



**Pat and Steve Miller**  
**Oct 2023**

**ELECTRIFY EVERYTHING WITH INFLATION  
REDUCTION ACT (IRA)**

**As written, the IRA allocates**  
**\$369 billion**  
**to energy security and**  
**climate solutions.**

**In tandem with existing policies,  
the IRA could cut US emissions  
40% below 2005 levels by 2030.**



# **What can WE do?**

**Lead by doing! Take advantage of the tax credits and incentives available to us.**

**Educate our communities on the IRA and how to access clean technology incentives – for households, businesses, and organizations.**

**Advocate for local laws that boost building electrification tax credits.**



# Top 3 Greenhouse Gas (GHG) Emissions Sources in NJ: 87% of All Emissions

- Electricity generation (19%)
- Transportation (42%)
- Residential and commercial buildings (26%)

**REDUCE ALL 3**

## **We can reduce building emissions ourselves.**

- **Replacing gas appliances with efficient electric models.**
- **Replacing older electric appliances with new and efficient models.**
- **Switching to LED lighting.**
- **Replacing traditional heating and cooling systems and water heaters with heat pump alternatives.**

## **We can reduce building emissions ourselves.**

- **Upgrading or replacing inefficient insulation, windows, siding, and weatherstripping.**
- **Installing rooftop solar systems and onsite battery storage.**
- **Supporting community solar initiatives.**



# **What are the benefits of building decarbonization?**

## **Cost Benefits**

**Electric appliances are cheaper to own over their lifetime than fossil fuel alternatives.**

**Energy efficiency measures can save the average household about 25% on energy costs.**

**Distributed energy sources like rooftop solar can bring significant savings over the system's lifetime.**

**Rebates and tax credits make upgrades more affordable.**

# **What are the benefits of building decarbonization?**

## **Justice Benefits**

**IRA incentives can help reduce pollution inside the home and alleviate health impacts disproportionately experienced by low-income communities.**

**Rebates and tax credits greatly cut costs for heating and cooling systems, helping low and moderate-income families safely weather dangerous heat or cold outside.**



**About one-in-eight cases of childhood asthma in the U.S. are caused by gas stove pollution.**



**Induction cooktops heat using a magnetic current. The result is evenly heated pots and pans with much less energy lost during cooking.**



Soup Water Fry Hot Pot Stir-Fry

Temp.



Power



Timer/Pre.



Child Lock



Elec./Volt.



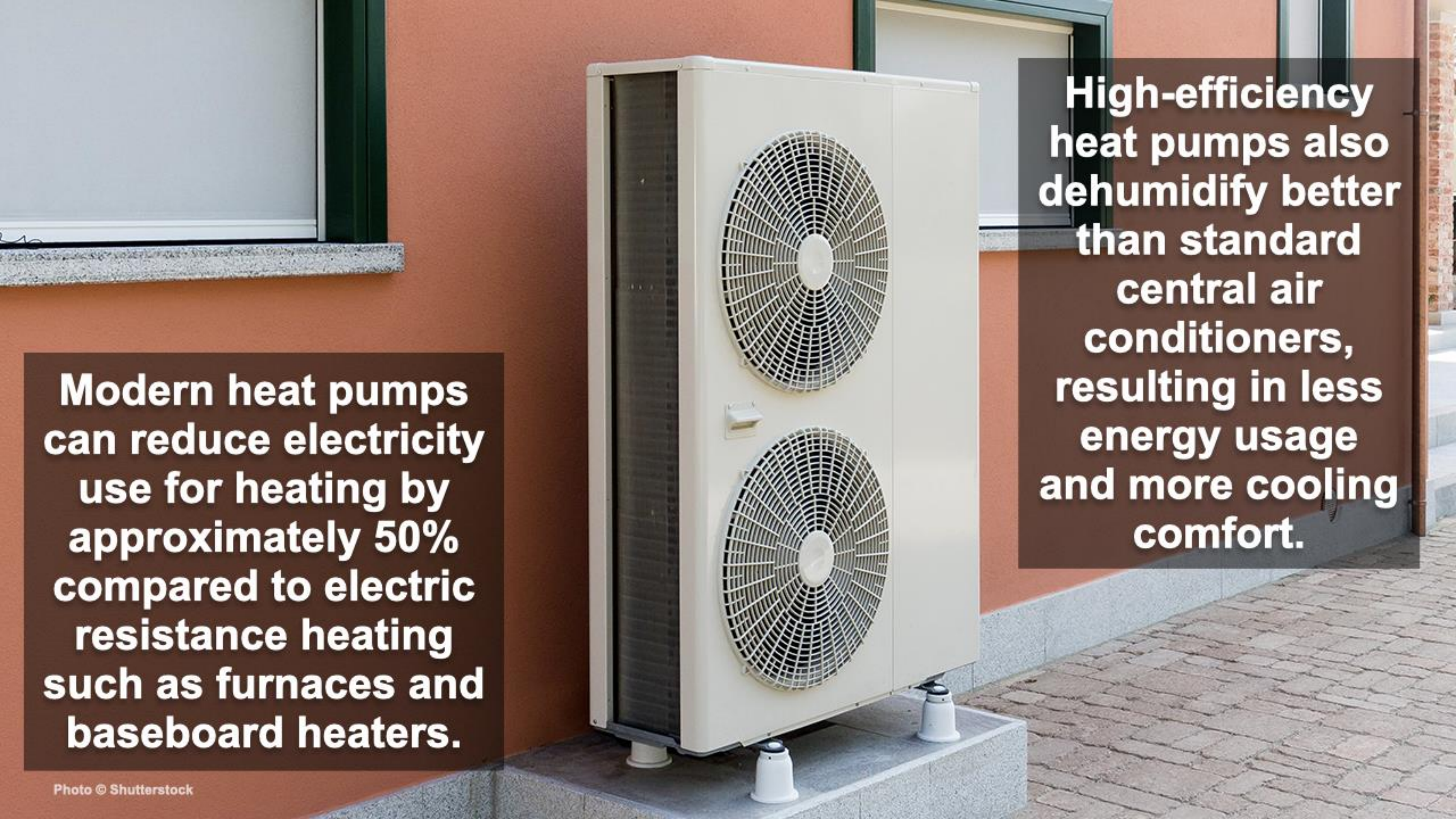
Function



ON/OFF







**Modern heat pumps can reduce electricity use for heating by approximately 50% compared to electric resistance heating such as furnaces and baseboard heaters.**


**High-efficiency heat pumps also dehumidify better than standard central air conditioners, resulting in less energy usage and more cooling comfort.**



## **Take the first step with a home energy audit.**

- **Likely available at low cost from your local utility.**
- **The IRA offers a tax credit to cover some of the cost.**
- **Can help you decide where to begin and what credits for appliances and upgrades are right for you.**



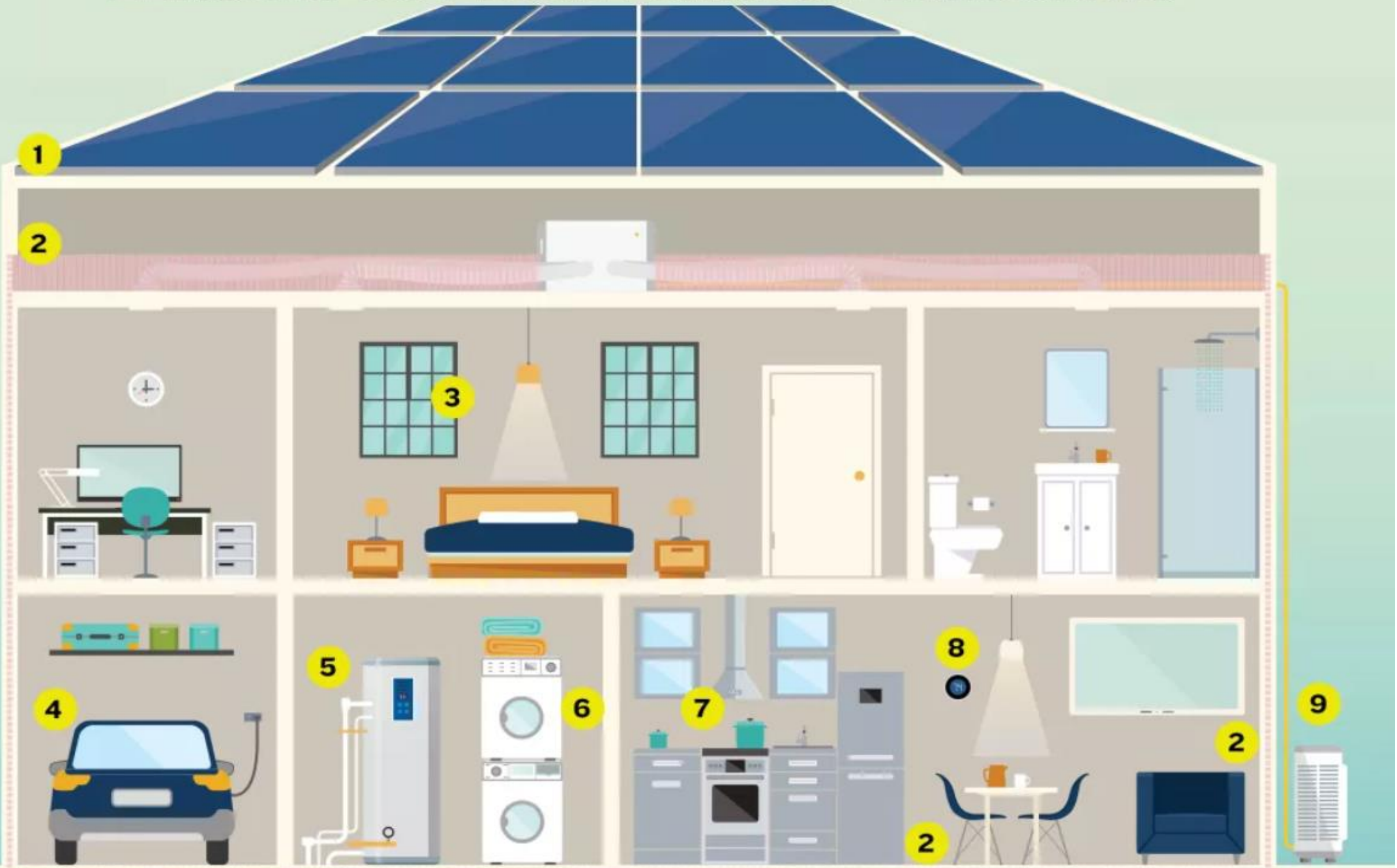


**On average, the maintenance cost for a battery-electric vehicle is 40% less than for internal combustion cars and light trucks.**



# ZEROING OUT HOME CARBON EMISSIONS

1. Solar Panels
2. Insulated Walls, Floors and Attic
3. Energy Efficient Windows & Doors
4. Electric Car
5. Heat Pump Water Heater
6. Heat Pump Dryer
7. Induction Stove
8. Smart Thermostat
9. Heat Pump Heating and Cooling



CREDIT: NRDC

# IRA incentives

NAVIGATING INDIVIDUAL INCENTIVES, BY DR. LEAH STOKES

[HTTPS://WWW.CLIMATEREALITYPROJECT.ORG/ELECTRIFICATION-JOURNEY](https://www.climateRealityProject.org/electrification-journey)

Name	Technical Name	Type of Program	Technologies	Target Population	Maximum \$ Amount per Household	Total Budget
<b>Electrification Rebates</b>	HEEHRA	Rebates	Heat pumps, heat pump water heaters, electric stoves, heat pump clothes dryers, panels, wiring, weatherization	Low- and moderate-income households	\$14,000	\$4.5B
<b>Efficiency Rebates</b>	HOMES	Rebates	Whole-home improvements (including heat pumps)		\$8,000 (LMI) \$4,000 (non-LMI)	\$4.3B
<b>Electrification + efficiency tax credits</b>	25C	Tax Credits	Heat pumps, heat pump water heaters, weatherization, panels, energy audits	Anyone with tax liability	30%, up to \$3,200 per year	Uncapped
<b>Solar + storage tax credits</b>	25D	Tax Credits	Solar, storage, geothermal	Anyone with tax liability	30%, uncapped	Uncapped
<b>EV tax credits</b>	30D/25E	Tax Credits	New EVs (30D) and used EVs (25E)	Non-high income households	\$7,500 (new) \$4,000 (used)	Uncapped



**Starting in late 2023, the IRA will offer electrification rebates of up to:**

- **\$8,000** for heat pump air conditioners/heaters
- **\$8,000** for certain home efficiency upgrades
- **\$4,000** for electrical panels
- **\$2,500** for electric wiring
- **\$1,750** for heat pump water heaters
- **\$1,600** for weatherization
- **\$840** for electric stoves
- **\$840** for heat pump clothes dryers

# IRA incentives

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## The law also allocates tax credits of up to:

- **\$7,500** for new electric vehicles (EVs)
- **\$4,000** for used EVs
- **\$1,000** for EV chargers
- **\$2,000** for heat pump HVAC systems
- **\$2,000** for heat pump water heaters
- **\$1,200** for weatherization
- **\$600** for electrical panels
- **30%** for battery storage
- **30%** geothermal heating
- **30%** for rooftop solar installation

# Rewiring America Savings Calculator

<https://www.rewiringamerica.org/app/ira-calculator>

Rebates available up to \$14,000 per household, plus tax credits

- 100% cost coverage for low-income households
  - Up to \$83,000 per year
- 50% cost coverage for mid-income households
  - \$83,000 to \$155,000

Zip Code <sup>?</sup>  
95652

Homeowner Status <sup>?</sup>  
Homeowner

Household Income <sup>?</sup>  
\$100,000

Tax Filing <sup>?</sup>  
Joint

Household Size <sup>?</sup>  
4 people

**Calculate!** We do not store this data.

**Your Personalized Incentives**  
Use these any time in the next 10 years.

UPFRONT DISCOUNTS	AVAILABLE TAX CREDITS
<b>\$14,000</b>	<b>\$7,536</b>
ESTIMATED TOTAL INCENTIVES	
<b>\$21,536</b>	

Household Electrification Incentives These are available to American homeowners and renters over the next 10 years.			
ITEM	DISCOUNT TYPE	DISCOUNT	TIMELINE
Rooftop Solar Installation	Tax Credit	30%	Now!
Geothermal Heating Installation	Tax Credit	30%	Now!
Battery Storage Installation	Tax Credit	30%	Now!
Community Solar Subscription	Tax Credit	30%	Now!
New Electric Vehicle	Tax Credit	\$7,500	2023
Used Electric Vehicle	Tax Credit	\$4,000	2023
Heat Pump Air Conditioner/Heater	Tax Credit	\$2,000	2023
Electric Panel	Tax Credit	\$600	2023
Basic Weatherization	Tax Credit	\$1,200	2023
Heat Pump Water Heater	Upfront Discount	\$1,750	2023
Heat Pump Air Conditioner/Heater	Upfront Discount	\$8,000	2023



<p><b>NJ HOME CREDITS &amp; REBATES</b></p>	<p><b>NEW JERSEY</b> (stackable with IRS Credit. Likely available until June 30, 2024 end of 3 year utility commitment, or when NJ utility rebate money runs out)  <b>HVAC-related rebates for JCP&amp;L, PSEG, Rockland Electric &amp; Atlantic City Electric are indexed in</b>  <a href="https://energyefficiencyalliance.org/wp-content/uploads/2023/08/NJ-HP-Incentives.pdf">https://energyefficiencyalliance.org/wp-content/uploads/2023/08/NJ-HP-Incentives.pdf</a></p>				<p><b>IRA TAX CREDIT CAPS: 30%</b> and \$3200 max/calendar-year; IRA credits have a three-year carryback and a twenty-two year carry forward. Credits transferable (limits such as passive activity rules).</p>	<p><b>IRA REBATE (\$14K cap for total); STATES MAY VARY</b> (effective-late2023 - 2024); stackable with tax credits; funding may quickly run out; All are "HEEHRA" unless labeled "HOMES". Appliances must be rated "Energy Star"</p>	
	<p><b>JCP&amp;L REBATES</b></p>		<p><b>PSEG REBATES</b></p>			<p>&lt; 80% Area Median Income AMI</p>	<p>80% to 150% Area Median Income AMI</p>
<p><b>AIR SOURCE HEAT PUMP (cold climate)</b></p>	<p>Cold Climate</p>	<p>\$1K</p>	<p>Cold Climate</p>	<p>\$600</p>	<p>30% (capped at \$2K/year for heat pump + heat pump water heater)</p>	<p>100%, up to \$8K</p>	<p>50%, up to \$8K;</p>
<p><b>AIR SOURCE HEAT PUMP</b></p>	<p>highest efficiency (energy star)</p>	<p>\$1K</p>		<p>\$600</p>	<p>30% (capped at \$2K/year for heat pump + heat pump water heater)</p>	<p>100%, up to \$8K</p>	<p>50%, up to \$8K;</p>
<p><b>GEOHERMAL HEAT PUMP</b></p>	<p>REPLACE AIR OR GND SOURCE HEAT PUMP</p>	<p>\$500</p>			<p>30% for geothermal; no caps and no limits</p>	<p>100% up to \$8K</p>	<p>50% up to \$8K</p>
<p><b>GEOHERMAL HEAT PUMP</b></p>	<p>REPLACE ELECTRIC FORCED AIR FURNACE/AC</p>	<p>\$1500</p>			<p>30% for geothermal; no caps and no limits</p>	<p>100% up to \$8K</p>	<p>50% up to \$8K</p>
<p><b>HEAT PUMP WATER HEATER</b></p>		<p>\$750</p>		<p>\$600</p>	<p>30% for heat pump water heater capped at \$2K/year for heat pump + heat pump water heater)</p>	<p>100% up to \$1750;</p>	<p>50%, up to \$1750;</p>
<p><b>ELECTRIC OR INDUCTION STOVE</b></p>						<p>100% up to \$840</p>	<p>50% up to \$840</p>
<p><b>WEATHERIZATION</b></p>	<p>NJ utilities typically provide: free or low cost energy audits; list of authorized weatherization companies; low or no interest "on bill" 7 to 10 year loans; "Home Performance with Energy Star" (see below)</p>				<p>30% cap/year: max \$1200 /yr (including elec.panel);insulation; \$250/door; \$600 windows; \$150 energy audit;</p>	<p>100% up to \$1600</p>	<p>50% up to \$1600</p>



# IRA SUMMARY (PAGE 2 OF 2)

ELECTRIC PANEL						\$30%; \$600 cap/year	100% up to \$4K	50% up to \$4K
ELECTRIC WIRING							100% up to \$2500	50% up to \$2500
HEAT PUMP CLOTHES DRYER							100% up to \$840	50% up to \$840
Modeled and Measured Energy Efficiency of Whole House		Home Performance with Energy Star (HPwES) \$5K max rebate for 25% improvement in energy efficiency. Less rebate for less improvement (To be superceded in 2024)					*HOMES Energy Efficiency (modeled): 80% up to \$8K	*HOMES Energy Efficiency "modeled": is 50% up to \$4K "measured" program is 50% (no cap)
GOOD SOURCE:	<a href="https://www.rewiringamerica.org/app/ira-calculator">https://www.rewiringamerica.org/app/ira-calculator</a>							
THIS IS BEST SITE: determine rebate and tax credits for YOUR location and family income								
JCP&L <a href="https://residential.energysavenj.com/jersey-central/hvac/">https://residential.energysavenj.com/jersey-central/hvac/</a> Appliances must be "Energy Star"						Highest efficiency "energy star" products required		
PSEG <a href="https://residential.energysavenj.com/jersey-central/sites/jersey-central/files/2022-04/PSEG_HVAC_Incentive_Claim_Form_2022.pdf">https://residential.energysavenj.com/jersey-central/sites/jersey-central/files/2022-04/PSEG_HVAC_Incentive_Claim_Form_2022.pdf</a> Appliances must be "Energy Star"						Area Median Income: LOOKUP BY ADDRESS: <a href="https://ami-lookup-tool.fanniemae.com/amilookuptool">https://ami-lookup-tool.fanniemae.com/amilookuptool</a> OR HUD Area Median Income (by family size)		
*HOMES: Proposed project reqmts: >20% energy savings (modeled), or >15% energy savings (measured). "measured" has NO cap; stackable with tax credits; fuel neutral; up to \$200 contractor incentive								
"HEEHRA" (High Efficiency Electric Home Rebate Act) REBATES are "point of sale"; includes multifamily buildings where >50% of building is occupied by LMI households; provides up to \$500 contractor incentives; rebates flow thru contractors & big-box stores								



**MILLER HOME  
MIDDLETOWN, NJ  
AND  
UUCMC, LINCROFT, NJ  
  
STAGED EFFICIENCY  
AND ELECTRIFICATION**

# Top 3 Greenhouse Gas (GHG) Emissions Sources in NJ: 87% of All Emissions

- Electricity generation (19%)
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**REDUCE ALL 3**



# COMMUNITY SOLAR



**Clean Energy**

**Lower Energy  
Costs**

**No Panels on  
Your Property**



**BPU/Sustainable Jersey Community Solar**

[www.sustainablejersey.com/communitysolar](http://www.sustainablejersey.com/communitysolar)



# OUR EV – PRIUS PRIME PLUG-IN





# Energy Efficiency – Use Less Energy





# A SIMPLE DO-IT-YOURSELF PROJECT

## DUCT SEALING

**CAULKING  
CORD**

**PRESSURIZED  
FOAM  
FOR LARGE GAPS**

**ALUMINUM  
FOIL TAPE  
TO SEAL JOINTS  
IN INSULATION**

**DUCT SEALANT  
WATER BASE**



**REFLECTIVE  
BUBBLE WRAP**

**WRAP  
AIR DUCTS IN  
UNHEATED AREAS**



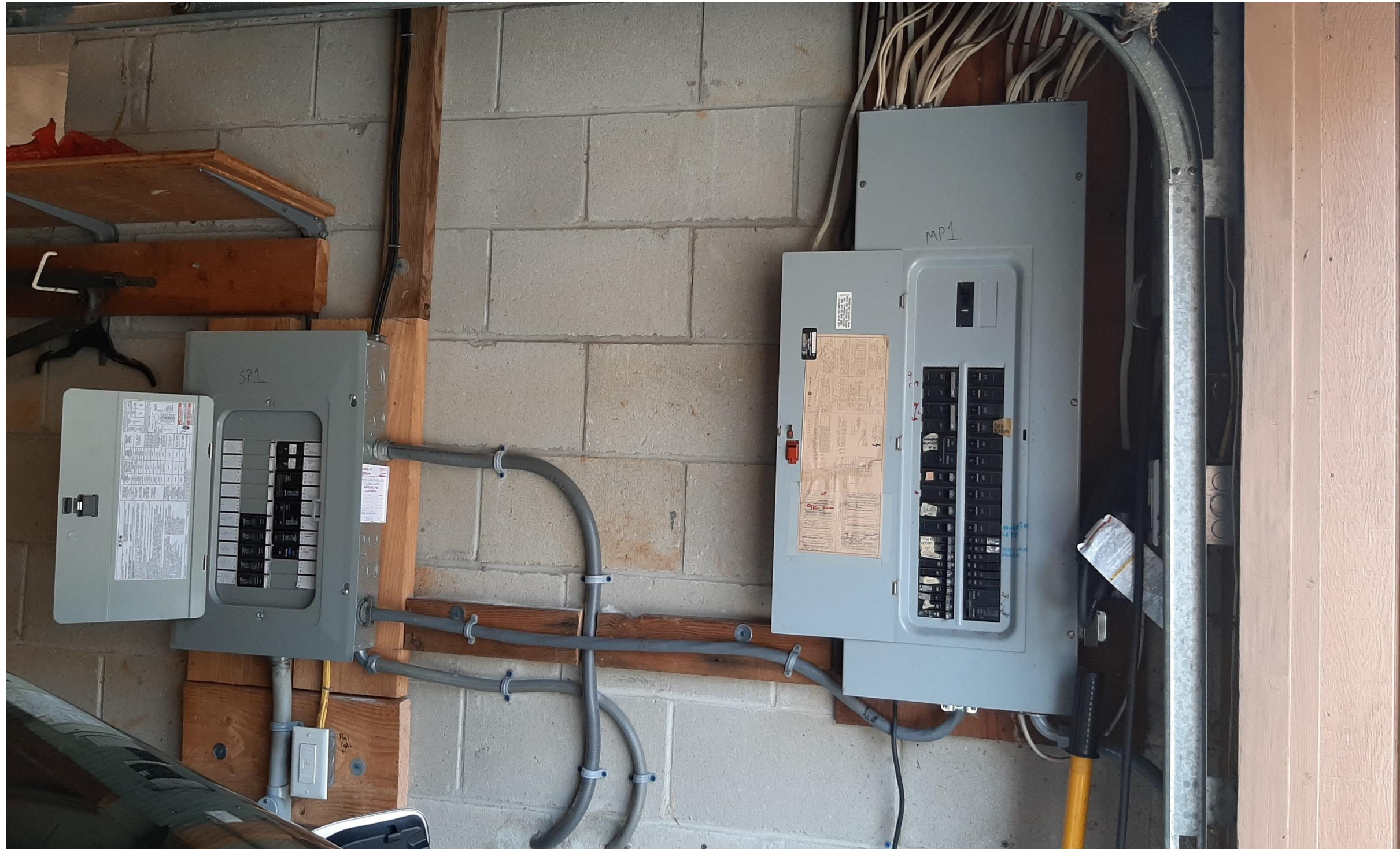
# SPACE HEATING & COOLING WITH ELECTRIC HEAT PUMP

## Gas Furnace Backup on Right





# Spare Circuits for Future Electric Appliances



**New Box on Left  
for New/Future**

- **2<sup>nd</sup> Heat  
Pump Space  
Heater/AC**
- **Heat Pump  
Water Heater**
- **Stove**
- **Dryer**
- **2<sup>nd</sup> EV**



# Electric Heat Costs Less, Pollutes Less

## 2022 ENERGY COSTS

	<b>ACTUAL with heat pump</b>	<b>CALCULATED (no heat pump)</b>	<b>% CHANGE with heat pump</b>	<b>With Heat Pump</b>
<b>TOTAL Gas + Electric*</b>	<b>\$2441</b>	<b>\$3153</b>	<b>(23%)</b>	<b>Savings</b>
<b>GAS Cost</b>	<b>\$394</b>	<b>\$1681</b>	<b>(77%)</b>	<b>Reduction</b>
<b>ELECTRIC Cost</b>	<b>\$2047</b>	<b>\$1472</b>	<b>39%</b>	<b>Increase</b>
<b>THERMS Gas Burned</b>	<b>201</b>	<b>1163</b>	<b>(83%)</b>	<b>Savings</b>
<b>TONS CO<sub>2</sub> Emitted**</b>	<b>1.2</b>	<b>6.8</b>	<b>(83%)</b>	<b>Savings</b>

\* Gas and electric costs include ALL uses for Miller household during year 2022

\*\*2023 electricity is 100% clean AND 21% lower cost, supplied by Community Solar

# ELECTRIC HEAT PUMP WATER HEATER



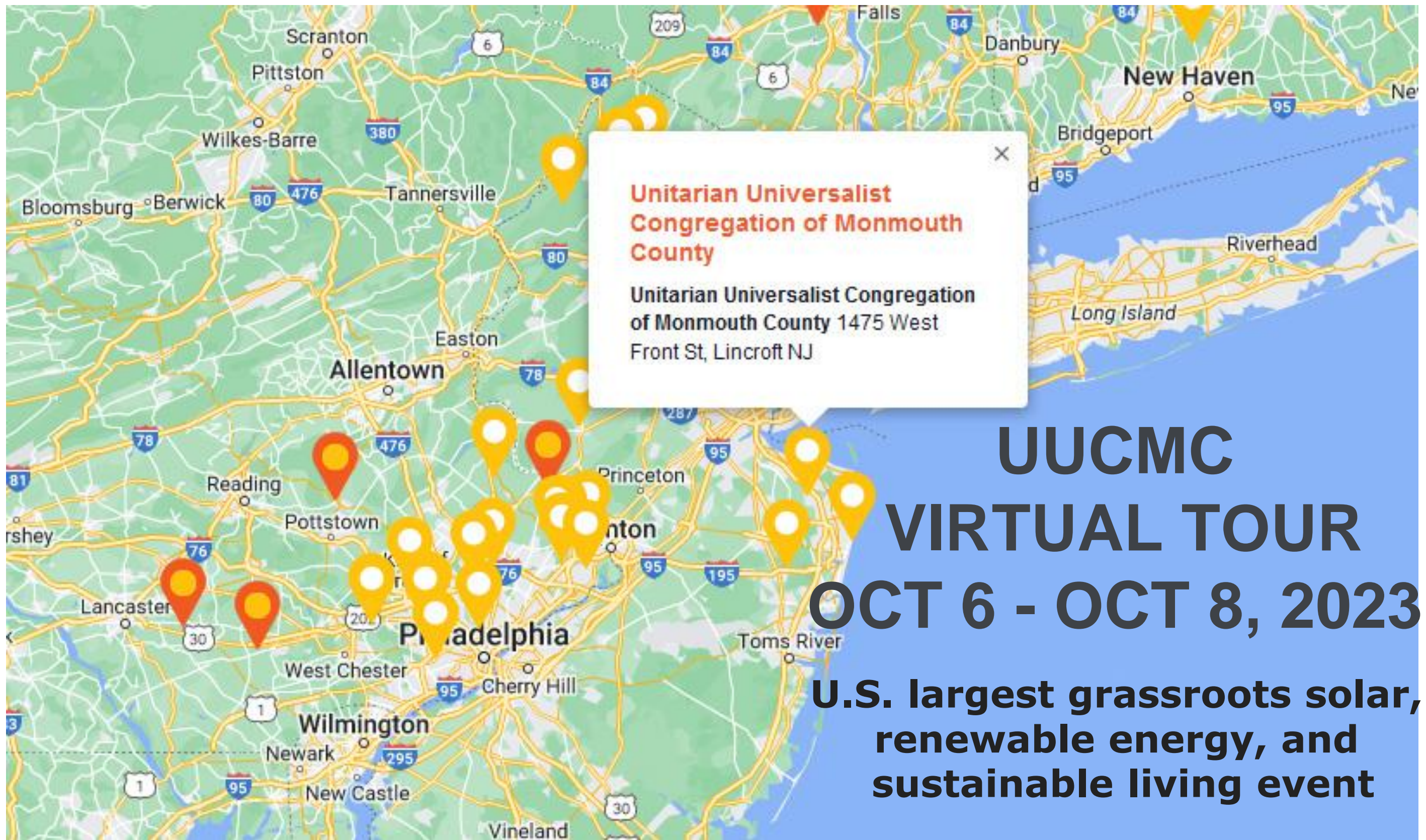


# **Unitarian Universalist Congregation of Monmouth County (UUCMC) Lincroft, NJ**

**Received 2nd Place National Energy Saver Award  
Feb, 2023 from Interfaith Power & Light**

**Featured in National virtual tour of churches, Oct 6 – Oct 8, 2023  
highlighting solar and renewable energy accomplishments**





**Unitarian Universalist  
Congregation of Monmouth  
County**

Unitarian Universalist Congregation  
of Monmouth County 1475 West  
Front St, Lincroft NJ

**UUCMC  
VIRTUAL TOUR  
OCT 6 - OCT 8, 2023**

**U.S. largest grassroots solar,  
renewable energy, and  
sustainable living event**

**DESCRIPTION, VIDEO AND PHOTOS LOCATED AT:**



**[HTTPS://WWW.NATIONALSOLARTOUR.ORG/TOURMAP/UNITARIAN-UNIVERSALIST-CONGREGATION-OF-MONMOUTH-COUNTY/](https://www.nationalsolartour.org/tourmap/unitarian-universalist-congregation-of-monmouth-county/)**



# UUCMC 2022 Rooftop Solar

4 X Capacity of Old System





# UUCMC 2021 Heat Pumps

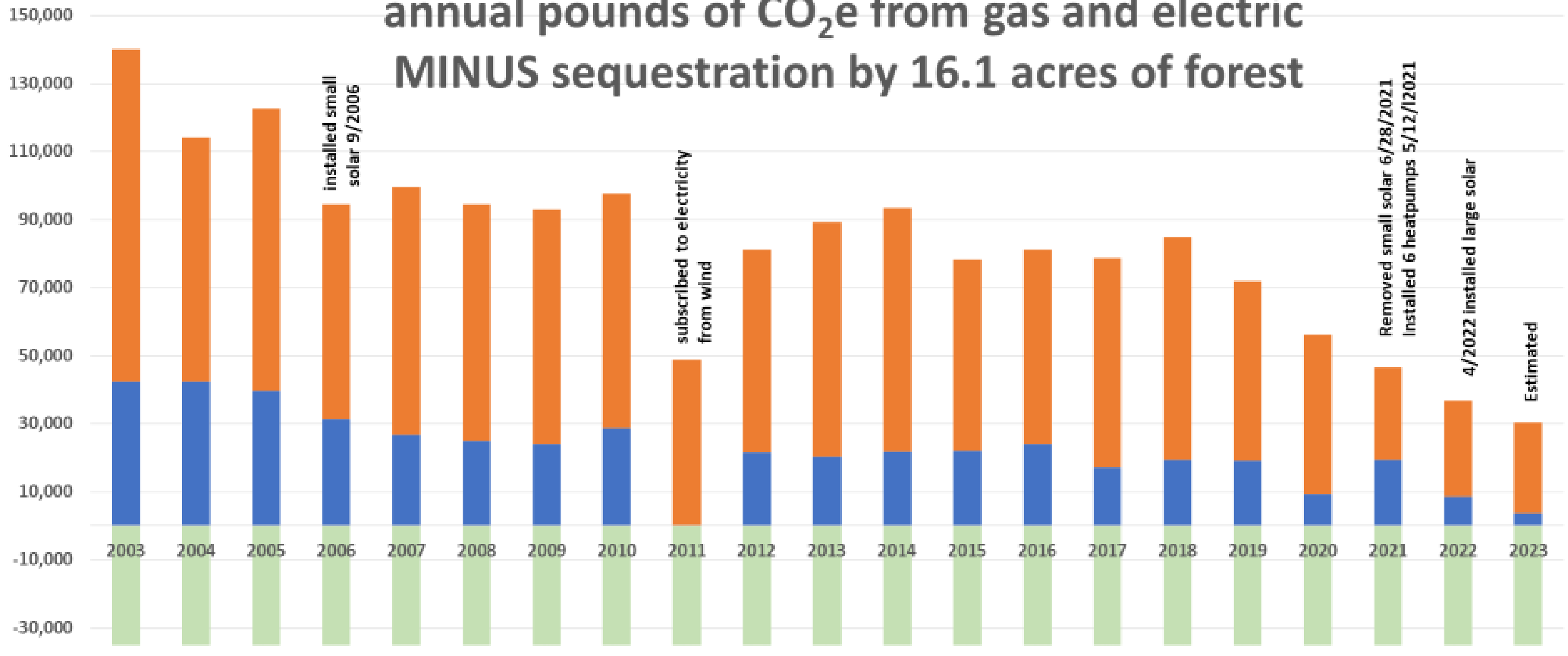




ANNUAL  
POUNDS OF  
CO<sub>2</sub>

# UUCMC GREENHOUSE GAS EMISSIONS

annual pounds of CO<sub>2</sub>e from gas and electric  
MINUS sequestration by 16.1 acres of forest



NOTES: 2019 is actual full year data, Jan-Dec, 2019  
 2022 is actual 12 month (1 year) data, Dec, 2021 through Nov, 2022. Solar began full operation 4/1/2022 (partial output previous 3 months)  
 2023 data is best estimate, with a full year of solar production

■ Electric GHG ■ GAS GHG pounds ■ 16.1 ACRES FOREST



# UUCMC REDUCTIONS IN CO<sub>2</sub> AND UTILITY BILL

- 2003 - 2019 insulated, sealed, LED bulbs, heat pump water heater,...
- 2021 - 2022 6 furnaces replaced with heat pumps;  
+ installed large rooftop solar array

YEAR	GAS CO <sub>2</sub> Tons	ELECTRIC CO <sub>2</sub> Tons	TOTAL CO <sub>2</sub> Tons	% TOTAL CO <sub>2</sub> REDUCTION	ELECTRIC Kwh from GRID	TOTAL BILL GAS+ELECTRIC	% TOTAL BILL REDUCTION
2003	49	21	70		72.4	\$22.1K	
2019	26	10	36	49%	32.8	\$12.4K	44%
2023 (est)	13	2	15	79%	7.0	\$4.3K	81%





# NEXT STEPS TO PLAN YOUR FUTURE

## ○ ARRANGE ENERGY AUDIT WITH YOUR ELECTRIC UTILITY

- JCP&L “[Quick Home Energy Check-ups](#)” OR FOLLOW THE JCPL “SELF-CHECK”
- PSEG “[QUICK HOME ENERGY CHECKUP](#)” OR ONLINE “MYENERGY PROGRAM”

## ○ START YOUR ELECTRIFICATION JOURNEY TODAY

<https://www.climaterealityproject.org/electrification-journey>

- WATCH DR. LEAH STOKES REVIEW THE IRA, 41 MINUTES (EXCELLENT!)  
<https://youtu.be/j2Fio5kbMvs>
- DETERMINE YOUR HOUSEHOLD BENEFITS FROM THE IRA  
<https://www.rewiringamerica.org/app/ira-calculator>

## ○ LOOKUP YOUR AREA MEDIAN INCOME (LOOKUP BY ADDRESS)

<https://ami-lookup-tool.fanniemae.com/amilookuptool/>

## ○ USE EXISTING REFERENCES TO BUILDING ELECTRIFICATION TOPICS

<https://climate.smiller.org/REF/> (find best heat pumps, water heaters, locate HVAC vendors...)

<https://climate.smiller.org/50x30/building-electrification/All-heat-pump-webinars.html> (approaching 2 years of webinars)

