

## **Sustainability Ad Hoc Committee**

City of Oregon

Committee Meeting Agenda

Monday January 13<sup>th</sup>, 2025, 9:00 a.m. – 10:00 a.m.

City Hall Conference Room

115 N. 3<sup>rd</sup> Street, Oregon, IL 61061

### **Public Access to Zoom Meeting**

Meeting ID: 823 2527 3365

Passcode: 164928

One tap mobile

+13126266799

1. Public Comment
2. Approve December 9<sup>th</sup>, 2024 Minutes
3. Updates to Lunch and Learn meeting in March with the Chamber of Commerce
4. Organize representatives from ComEd, Nicor, and Solar for energy saving programs for business district
  - a. Dole out any tasks individual members can start to work on to organize the Lunch and Learn. Vic and Joyce had some ideas on a second Lunch and Learn – growing greens in–house. This would be separate from Chamber involvement.
5. Start to prioritize top 5 items we'd like the committee to work on from the Sustainability Plan
6. Adjournment

### **Committee Members**

Melanie Cozzi, Tim Benedict,

Joyce Lewis, Tom Pacey, Steve Rypkema, Vic Zaderej

Ex. Officio Member Darin DeHaan, City Manager

City of Oregon  
Sustainability Ad Hoc Committee Meeting

The Sustainability Ad Hoc Committee met Monday, December 9<sup>th</sup>, 2024, at 9 am.

**Present:** Tim Benedict, Darin DeHaan, Cheryl Hilton, Joyce Lewis, Tom Pacey, Steve Rypkema, and Vic Zaderej.

**Present via Zoom:** Melanie Cozzi

Meeting called to order at 9:02.

No public comment.

Melanie Cozzi moved to approve the November 18<sup>th</sup>, 2024 minutes, Seconded by Vic Zaderej.

Motion carried. No Nays.

The committee discussed Eco Oregon and how to implement and rank each category within the pledge. The committee plans to use the City of Galena's Green Pledge for businesses as a foundation for the City of Oregon's pledge. Over the next month, the committee members will create a template for program goals and how to rank each category. Melanie Cozzi will reach out to local business owners for feedback. They also discussed helping businesses reach program goals and incentives to become and continue to be sustainable. They plan to collaborate with the Chamber of Commerce and the Ogle County Health Department for educational opportunities. Potential educational topics included growing food, food security, solar, and ComEd and Nicor incentives.

Recycling containers for the downtown business owners and the fees for those were also discussed. The committee would like to tour a recycling facility in the spring. Educating the community about recycling continues to be a high priority.

The meeting was adjourned at 10:09 a.m.

Submitted by City Clerk Cheryl Hilton

December 9, 2024

Cheryl Hilton

City Clerk

City of Oregon

115 N. 3rd St.

Oregon, IL. 61061

We are pleased to report recycling totals in your community for November 2024.

**City of Oregon Recycling Statistics**

Total Weight: 31,800 lbs.

Mixed recycling includes plastic and glass containers, aluminum and metal cans or containers, aluminum, and metal cooking pans and tins, papers items such as newsprint, magazines, catalogs, fliers, brochures, papers, envelopes, file folders, paper bags, beverage, food and clothing packages and cardboard items.

If you have any questions, please feel free to contact us at 815-938-8509.

Sincerely,

Lisa Keller

Republic Services

306 E. Main St.

P.O. Box 158

Forreston, IL. 61030

**Commercial Recycling Options for Businesses in  
Oregon, IL  
January, 2025**

The City of Oregon adopted a Sustainability Plan in September of 2024, which included a number of recommendations for implementation of the plan. Several of the recommendations are intended to help and encourage local businesses to become more sustainable with respect to economic stability, social equity, as well as preserving environmental resources for current and future generations.

The Plan lists a series of strategies to educate and motivate residents and businesses to recycle more of the waste that they generate. Business owners have stated that it is difficult for them to recycle and to know how to go about acquiring recycling services. In response, the Oregon Sustainability Committee (OSC) has contacted local waste and recycling companies to make this process easier. The estimates are on the next page and are subject to change.

Although the City recently entered into a new residential waste & recycling service contract with Northern Illinois Disposal Service, businesses are free to choose any company for waste and recycling services.

When considering adding recycling service at your business, look at the possibility of reducing the size of your waste container to reduce that cost to offset any new charges for recycling.

Prior to starting a business recycling program, it is recommended that you take a close look at the waste that your business generates, if any of it can be reduced through changes in your procedures, and whether or not it may be recyclable. Can any of your consumables be eliminated or replaced with reusable or recyclable items? Conducting a formal waste audit can also help to get more accurate measurement of what goes out your back door, and how to best manage it. An example of a Waste Audit Form is attached.

The City of Oregon encourages all efforts to make your business more sustainable. In the near future, the Sustainability Committee will be announcing a recognition program – Eco-Oregon, for businesses that meet certain goals for making their operations more environmentally sustainable. We look forward to your participation!

Three companies were contacted for information about recycling services for businesses in Oregon. Two responded with the following information. **Both stated that the pricing are estimates only and subject to change.** Please contact the company directly to get a specific quote based on your needs.

1. **Northern Illinois Disposal Services, Inc.**

5450 Wansford Way, Rockford, IL 61109

779-200-4252

Corinne Lombardo, Territory Account Manager

[corine.lombardo@wasteconnections.com](mailto:corine.lombardo@wasteconnections.com)

<https://www.northernillinoisdisposal.com/>

**Option 1:** 95 gallon totes serviced every other week, like the residential schedule. Cost would be \$20 per month, with a one-time delivery fee of \$60. This service could be provided even if the business currently has another waste hauler.

**Option 2:** businesses could share in the cost (however, one business would be billed) of a large 25 cubic yard roll-off container with sliding lids like the ones Ogle County Solid Waste Management provides for residents who do not have curbside recycling options. The container would be picked up as requested at a cost of \$350 per haul plus a charge of \$90 per ton of recyclables.

2. **Republic Services (formerly Moring Disposal)**

2110 McNeil Rd., Rock Falls, IL 61071

779-804-3009

Donnie Dittmar, Territory Executive

[ddittmar@republicservices.com](mailto:ddittmar@republicservices.com)

<http://republicservices.com/>

**Option 1:** 96 gallon tote picked up weekly: \$100

**Option 2:** 96 gallon tote picked up every two weeks: \$54

**Option 3:** 2 yard container serviced weekly: \$140

**Option 4:** 2 yard container serviced every two weeks: \$85

3. **Midwest Disposal**

1556 Red Brick Rd., Dixon, IL 61021

779-245-7063

Derrek Humphrey

[derek@midwestdisposalllc.com](mailto:derek@midwestdisposalllc.com)

<https://midwestdisposalllc.com/>

No response received to request for pricing.

# Conducting a Waste Audit

**DRAFT**

What is a Waste Audit and why do one?

A waste audit is a formal, structured process used to quantify the amount and types of wastes being generated by an organization. Information from audits will help identify current waste practices and how they can be improved. Being waste-wise can mean:

- A more efficient and effective organization and potential material savings
- Reduced waste management costs
- Better use of limited natural resources

A small business waste audit can be conducted and it is first step to finding out cost saving ways of reducing your waste. It will also provide an idea of what sort of material you are using and ways to reduce it through recycling or other methods.

What are the objectives of the audit?

The audit's objectives will largely determine the waste types and physical locations to be audited. Some examples of audit objectives could be:

- To determine composition and quantities of waste being generated
- To measure effectiveness of existing waste management systems
- To identify opportunities for improving waste management systems and strategies
- To collect baseline data for measuring the effectiveness of waste minimization strategies

**Business Name:**

**Date of Survey:**

**Sheet No.:**

## MIXED WASTE ONLY: Record ONLY SORTED Waste Samples

	Sample 1	Sample 2	Sample 3	Sample 4	Daily/Weekly Total
<b>Source</b>					
<b>TOTAL SAMPLE WEIGHT (lbs.)</b>					
<b>PAPER</b>					
Office Paper					
Newspaper					
Magazines & glossies					
Tissue Paper					
Other Paper					
Paper Packaging					
<b>CARDBOARD</b>					
Flat Packaging					
Corrugated packaging					
Other (Non Packaging)					
<b>GLASS</b>					
Green Glass (Pac)					
Brown Glass (Pac)					
Clear Glass (Pac)					
Other Glass (non pac)					
<b>PLASTIC</b>					
PET Packaging					
PS Packaging**					

PE Packaging					
PP Packaging					
Plastic Films Packaging*					
Other Plastic Packaging					
Other Plastic					
<b>METAL</b>					
Aluminium Packaging					
Ferrous Metals Packaging					
Non Ferrous Packaging					
Other Ferrous Metals					
Other Non Ferrous					
Other Metal waste					
<b>ORGANIC WASTE</b>					
Food Waste					
Vegetable Oil					
Garden/Landscape Waste					
Liquid Waste***					
<b>TEXTILES</b>					
Textiles Packaging					
Textiles (Non Packaging)					
Healthcare Textiles (Nappies, etc)					
Clothes					
<b>WOOD</b>					
Wood Packaging					
Other Wood					
<b>COMPOSITES</b>					
Composite Packaging					
Tetra Pak Packaging					
Non Packaging					
<b>SPECIAL/IRREGULAR WASTE</b>					
Electrical & Electronic Equipment					
Fluorescent Bulbs					
Batteries					
Waste Chemicals					
Waste Mineral Oil					
Crockery					
Other ( )					
Other ( )					
Other ( )					
Other ( )					
Other ( )					
Other ( )					

Source: City of Huntington Park, CA

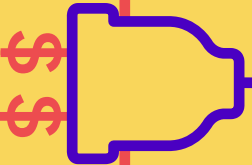
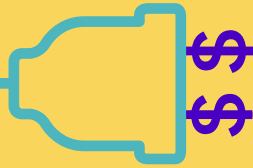
REWIRING  
AMERICA

# Go electric!

(Now)

Rewiring America's  
Guide to the Inflation  
Reduction Act

Everything you need to know to start  
using your electric bank account





# Table of Contents

## Introduction

What is the Inflation Reduction Act?	03
Why Electrify?	04
What it means for YOU	06

## Key details + timelines

When this all goes into effect	05
Getting Rewiring Ready	06

<b>Know your machines! What are all these things?</b>	<b>07</b>
---	-----------

<b>Know your incentives? What are all these things?</b>	<b>14</b>
---	-----------

<b>Case studies</b>	<b>15</b>
---------------------	-----------

<b>FAQ</b>	<b>32</b>
------------	-----------

<b>Your plan</b>	<b>33</b>
------------------	-----------

<b>Further information + contact us</b>	<b>34</b>
---	-----------

Go deeper with our Electrify everything in your home guide.  
[Visit RewiringAmerica.org](https://www.RewiringAmerica.org) to learn more



# What is the Inflation Reduction Act?

And what does it mean for you?



The Inflation Reduction Act is the largest clean energy investment America has ever made, with strategic incentives to make the transition to clean energy and a decarbonized life easy and financially smart. Its home energy offerings include up-front discounts, tax credits and low-cost financing that together provide a substantial pot of money for every household to electrify the machines they rely on — the cars they drive, how they heat the air and water in their homes, cook their food, dry their clothes and get their power — regardless of income level.

Think of the IRA as a **free electric bank account** with your name on it, because that's what it is. It's your own personal fund to help you go electric — swapping out your old, fossil-fueled appliances for new, clean electric ones — over the next ten years. We'll call it the IRA — which is confusingly like an Individual Retirement Account — but, hey, you and the federal government are investing in you!

## What does it mean to electrify?

To electrify everything, you'll need to replace any machine that currently burns fossil fuels — your gas-powered car, furnace, water heater, kitchen stove and dryer. You might also install some new electric machines, like solar panels, a home storage battery and an upgraded electrical panel and wiring. You don't have to do this all at once — you can wait until the next time your car or air conditioning needs to be replaced. The IRA is a financing tool to help you convert your household to run fully on electricity, backed by renewable energy. You can use the IRA money over the next ten years to electrify at the pace that works for you.



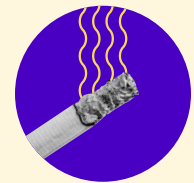
**Why go electric?** There are three key reasons, all of which will substantially improve your quality of life, and that of the people around you.

### Money money money money

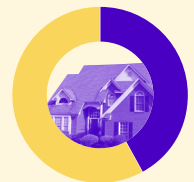
Running electric appliances and driving EVs were already becoming cheaper than fossil-fueled machines, but the IRA incentives make this financial choice even more compelling by bringing down the up front costs of electric machines themselves. Households will save [on average \\$1,800 a year](#) by going electric. You'll also no longer be beholden to the volatility of oil (yo-yoing gas prices!). In the coming years, electric appliances will become cheaper and cheaper to buy and run. For low-income households, the IRA's up-front discounts will unlock lower energy bills year over year.



Save on average \$1800 a year by going electric!



Burning gas in the home is akin to living with a smoker.



42% of energy-related emissions come from the home.

### Home clean home

Going electric improves your home health and safety in a number of ways. We know that burning gas in the home is akin to living with a smoker, and is a major factor in childhood asthma. But beyond cleaner air, electric home heating and cooking are more even and consistent, providing better thermal comfort, and greater temperature control.

### You've got the power

For too long, we've been told there's not much we, as individuals, can do to fight the climate crisis. And while it's true that we need more systemic policy changes (hello IRA), it's also true that 42 percent of energy-related emissions come from our homes and vehicles. Going electric is the equivalent of growing a victory garden — doing your part to help build a resilient, climate-safe future. The bonus is that you control your power — renewable energy that comes from your roof means you're not beholden to foreign dictators and price volatility, and that you're keeping money in your community, supporting local businesses and helping onshore good-paying jobs.

# Jolt into action

## A quick overview to get you going

### ⚡ Key things to know / Timelines

#### Electrify now!

Some incentives are available **right now**, and others will **start in 2023**. You can [check out our calculator](#) to see which incentives are available to you, and when you can start accessing them. And these are just federal incentive programs — you might have state and local incentives available now, too.

#### Who gets the money? Everyone!

Your IRA electric bank account is a mixture of up-front discounts right when you buy electric appliances, tax credits you can claim later, and low-cost financing. Your income determines the particular makeup of your bank account.

#### Show me the money!

[Use our calculator](#) to get an overview of the money available to you, and start thinking about your plan. There are provisions of all kinds, for every kind of household. In the following pages, we'll highlight key incentives for specific groups. We'll also show you some samples of households that might be like yours, so you can get a sense of what your electrification journey might look like.

### ⚡ The cheat sheet

**Switching to electric appliances:** The IRA offers households up to \$14,000 in up-front discounts to switch over to electric appliances — covering up to 100 percent of project costs for low-income households and up to 50 percent of costs for moderate-income households. For remaining costs and for households who don't qualify for the up-front discounts, the IRA includes major tax credits for electrification and energy efficiency upgrades. Low-cost financing — which will bring down the monthly, financed costs of electric machines — will also become widely available in the months ahead.

**Purchasing electric vehicles:** The IRA offers up to \$7,500 toward the purchase of a new electric vehicle and up to \$4,000 toward the purchase of a used electric vehicle. Starting in 2024, these incentives can be accessed as up-front discounts.

**Installing rooftop solar and home storage:** The IRA provides 30 percent off the cost of rooftop solar, home batteries and geothermal systems.

**Making major investments in affordable housing and multifamily rental units.** While it may not be consumer-facing, the IRA includes significant funding for rental housing to go electric, cut costs, and increase safety and resiliency.

## Is your household income low or moderate?



The IRA targets the most money to low- and moderate-income households who can least afford to upgrade to electric, yet stand to benefit the most from the lower operating costs.

“Low income” or “moderate income” is relative to where you live and how big your family is. Compared to the “Area Median Income” (AMI) for your region, any household making less than 80 percent of AMI is considered low income, and any household making between 80 percent and 150 percent of AMI is considered moderate income.

Low- and moderate-income families are eligible for up-front discounts that can pay for lots of electrification upgrades! Low-income families will have 100 percent of their electrification costs covered up to \$14,000, and moderate-income families will have 50 percent of their costs covered (but they can pair the discounts with tax credits for additional savings).

→ Read our case study ([page 18](#)) to see how a low-income family will pay almost nothing to electrify their home.

→ Read our case study ([page 20](#)) to see how a moderate-income family will electrify their home for half-off and use tax credits to recoup some of the remaining cost.

## Is your household income too high to qualify for up-front discounts?



If your household income is over 150 percent of your Area Median Income, you won't qualify for the IRA's up-front electrification discounts. In the Denver suburbs, that might mean an income over \$160,000 for a family of four... or in Lancaster, Pennsylvania, an income over \$100,000 for a household of two.

Instead, these folks can take advantage of the IRA's electrification tax credits, which will reduce final costs by up to 30 percent!

→ Read our case study ([page 28](#)) to see how a high-income family will electrify their home by taking full advantage of the 30 percent tax credits.

Low-cost financing — which will bring down the monthly, financed costs of electric machines — will also become widely available in the months ahead.

Most households will qualify for the new EV tax credit, too, though some very high-income households won't. Very expensive cars also won't qualify. So, if you have your eyes on a future electric Ferrari, you're on your own for that one.

## Are you a renter?



The IRA's up-front electrification discounts and electrification tax credits can all be used by renters! Renters are also eligible for the used and new EV tax credits.

Many electrification upgrades (including window-unit heat pumps, induction cooktops / stoves, and heat pump clothes dryers) are portable, so renters can bring them to their next homes and won't have to leave any savings behind.

→ Read our case study ([page 24](#)) to see how a couple of low-income renters will be able to install portable, window-unit heat pumps for free!

Renters can also switch to fully renewable electricity from their utility or subscribe to community solar — which will be cheaper because of the IRA's renewable energy supply incentives.

And although they're not exactly consumer-facing, the IRA includes multiple provisions that will benefit renters by incentivizing energy retrofits in apartment buildings.

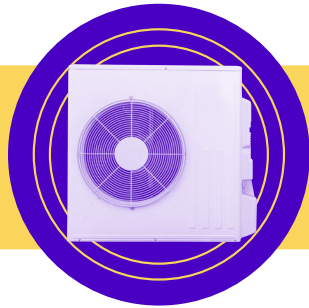
Check out our [IRA calculator](#) to see which incentives your household qualifies for.



# What's a [BLANK]?

## And everything else you need to know about electric appliances

### Heat Pump



#### Equipment Description

A heat pump is a single electric appliance that can replace both your traditional air conditioner and home heating system (like a furnace or boiler).

At the simplest level, heat pumps use electricity to move heat from one place to another. In cooling mode, a heat pump acts like an air conditioner, moving the heat from inside your home to the outside. In heating mode, heat pumps go into reverse-mode and pump heat from the air outside your home to the inside.

That might seem a bit counterintuitive. After all, how can something move heat from the outside air when it's 20 degrees outside? But heat is just energy, and there's energy in the air all the way down to absolute zero, which is  $-465^{\circ}\text{F}$ . Heat pumps designed for cold climates can keep your home warm — without a backup heating source — even when outside temperatures are below  $-20^{\circ}\text{F}$ .

Heat pumps come in two main forms: ducted and ductless. Ducted heat pumps use your home's existing ductwork (or new ducts if needed) to disperse heated or cooled air throughout your home. Ductless (or "mini-split") heat pumps are easier to install where there is no existing ductwork. Ductless heat pump heads are usually mounted high on the wall, and each one serves one room or area of your home. There are also window-unit heat pumps, which are an especially good option for renters.

#### How will it save me money?

Heat pumps are 3-5 times more efficient than most

current fossil fuel heating systems. This is because it takes less energy to move heat around than to produce it. In a natural gas furnace, the heat must first be produced by burning gas and then additional energy must be used to distribute it around your house. With a heat pump, the heat energy itself is taken for free from the air outside, so energy is only needed to transport that heat indoors and then distribute it around your house.

As a result, heat pumps are often far less expensive to run than other heating systems, which translates to hundreds of dollars per year in savings for an average household. And these dollar savings are increased when fossil fuel prices rise — as they have in recent months.

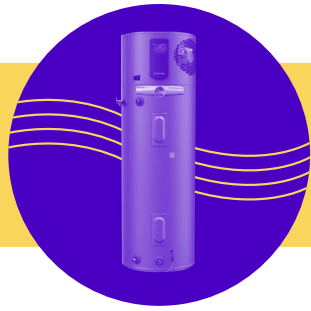
#### Why is it better for the environment?

Heat pumps don't burn fossil fuels — they're electric! When paired with clean electricity sources like rooftop or community solar, heat pumps warm your home without warming the planet. Even if your electricity supply isn't 100% clean today, heat pumps are still more climate friendly than other heating systems because they use so much less total energy. And as the grid gets cleaner, their emissions will continue to fall. Even under conservative modeling assumptions, 98% of U.S. households would cut their carbon emissions by installing heat pumps today.

Because they are not connected to the gas grid, heat pumps also do not contribute damaging methane leaks into the atmosphere. Your gas furnace (and the gas lines connected to your house) are the source of ongoing emissions of unburned methane gas, which has many times the global warming effect of carbon dioxide.

Heat pumps do use small amounts of refrigerants that can sometimes leak into the atmosphere and contribute to climate change. However, the United States is moving with other countries to adopt strong standards that require the use of new, climate-friendly refrigerants.

## Heat Pump Water Heater



### Equipment Description

Heat pump water heaters (HPWHs) are similar to heat pumps for space heating, except they produce hot water instead of hot air. In other words, HPWHs use electricity to pull heat from the surrounding air and transfer it into a hot water tank. Like heat pumps, HPWHs transfer heat instead of creating it, leading to efficiency gains, utility bill savings, and greenhouse gas reductions.

### How will it save me money?

HPWHs transfer heat instead of creating it, and they don't combust fossil fuels. As a result, they are 2-3 times more efficient than most current hot water systems. These efficiency gains translate to hundreds of dollars per year in savings for an average household.

This year, Rheem launched the first 120-volt HPWH.

Because they plug into a wall outlet and don't require any special wiring, 120-volt HPWHs will have lower installation costs and further increase household savings. We expect more 120-volt HPWHs to become available soon.

### Why is it better for the environment?

HPWHs don't combust fossil fuels! When paired with clean electricity sources like rooftop or community solar, HPWHs warm your water without warming the planet. Even without clean electricity, HPWHs are more climate friendly than other water heating systems because they use so much less total energy.

Because they are not connected to the gas grid, heat pumps also do not contribute damaging methane leaks into the atmosphere. Gas water heaters (and the gas lines connected to your house) are the source of ongoing emissions of unburned methane gas, which has many times the global warming effect of carbon dioxide.

And like other heat pumps, HPWHs will become even better for the environment as the grid becomes cleaner and manufacturers switch to new refrigerants.

## Heat Pump Clothes Dryer



### Equipment Description

Heat pump clothes dryers use heat pump technology to transfer hot air from outside the dryer to inside. This hot air flows through the dryer drum, sucking moisture out of your clothes. Rather than releasing the humid air through a dryer vent to the exterior of your home like a conventional dryer, a heat pump dryer sends it through an evaporator to remove the moisture and then reuses the warm air to continue drying your clothes.

### How will it save me money?

Like heat pumps for space and water heating, heat pump clothes dryers are more efficient than their traditional counterparts, which translates to utility bill savings.

### Why is it better for the environment?

Heat pump clothes dryers don't combust fossil fuels! When paired with clean electricity sources like rooftop or community solar, HPWHs dry your clothes without warming the planet. Even without clean electricity, heat pump clothes dryers are more climate friendly than other clothes dryers because they use so much less total energy. And like heat pumps, heat pump clothes dryers will become even better for the environment as the grid becomes cleaner and manufacturers switch to new refrigerants.

## Electric Stove / Induction Stove



### Equipment Description

The term “electric stove” (or “range” or “cooktop”) includes both traditional electric resistance stoves and modern electric induction stoves. These technologies are quite different, but what matters is that neither burns methane gas inside your home to create heat.

Traditional electric resistance stoves — often with metal coil burners — have been sold for decades, and are what you probably think of when you hear “electric stove.” They operate much like your toaster in that the burner gets hot as electricity passes through a resistance element.

Modern electric induction stoves operate quite differently; energy is transferred directly to the cooking pan through a magnetic field. As a result, the cooktop surface doesn’t get very hot, so there’s less chance of

getting burned. They heat super-fast and can be accurately controlled — so not only are induction stoves better for the environment than gas stoves, but they work better, too.

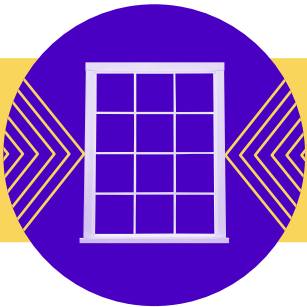
### How will it save me money?

Induction stoves are more efficient than both gas and electric resistance stoves, and are somewhat cheaper to operate. Because you only use your stove for a few minutes a day, your energy bill savings won’t add up to much every month — but then again, you can’t put a price on the joy of watching a pot of water boil in less than half the time!

### Why is it better for the environment?

Neither induction nor electric resistance stoves burn fossil fuels. They also don’t require gas hookups, which often leak methane — a potent greenhouse gas. In fact, recent studies have shown that methane leaking from gas-burning stoves installed in U.S. homes, even when they are turned off, has the same negative impact on the environment as the carbon dioxide emitted from around 500,000 gasoline-powered vehicles.

## Weatherization



### Equipment Description

Weatherization refers to a series of steps you can take to reduce the amount of energy required to heat and cool your home. Weatherization may involve air sealing, insulation, door and window upgrades, and ventilation improvements.

The first step towards weatherization for most people

is to get an energy audit — a service in which a trained professional comes to your house, performs tests, and identifies trouble areas in your home. Energy audits may be offered for little to no cost by your local electric utility.

### How will it save me money?

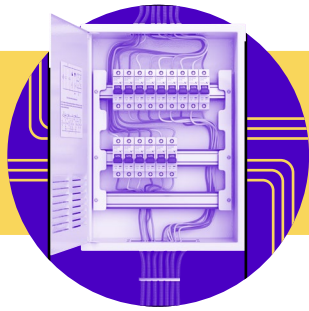
Weatherization can save you hundreds of dollars a year by reducing energy waste.

### Why is it better for the environment?

By reducing energy waste, weatherization also reduces your home’s carbon emissions.



## Electrical Panel



### Equipment Description

Your home gets its electricity from the electric grid, and it is distributed to different circuits through your home's electrical panel — sometimes called the breaker box, load center, or distribution center. You can think of electricity coming into your home like water flowing through a pipe, with the flow of electricity measured in Amperes or Amps. Older homes might have panels that can handle a maximum of 60 or 100 Amps (60A or 100A), while newer homes are often set up to handle 200A or more. Depending on the size of your home and your electrical needs, it may be possible to electrify everything with 100A, but you may need an upgrade. In any case, electric panels are critical enabling

equipment for whole-home electrification.

Upgrading to a larger electrical panel will often require a utility service upgrade. That's why tech companies are getting creative with tools like "smart panels," which use software to support a fully electrified home without requiring a utility service upgrade. The best option for your home — a smart panel or a 200A panel upgrade — will depend on your home, electrification plan, and household characteristics.

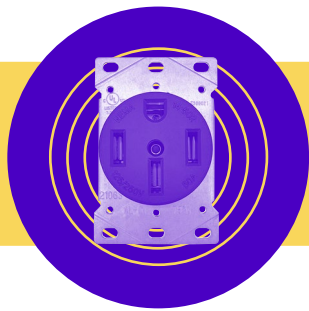
### How will it save me money?

Upgraded electrical panels themselves won't save you money, but they will enable other upgrades — like heat pumps and electric vehicles — that will save you money!

### Why is it better for the environment?

Same deal as above. Upgraded electrical panels themselves aren't better for the environment, but they will enable other upgrades — like heat pumps and electric vehicles — that are!

## Electrical Wiring



### Equipment Description

Along with your electrical panel, electrical wiring is a critical enabling step for whole-home electrification. While some electric appliances — including 120V heat pump water heaters and 120V window-unit heat pumps — can plug into a normal outlet, many others require 240V outlets. This is especially important for EV chargers, induction stoves, and most heat pumps and heat pump water heaters.

If you're upgrading your panel, or hiring an electrician for one electrification project in your home, that's a

great time to install additional dedicated circuits and outlets for appliances you might want to electrify in the future. Then when your next fossil fuel appliance needs to be replaced, the circuit and wiring will be ready to go and you will save substantial money and time because you won't need to hire the electrician a second time.

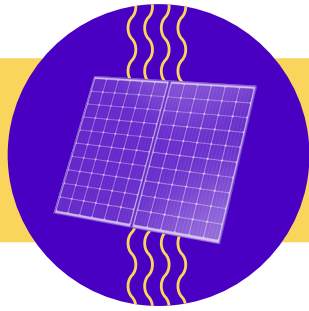
### How will it save me money?

Upgraded wiring itself won't save you money, but it will enable other upgrades — like heat pumps and electric vehicles — that will save you money!

### Why is it better for the environment?

Same deal as above. Upgraded wiring itself isn't better for the environment, but it will enable other upgrades — like heat pumps and electric vehicles — that are!

## Rooftop Solar



### Equipment Description

Rooftop solar uses solar photovoltaic (PV) panels to turn sunlight into electricity. PV panels can be installed on your roof or even in your yard. When sunlight shines onto a PV panel — even on a cloudy day — your solar system will generate clean, renewable energy.

Rooftop solar provides zero-carbon, no-cost electricity once it's installed and paid for. Depending on your situation, it might make sense to buy your rooftop solar

outright or finance your purchase over a number of years.

### How will it save me money?

Depending on how it's purchased or financed, rooftop solar can save you hundreds of dollars a year. That's because the electricity produced by rooftop solar is completely free! As you electrify your home and your electricity needs grow, rooftop solar may deliver even bigger savings.

### Why is it better for the environment?

Rooftop solar produces no carbon emissions! In many cases, this carbon-free electricity will flow back into the utility grid, where it will directly decrease the amount of fossil fuels burned by your utility company.

## Battery Storage



### Equipment Description

A battery storage system lets you store energy from the power grid or from rooftop solar. Battery storage systems are most effective when paired with rooftop solar, because the pairing enables households to store no-cost solar electricity generated during the day for use around the clock.

You can use a home battery to power any electric appliance in your home, so its benefits are maximized

when more of your appliances are electric!

### How will it save me money?

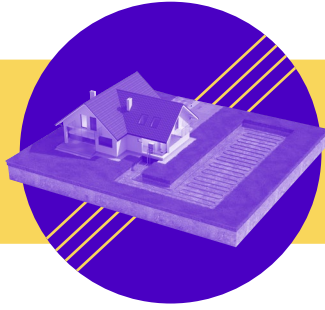
A battery storage system lets you store excess solar energy generated during the day. You can use this low-cost excess energy during peak hours, when grid electricity is most expensive, which reduces your electricity bill.

As more utilities roll out “time-of-use” rates and demand-response programs, home batteries will enable customers to take full advantage of available incentives.

### Why is it better for the environment?

Battery storage systems reduce your carbon emissions by enabling you to use zero-emission solar energy all day long.

## Geothermal Heating



### Equipment Description

Geothermal or ‘ground-source’ heat pumps function much like every other type of heat pump, by capturing and moving heat between indoors and out. The primary difference is that geothermal systems transfer heat with the earth, through long loops of liquid-filled pipe buried in the ground.

Because the earth even a few feet underneath our feet remains at a stable temperature all year long, geothermal heating doesn’t have to do much work to extract and disperse heat. As a result, geothermal heating can be even more efficient than air source heat pumps.

### How will it save me money?

Like air source heat pumps, geothermal heating transfers heat instead of creating it, and it doesn’t burn fossil fuels. As a result, it is 3-5 times more efficient than most current heating systems. These efficiency gains translate to hundreds of dollars per year in savings for an average household.

### Why is it better for the environment?

Geothermal heating doesn’t burn fossil fuels! When paired with clean electricity sources like rooftop or community solar, geothermal warms your home without warming the planet. Even without clean electricity, geothermal is more climate friendly than other heating systems because it uses so much less total energy. And like air source heat pumps, geothermal will become even better for the environment as the grid becomes cleaner and manufacturers switch to new refrigerants.

## Electric Vehicles



### Equipment Description

Electric vehicles are either partially or fully powered by electricity. Fully electric vehicles (EVs) have a battery instead of a gasoline tank, and an electric motor instead of an internal combustion engine. Plug-in hybrid electric vehicles (PHEVs) are a combination of gasoline and electric vehicles, so they have a battery, an electric motor, a gasoline tank, and an internal combustion engine.

Most EVs on the market today have a range of more than 200 miles on a single charge, which means most people can satisfy all of their daily driving needs by charging their EV overnight at home. Most EVs can be charged with a standard 120 V outlet. To charge the vehicle more quickly, you may want to install a dedicated “Level 2” charging system. If you live in an apartment

or condo complex, your building may offer charging services, and if you live in a city there could soon be a charger on every utility pole in your neighborhood. You may also be able to plug in at your workplace, or at one of the growing numbers of public charging stations.

### How will it save me money?

Electric vehicles are much cheaper to operate than gas-powered vehicles. As gas prices get higher and more volatile, electric cars are now three to six times cheaper to drive than gas vehicles, which translates to hundreds of dollars a year in savings. EVs also typically cost half as much to maintain because they have fewer moving parts and don’t require oil changes.

### Why is it better for the environment?

EVs produce no tailpipe emissions! And when paired with clean electricity sources like rooftop or community solar, electric vehicles don’t produce any emissions while charging, either. Even without clean electricity, EVs are more climate friendly than gas vehicles because they are so much more efficient.

## EV Charger



### Equipment Description

An EV charger pulls electricity from your home and delivers it to an electric vehicle, just like any other appliance or device you charge by plugging into the wall. Most residential EV chargers will be “Level 2,” meaning that they pull electricity from a 240V outlet and can fully charge your electric vehicle overnight.

“Level 3” chargers, most often found in public locations and along highways, can charge your EV in as little as 20 minutes.

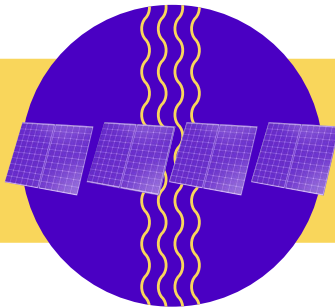
### How will it save me money?

EV chargers themselves won’t save you money, but they will enable you to use electric vehicles, which can save you hundreds of dollars a year!

### Why is it better for the environment?

Same deal as above. EV chargers themselves aren’t better for the environment, but they will enable you to use electric vehicles, which are much better for the environment!

## Community Solar



### Equipment Description

A community solar project is a large, central solar power plant, whose electricity is shared by more than a single property. Community solar is also often referred to as roofless solar, solar gardens, or shared solar.

Since you don’t need to have a suitable rooftop for solar to participate in a community solar project, it’s a great option for renters and people who live in shared housing. By purchasing a share of or subscribing to a community solar project, everybody can benefit from solar while paying less for electricity.

Community solar projects and programs are typically offered in two formats. In the “ownership model,” participants purchase a portion of a community solar

project. When you buy into a community solar project, you’ll get electric bill credits/savings from all of the power produced by the solar panels you own — almost as if they were on your roof. In the “subscription model,” participants subscribe to a solar farm owned by a developer. When you subscribe to a community solar project, you usually start paying a lower price for your electricity.

### How will it save me money?

Zero-carbon electricity is simply cheaper than electricity generated by fossil fuels. As a result, community solar participants often save between 5 to 15 percent of their typical electricity bills.

### Why is it better for the environment?

Community solar produces no carbon emissions! In most cases, this carbon-free electricity will flow into the utility grid, where it will directly decrease the amount of fossil fuels burned by your utility company.

# What's a HEEHRA?

## A quick overview of every household electrification incentive available and what all those letters mean

For more information about specific electrification incentives, their eligibility requirements, and which provisions you might qualify for, check out [our calculator](#). But since we mention some incentives by their wonky legislative names, here's a little information about each of them:

### **High-Efficiency Electrification Rebates (HEEHRA)**

HEEHRA provides up-front discounts up to \$14,000 to enable low- and moderate-income households to electrify their homes. These point-of-sale rebates are immediate, off-the-top discounts when making qualifying electrification purchases. HEEHRA covers 100 percent of electrification project costs (both the appliance and labor) for low-income households and 50 percent of costs for moderate-income households.

Note that HEEHRA rebates only apply if you're replacing a non-electric appliance (i.e., replacing an oil boiler with a heat pump or replacing a gas stove with an electric one). Unfortunately, this means that households with inefficient electric resistance heating cannot receive HEEHRA rebates for a heat pump. However, households with electric resistance heating are prime candidates for the

Whole Home Energy Reduction Rebate Program, which is also featured on our calculator.

### **25C Energy Efficient Home Improvement Tax Credit**

25C is a capped 30 percent tax credit for residential efficiency and electrification upgrades, including heat pumps and heat pump water heaters.

### **25D Clean Energy Tax Credit**

25D is an uncapped 30 percent tax credit for residential renewable energy installations, including rooftop solar, battery storage, geothermal heat pumps and some community solar ownership models.

### **25E Used EV Tax Credit**

25E is a 30 percent tax credit up to \$4,000 for used electric vehicles, dependent on MSRP and income limits. Starting in 2024, this credit

can be transferred to dealerships in exchange for a point-of-sale discount right off the top.

### **30D New EV Tax Credit**

30D is a \$7,500 tax credit for used electric vehicles, dependent on MSRP and income limits. Starting in 2023, the credit will also be subject to geographic manufacturing requirements that may initially restrict the list of eligible models. Starting in 2024, this credit can be transferred to dealerships in exchange for a point-of-sale discount right off the top.

### **30C EV Charging Tax Credit**

30C is a capped 30 percent tax credit for installing home electric vehicle chargers. Starting in 2023, the credit will be limited to households in low-income or rural communities.

# Electric inspiration

## Case studies to help you build your own electric plan

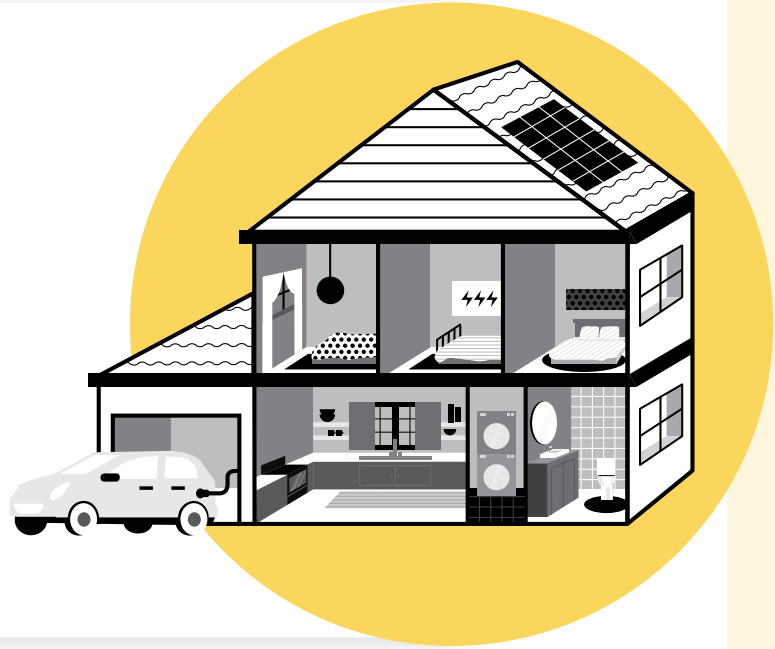
The IRA lets you create the electrification plan that's right for you. You have ten years to access these benefits, but the earlier you start, the more you save, so it's important to create a plan and charge forward on your electric journey. Looking at different households across the country, we see that there are great options for everyone.

**Note:** These case studies are our best guesses, not our guarantees. While we've tried to use realistic cost estimates, your actual costs will likely vary. These case studies are intended to offer examples of how to take advantage of and maximize the incentives, spur conversation around what's possible, and help you start imagining what your own household electrification plan might look like. **Also note:** These case studies refer only to the IRA's incentives, not to state, local and utility incentives. Many consumers will be able to access additional incentives that will further drive down costs. **Also also note:** For these case studies, we assume that the IRA's incentives remain fully funded by Congress and structurally unchanged over the next 10 years. We also assume that if a family is eligible for up-front electrification discounts in 2023, they stay eligible for the rest of their electrification journey.

## The Colemans care about cost and climate

With a modest income, this family in Cleveland can realize their electric dreams

**Household Profile:** Size: 4 people; Income: \$128,000; AMI: Under 80 percent; Location: Cleveland, OH



### Their story

The Colemans are a family of four in Cleveland, Ohio. They own a 1,300-square-foot, 3-bedroom home built in 1966, and heat it with natural gas. They have an annual household income of \$128,000, which is just under 80 percent of their Area Median Income (AMI). As a result, they qualify for up-front discounts that can cover 100 percent of their electrification costs up to \$14,000.

The Coleman family has two main reasons for electrifying: cost savings and emissions reductions. Because the IRA will almost completely cover their costs up-front, they can accomplish both goals at once! All in, the Colemans will electrify their home for \$875, plus \$10,000 for an electric vehicle (which they would have spent to replace their car anyway). Each electrification upgrade will reduce the family's energy costs (the heat pump, heat pump water heater and electric vehicle together will

save them over \$1,500 each year), so the upgrades will pay for themselves both in terms of cost savings and improved quality of life.

### Money and time

The Coleman family knows that they could utilize the \$14,000 of electrification discounts all at once, but they plan to spread the upgrades over the next ten years to make it easier. They'll start by switching their utility plan to a renewable electricity option (for no additional cost), which will matter even more as they convert to electric appliances. The Colemans would like to subscribe to community solar, but Ohio law doesn't yet allow it.

### First, the stove

The first thing the Colemans will electrify is their old gas range (for no cost!). Ever since the hood stopped working a few years ago, they've worried about the impact of particulate pollution on their kids — and recent studies have



**They qualify for up-front discounts that can cover 100% of their electrification costs..."**

confirmed that burning gas in your kitchen raises the odds of childhood asthma. While the Colemans are upgrading their stove, they'll also lay the groundwork for future electrification by rewiring their home (also at no cost!). The Colemans considered upgrading their electrical panel, too, but they decided not to because they already have a 100A panel, which is enough in their case for them to fully electrify.

**As their old appliances die**

Upgrades will then proceed roughly in line with their current appliances' useful lives — an electric heat pump water heater to replace their aging propane water heater, then a heat pump to replace both their central AC and propane furnace when either one dies and finally a heat pump clothes dryer to replace their unreliable propane dryer. Each appliance upgrade is covered by the IRA's up-front electrification discounts, with the heat pump and heat pump clothes dryer fully paid for. The cost of the heat pump water heater exceeds the value of its discount, so

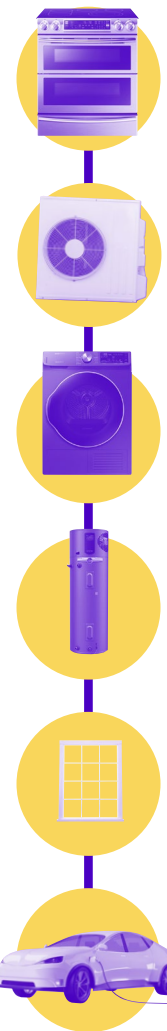
it will cost \$875 after the Colemans claim a tax credit against the remaining cost. They'll also use an up-front discount to weatherize their home for no cost. By sealing air leaks and adding some insulation, the Colemans will finally get rid of pesky drafts and ensure that their home is as efficient as possible.

**The EV market speeds up**

Toward the end of the decade, the Colemans plan to replace their gasoline engine car. By that time, there will be a growing used car market for EVs, with prices falling across the board. The Colemans can transfer their used EV tax credit to the dealership in exchange for an up-front discount on a used EV, which will end up costing them \$10,000. It's a sizable purchase, but one they would have needed to make anyway. The Coleman family also qualifies for a tax credit to install a Level 2 EV charger in their garage, but they decide to hold off on that expense. For now, they'll primarily charge the car at work and around town.



**They'll also lay the groundwork for future electrification by rewiring their home (also at no cost!).”**



**The Electric End**

The Coleman family's electrification journey is complete! In the back of their minds, they're wondering about solar power — they might consider rooftop solar and battery storage if the costs drop enough, or community solar if Ohio allows it. For now, though, they're saving money, breathing cleaner air and enjoying their high-tech electric appliances.



# The Colemans go electric

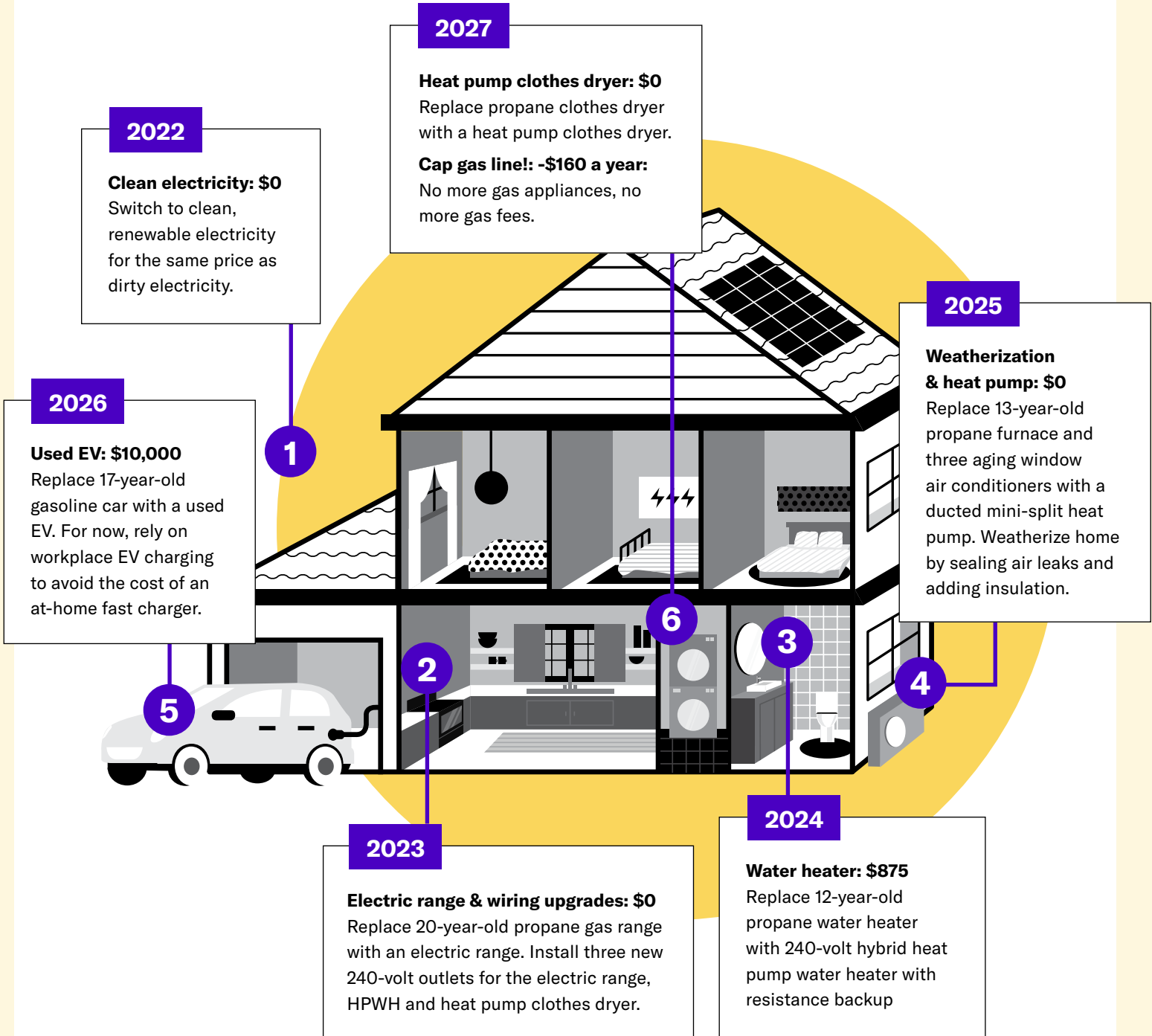
	Replacing	Buying	Est. cost, installed	Up-front discount	30% Tax credit	Final cost
2022	Dirty electricity	Clean electricity	\$0			\$0
2023	Propane Range	Electric range	\$749	-\$749 (HEEHRA)		\$0
	—	Electric wiring	\$1,500	-\$1,500 (HEEHRA)		\$0
2024	Tank propane water heater	Heat pump water heater	\$3,000	-\$1,750 (HEEHRA)	-\$375 (25C)	\$875
2025	—	Weatherization	\$1,600	-\$1,600 (HEEHRA)		\$0
	Propane Furnace	Ducted mini-split heat pump	\$7,500	-\$7,500 (HEEHRA)		\$0
	Window AC unit					
	Propane clothes dryer	Heat pump clothes dryer	\$798	-\$798 (HEEHRA)		\$0
2027	Cap gas line!					-\$160/year
2027	Gasoline car	Used EV	\$14,000	-\$4,000 (25E)		\$10,000
<b>TOTAL AFTER TEN YEARS</b>			<b>\$29,147</b>	<b>-\$17,897</b>	<b>-\$375</b>	<b>\$10,075</b>

## Upgrades considered but not currently planned:

	100A electric panel	200A electrical panel	\$2,000	-\$2000 (HEEHRA)		\$0
	—	EV charger	\$1,000		-\$300 (30C)	\$700
	—	Rooftop solar	\$19,000		-\$5,700 (25D)	\$13,300
	—	Battery storage	\$16,000		-\$4,800 (25D)	\$11,200

### Household Profile:

Size: 4 people; Income: \$128,000; AMI: Under 80%; Location: Cleveland, OH



# The Garcias want a beautiful future for their child

They can do their part for the climate crisis, and save money

**Household Profile:** Size: 3 people; Income: \$130,000; AMI: Under 150%; Location: Sacramento, CA



## Their story

The Garcias are a family of three in Sacramento, California. They own a 1,600-square-foot, 4-bedroom home built in 1972, and heat it with natural gas. The family has an annual household income of \$136,000, which is just under 150 percent of the Area Median Income (AMI) where they live. As a result, they qualify for up-front discounts that can cover 50 percent of their electrification costs up to \$14,000.

The Garcias just had a baby, and they care deeply about the climate crisis. They know that electrification will cost money, but they believe it's the right thing to do: for the planet, for their child and for their home resale value. The Garcias will try to time their electrification upgrades with their current appliances' natural life spans to minimize added costs. Nothing's going to be replaced early, but when things do need to be replaced, the appliances will be electric. All in all, the Garcias will electrify their home for

\$9,490, plus \$13,000 for an electric vehicle (which they would have spent on a car anyway) and \$13,300 for rooftop solar (which will be reflected in their home value). Each electrification upgrade will reduce the family's energy costs — the heat pump, heat pump water heater, EV and solar will save them almost \$2,400 each year — so the investments will quickly pay dividends.

## Driving toward electrification

The first thing the Garcias plan to electrify is their car. Both parents regularly commute for work and take longer trips on the weekends to visit family in the Bay Area, and they've recently been slammed by sky-high gas prices. Since they'll need to replace their old gas clunker soon anyway, the Garcias will opt for a used EV. After tax credits, a used EV and an at-home Level 2 charger cost \$13,840, which they'll finance. And while they have an electrician installing the EV charger, the Garcias will lay the groundwork for future electrification by



**Nothing's going to be replaced early, but when things do need to be replaced, the appliances will be electric."**

rewiring their home and upgrading their electrical panel to 200 Amps. After the up-front discount and tax credits, the rewiring and panel upgrade cost \$1,950.

**Fossil-free Independence, retire early**

The Garcias are willing to break their end-of-life replacement rule for one appliance: their gas stove. Since they read recent studies about the harmful air quality effects of gas stoves on small children, they've been using an inexpensive portable induction burner and a toaster oven for most of their cooking. But the Garcias want a more permanent solution, so they'll install an induction stove, which costs \$650 after the up-front discount. As a safety bonus, they won't have to worry about open flames and hot burners as their child grows.

**Weatherization and wildfires**

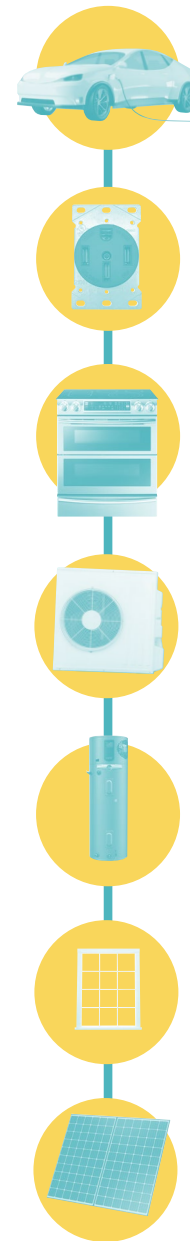
A few years later, the Garcias will be ready to weatherize the house and replace their old AC, gas furnace and water heater. By weatherizing their home first, the Garcias will be able to purchase a smaller, less expensive heat pump because they won't have

to overcompensate for leaks and bad insulation. They'll also improve their indoor air quality, which is especially important when wildfire smoke is present. Together, the weatherization, heat pump and heat pump water heater will cost \$6,050 after up-front discounts and tax credits. Since the Garcias already have an electric clothes dryer, their home is now gas-free and they can contact their gas utility to permanently disconnect the gas service line from their home!

By the end of the decade, rooftop solar costs will have dropped enough that the Garcias will finance the purchase. They know that it's a big cost (\$13,300 after the tax credit), but they also know that rooftop solar will maximize the savings potential of their electric appliances. In fact, because electricity is so expensive in California, rooftop solar could save the Garcias and their fully electrified home \$1,000 a year! In doing so, their solar will soon pay for itself, as well as add significant value to the home. They're not planning to get battery storage at the moment, but they'll see how much costs fall in the coming years.



**...they also know that rooftop solar will maximize the savings potential of their electric appliances.”**



**The Electric End**

The Garcia family's electrification journey is complete for now! They still wonder about adding a home battery to their rooftop solar to maximize their ability to use the electricity their solar system generates and to keep electricity flowing when the power's out, but they're content with their decisions. The Garcias' investments will pay off, and their child will grow up in a healthy home.

# The Garcias go electric

	Replacing	Buying	Est. cost, installed	Up-front discount	30% Tax credit <sup>1</sup>	Final cost
2023	Gasoline car	Used EV	\$17,000		-\$4,000 (25E) <sup>2</sup>	<b>\$13,000</b>
	—	EV charger	\$1,200		-\$360 (30C)	<b>\$840</b>
	—	Electric wiring	\$2,500	-\$1,250 (HEEHRA)		<b>\$1,250</b>
	60A electric panel	200A electric panel	\$2,000	-\$1,000 (HEEHRA)	-\$300 (25C)	<b>\$700</b>
2024	Gas range	Induction range	\$1,300	-\$650 (HEEHRA)		<b>\$650</b>
2026	—	Weatherization	\$1,600	-\$800 (HEEHRA)		<b>\$800</b>
	Gas furnace	Central heat pump	\$12,000	-\$6,000 (HEEHRA)	-\$1,800 (25C)	<b>\$4,200</b>
	Central AC					
2027	Tankless gas water heater	Heat pump water heater	\$3,000	-\$1,500 (HEEHRA)	-\$450 (25C)	<b>\$1,050</b>
2027	Cap gas line!					<b>-\$160/ year</b>
2028	—	Rooftop solar	\$19,000		-\$5,700 (25D)	<b>\$13,300</b>
<b>TOTAL AFTER TEN YEARS</b>			<b>\$59,600</b>	<b>-\$11,200</b>	<b>-\$12,610</b>	<b>\$34,990</b>

## Upgrades considered but not currently planned:

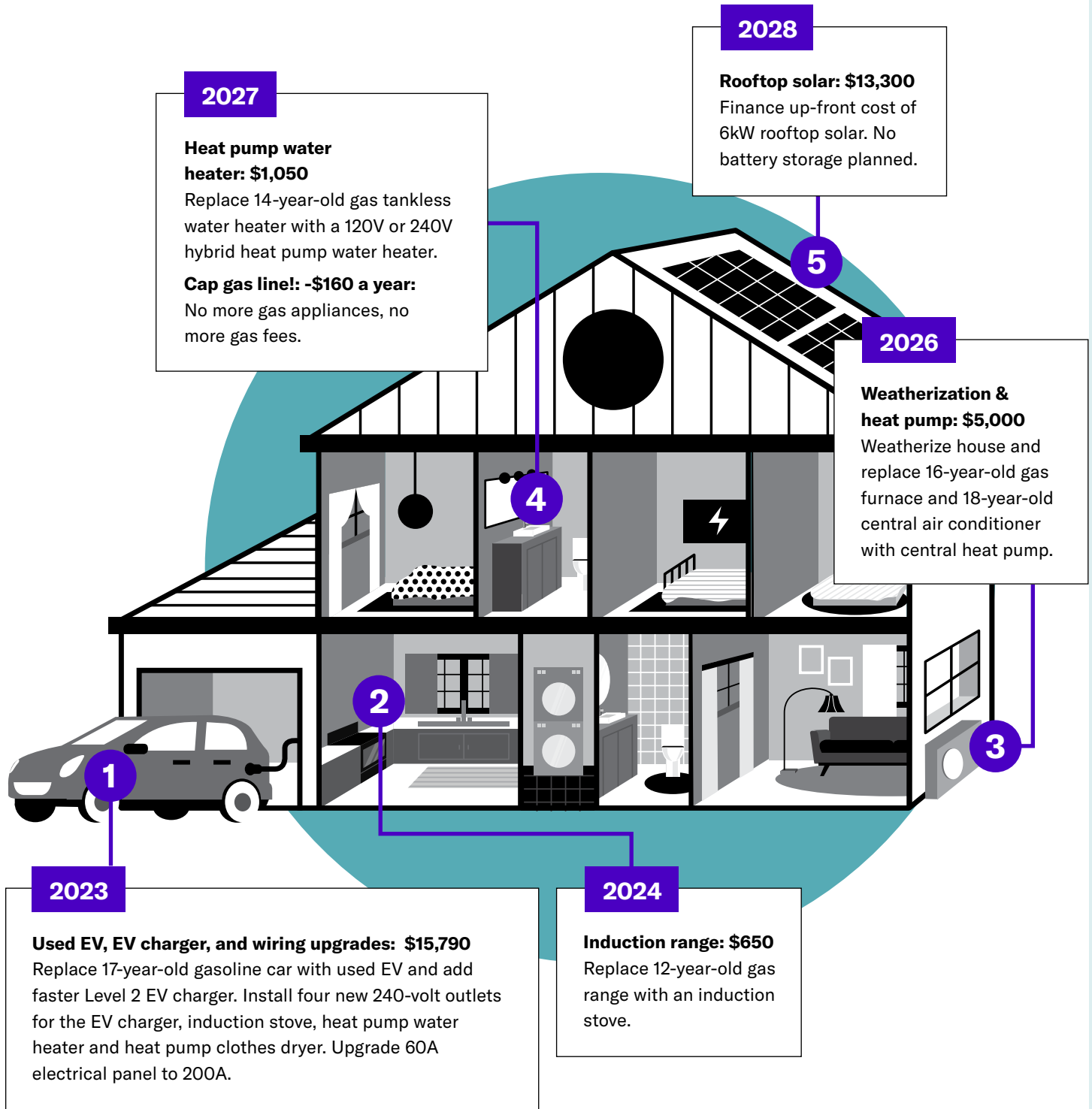
	—	Battery storage	\$16,000		-\$4,800 (25D)	<b>\$11,200</b>
--	---	-----------------	----------	--	-------------------	-----------------

<sup>1</sup> The 30 percent tax credit hits a \$4,000 cap for the used EV purchase.

<sup>2</sup> Starting in 2024, the used EV tax credit can become an up-front discount. But the Garcias didn't want to wait till then, so they'll recoup the \$4,000 as an end-of-year tax credit.

### Household Profile:

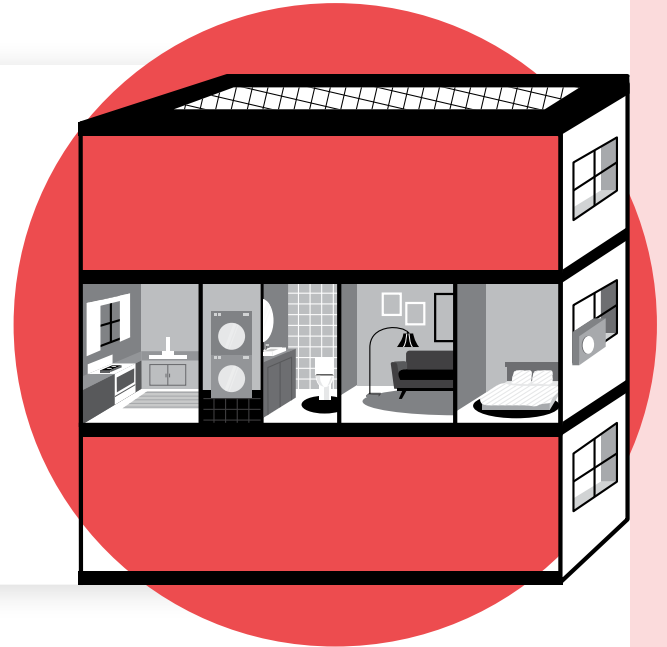
Size: 3 people; Income: \$130,000; AMI: Under 150%; Location: Sacramento, CA



## A retired Georgia couple electrify their apartment

These renters on a budget show it can be done

**Household Profile:** Size: 2 people; Income: \$30,000;  
AMI: Under 80%; Location: Atlanta, GA



### Their story

The Nguyens are a retired couple in Atlanta, Georgia. They rent a 650-square-foot, 2-bedroom apartment in a 10-unit, gas-heated building built in 1961, and they use a Section 8 individual housing voucher. The couple has an annual household income of \$30,000, which is well below 80 percent of the Area Median Income where they live. As a result, they qualify for up-front discounts that can cover 100 percent of their electrification costs up to \$14,000.

### You can take it with you

The Nguyens have been reading about indoor air quality with gas appliances, and they're worried about energy costs rising. There's a lot they can do, even though they're renters, and even though their cash is limited. Their electrification

journey is focused on using the IRA's up-front discounts to install mostly portable electric appliances, so that if they decide to move, they'll be able to take their electric appliances with them. But they'll also be advocating for their landlord to take advantage of the IRA's investments in greening affordable housing.

The Nguyens know that they're at high risk of developing respiratory illnesses, so they start their electrification journey by buying a portable induction burner and countertop oven (both fully covered). These electric appliances will allow the couple to avoid using their asthma-inducing gas range as much as possible. The Nguyens would also like to subscribe to community solar — which would probably save them money<sup>3</sup> — but there



**If they decide to move, they'll be able to take their electric appliances with them."**

aren't many good community solar options currently available in Georgia. Once there are, they'll switch.

**The window-units are coming**

In a couple years, the Nguyens will replace their aging window-unit ACs with new window-unit heat pumps, which are fully covered by up-front discounts. Efficient window-unit heat pumps are entering the market today and should be a great choice soon — especially for renters. They're self-installable and portable, so the Nguyens know that they won't have to leave any savings behind if they move one day.

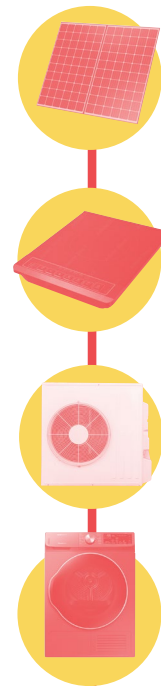
The Nguyens also plan to install a 120-volt

combo clothes washer/dryer, fully covered up to \$840, which will let them age in place more easily. Those units are currently a little more expensive than the discount limit, so they'll keep an eye on the price.

The Nguyens will also set to work educating their landlord on the IRA's available incentives. Because the building includes at least one federally-subsidized unit, their landlord can apply for new funding for affordable housing energy retrofits like heat pump water heaters.<sup>4</sup> Their landlord can also use the funding for rewiring and electrical panel up-grades, which will enable the building's residents to install even more electric appliances.



**Their landlord can apply for new funding for affordable housing energy retrofits.”**



**The Electric End**

The Nguyens' electrification journey is complete! They know that they can also get \$4,000 off a used electric vehicle, but the Nguyens are content riding around on Atlanta's (increasingly electric) public transportation. And they're happy knowing that they've taken more control of their health and budget ... and done their part to fight against climate change!

<sup>3</sup> The Nguyens' Section 8 housing voucher limits their rent and utilities to 30 percent of their income, which comes out to \$750 a month. If their monthly utility bill goes up or down, it lasts only until the next time their utility allowance is adjusted. Generally, because of their housing voucher, the Nguyens' potential savings are limited.

<sup>4</sup> This funding was appropriated in a new IRA provision titled "Improving Energy Efficiency or Water Efficiency or Climate Resilience of Affordable Housing," and it will be administered by the Department of Housing and Urban Development (HUD). The funding can be distributed as a grant or converted from a loan to a grant if the landlord agrees to an extended period of affordability for the property.



# The Nguyens go electric

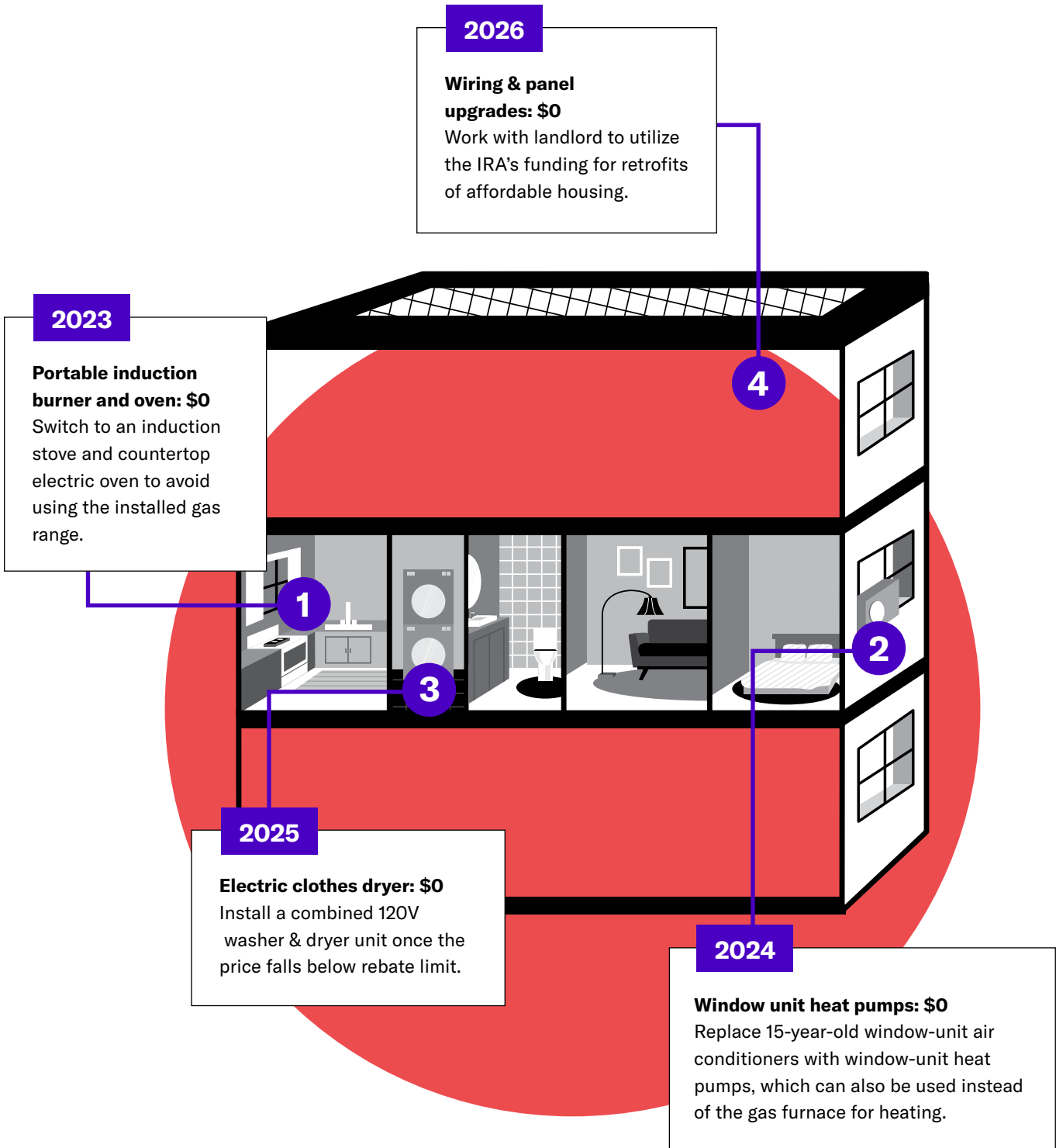
	Replacing	Buying	Est. cost, installed	Up-front discount	30% Tax credit	Final cost
2023	—	Portable induction burner and oven	\$300	-\$300 (HEEHRA)		\$0
2024	2 window unit ACs	2 window unit heat pumps	\$4,000	-\$4,000 (HEEHRA)		\$0
	Gas furnace					
2025	—	Combo washer & clothes dryer	\$840	-\$840 (HEEHRA)		\$0
2026	60A electric panel	100A electric panel	\$2,000	-\$2,000 (HEEHRA)		\$0
	—	Electric wiring	\$2,000	-\$2,000 (HEEHRA)		\$0
<b>TOTAL AFTER TEN YEARS</b>			<b>\$9,140</b>	<b>-\$9,140</b>	<b>-\$0</b>	<b>\$0</b>

**Upgrades considered but not currently planned:**

	Gas range	Electric range	\$540	-\$540 (HEEHRA)		\$0
	Gasoline car	Used EV	\$10,000	-\$3,000 (25E)		\$7,000

## Household Profile:

Size: 2 people; Income: \$30,000; AMI: Under 80%; Location: Atlanta, GA



## Reaching for resilience

A well-resourced Oklahoma family electrifies for security and the climate crisis

**Household Profile:** Size: 5 people; Income: \$280,000; AMI: Above 150 percent; Location: Oklahoma City, OK



### Their story

The Sandovals are a family of five who live outside of Oklahoma City, Oklahoma. They own a 3,500-square-foot, 5-bedroom home built in 1999, and heat it with natural gas. The family has an annual household income of \$280,000, which is well above 150 percent of their Area Median Income (AMI). As a result, they don't qualify for the IRA's up-front discounts, but they do qualify for electrification tax credits.

The Sandovals want to fight the climate change that is causing extreme heat and to increase their household resiliency — and they have the resources to do it. They've lost power a few times recently because of tornadoes and heavy rain, which is scary and dangerous. Now that the IRA re-upped a bunch of tax credits — and added one for home battery storage — the Sandovals have decided to fully electrify. All in all, the Sandovals will electrify their home for \$29,100, plus \$55,000 for two electric vehicles (which they would have spent

on new cars anyway) and \$24,500 for rooftop solar and battery storage. Each electrification upgrade will reduce the family's energy costs — the heat pump, heat pump water heater, EV and solar will save them over \$1,700 each year. But just as importantly for the Sandovals, the upgrades will ensure that their home stays powered even when extreme weather threatens the electric grid around them.

### Power like the wind

The Sandovals start with their priority: installing rooftop solar plus battery storage. Together the solar and storage will enable the Sandovals to keep their lights and air conditioning on even when the power goes out. The Sandovals also know that the resiliency benefits of solar and storage will only increase as they electrify more household appliances. The IRA includes 30 percent tax credits for both upgrades, which knock over \$10,000 off the sticker price for a final cost of \$24,500, which the Sandovals plan to finance over twenty years.



**The upgrades will ensure that their home stays powered even when extreme weather threatens the electric grid around them."**

While they have an electrician over to hook up the solar and storage, they'll prepare for future electrification by adding 240-volt electrical outlets for a heat pump water heater, two EV chargers, and an induction range. They'll also install a 200A smart panel, which will help manage the electrical loads in their home. There's no tax credit for the wiring, but there is one for the panel upgrade. Together, the final cost is \$6,000.

**Electrifying their fleet**

Because they live in the suburbs, the Sandovals drive a lot and know that transportation represents an outsized share of their emissions and costs. So when it comes time to buy a new car they'll choose an electric model, with its \$7,500 tax credit, along with a faster Level 2 charger. The Sandovals don't qualify for the EV charger tax credit (they don't live in a rural or low-income community), but after the EV tax credit, the total cost for the EV and charger is \$33,500.

**A family of heat pumps**

The Sandovals decide to install heat

pumps next. There's a \$2,000 yearly cap for the heat pump tax credit, so they work with their contractor to split up the job across two years. In the first phase, the Sandovals replace their gas furnace and central air conditioner with a central heat pump that serves the main living areas in the house. In the second phase, the Sandovals install a ductless mini-split heat pump for two rooms above their garage that have always been a little too hot or too cold. By breaking up the heat pump installation into two parts, the Sandovals double the value of the tax credit, for a final cost of \$16,000.

Later in the decade, the Sandovals will install an induction stove, heat pump water heater and heat pump clothes dryer. Because of the Sandovals' income, the stove and dryer are not eligible for any tax credit, but the water heater is. The final cost of these three projects is \$5,600, and now the Sandovals are officially gas-free. They can cap their gas line, breathe easier without asthma-causing fumes, and stop paying their monthly utility gas meter fee!

**The Electric End**

The Sandovals finish their electrification journey by purchasing a second new EV and charger, for \$23,000 after the EV tax credit. At this point, the family home is fully electrified and much more resilient. Even when the grid is down, the Sandovals can heat and cool their home, cook their food and drive their cars — all with no carbon emissions. And when extreme weather strikes, the Sandovals provide safe haven for their friends and neighbors, too.



**They can cap their gas line, breathe easier without asthma-causing fumes, and stop paying their monthly utility gas meter fee!”**



# The Sandovals go electric

	Replacing	Buying	Est. cost, installed	Up-front discount	30% Tax credit <sup>5</sup>	Final cost
2023	—	Rooftop solar	\$19,000		-\$5,700 (25D)	<b>\$13,300</b>
	—	Battery storage	\$16,000		-\$4,800 (25D)	<b>\$11,200</b>
	100A electric panel	200A smart panel	\$5,000		-\$1,500 (25D)	<b>\$3,500</b>
	—	Electric wiring	\$2,500			<b>\$2,500</b>
2024	Gasoline car	New EV #1	\$40,000	-\$7,500 (30D)		<b>\$32,500</b>
	—	EV charger #1	\$1,000			<b>\$1,000</b>
2025	Gas Furnace	Central heat pump (year 1)	\$13,000		-\$2,000 (25C)	<b>\$11,000</b>
	Central AC					
2026	Window ACs	Ductless mini-split heat pump (year 2)	\$7,000		-\$2,000 (25C)	<b>\$5,000</b>
2027	Tank gas water heater	Heat pump water heater	\$4,000		-\$1,200 (25C)	<b>\$2,800</b>
	Electric range	Induction range	\$1,300			<b>\$1,300</b>
	Electric clothes dryer	Heat pump clothes dryer	\$1,500			<b>\$1,500</b>
	Cap gas line!					<b>-\$160/ year</b>
2029	Hybrid car	New EV #2	\$30,000	-\$7,500 (30D)		<b>\$22,500</b>
	—	EV charger #2	\$500			<b>\$500</b>
<b>TOTAL</b>			<b>\$140,980</b>	<b>-\$15,000</b>	<b>-\$17,200</b>	<b>\$107,980</b>

<sup>5</sup> The 30 percent tax credit hits a \$2,000 cap for the heat pump purchases.

## CASE STUDY #4

### Household Profile:

Size: 5 people; Income: \$280,000; AMI: Above 150 percent; Location: Oklahoma City, OK

**2027**

**2027, Heat pump water heater, induction stove & heat pump clothes dryer: \$5,600:**

Replace 10-year-old gas water heater with a heat pump water heater, 14-year-old gas range with an induction range, and 11-year-old resistance clothes dryer with a heat pump version.

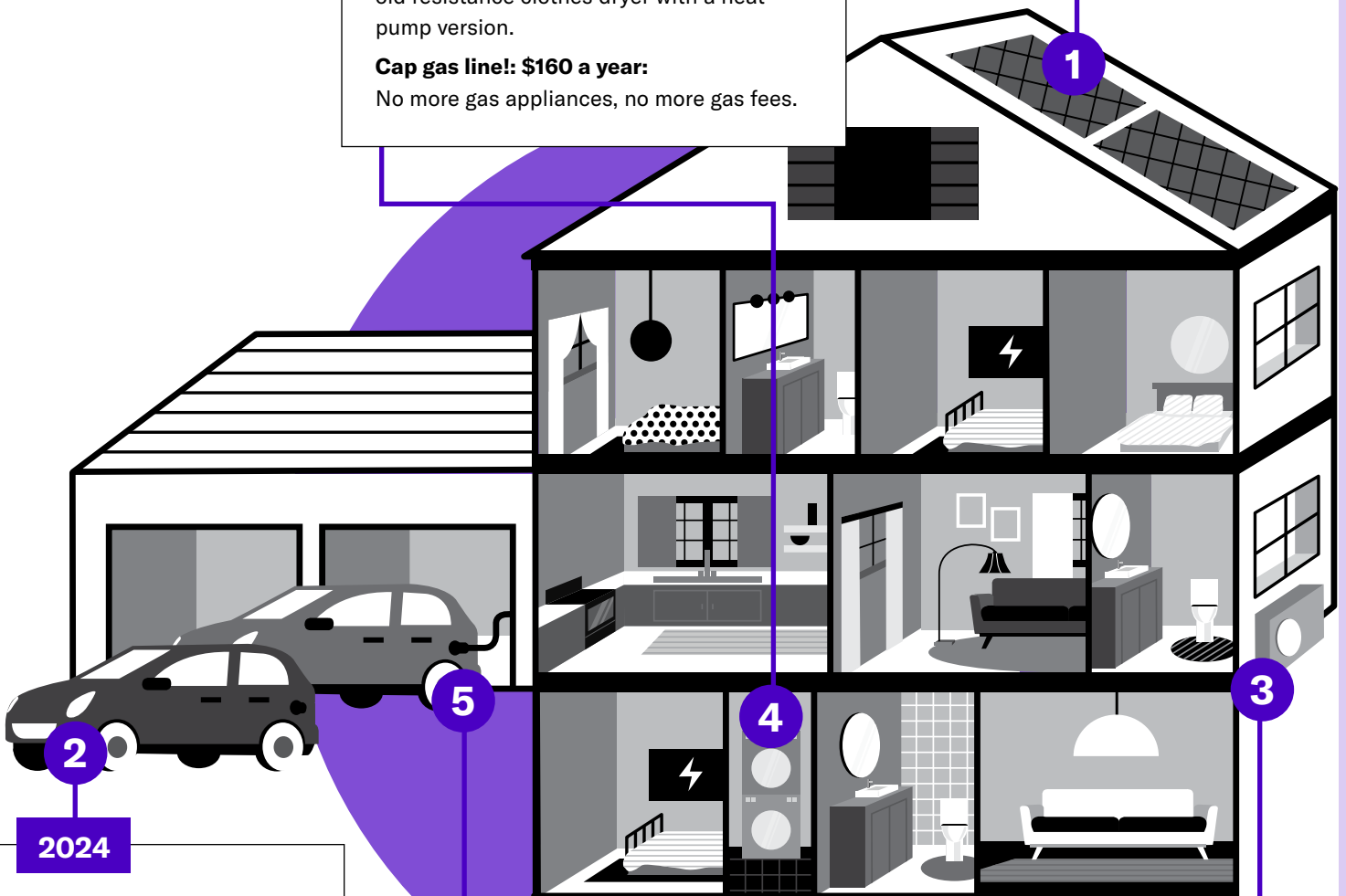
**Cap gas line!: \$160 a year:**

No more gas appliances, no more gas fees.

**2023**

**Rooftop solar, battery storage & panel/wiring upgrades: \$30,500**

Add 6kW rooftop solar and two 10kWh storage batteries. Upgrade electrical panel to 200A smart panel and pre-wire for heat pump water heater, two EV chargers, and induction range.



**2024**

**New EV #1 & EV charger #1: \$23,500**

Replace 15-year-old gasoline car with first new EV and add first 240V Level 2 charger.

**2028**

**2029, New EV #2 & EV charger #2: \$23,500**

Replace 16-year-old hybrid car with second new EV and add second 240-volt Level 2 charger.

**2025**

**2025 and 2026, Heat pump: \$16,000**

Spread heat pump upgrades across two years to maximize tax credit. First year, replace gas furnace and central air conditioner with a central heat pump ducted through main part of the house. Second year, add ductless mini-split heat pump to rooms over garage that are often uncomfortable.

# Frequently Asked Questions

## **Do I need to spend a lot to get these incentives?**

In many cases, no! The IRA's incentives are designed to increase access to clean technology. For households with lower incomes, 100 percent of appliance and installation costs are discounted at purchase, meaning you could install efficient electric appliances at no cost, with no spending.

Moderate-income households do have to spend in order to access savings, but up to 50 percent of appliance and installation costs can be covered through upfront discounts, and you can use tax credits to cover some of the remaining gap. In most cases, these families will have to spend money either way because they're replacing a failed or failing machine – the IRA just makes the electric version the most affordable choice.

Highest income households are not eligible for upfront discounts, so they will have to pay full price for appliances and installation — but tax credits on the back end could recoup around 30 percent of their costs.

Everyone will likely see lower energy costs going forward.

## **Do the rebates and tax credits cover installation costs as well as purchase costs?**

Yes!

## **When can I access the IRA's incentives?**

Some incentives are available now, and others will become available in 2023. The tax credits marked “2023” will be available on January 1, 2023. Unfortunately we don't know exactly when the up-front discounts marked “2023” will be available, because it will depend on how each state rolls out its incentive program. Our best guess is that those up-front discounts will be available by the middle-to-end of the year.

## **Can I benefit from other electrification incentives in addition to what's in the IRA?**

Probably! It's up to your state, local government, and utility to decide if you're allowed to stack their incentives on top of the IRA's rebates and tax credits, but we think most of them will allow it.

# Your plan

Up-front discount Tax credit

The most important thing is to get Rewiring Ready. This means creating an electric plan, like the households in our case studies. Of course, your plan needn't be as extensive. Just knowing what's available to you, and how to get ready to electrify, is your first step. Because if your furnace dies in the middle of a cold winter night, you may make an emergency decision that locks in higher costs and fossil fuels emissions for the next 20 years. We've grouped things that make sense to upgrade together in the table below. Fill in the year you might upgrade each of these items. We've done the first one for you, to encourage you to switch to a clean electricity plan ASAP!

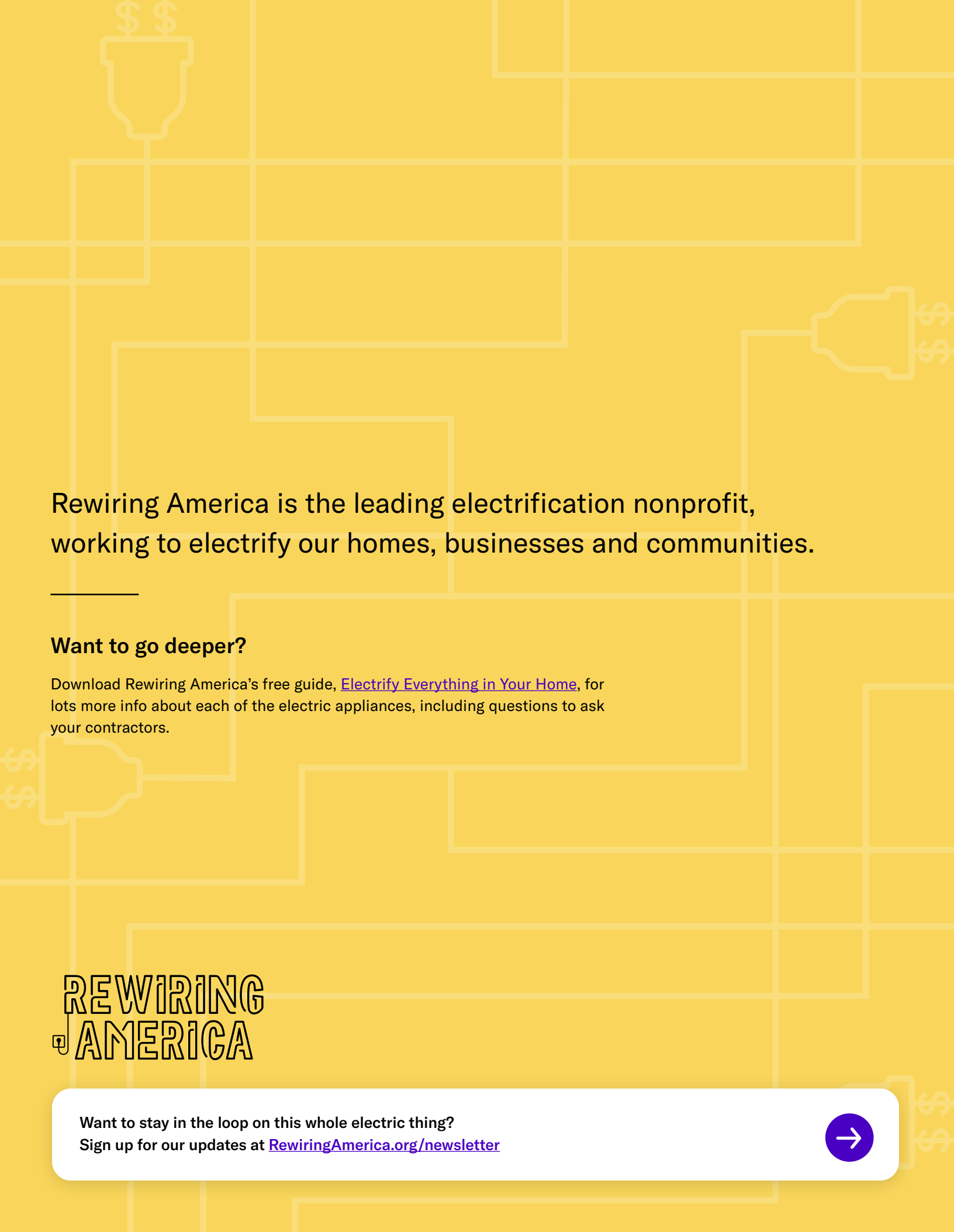
Fill In Year!	Buying	Up-front discount, low-income	Up-front discount, moderate-income	Tax credit
2022	Clean electricity			
	Electrical wiring (pre-wire outlets early!)	100% up to \$2,500 (HEEHRA)	50% up to \$2,500 (HEEHRA)	
	Electrical panel (if under 100-amps)	100% up to \$4,000 (HEEHRA)	50% up to \$4,000 (HEEHRA)	30% up to \$600 (25C) or 30% uncapped (25D), depending on the corresponding upgrade <sup>9</sup>
	Weatherization	100% up to \$1,600 (HEEHRA)	50% up to \$1,600 (HEEHRA)	30% up to \$1,200 (25C)
	Heat pump	100% up to \$8,000 (HEEHRA)	50% up to \$8,000 (HEEHRA)	30% up to \$2,000 (25C)
	Heat pump water heater	\$100% up to \$1,750 (HEEHRA)	50% up to \$1,750 (HEEHRA)	30% up to \$2,000 (25C)
	Electric/induction stove	100% up to \$840 (HEEHRA)	50% up to \$840 (HEEHRA)	
	Heat pump clothes dryer	100% up to \$840 (HEEHRA)	50% up to \$840 (HEEHRA)	
	New EV	\$7,500 (30D) <sup>10</sup>		
	Used EV	30% up to \$1,000 (30C) <sup>11</sup>		
	EV Charger	30% up to \$1,000 for some census tracts (30C)		
	Rooftop solar	30% (25D)		
	Geothermal heat pump	30% (25D)		
	Battery storage	30% (25D)		

<sup>9</sup> 25C provides households a 30% tax credit for an electrical panel upgrade, capped at \$600, if it's upgraded in conjunction with another upgrade covered by 25C (like a heat pump or heat pump water heater). 25D provides households a 30% uncapped tax credit for an electrical panel upgrade if it's upgraded in conjunction with rooftop solar.

<sup>10-11</sup> In 2023, the electric vehicle incentives will be accessible as tax credits. Starting in 2024, these incentives will be transferable to dealerships in exchange for up-front discounts.

\*Not every household will be eligible for every incentive: product standards, income limits, and other eligibility requirements apply. For more information on the incentives, check out [our calculator](#).





Rewiring America is the leading electrification nonprofit, working to electrify our homes, businesses and communities.

---

### Want to go deeper?

Download Rewiring America's free guide, [Electrify Everything in Your Home](#), for lots more info about each of the electric appliances, including questions to ask your contractors.

**REWIRING  
AMERICA**

Want to stay in the loop on this whole electric thing?  
Sign up for our updates at [RewiringAmerica.org/newsletter](https://RewiringAmerica.org/newsletter)

