ALAMEDA
MUNICIPAL POWER
*A Department of the City of Alameda*

# HOME
# Electrification
## Guide

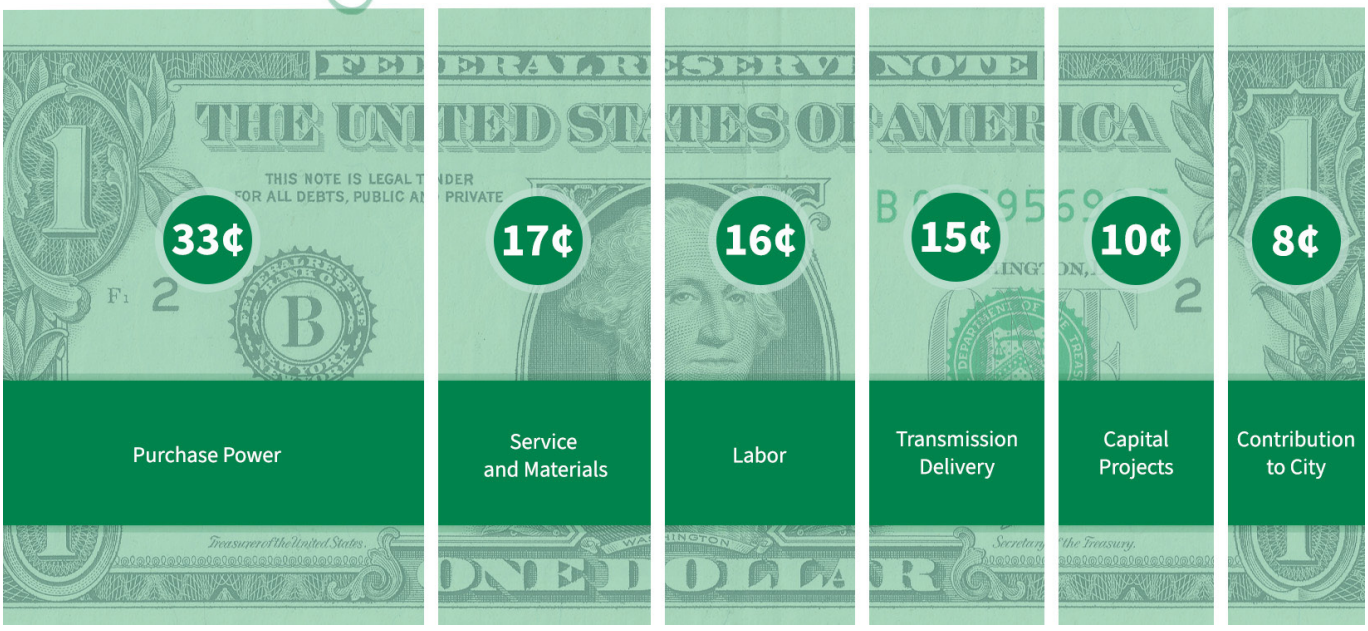
# What is **Electrification?**

As a municipally owned utility (MOU), Alameda Municipal Power (AMP) operates as a department of the City of Alameda. This structure enables AMP to maintain stable electric utility rates, reinvest funds into the community, and ensure its values are in harmony with those of Alameda's residents.

- Alamedans have made it clear that moving towards a more sustainable Alameda is important. As such, AMP is committed to providing clean, safe, and reliable electricity to its customers.
- In addition to clean and renewable energy, AMP's electric utility rates are much lower compared to PG&E. Which is why sustainable practices such as electrification is beneficial here in Alameda.

The figure below shows where your electric dollar is spent when AMP purchases 100% clean and renewable energy so that all customers are using sustainably sourced electricity.

## WHERE *Your* ELECTRIC DOLLAR GOES




Electrification involves transitioning different sectors, systems, or equipment from relying on fossil fuels to using electricity as their main energy source. For utility customers, this shift means adopting cleaner and more efficient technologies that use electricity to power everyday appliances.

# Why **Electrify?**

**1.** Electrifying your home offers a range of significant benefits, including reduced environmental impact, increased energy efficiency, and long-term cost savings. By switching to electric appliances, you can cut down on greenhouse gas (GHG) emissions, especially with AMP's 100% clean power.

**2.** Electric systems, such as heat pumps and induction stoves, operate more efficiently and require less maintenance than their fossil-fuel counterparts, leading to lower energy bills and fewer safety risks.

**3.** Additionally, as the electric grid becomes greener and technology advances, electrifying your home not only supports a sustainable future but also provides enhanced comfort and control over your living environment.

## GETTING STARTED

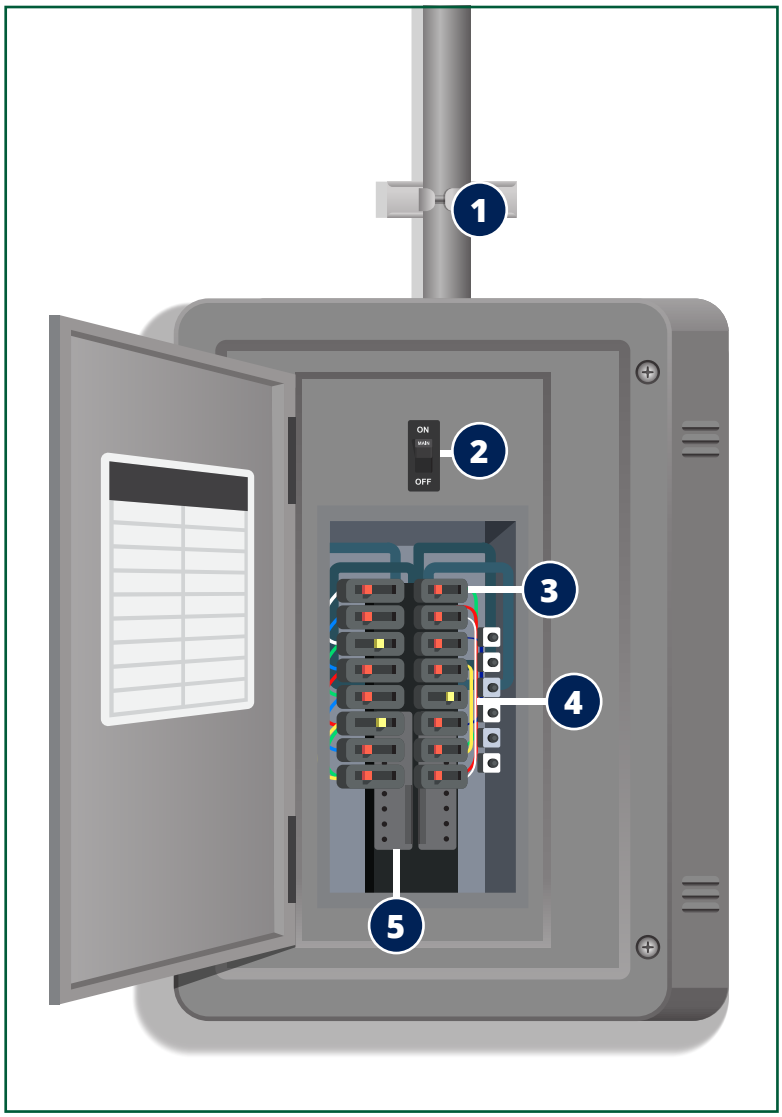
You will want to start by evaluating your home's energy efficiency. Addressing energy efficiency first is important because it will ensure that your equipment and systems are working together effectively.

Learn about your home's energy efficiency by conducting a Do-It-Yourself Energy Audit. The energy audit will provide information and recommendations on how to improve your home's energy efficiency.

Request an audit by visiting: alamedamp.com/energyaudit.

# Understanding Your **Electrical Panel**

The next step is evaluating your main service panel and understanding your electric panel's capacity and utilize watt dieting strategies.




### 1 Service Entry Wire

Electricity from AMP service wires is sent to your home through the service entry wire. These wires are connected to the main breaker (2) in your main service panel.

### 2 Main Breaker

The main breaker is a switch that acts as a gatekeeper controlling the flow of electricity and distributes electricity to individual circuit breakers. Turning this switch cuts off electricity to your entire home.

### 3 Circuit Breakers

Similar to the main breaker, circuit breakers act as controllers for the flow of electricity but for corresponding areas or appliances in your home. When a circuit is overloaded, the circuit breaker will trip, cutting off power to everything connected to the circuit. Circuit breakers connected to only one bus bar are only releasing 120 Volts of electricity whereas being connected to two allows for 240 Volts of electricity.

### 4 Circuits

A circuit is wire leading from the breakers to outlets, switches, and appliances or equipment. Flipping a circuit breaker on or turning on equipment completes the circuit, allowing electricity to flow.

### 5 Bus Bars

These are metal strips inside panels that distribute electricity from the main breaker to individual breakers. Typically, there are two bus bars in an electrical panel. The voltage of each bus bar is 120V, which in total is 240V.

# Watt **Dieting**

Watt Dieting is a strategy that involves careful planning to maximize the capacity of an electric panel. Adding electric load can require increasing the size of your main service panel, but watt dieting makes it possible to fully electrify a home with only a 100-amp main service panel.

**Basic watt dieting strategies include:**

1. Selecting appliances that combine two functions into one machine, such as a heat pump washer and dryer combo unit
2. Selecting more power efficient versions of the appliances or equipment that also draw fewer amps
3. Using energy management devices such as circuit splitters

When you are ready, contact a certified electrician to determine your panel's capacity and if a panel upgrade is necessary. Ask your contractor to consider the watt dieting strategies outlined above to avoid a panel upgrade when possible.

The table below provides the estimated required amps for each electrification measure. If a panel upgrade is necessary, ask with your contractor for a quote so you can estimate the benefits of electrifying. Proposed equipment and installation costs will also be required to estimate the benefits of electrifying.

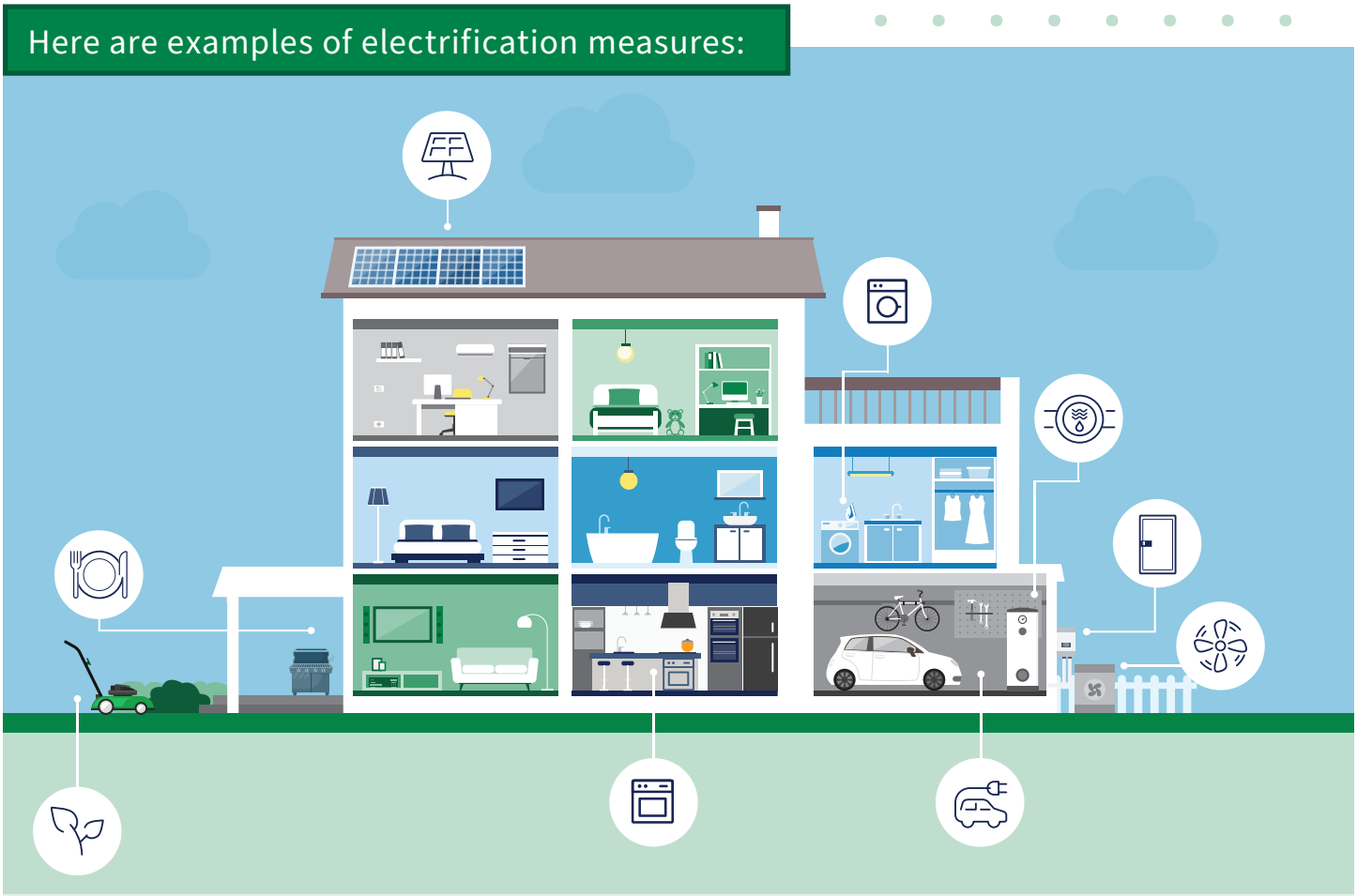
| Electrification Measure | | | | |
|---|---|---|---|---|
| **Electric Vehicle (EV) Charger** | **Heat Pump Water Heater** | **Heat Pump Space Heat and Air Conditioner** | **Induction Cooking** | **Heat Pump Clothes Dryer** |
| **EXAMPLE:** *Level 2 EV Charger* | **EXAMPLE:** *80 gallons* | **EXAMPLE:** *30K-60K BTU heating load, mini split unit* | **EXAMPLE:** *4-5 burner cooktop* | **EXAMPLE:** *4-7 cubic drum capacity* |
| Estimated Required Amps: 30-40 | Estimated Required Amps: 15-30 | Estimated Required Amps: 15-45 | Estimated Required Amps: 40-50 | Estimated Required Amps: 15-30 |

# Electrification **Journey**

You will need to select the electrification measures that you want to pursue. Consider your needs as you begin your electrification journey.

*You want to be proactive rather than reactive about replacing certain measures.* Some measures, like installing a heat pump water heater, is an involved process that takes time. Since hot water is a daily necessity, it would not be ideal to install a heat pump water heater (HPWH) upon the failure of your natural gas water heater.

## Here are examples of electrification measures:



- Electrical Panel
- EV Charger
- Heat Pump Clothes Dryer
- Heat Pump Heating Ventilation, Air Conditioning (HVAC)
- Heat Water Pump
- Induction Cooking
- Landscaping Equipment
- Outdoor Cooking
- Solar Panels

# Measures

## Heat Pump Clothes Dryer

### Requirements & Considerations

- Use a socket splitter between the dryer and an EV charger. This will help manage how much power is being drawn though a circuit and avoid tripping the circuit breaker.
- Consider purchasing an all-in-one model that is a washer & dryer combo unit
- Most heat pump dryers units require a water drainage pipe for condensation
- Purchase a model with high efficiency specification or lower amperage rating
- Maintain at least 1 to 3 inches of clearance on the sides and back of the dryer. Some manufacturers may require more. Always reference the user manual for specific installation requirements.

## Induction Cooking

### Requirements & Considerations

- Installing an induction cooktop or range may require a main service panel upgrade
- Consider how many heating zones or elements you require
- Magnetic, stainless steel, or cast-iron cookware must be used
- Induction cooktops require appropriate leveling and alignment to meet clearances and ensure proper performance
- Consider induction ranges with an auxiliary battery in the event of power outages

## Heat Pump Water Heater (HPWH)

### Requirements & Considerations

- Electric panel upgrade may be required. However, there are models that only require 120 volts.
- Heat pump water heaters often require dedicated clearance space all around the unit for proper air flow. Check the installation manual for specific requirements
- Noise from heat pump water heaters may be noticeable in quiet areas
- Heat pump water heaters work best in warmer areas of the house such as the garage
- Consider circuit sharing with dryer or EV charger
- May require running a condensate lane

## Heat Pump Heating, Ventilation, Air Conditioning (HVAC)

### Requirements & Considerations

- If you're adding a heat pump to an existing system, ensure that the ductwork is in good condition and properly sealed. Poorly insulated or leaky ducts can reduce efficiency
- Proper insulation in your home can improve the performance of your heat pump by reducing the demand on the system
- Ensure that outdoor units are placed in a location with adequate airflow and away from obstructions. It should be on a stable surface to prevent vibrations and noise
- Once your electric heat pump HVAC is installed, contact AMP to switch your rate code from D1B to D1H to take advantage of AMP's low electric rates

## Solar Panels

### Requirements & Considerations

- Evaluate your home obstructions like trees, buildings, or chimneys that might cast shadows. You'll want to consider the roof that is south facing because that is the roof face that will receive sunlight for the longest time
- Your roof should be in good condition. You will be unable to install solar panels if your roof is damaged. Your roof must also be made of appropriate shingles. Shingles that are made of clay or stone are not able to support solar panels
- Assess your current energy consumption and determine how much of it you'd like to offset with solar energy. This will help you estimate the size and number of solar panels you'll need

## EV Charger

### Requirements & Considerations

- Ensure your home's electrical panel can handle the additional load. Older homes might need an upgrade to support a Level 2 charger
- Consider the type of charger. Level 1 charger uses a standard 120V outlet. Typically providing 3-5 miles of range per hour of charging. This is generally sufficient as most EV owners are not requiring a full charge. Level 2 chargers require a 240V outlet adds 12-60 miles of range per hour, depending on the vehicle and charger
- Typically, a dedicated 40-50 amp circuit is needed for a Level 2 charger
- Take smart chargers into consideration. These chargers offer scheduling options, energy monitoring, and integration with home energy systems that can manage your home's electrical load

## Other Measures | Landscaping Equipment & Electric Grills

- Conventional landscaping equipment and grills run on fossil fuels such as gasoline, charcoal, or natural gas. Switching to electric landscaping tools and grills offers significant environmental benefits by reducing greenhouse gas emissions and eliminating reliance on fossil fuels. Electric options also tend to be quieter and require less maintenance, making them a more convenient and eco-friendly choice for both you and the environment.

# Electrification **Estimator Tool**

Use the electrification estimator to help plan your project. This tool will provide you estimated benefits when electrification measures are installed.

**1** The electrification estimator will require the following information. Gather this information before getting started. The average monthly cost of your utility bill for both electricity and gas added together.

**2** If you have solar, your net metering rate per kWh

**3** Panel upgrade costs, if any

**4** What appliances that you want to replace and their size and layout. Equipment size and layout can typically be found on the manufacturer's tag.

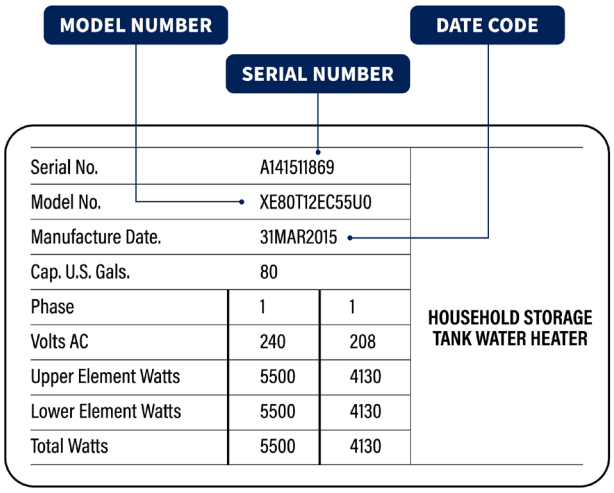
**5** List of electrification measures that you want to pursue, new equipment specifications, and installation costs. Important specifications such as seasonal energy efficiency ratio (SEER) or Heating Seasonal Performance Factor (HSPF) rating can be found on the energy saver label:

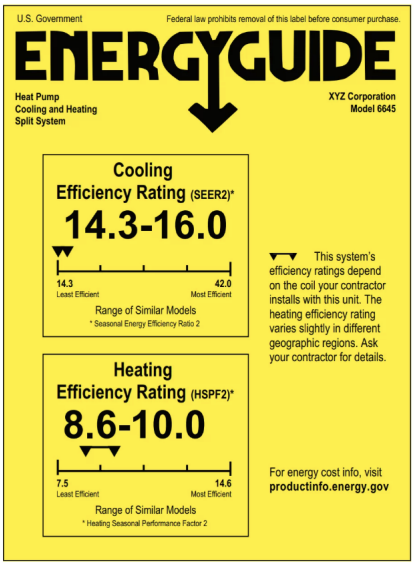
**6** Look for any available incentives offered by AMP programs, State programs, and/or Federal Programs

**DOWNLOAD**

the Electrification Estimator or visit:
alamedamp.com/electrification

***EXAMPLE:***



# How to Disconnect your gas service

**After your home has converted to all-electric, contact PG&E to safely stop gas services. Request to disconnect your gas service by visiting yourprojects-pge.com or contacting a PG&E representative at 1-877-743-7782.**

If you've had gas service for more than 10 years, your gas service will be discontinued at no cost to you.

PG&E will provide an estimate of your costs if you have had service for less than 10 years.

# Apply for Rebates and Incentives

**AMP provides incentives for the following measures.**
**Visit alamedamp.com/rebates for program requirements.**

You can view other potential rebate offerings from the state and/or federal level through switchison.org/incentives

- **Heat Pump Water Heater**
- Heat Pump Heating, Ventilation, Air Conditioning
- Induction Cooktop or Range
- **EV Chargers**
- **Energy Management Device**
- Income Qualified Solar Program
- Used Electric Vehicle
- **Electric Panel Upgrade**

POWERED BY 100% CLEAN ENERGY

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