

# 2050

## Andover's Sustainability E-Newsletter

July/August 2022

### **Inflation Reduction Act (H.R. 5376) and An Act Driving Clean Energy and Offshore Wind (H. 5060): What it Means for You and the Planet**

By: Joyce Losick-Yang

Thirty years from now, we will look back at the year 2023 as the year during which more Americans than ever began the transition to clean energy and energy efficient technologies. Two landmark climate bills– the Inflation Reduction Act (H.R. 5376) from U.S. Congress, and An Act Driving Clean Energy and Offshore Wind (H. 5060) from Massachusetts State Legislature, passed within a week of each other- have created the most generous package of incentives in history to support individuals looking to reduce their personal carbon footprints, whether by driving new (or used) zero-emission vehicles, installing rooftop solar for renewable electricity, or replacing aging oil boilers and central air conditioners with all-electric heat pumps.

If reading the 273 page [H.R. 5376](#) or the 90 page [H. 5060](#) doesn't qualify as beach reading, no worries. Key provisions are summarized below with projected upfront and long-term cost savings as well as carbon footprint impact. Some assumptions based on the median household income, home square footage, and commuting patterns of a typical Andover resident were made, some or all of which may or may not apply. To the extent possible, assumptions and calculations are outlined so that substitutions with household data is possible.

#### Tax Incentives and Rebates to Electrify Your Ride, Starting 2023

Federal Tax Credit ([select Electric Vehicles](#)): up to \$7,500\* for EVs costing \$80,000 or less. Up to \$4,000\* federal tax credit for used EVs starting 2024. (\* income eligibility, vehicle type and [US manufacturing content requirements](#) apply)

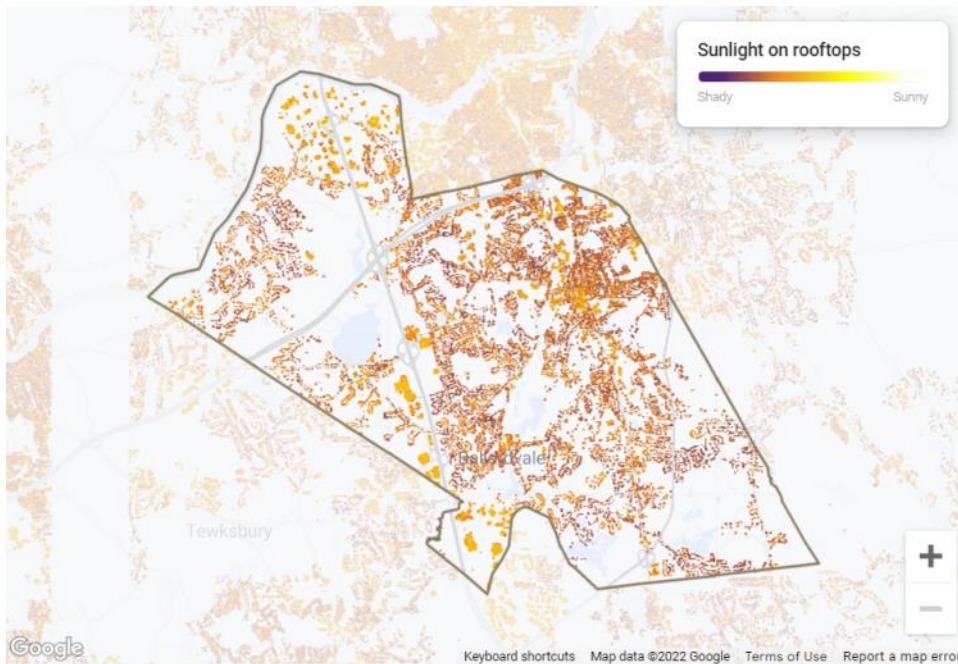


Massachusetts EV Rebate: \$3,500 for new EV costing \$55,000 or less (low-income individuals will receive an additional \$1,500 rebate). Trading in a gasoline vehicle will yield an additional \$1,000 rebate.

Example Vehicle: 2022 Nissan Leaf SV Plus with a range of 215 miles per full charge at MSRP \$36,685. Possible cost after federal tax credit and state rebates: \$24,685. Additional dealer incentives may be available with the Green Energy Consumer Alliance's [Drive Green Program](#).

The U.S. Department of Transportation estimates a fleet average fuel economy of 36 miles per gallon (MPG). At the current price of \$4/gal gasoline, it costs owners \$0.11 to drive a mile. Compare that to an electric vehicle (EV) that gets 3.5 miles per kilowatt-hour (kWh). At a rate of \$0.27/kWh (supply and delivery), going the same mile in an EV costs \$0.08. Over 150,000 miles of useful life (assuming current electricity and gasoline cost), the fuel savings would be \$4,500. With residential solar, EV fuel savings could be higher. Another fun thing about the fully electric vehicle? Eliminating oil changes. At a cost of \$100 per oil change every 10,000 miles, owning an EV would save an additional \$1,500.

Savings are nice, but the primary reason to electrify is reducing carbon emissions and pollutants. A 36 MPG car requires 4,167 gallons of gas to go 150,000 miles, which equals [37 metric tons of carbon emissions](#). An EV getting 3.5 miles per kWh would emit only 18.5 metric tons (50% less) even assuming the power grid does not get greener. Other tailpipe emissions can also be avoided, improving public health (pollutants contribute to lung disease), boost visibility (no smog) and water quality (less chemical runoffs). *Cont. page 2*



(continued from page 1)

**Adorn Rooftop with Solar Panels.** The Google Environmental Insight Explorer (EIE) tool uses satellite imagery to estimate solar potential. EIE projects that the median Andover home is capable of producing 8,000 kWh of energy per year from a 8 kilowatt-DC (kW-DC) solar photovoltaic (PV) system, offsetting 80% of a typical 10,000 kWh annual usage.

The federal solar investment tax credit (ITC) is a one-time credit claimed by taxpayers the first year the solar system comes online. In 2022, the ITC was 26% of the total system cost. The new Inflation Reduction Act boosts the ITC to 30% through 2032. A good rule of

thumb is \$3/Watt installed PV cost; the 8 kW-DC installation in Andover would cost \$24,000. With the new 30% ITC, plus a \$800 state tax credit, the net upfront cost would be \$16,000. A residential PV owner then participates in net-metering where electricity usage is offset by production onsite. At the current net-metering credit of \$0.23/kWh, assuming no electricity rate changes, inflation, or financing costs, the total savings from the 8,000 kWh production will be \$1,840 per year (simple payback period just under 9 years). Using the same assumptions for the remainder of the PV system's useful life of 11 years, the avoided electricity savings will be an additional \$20,240 (a significant down-payment towards the replacement PV system). The annual greenhouse gas emission avoided by this PV system is 5.7 metric tons. The individual's choice to install solar contributes to a multitude of societal benefits which includes reducing power plant emissions and pollutants (typically sited in environmental justice neighborhoods), and lowering demand for natural gas.

One last item of note... The ITC should be stable for 10 years. If the roof needs replacement this decade, consider adding solar panels at the same time to maximize useful life overlap and compatibility. (cont. pg 3)

## Upcoming Events

### Shawsheen River Master Plan Workshop

September 22, 2022, 6:30 PM

Memorial Hall Library, 2 N. Main St.

*The Town invites you to participate in the next public conversation on the Shawsheen River to continue the discussion on the Shawsheen River. Join us to envision the potential for the future of this beautiful waterway.*

POC: [Robert.Douglas@andoverma.us](mailto:Robert.Douglas@andoverma.us)

### Andover Day—Sustainability Fair

September 24, 2022, 10 AM to 2 PM Downtown

Parking Lot between U. Burger and Caffe Nero

*WECAN is bringing together a number of vendors and nonprofits who are doing great work to help us reduce our greenhouse gas emissions and educate us on sustainability.*

POC: [Joyce.LosickYang@andoverma.us](mailto:Joyce.LosickYang@andoverma.us)

### Andover Comprehensive Plan Visioning Workshop

September 28, 2022, 7 PM

Memorial Hall Library, 2 N. Main St.

*The Town invites you to participate in the next public conversation on the Shawsheen River to continue the discussion on the Shawsheen River. Join us to envision the potential for the future of this beautiful waterway*

POC: [Lisa.Schwarz@andoverma.us](mailto:Lisa.Schwarz@andoverma.us)

### Andover Green Advisory Board Meeting

September 29, 2022, 7 PM

Virtual Webex Meeting (see Town Calendar)

*Regular monthly meeting of the Green Advisory Board.*

POC: [Joyce.LosickYang@andoverma.us](mailto:Joyce.LosickYang@andoverma.us)

## Contact

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Town of Andover

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Tweet me @LosickYang | Website <https://www.andoverma.us/Sustainability>

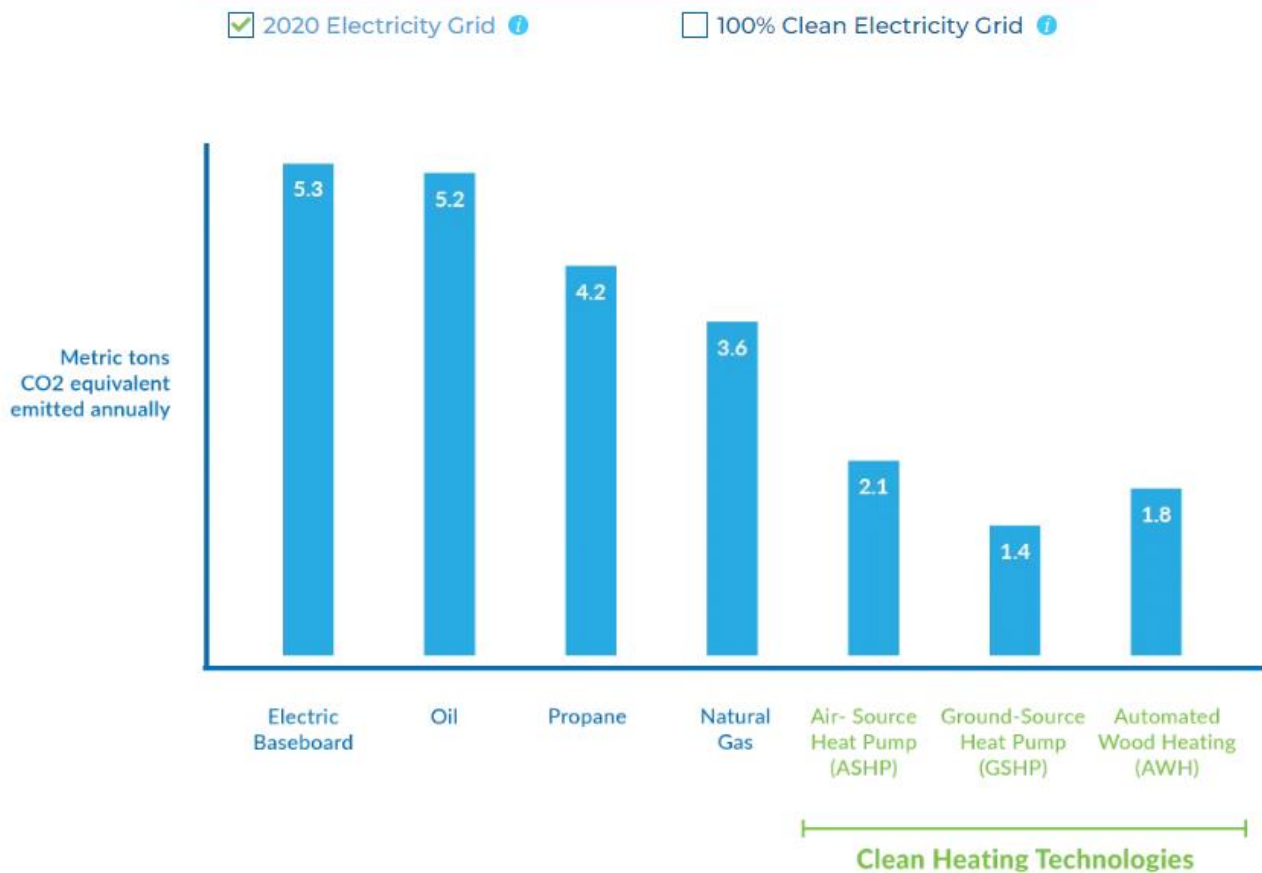
Manage your 2050 subscription at <https://andoverma.gov/list.aspx> (scroll down to News Flash)

(continued from page 2) Heat and Cool with an All-Electric Heat Pump (But Weatherize First). In March, home heating oil prices in Massachusetts spiked above \$5/gallon (up from \$3/gallon a year ago) creating strong incentives for homeowners to look for alternatives. Most homeowners in Massachusetts use 800 gallons of heating oil per winter season, resulting in typical operating costs of more than \$2,400 per year. In May, the new Mass Save air-source heat pump rebate of up to \$10,000 for a whole home (heating and cooling) conversion became available. The new Inflation Reduction Act sweetens the economics by offering an additional \$2,000 tax credit for EnergyStar heat pumps in 2023 (including cold-climate models that operate at negative 10 degrees Fahrenheit). The example provided for the 2,000 SF home assumes a whole-home heat pump conversion as it maximizes savings available. For partial home conversions, and other heat pump offers, please visit the [Mass Clean Energy Center \(MassCEC\) Go Clean website](#) for more details.

Heat pumps are designed to replace both air conditioners and furnaces/boilers. As such, the upfront cost to purchase a whole home system (3-4 ton outdoor unit and 4-6 indoor units) is significant, and will likely exceed \$28,000, especially if electric service and ductwork upgrades are needed. Luckily, the generous Mass Save rebate, coupled with the tax incentive will bring down the upfront cost to \$16,000. The remainder of the cost can then be financed over 7 years with the 0% interest Heat Loan (also as a part of the Mass Save program). A homeowner would be wise to reach out to at least three Mass Save [approved heat pump installers](#) for quotes and to obtain information on the different heat pump models approved for both Mass Save rebates and federal tax credit that are available, starting in 2023. Lastly, before any heat pump discussions, homeowners should complete all air-sealing and weatherization projects in 2022 that will improve efficiency by reducing heat and cooling loads so that the correct heat pump size can be installed. Mass Save’s no-cost home energy assessment will identify those cost saving opportunities, and these upgrades already qualify for substantial Mass Save 75% rebates for insulation as well as up to \$500 federal energy efficiency tax credits (IRS Form 5695).

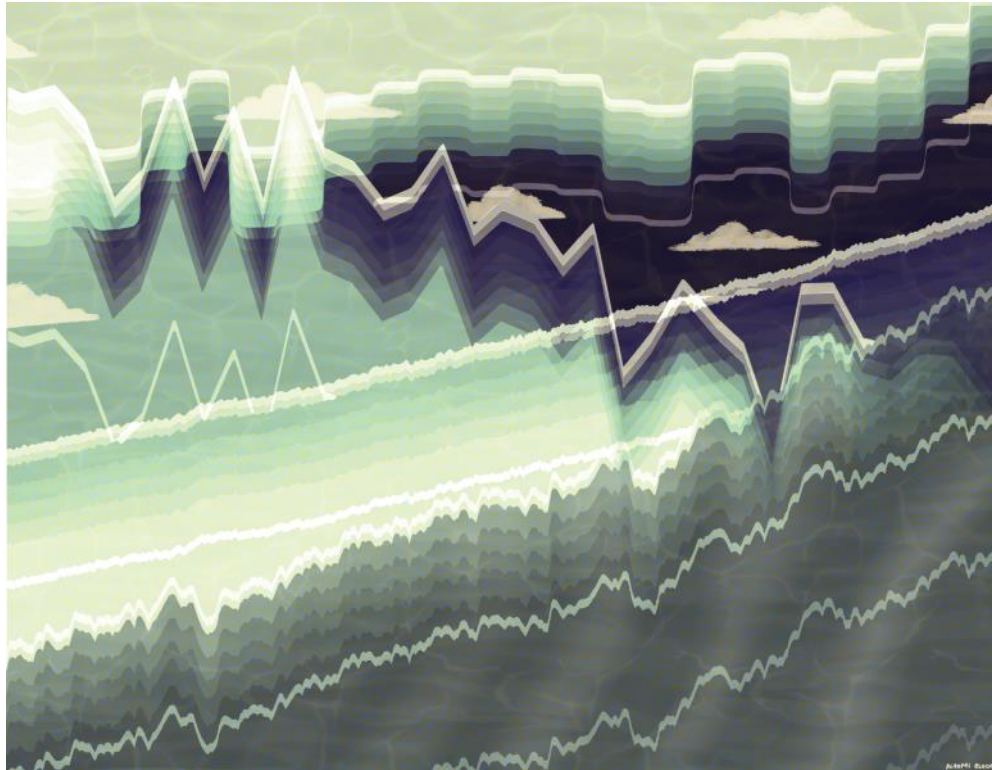
Even though heat pumps do not offer significant operating cost savings when compared to fossil-fuel based boilers or furnaces, it is essential technology to transition to lower carbon impacts, offering 60% reduction in green house gas emissions compared to oil heating. As the grid becomes 100% renewable, electric heat pumps will become emissions-free. For more on air-source heat pumps, review the [guide from MassCEC](#).

Greenhouse Gas (GHG) Emissions for Heating a Standard 2,000 SF Home





# Scenes Around Town



**Ocean Abstracted Data** by Naomi Bloom

## Submission Guidelines

2050, Andover's Sustainability E-Newsletter welcomes your submissions for the following content. Below please find the specific guidelines for each type of content.

	Sustainability Heroes	Community Share Space	Events	Scenes Around Town
Send all submissions to <a href="mailto:Joyce.LosickYang@andoverma.us">Joyce.LosickYang@andoverma.us</a>				
<b>Content Sought</b>	Nominations for heroes to include full name(s) or individual or team and organizational affiliations. Spell out all abbreviations. Preferred dates and times for a 30 minute interview if selected also helpful.	Sustainability tip or project; Recipes that reduce food wastes or other reuse advice; Product reviews (must review at least 2 other competitor products); Other resources also welcome. Other ideas? Contact Joyce to discuss	Event title, date(s) and start time(s); host organization; location; whether event is held in person or virtually; registration and website link; fee or cost	Original photograph taken in Andover or original artwork that pertains to sustainability; place photo taken; date photo taken; 12 words or less caption
<b>Contact</b>	Full name, email or phone contact information for the submitter. Also required is your Andover street address which will not be printed			
<b>Requirements</b>	300 words or less summary of the emissions reduction (>100 CO2 equivalent tons per year) or resilience achievement	300 words or less original article that is factual and unbiased. Opinion and editorials as well as political commentary are discouraged.	Event to take place up to 3 months in advance of the publication; must be appropriate for general audience	300 dpi or better resolution original photograph
<b>Preferred Electronic Format</b>	Microsoft Word (.docx) or Email	Microsoft Word (.docx) or Email	Microsoft Word (.docx) or Email	.jpg or .png file format; Do <u>not</u> compress or optimize
<b>Due Date</b>	None (Year-Round)	By the 5 <sup>th</sup> of month	By the 5 <sup>th</sup> of month	None (Year-Round)

**Disclaimer:** The views, thoughts and opinions expressed in submitted content are those of the individual writers and do not necessarily reflect those of the Town of Andover or the Sustainability Coordinator. All content submitted for publication are subject to editing. The Town of Andover reserves the right to edit or remove any post for any reason.