

Switching to Electric:

Home Electrification for the Future **Global**

LG's "Home Electrification White Paper" offers a step-by-step approach to creating a more sustainable home. Explore the future of electric with LG's latest innovations.



Switching to Electric: Home Electrification for the Future Global

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Introduction

As the world increasingly shifts towards sustainable living and environmental consciousness, the concept of home electrification has emerged as a critical component in reducing carbon footprints and enhancing energy efficiency. LG Electronics, a global leader in consumer electronics and home appliances, is at the forefront of this transformative movement. Our commitment to innovation and sustainability is driving the development of advanced electrification solutions that not only meet the growing demands of modern households but also contribute to a greener planet.

Through this white paper, we aim to provide insights into the challenges and opportunities within the home electrification landscape, showcase our innovative solutions, and outline our vision for a sustainable future.

As we navigate the complexities of global energy transitions, LG remains dedicated to empowering consumers with the tools and technologies needed to build eco-friendly homes that are both efficient and connected.

Benefits of Home Electrification

Home electrification stands at the forefront of contemporary sustainable living, offering a spectrum of benefits that extend from environmental impact to technological advancement. This process involves replacing traditional energy sources and systems with electric alternatives, leading to significant environmental contributions through the reduction of carbon emissions. Electric appliances and systems, known for their superior energy efficiency, play a pivotal role in this transition, ensuring that homes not only contribute to a greener planet but also operate more efficiently. The efficiency of these modern electric solutions often translates into notable cost-effectiveness, with long-term financial savings accruing from lower energy consumption and reduced maintenance requirements.

In addition to financial and environmental advantages, home electrification enhances safety standards within residential settings by significantly lowering the risks associated with gas leaks and fires, contributing to a safer living environment. The shift towards electric appliances not only brings access to the latest technological advancements, including smart technology that provides homeowners with increased control, convenience, and adaptability in their daily energy usage, but also aligns with global sustainability goals. This move towards home electrification thus improves the quality of living and paves the way for a safer, more efficient, and technologically advanced future.

Benefits of Home Electrification



Improve Quality of Living



Enhance Safety Standards



Long-term Financial Savings

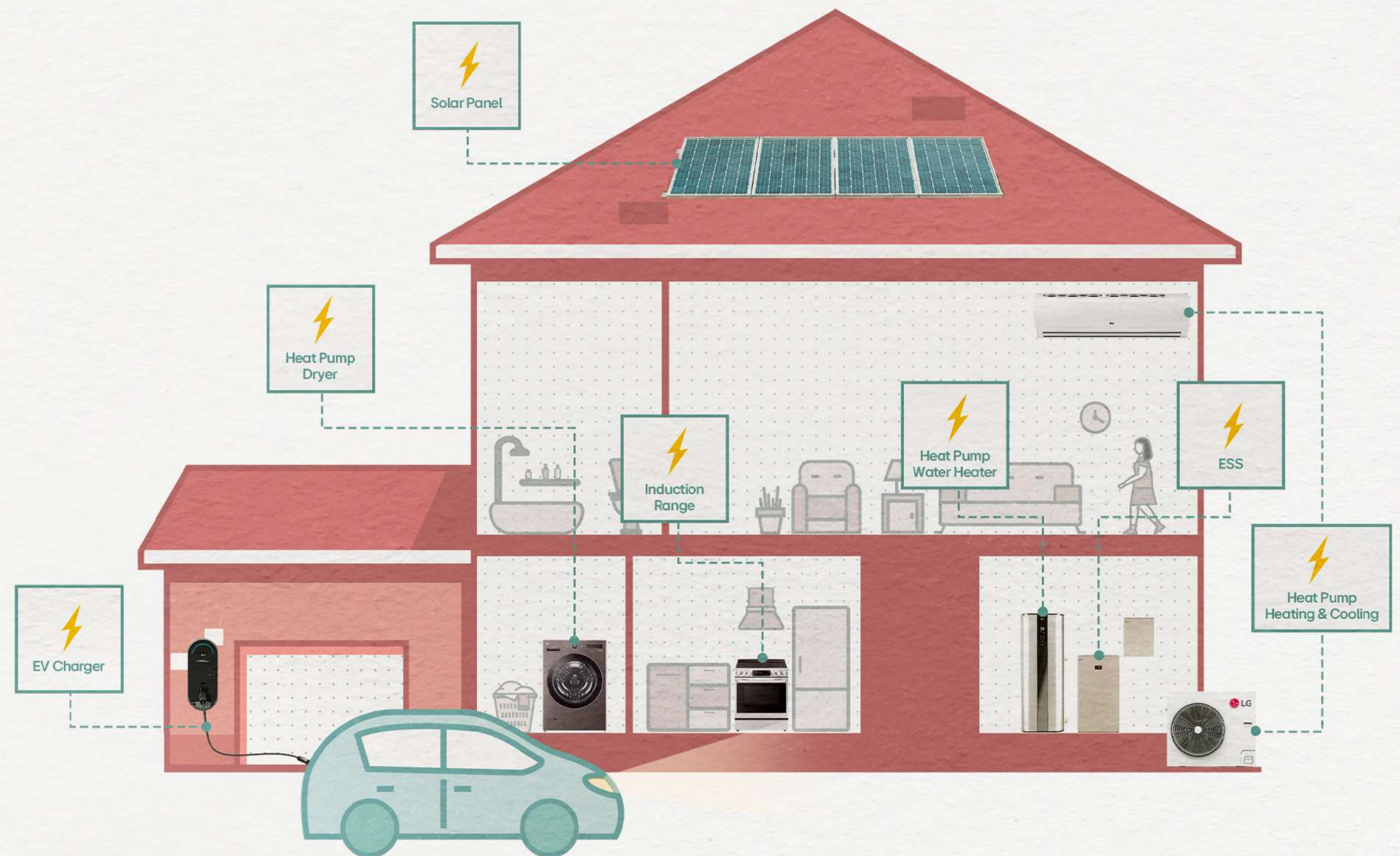


Reduce Carbon Emissions



The Path to Total Home Electrification

The process of electrifying a house might seem daunting at first, given its complexity and the range of technicalities involved. However, by understanding and following some key steps, such as assessing energy needs, upgrading electrical panels, and installing efficient appliances, this task becomes significantly more manageable. Let's delve into the intricacies of the home electrification process to demystify it further

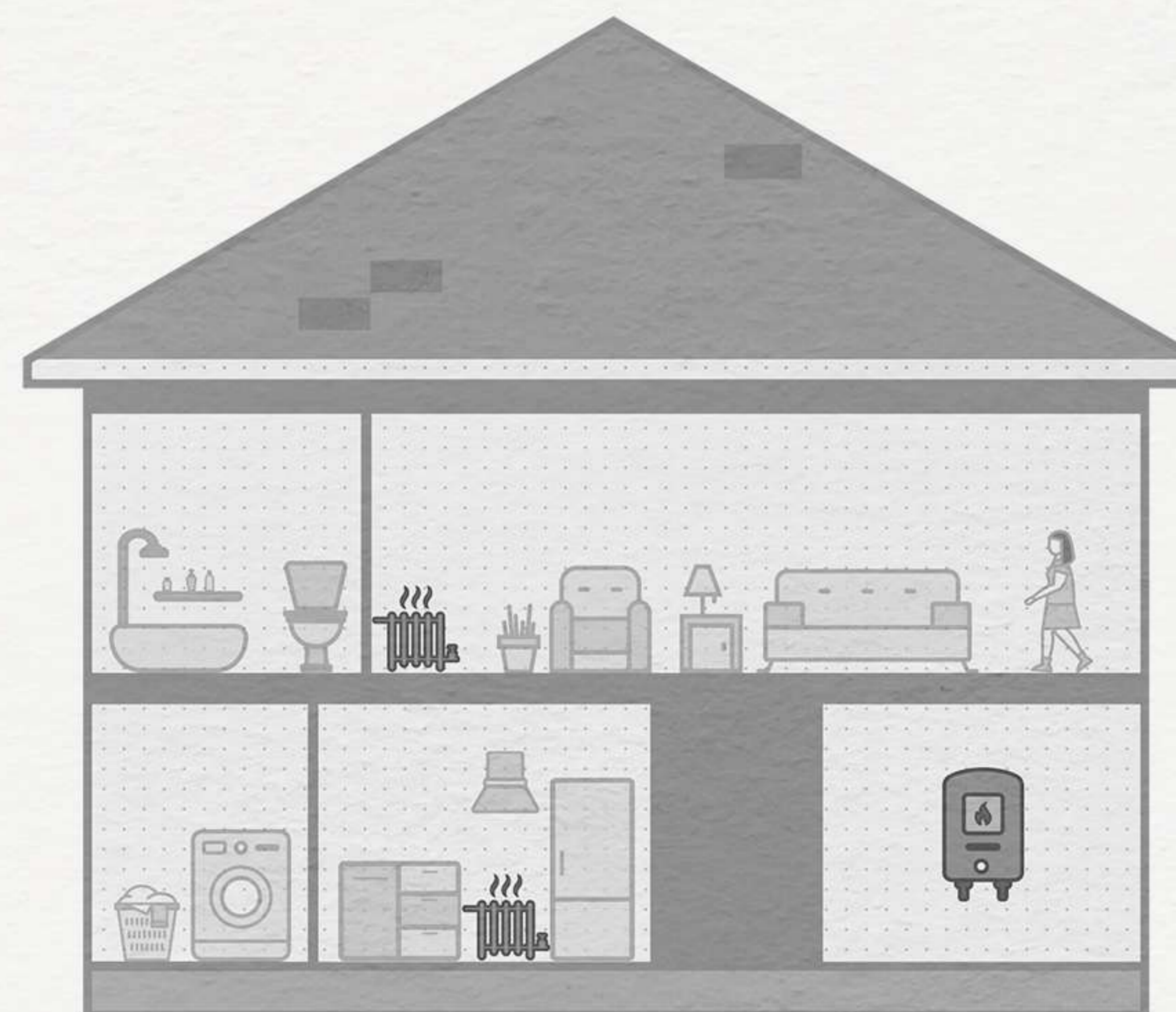
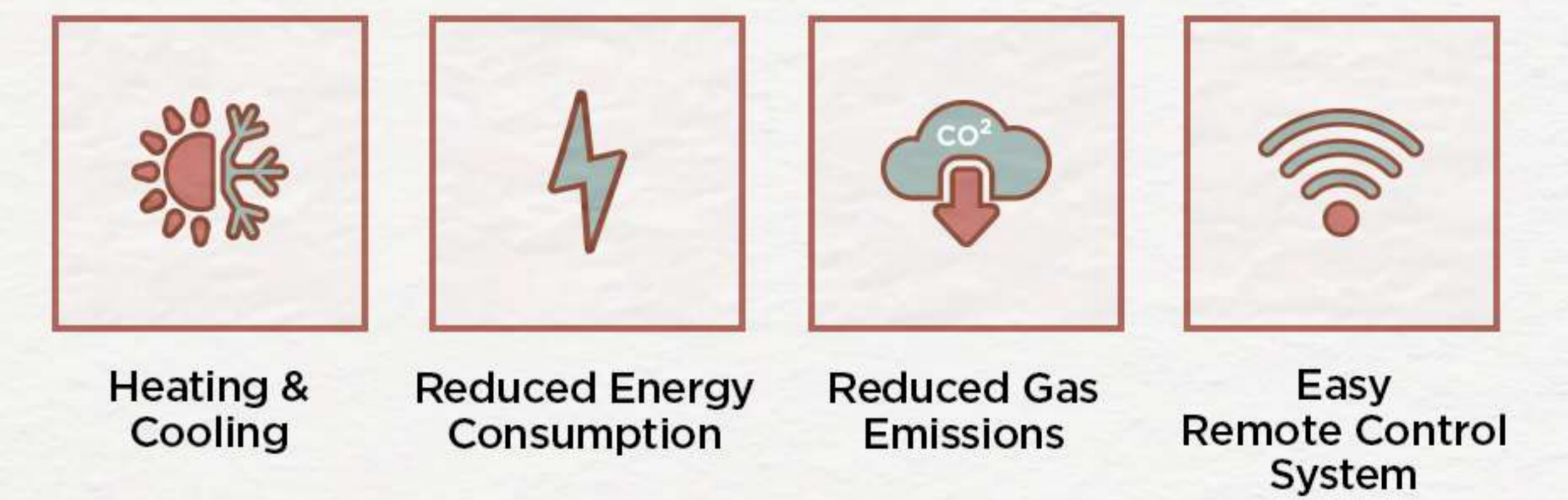
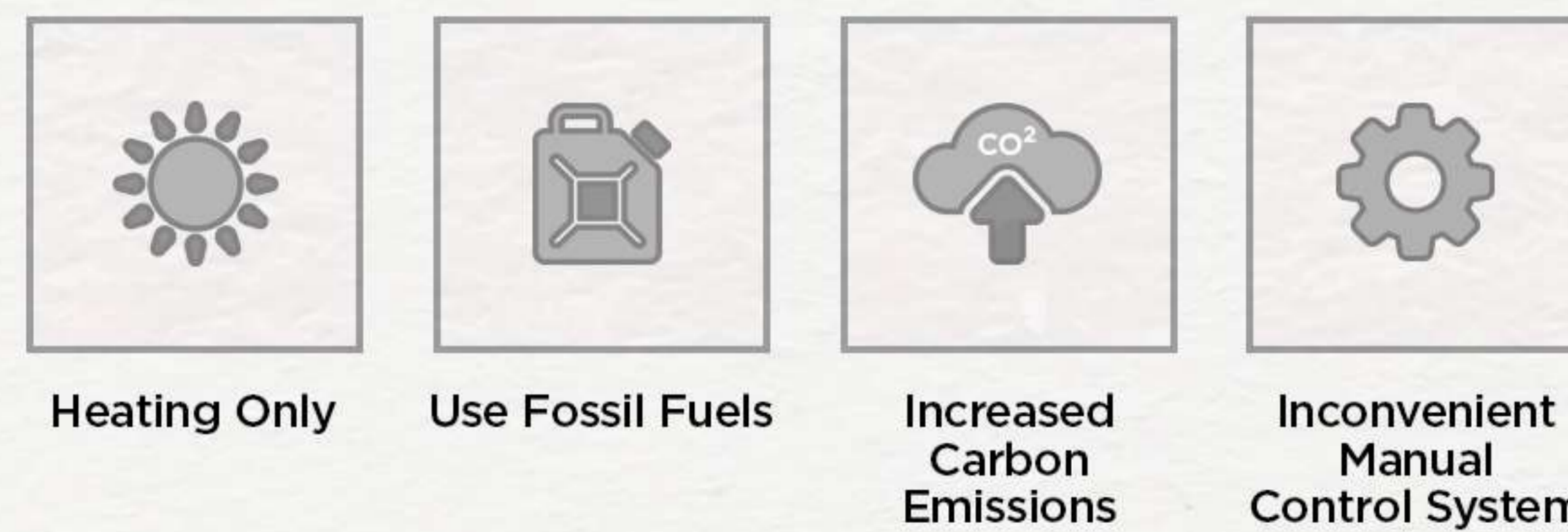


Inside the House

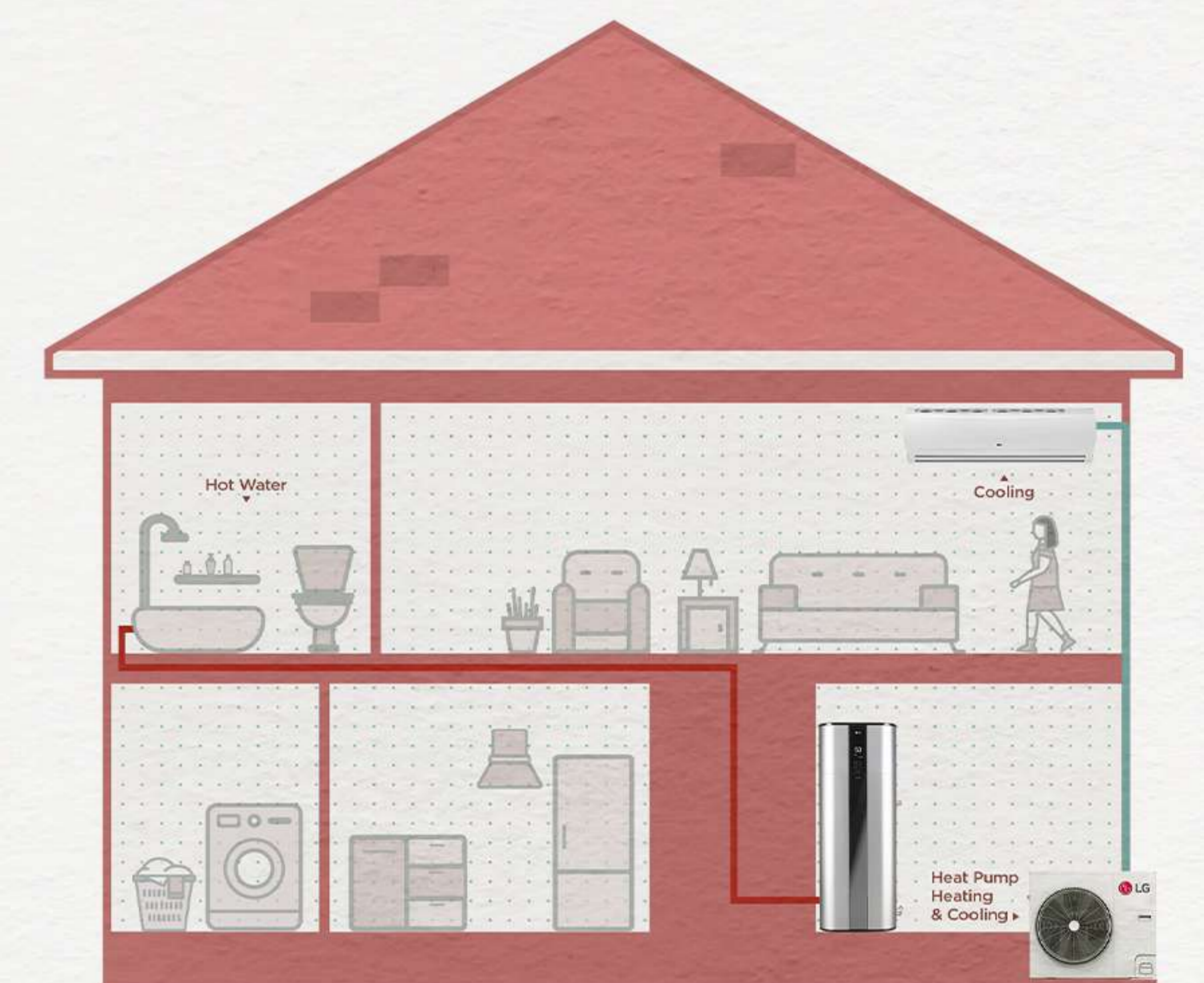
HVAC System

Benefits

Electrifying HVAC systems in homes leads to marked improvements in energy efficiency, as modern electric heat pumps offer both heating and cooling solutions in one device, reducing overall energy consumption. These systems contribute to a cleaner environment by significantly lowering greenhouse gas emissions, especially when paired with electricity from renewable sources, aligning with global sustainability goals. Electric HVAC systems also enhance indoor air quality by eliminating the combustion process associated with traditional gas heating, thus reducing the presence of harmful pollutants indoors. Furthermore, the integration of smart technology in electric HVAC systems allows for precise temperature control and remote management, providing unparalleled comfort and convenience for homeowners.



Traditional Gas Heating



Electric Heating

Laundry Appliances

Benefits

Electric washers and dryers bring a wealth of advantages and benefits to modern households, starting with significant energy savings. These appliances often feature advanced technology that can sense the size of the laundry load and adjust water and energy use accordingly, promoting conservation. With heat pump electric dryers, the efficiency is further enhanced by recycling heat, leading to even more energy savings. Additionally, electric washers and dryers are known for their quiet operation, a welcome relief in homes where laundry must be done frequently or during odd hours. Installation flexibility is another benefit; most heat pump models do not require external venting, allowing them to be placed in a variety of locations within the home. Finally, the long-term cost savings of using energy-efficient electric washers and dryers, combined with their reduced environmental impact, make them a smart choice for eco-conscious consumers.

The LG WashCombo™ All-in-One exemplifies advancements in energy-efficient laundry solutions, completing full wash and dry cycles in approximately two hours*—a significant time efficiency that parallels its energy savings. Its innovative ventless technology is engineered to maximize energy conservation, achieving up to 60% energy reduction per load. Complementary to the WashCombo™, the LG heat pump dryer utilizes a sophisticated heat-recycling process that curtails energy usage by up to 65%, marking it as a leading model in sustainable home appliances. The integration of such energy-saving technologies into the LG laundry suite represents a substantial leap forward in reducing household energy consumption while maintaining high-performance standards.

* Please note that wash times may vary based on the type of items being washed and other influencing factors.

LG WashCombo™



Mega Capacity

5.0 cu.ft. mega-capacity washer/dryer combo



Energy Saving

With LG's Inverter heat pump technology, 60% less energy use



6MOTION™

6 motions to optimize wash & dry for each load



ezLintFilter™

Easy to access and easy to clean



Two Hours

Complete wash & dry cycle as fast as 2 hours¹⁾



1) Based on independent testing in Wash+Dry cycle with Dryer on Energy Saver mode, 10 lb. DOE standard load (October 2023). Cycle time may vary depending on load type/weight.

Kitchen Appliances

Benefits


All-electric induction cooking solutions stand at the forefront of energy-efficient cooking technologies. Induction cooking harnesses electromagnetic energy to directly heat pots and pans rather than the cooktop itself, which drastically reduces heat loss and results in faster, more economical cooking. The precise temperature control inherent to induction ranges translates to less energy wastage, ensuring that only the exact amount of energy needed is consumed. The cool-to-the-touch surface when not in contact with induction-compatible cookware contributes to a safer, energy-conserving kitchen environment. Furthermore, by obviating the use of gas, electric induction ranges and cooktops represent a clean energy solution, reinforcing the commitment to reducing household carbon footprints.

The LG induction range epitomizes the fusion of high-efficiency cooking with innovative technology, offering a cooking solution that marries rapid heating capabilities with substantial energy savings. Its precision induction elements convert electricity into a magnetic field, which directly heats cookware, resulting in up to 3 times more energy efficiency¹⁾ compared to traditional gas ranges. This direct energy transfer not only accelerates cooking times but also enhances kitchen safety with lower surface temperatures due to electromagnetic induction and adds to the unit's overall energy-conserving profile. As part of LG's commitment to sustainable appliance solutions, the induction range is designed to decrease energy consumption significantly, while its sophisticated control and sleek design maintain the high performance that users expect.

Both products utilize induction technology to directly heat cookware, minimizing heat loss and maximizing energy efficiency. This method provides rapid heating, precise temperature control, and significant energy savings by only using the necessary amount of energy, while also maintaining a safer, cooler cooking surface.


1) <https://www.lg.com/us/cooking-appliances/lg-lsil6334fe-slide-in-induction-range>

LG Induction Cooking



UltraHeat™

Quickly boil water or hold a true simmer with ease




Faster Heating

Gas	4min 36sec
Radiant	3min 58sec
Induction	1min 36sec ¹⁾

Exclusive Coil Design

Provide stable power output for optimal performance



Energy Efficient

Induction	85% Efficient ²⁾
Radiant	75% Efficient
Gas	32% Efficient

Cookware Compatibility Indicator

Optimize performance and maximize energy efficiency³⁾

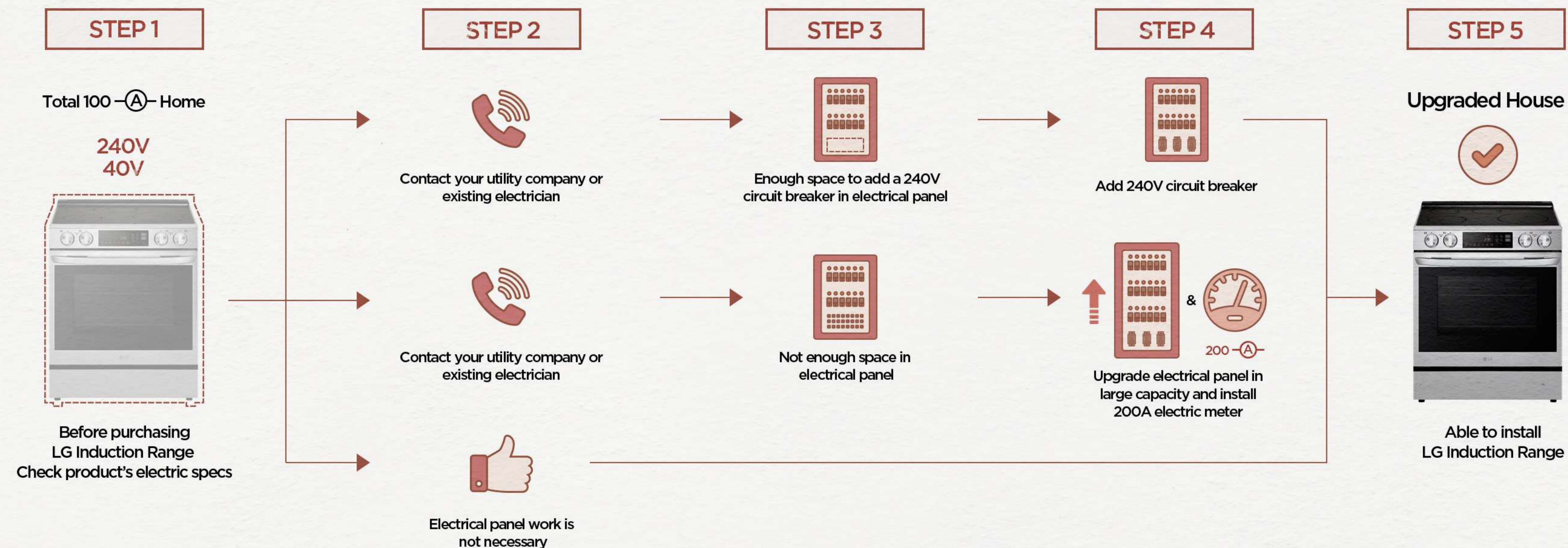
Indicator	Compatibility
0 - 3	LOW
4 - 8	MEDIUM
9 - 10	HIGH

1) Based on internal LG testing comparing the boiling speed of LG cooktops at maximum power.
 2) According to ENERGY STAR
 3) The LG Heating Index only applies to the LG appliance(s) being used.

Process & Requirements

When installing a new induction cooking solution, it is essential to follow a structured process to ensure compatibility and safety. Initially, verify the product specifications to understand the power requirements and features. Next, determine the type of outlet required to connect the product, ensuring it matches the existing electrical setup. If the product operates on a 120V type and requires electrical work, begin by contacting the utility company listed on the electrical panel. If specialized electrical services are necessary, reach out to a professional electrical firm previously utilized. For those encountering a need for additional space within the electrical panel, or if the current breaker capacity is insufficient, assess whether there is a 240V margin available. Should there be no margin at 240V and an upgrade to a 200A main breaker is needed, professional modification of the electrical panel will be required to accommodate the new installation safely. This methodical approach minimizes risks and ensures that the electrical infrastructure adequately supports the new product's demands.

Electric Panel Guide Process



Water Heater

▪ Benefits

Converting to heat pump water heaters presents a suite of advantages, notably in the realm of energy efficiency. Heat pump water heaters are typically more energy-efficient than their gas counterparts, as they convert almost all the electricity they consume into heat with minimal loss, thus reducing overall energy expenditure. Many models come with programmable timers, allowing users to heat water during off-peak hours, leveraging lower electricity rates and contributing to energy conservation. The lack of a need to vent exhaust gases makes installation more flexible and eliminates the energy loss associated with gas flue systems. Such energy-saving features align with increasing environmental sustainability goals, making electric water heaters a smart choice for eco-conscious consumers seeking to reduce their carbon footprint and energy bills.

LG Inverter Heat Pump Water Heater



Differentiated Design

Luxury silver color makes an excellent design for the home



Hot Water Supply

DUAL Inverter HeatPump Compressor™ providing a higher FHR¹⁾ value relative to storage volume



Excellent Efficiency

Energy savings of over 70%, with DUAL Inverter HeatPump Compressor™



Easy Control

LG ThinQ app can control systems remotely



Low Noise

With DUAL Inverter HeatPump Compressor™, noise is reduced to 42db(A)

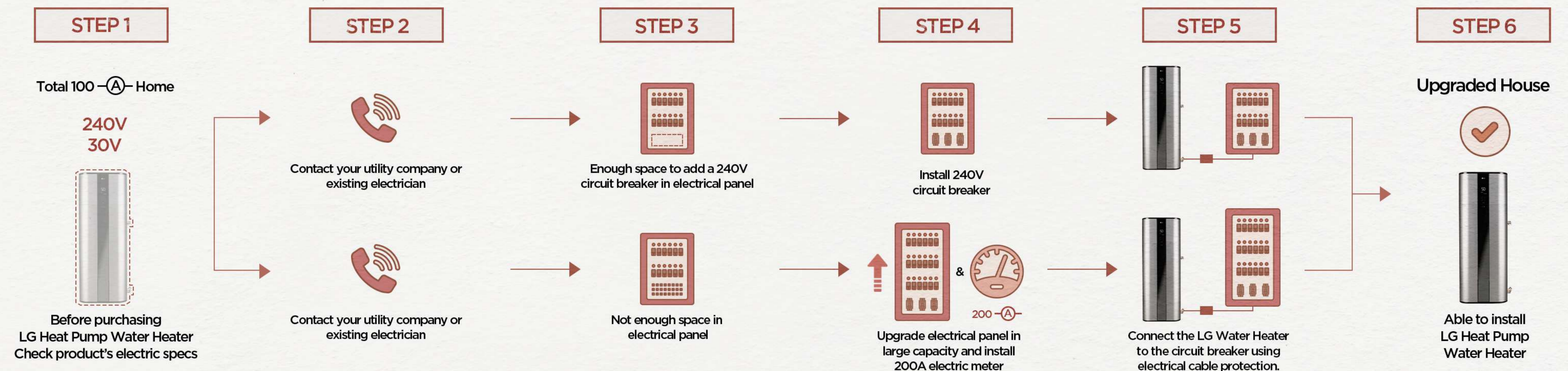


1) First Hour Rating(FHR) for LG 58-gallon model is 76 gallon on Auto mode (Certified by Intertek US) and 80 gallon on Turbo mode.

Process & Requirements

Transitioning to a heat pump water heater involves several key steps and requirements to ensure successful installation and operation. First, homeowners should assess their current plumbing and electrical systems to determine compatibility with an electric water heater. This involves evaluating the existing electrical panel capacity to ensure it can handle the additional load, as electric water heaters may require significant power, particularly if a high-capacity model is chosen. It is often necessary to upgrade the electrical panel or circuits to accommodate the new unit's power requirements. Furthermore, the installation space must be assessed for proper ventilation and accessibility, as electric models can have different spatial requirements compared to gas units. Professional installation by a certified electrician or plumber is recommended to ensure that all local building codes and safety standards are met, securing the system's efficiency and longevity.

Electric Panel Guide Process




ESS (Energy Storage System)

Benefits

Converting to an electric ESS provides significant advantages in energy efficiency and system integration. These systems optimize energy costs and reduce grid strain by storing excess electricity during off-peak times and releasing it during high demand. When integrated with renewable energy sources like solar or wind, ESS solutions store surplus energy and ensure a consistent supply, enhancing the use of renewables and reducing carbon emissions. Additionally, modern ESS technologies feature smart management systems that adapt charging and discharging based on usage patterns and grid demands, boosting energy system efficiency. By adopting an ESS, users gain energy independence, stabilize costs, and support a sustainable energy transition.


The LG Home 8 Energy Storage System significantly enhances home electrification by providing up to 14.4 kWh of cleaner, more reliable backup energy, which not only supports eco-friendly initiatives but also ensures energy cost reductions. Its innovative design integrates seamlessly with LG Electronics appliances and HVAC systems, enabling optimal energy management and improved efficiency, which translates into a more cost-effective and sustainable lifestyle.

Energy Storage System




Powerful & Modular

Can Connect up to 4 system and provide up to 57.6kWh




External Display

Can easily see how much battery is in the system




Smart Mode

Optimize battery charging using weather forecasts to save money




Unique Modular

LG HBP battery has a control unit and two modules for easy transport and installation




Easy Monitoring

Homeowners can easily control and navigate the LG ESS system via the LG ThinQ app®



Integrated Service

Provide to customers up to 10-years limited warranty¹⁾



1) Warranty conditions may vary depending on the marketing policy by countries, please check before purchase the products.

Outside the House

(Solar Panels, EVC, Outdoor Lighting, Smart Grid Integration)

The electrification of outdoor home components plays a pivotal role in enhancing energy efficiency and sustainability. Solar panels are a cornerstone of this movement, converting sunlight into electricity and significantly reducing reliance on non-renewable energy sources. The integration of solar power not only diminishes household energy costs but also increases property values with the added benefit of potential tax incentives. Additionally, the installation of Electric Vehicle (EV) charging stations at home provides the convenience of charging personal vehicles overnight, promoting the adoption of electric vehicles. This, coupled with energy-efficient outdoor lighting solutions, which use less power and reduce light pollution, complements a comprehensive approach to green living.

Smart Grid integration further elevates the benefits of home electrification by allowing homeowners to connect with utility grids in an intelligent manner. Through smart grids, energy consumption can be optimized in real-time, enhancing the efficiency of solar panels and other home electrification systems by dynamically adjusting to energy demands and supply. This connectivity also facilitates the use of excess energy generated by home systems to be fed back into the grid, providing energy credits and reducing costs. The adoption of these technologies not only supports personal energy management but also contributes to the broader goals of reducing carbon footprints and promoting sustainable energy practices. Ultimately, the integration of these advanced outdoor electrification technologies fosters a more resilient and energy-independent home environment.

Conclusion

Electrifying a home is not just about adopting new technologies but embracing a lifestyle that contributes to global sustainability efforts. This white paper covers the key aspects of indoor and outdoor electrification, from integrating smart HVAC systems to harnessing solar power with panels.

It highlights the strategic, economic, and environmental benefits of adopting comprehensive electrification solutions and emphasizes the importance of tailored incentives and professional installation in facilitating this shift. As the future of home energy evolves worldwide, this guide serves as a valuable resource for homeowners around the globe who seek to make informed decisions and take action towards a more sustainable future.

LG Electrification Full Line-up

| Laundry Solution



WashCombo
(All-in-one Washer & Dryer)



WashTower

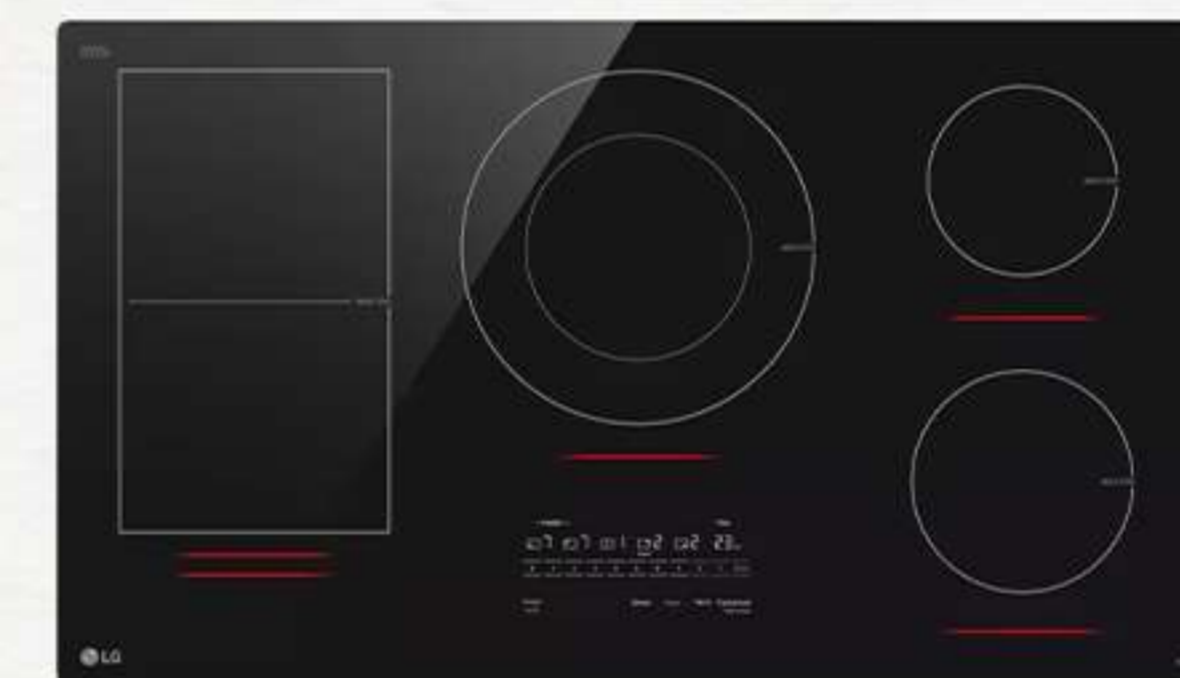


Heat Pump Dryer

| Kitchen Solution



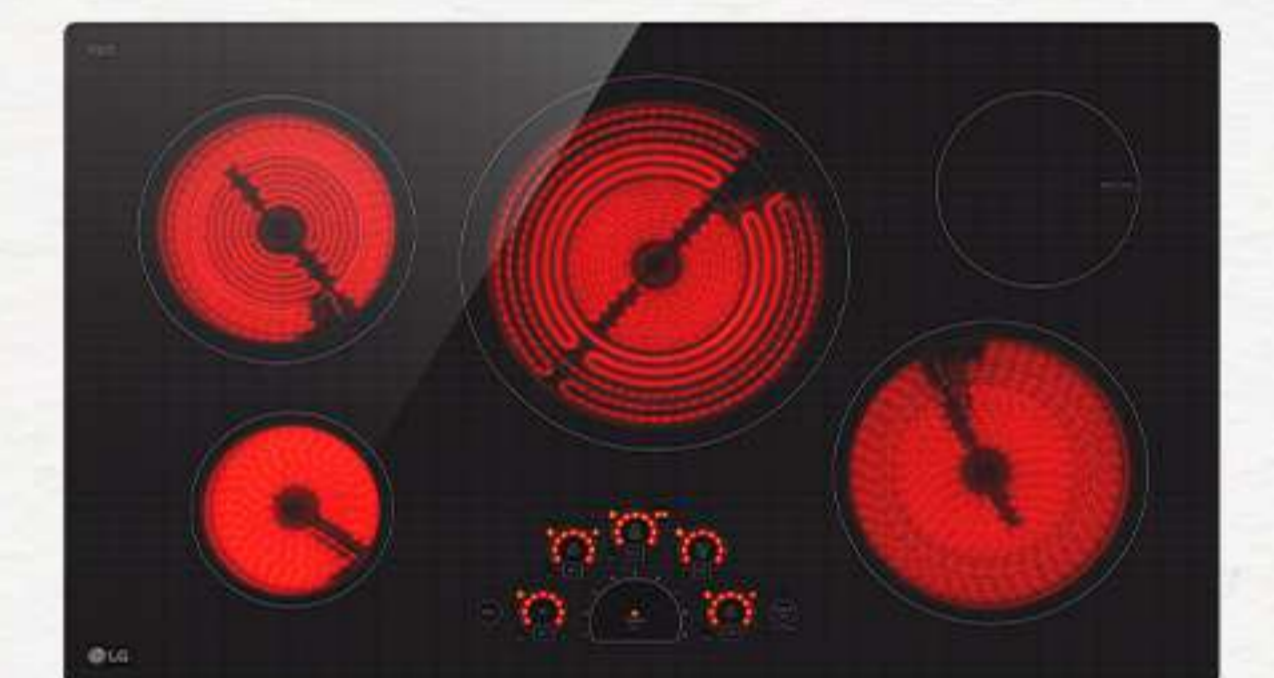
Induction Range



Induction Cooktop

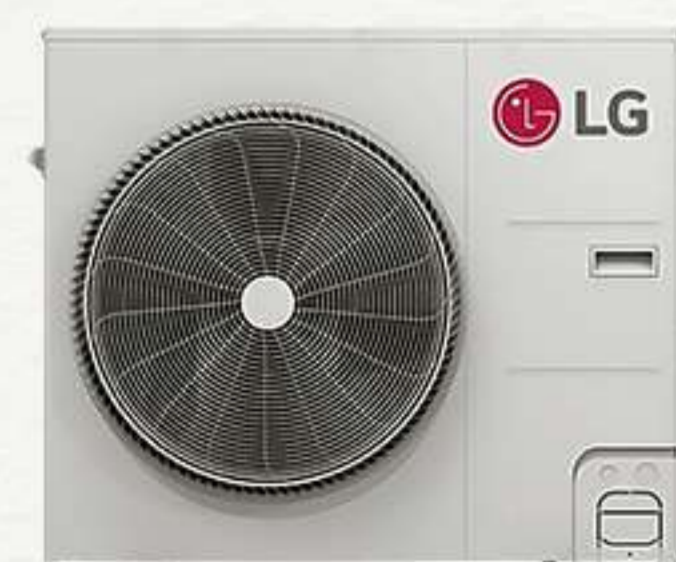


Radiant Range



Radiant Cooktop

| HVAC Solution



Inverter Heat Pump



Inverter Heat Pump
Water Heater


| Home Energy Storage Solution



Energy Storage System

*Products and solutions shown may differ by region. Please check availability with your local office.



 www.lg.com/global/business/air-solution

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