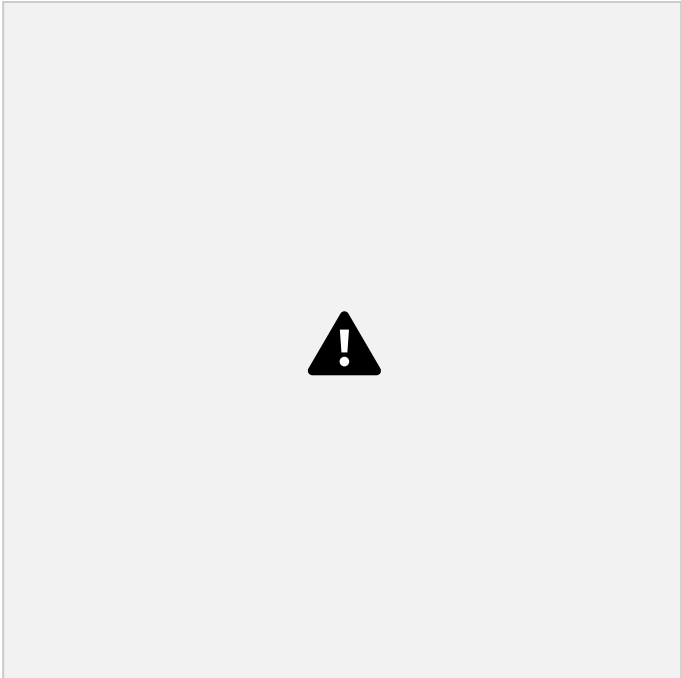
Quicker heating

Even temperatures

Reduce your home's  
carbon footprint by as  
much as 30%



**Start with Weatherization**



# Weatherization Incentives

No-cost  
assessment

No-cost targeted  
air sealing

75-100% off  
approved

insulation  
improvements  
Federal Tax Credits  
of 30% up to  
\$1,200/year (2023-  
2032)

Mass Save HEAT  
Loan (0% interest)  
Cut heating and  
cooling costs by an  
average of 20%

## Example Cost for a 2,000 sf Home

Home Insulation Project

Home Energy Assessment: \$0

Total project cost (pre-incentives): \$3,500

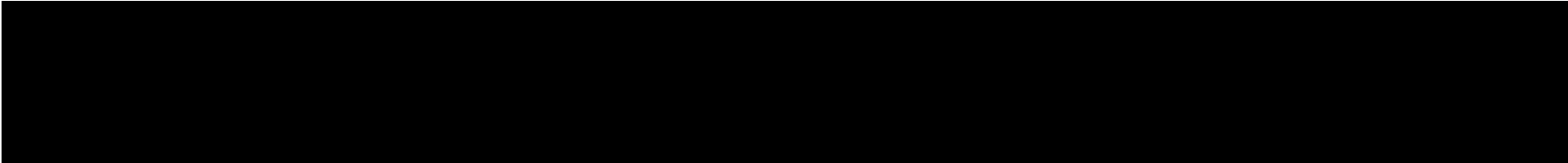
Mass Save rebate: \$2,625

**Total cost (with Mass Save): \$875**

**to federal tax amount owed.**

**Federal Tax Credit brings  
final cost to \$613!**

**Resident may claim a 30% credit for the  
post-rebate project cost. This a reduction**



Improved indoor air quality

Lower operating costs than electric resistance, oil, propane, and even natural gas in some cases

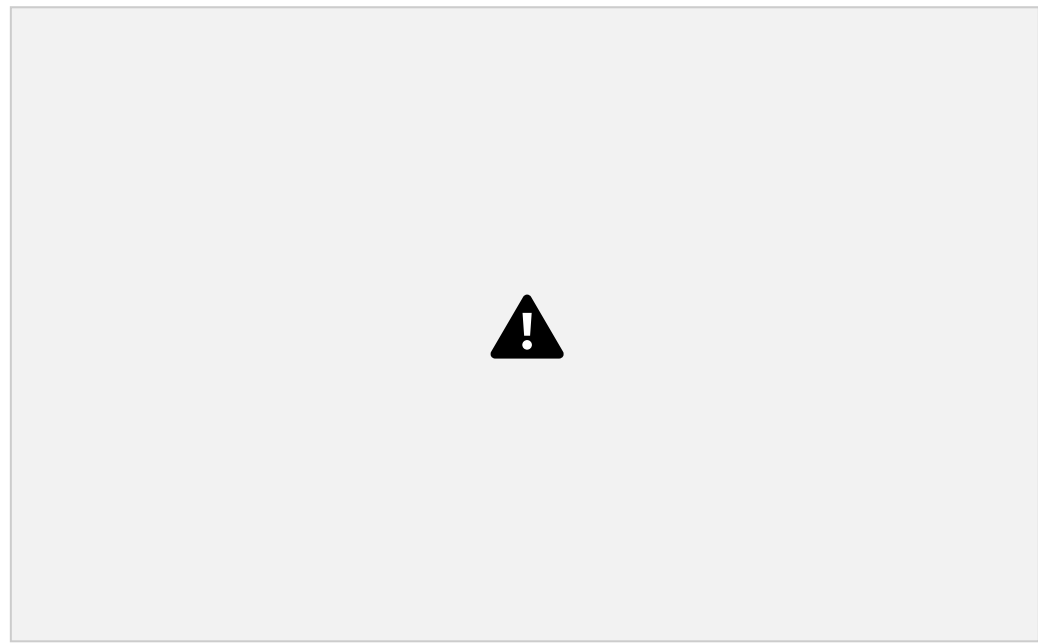




Quiet system

Built-in

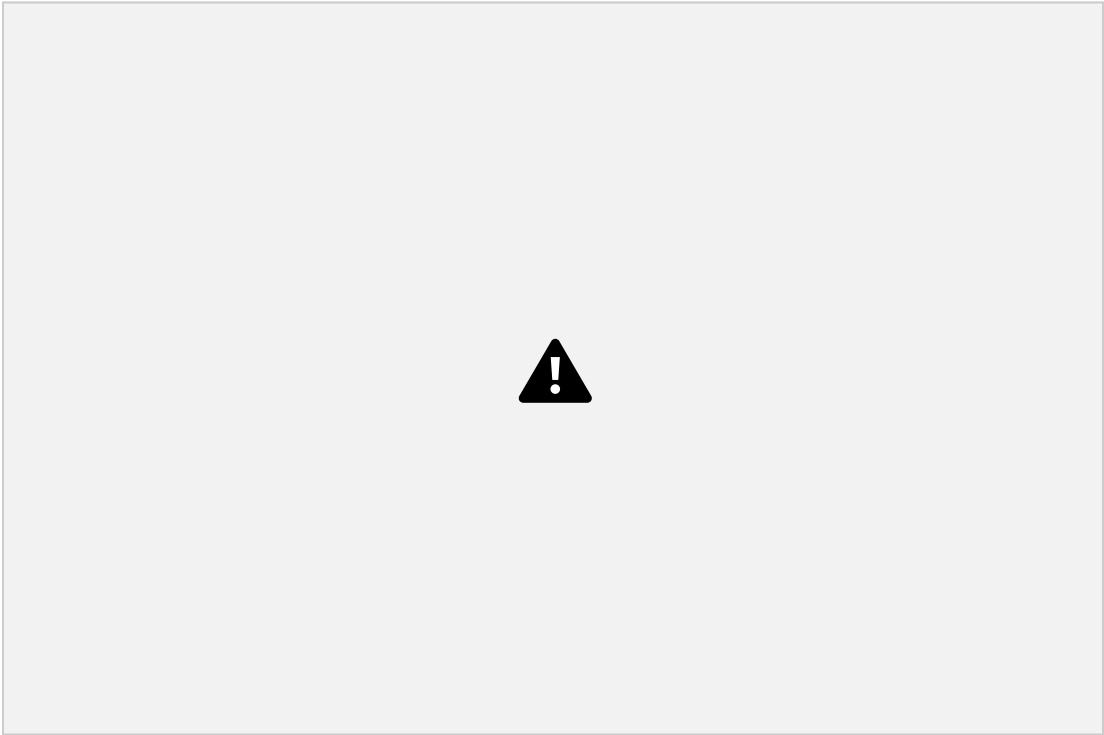
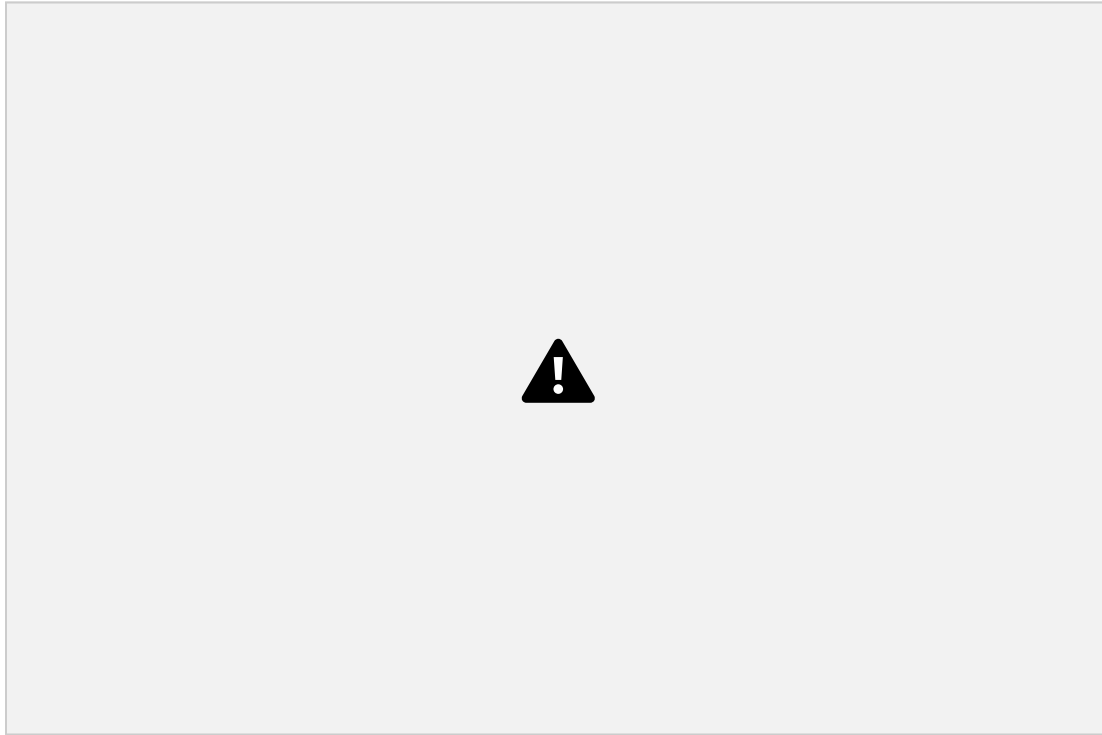
dehumidifier



4x as efficient as combustion  
heating

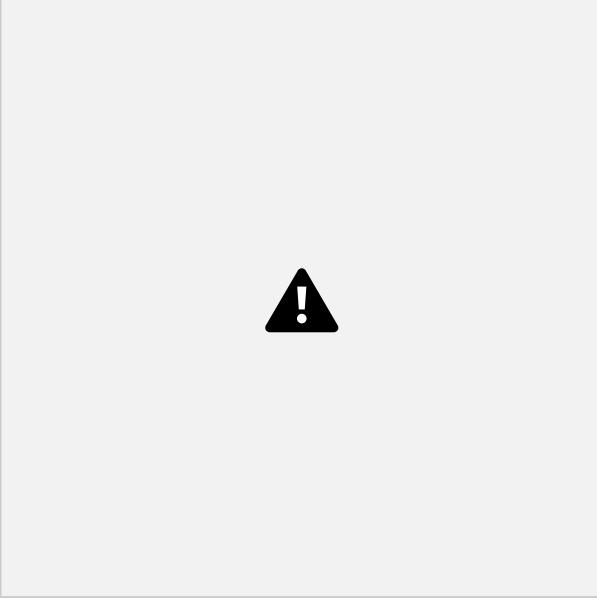
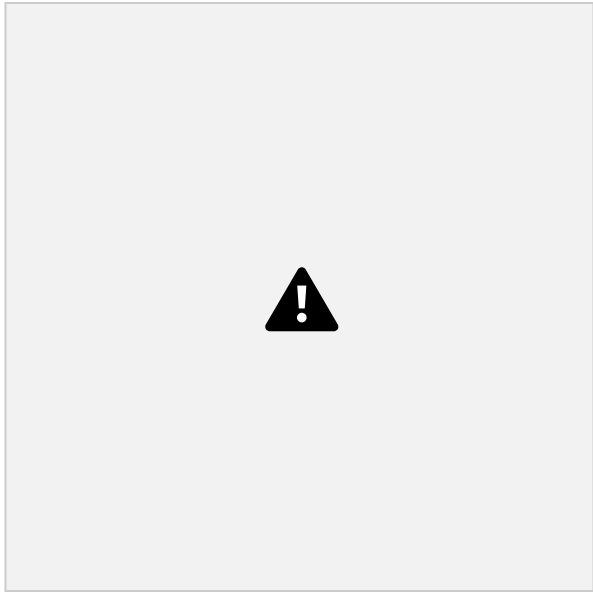
Photo source: Abode





Photo

source: MassCEC





Vetted contractor list  
Quote comparison reports  
Incentive and rebate advice



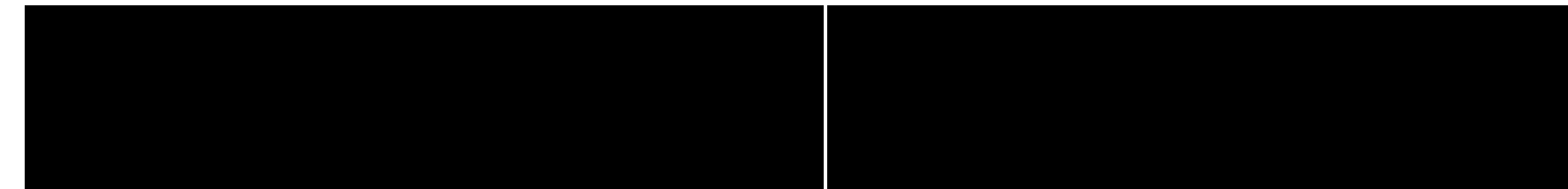
**Over 110 Lexington participants**

**Over 20 heat pump contracts signed**

Consultations with trained Energy Advisors

# participants use oil to heat their home

Over 50% of



**Air-Source  
Heat Pumps**

**Ground-Source  
Heat Pumps**

**Whole-home and  
partial-home  
rebates: up to  
\$10,000  
(\$16,000 for  
income  
qualified)**

**Whole-home and  
partial-home  
rebates: up to  
\$15,000  
(\$25,000 for  
income  
qualified)**

**Alternative  
Energy  
Certificates  
(AECs)**

**Alternative  
Energy**

**Certificates  
(AECs)**

**Federal Tax  
Credits of 30%  
up to  
\$2,000/year  
(2023-2032)**

heating sources

traditional heating sources

30% Federal Tax Credits of 30% (2022-2023)

Mass Save HEAT Loan (0% interest up to \$50,000)

Mass Save HEAT Loan (0% interest up to \$50,000)

Lower annual costs compared to several traditional

Lower annual costs compared to several

Additional Federal Incentive: Electric service upgrades can earn a 30% Federal Tax Credit when accompanying solar electricity or up to \$600 when accompanying heat pumps (2023-2032)

# Example Cost for a 2,000 sf Home

Total project cost (pre-incentives): \$25,000

Mass Save whole-home rebate: \$10,000

Alternative Energy Credits: \$1,000

Federal tax credit: \$2,000

**Total cost (post-incentives): \$12,000**

# **Take out a Mass Save**

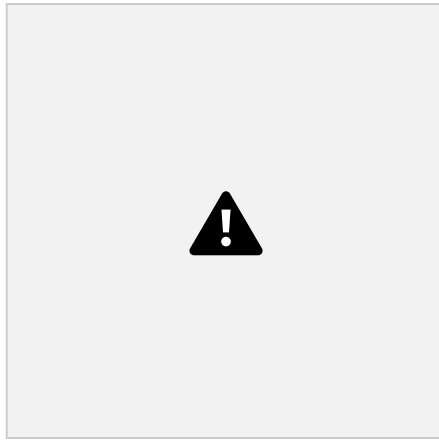
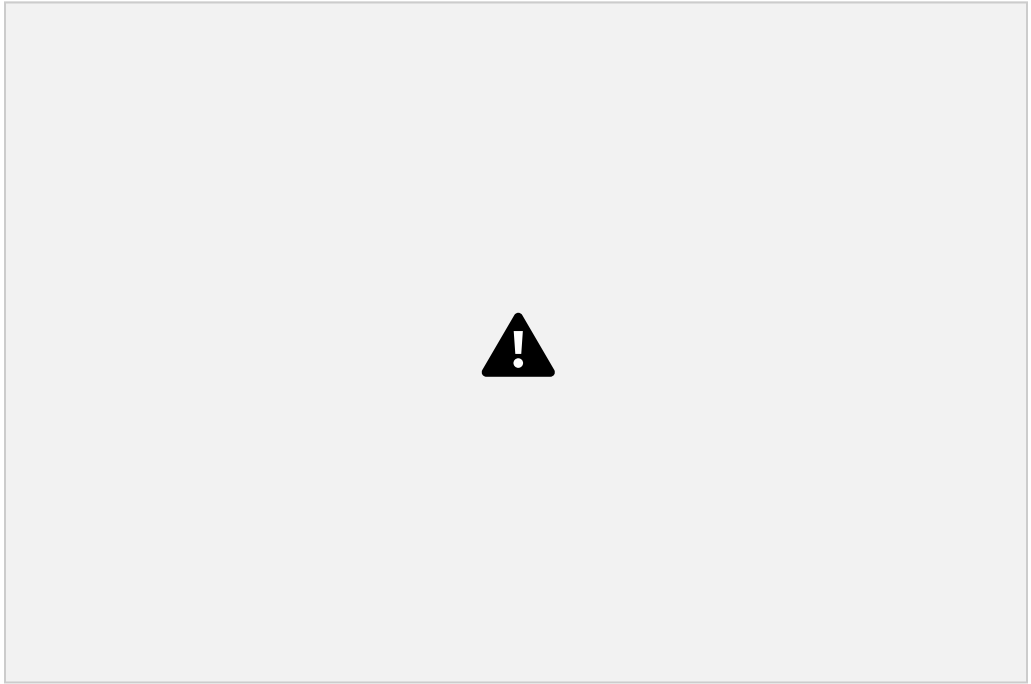
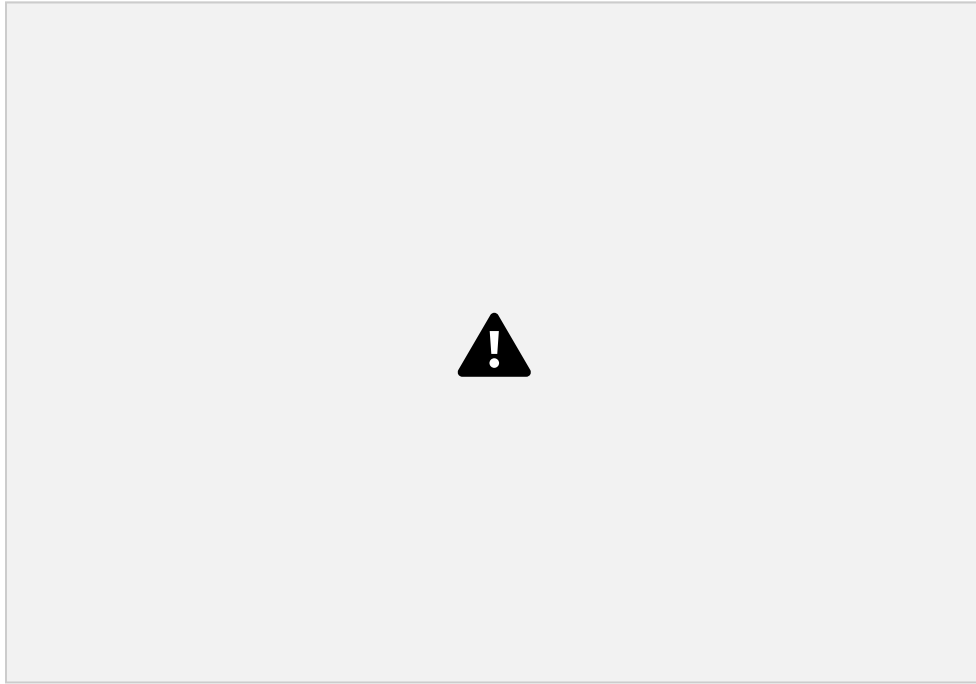
## **HEAT Loan**

**Monthly payment of \$143 (7 year  
term)**

Note: Homeowner would have to front the \$13,000 that would eventually be covered by the rebates/incentives

**Appliances & Equipment**

**Induction Stove/Cooktop Heat Pump Hot Water Heater Battery-Powered Outdoor Equipment**





# Appliance/Equipment Incentives

## Solar Hot Water Heaters

Federal tax credit of 30% for systems installed 2023-2033

## Heat Pump Hot Water Heater

3x more efficient than conventional Lower operating cost by approx. 50% Dehumidifies air space around equipment

Mass Save \$750-\$1,500 rebate  
Federal 30% tax credit up to \$2,000/year (2023 - 2032)  
Mass Save HEAT Loan (0% interest financing)

## Heat Pump Clothes Dryer

Easy install with no ventilation  
Reduced energy use  
Gentler on clothes, dries at lower temperature

Mass Save \$50 rebate  
Federal incentives based on income level coming...

## Induction Stove/Cooktops

Heats faster and more evenly  
No emissions or risk of gas leaks

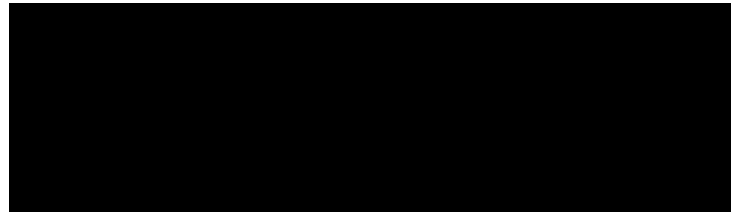
Mass Save \$500 rebate  
Federal incentives based on income level coming...

## Battery-Powered Outdoor Equipment

Lower cost than many conventional fuels Provides up to 80% of water heating needs Pairs with any form of back-up water heating

Quiet, lightweight  
No emissions or oil changes  
MA DOER Alternative Energy Certificates (AECs) MA State 15% tax credit up to \$1,000

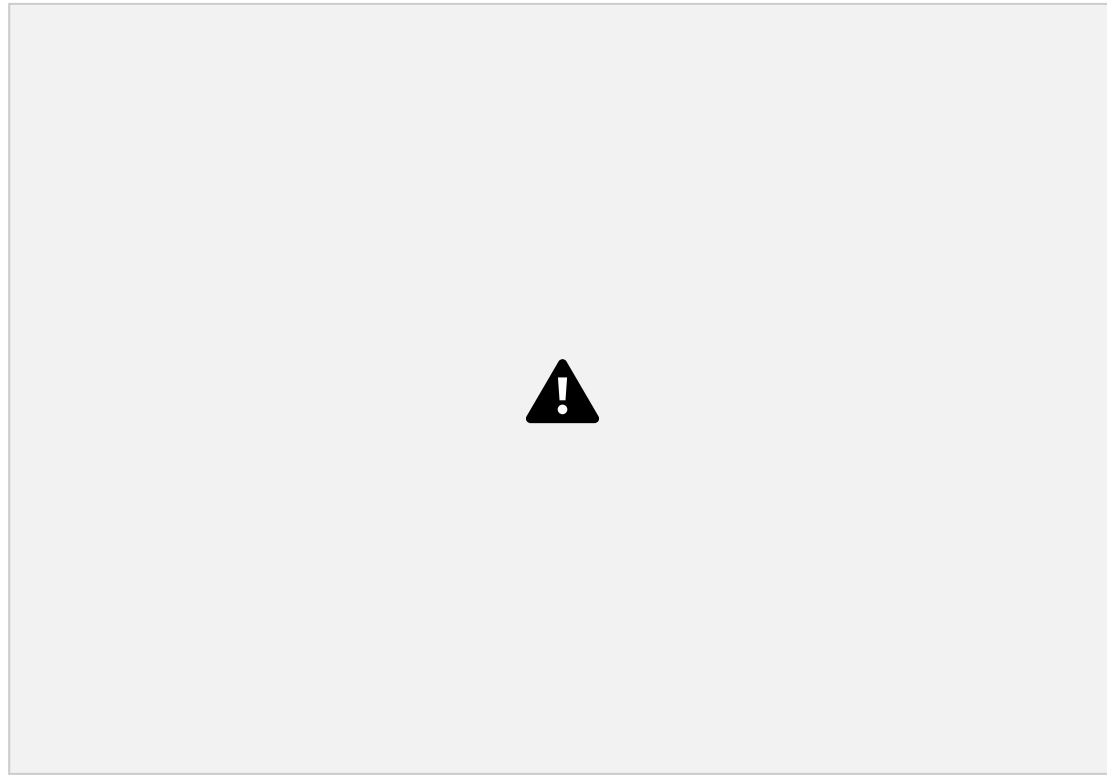
Mass Save rebates for mowers, blowers, trimmers, and chainsaws



45% federal and state tax credits

Lower electric bills

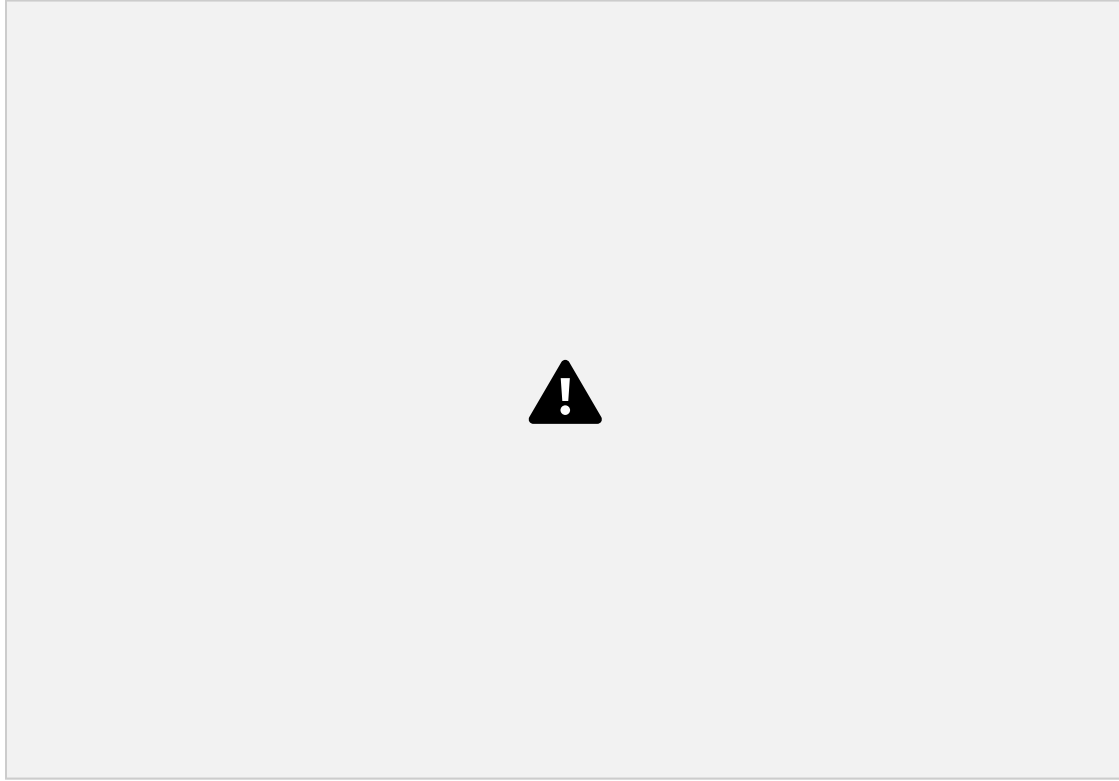
Credits for  
producing



renewable energy

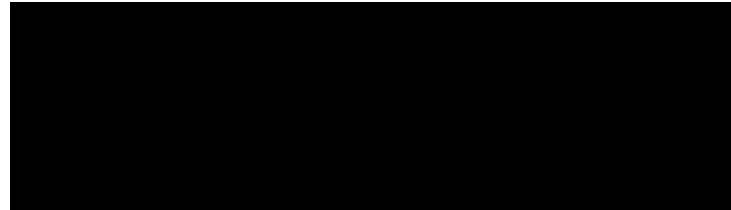
Silent operation



Back up power when coupled with battery storage

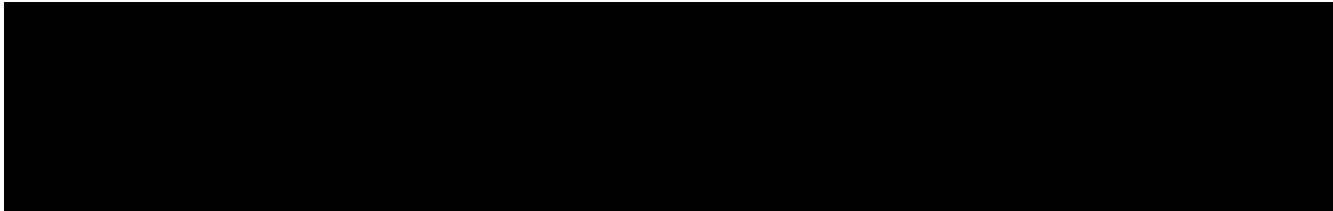
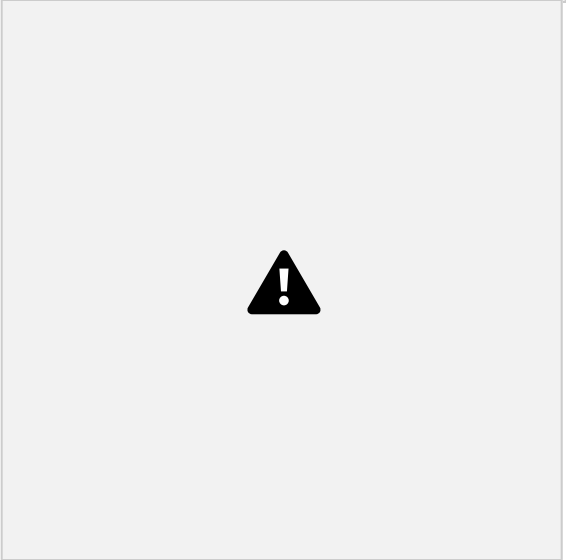
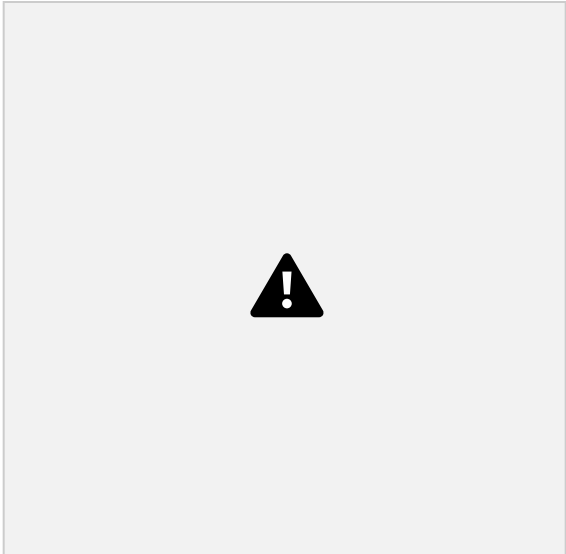


Carbon-saving  
equivalent of  
planting an acre of trees

Photo source: MassCEC





**Solar Renewable  
Energy Credits  
(SREC)**

**15% state tax credit up to \$1,000  
30% federal tax  
credit for systems installed 2023-2032**

**Solar Massachusetts  
(SMART) Renewable Target**

**Solutions  
SMART Battery Adder**

**30% tax credit for systems installed  
2023-2032**

**Battery Storage Connected**

**Clean Peak Energy Standard**

**Lexington Solar Example**

**2014 Installation: 31 panels, 8.37 kW system**

# Average Annual Operational Savings

Net metering credits: \$79

Electricity savings: \$1,297

SREC payments: \$1,812

Performance guarantee payments\*: \$167

**Total Annual Savings : \$3,355**

**Payback period: 7.5 years**

# Project Cost

Panels cost: \$32,906

Roof replacement: \$4,630

**Total cost (pre-incentives): \$37,536**

Total state tax credit: \$1,000

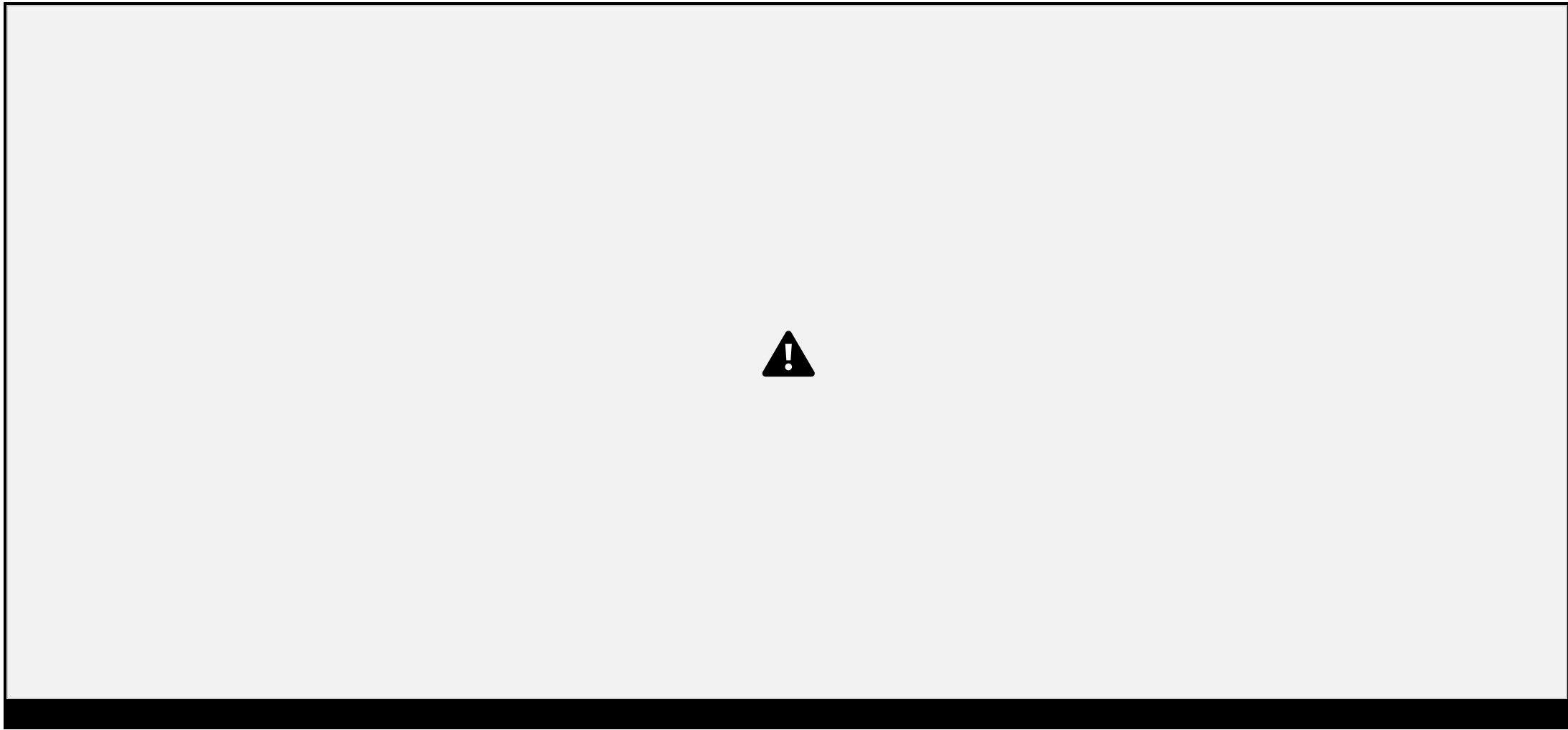
Total federal tax credit: \$11,261

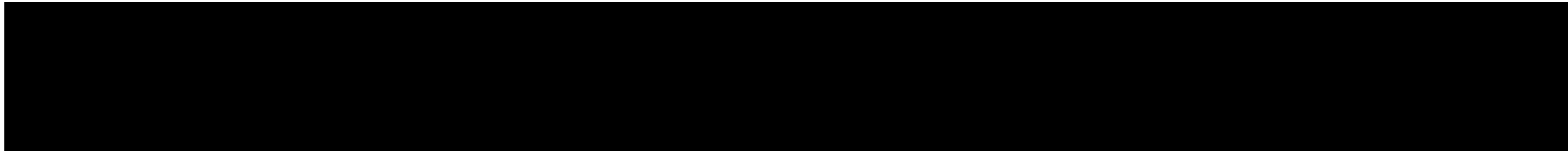
**Total cost (post-tax credits): \$25,275**

\*A performance guarantee payment is an agreement with a solar installation company on what the minimum production will be. The company pays the difference if minimum is not met.









EVs available at all price points

Quiet operation

No oil changes  
including used cars

\$11,000  
Charge at home

charging stations in  
the Boston area

acceleration

Federal and state tax  
credits of up to

Thousands of public

Smooth and fast

No tailpipe emissions  
makes for cleaner air

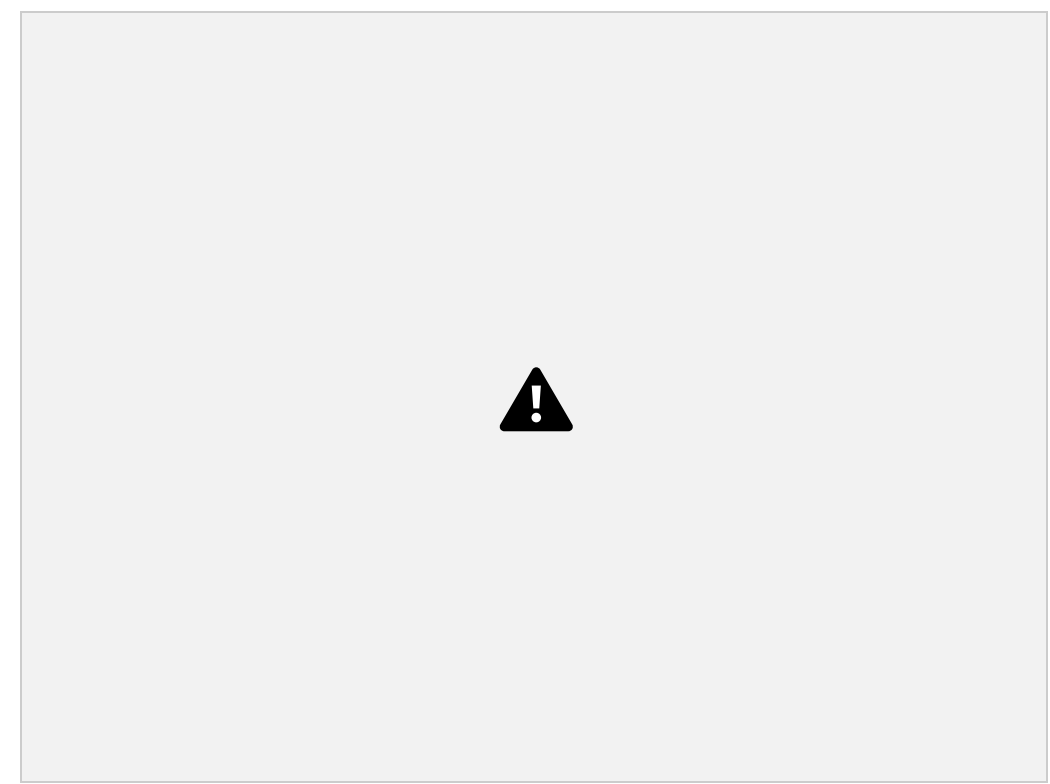
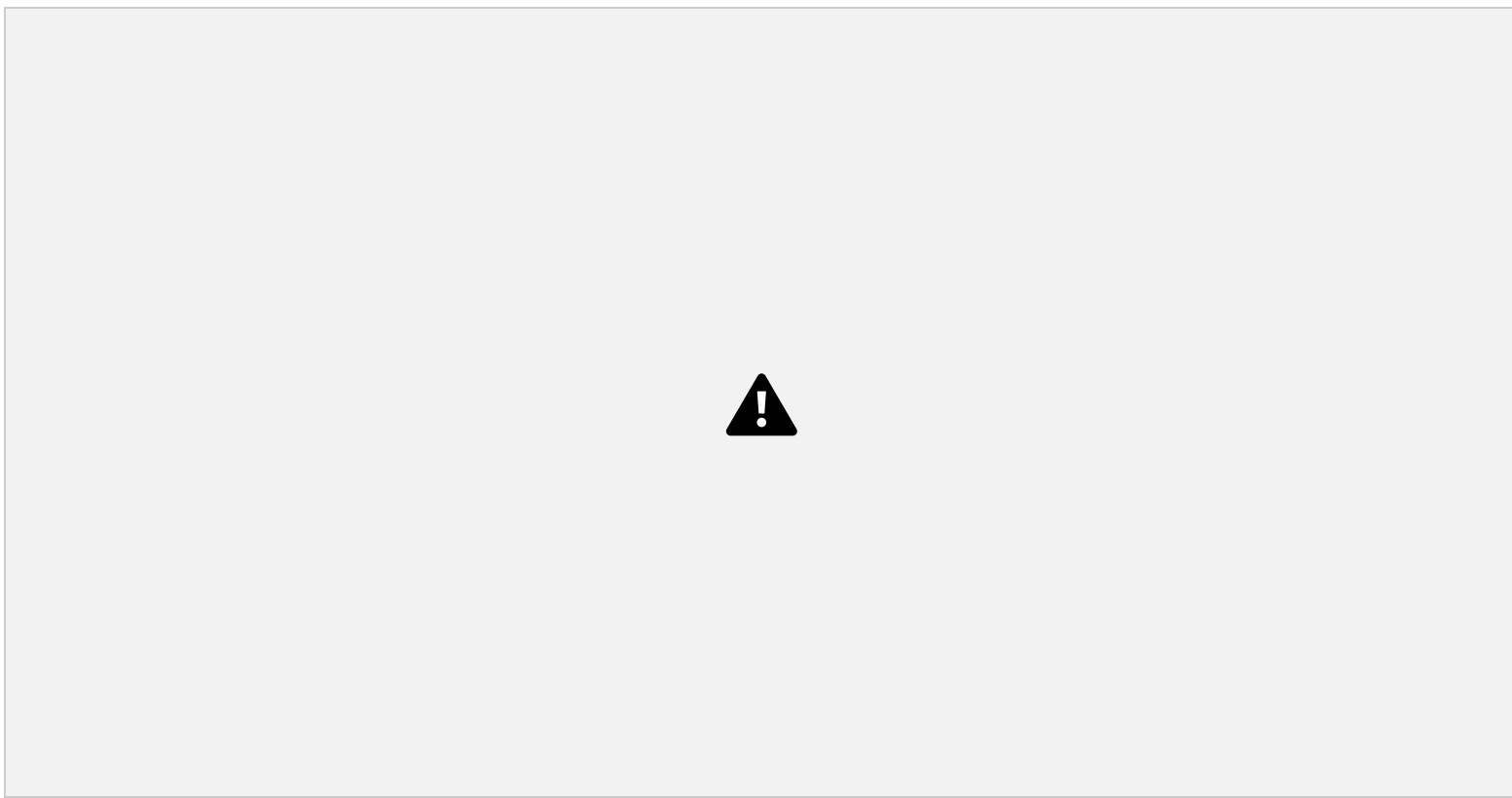
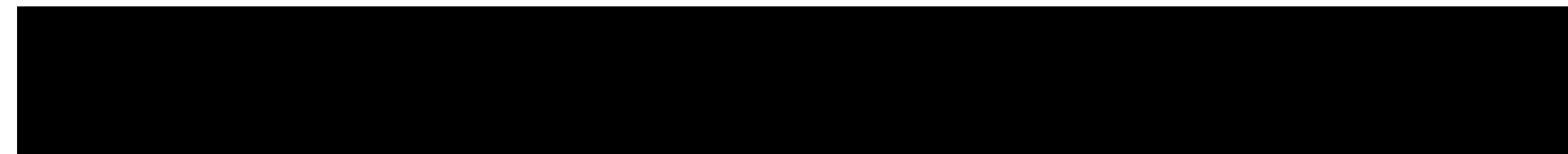
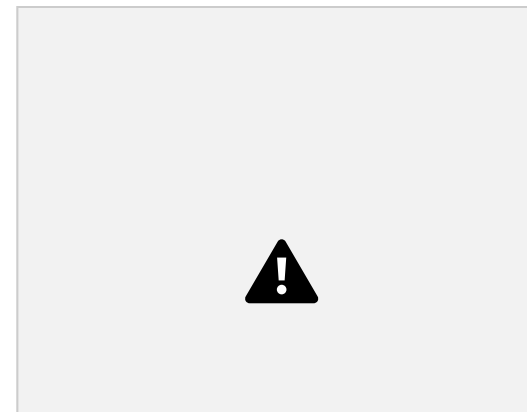
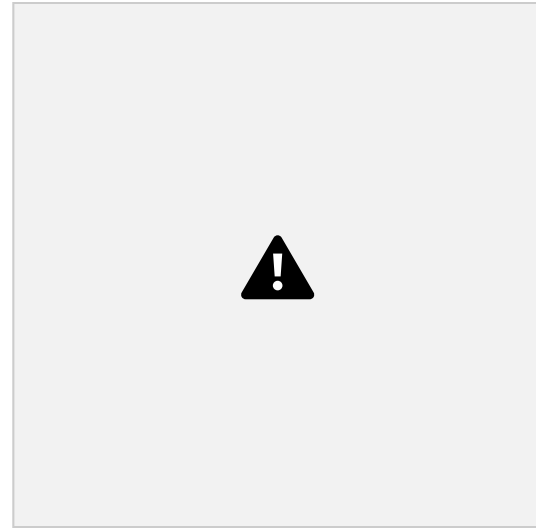
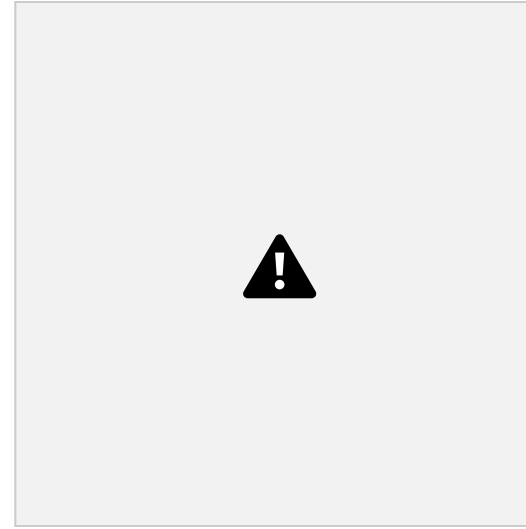
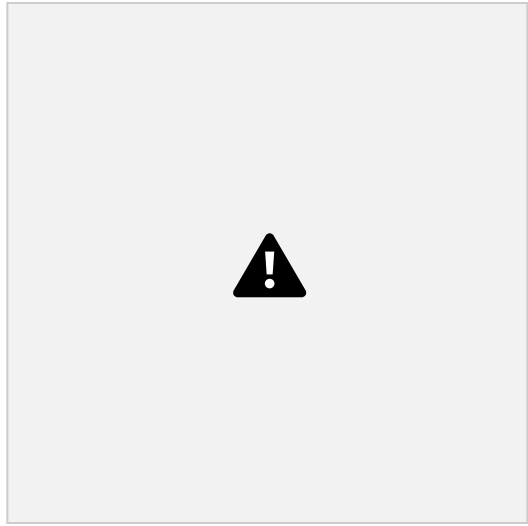


Photo source: PlugShare







**\$3,500 point-of-sale/time-of-lease rebate for a new battery or fuel cell electric vehicle**

**Income-eligible applicants can get the \$3,500 when purchasing or leasing a new or used EV,**

**as well as an additional \$1,500 rebate on top.**

**\$7,500 tax credit for a new plug-in or fuel cell electric vehicle purchased in or after 2023.**

**Up to \$4,500 credit for a used plug-in or fuel cell electric vehicle purchased in or after 2023**

# **Example Cost for a New EV Lease**

## **Ford Mustang Mach-E Price Breakdown**

Total vehicle cost (MSRP pre-incentives): \$43,000

MOR-EV State rebate: \$3,500

Federal rebate: \$3,750

**Total cost (post-incentives): \$35,750**

## **Lease Terms**

36-month

\$0 down

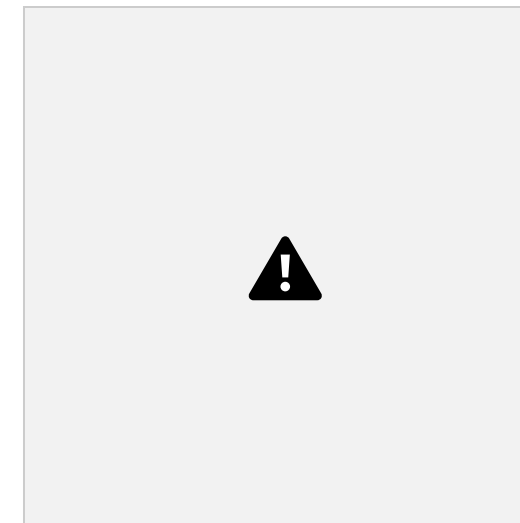
**Monthly lease: \$444**

Note: Mach-E does not qualify for full federal rebate, as it does not source at least 40% of its critical minerals in the U.S.

0% interest

Up to 7 year repayment term

Requires authorization form from Mass Save



HEAT Loan Worksheet

## Lexington Banks Offering HEAT Loans

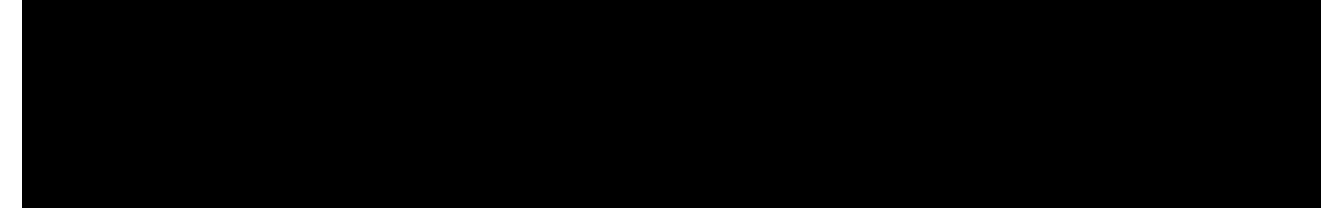
**Union**

**Lexington MA Federal Credit Union**

**Eastern Bank Hanscom Federal Credit**







**Maggie Peard**  
Sustainability & Resilience Officer  
Town of Lexington  
[mpeard@lexingtonma.gov](mailto:mpeard@lexingtonma.gov)

# Appendix A

**Andy Joynt**  
Clean Heat Outreach Specialist LexCAN  
[lexcleanheat@gmail.com](mailto:lexcleanheat@gmail.com)



# Ductless ASHP

Appendix B



## Appendix C

# Ducted ASHP



# How Heat Pumps Work