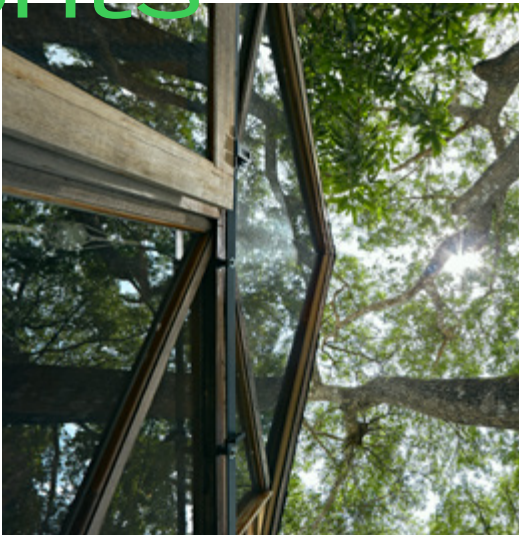


Schneider Electric
Whitepaper

Create an energy efficient home

By following several key steps to make your home more energy-efficient, you can reduce your environmental footprint and create significant home energy savings.

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What does the average energy bill look like?

After record energy bills, it makes sense that more of us are now looking to get a better understanding of our energy usage, and what exactly makes up our monthly bills.



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Introduction

At Schneider Electric, we believe there are ways to be wiser with energy usage,



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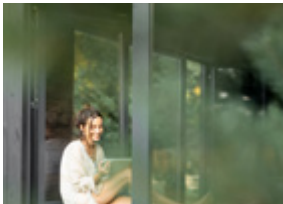
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- › 5 hidden places you might be overconsuming energy
- › 3 easy ways to reduce energy bills at home
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Here to help.



01

Introduction





**At Schneider Electric,
we believe there are
ways to make our home
energy efficient,**

which can create a major change – in fact, these small steps can have a big impact on the planet, not just our pockets.

According to our latest global study, improving our homes to be more energy efficient is the single most important priority for 86% of people.

With the average energy bill having increased by at least 63% over the past 12 months according to the World Economic Forum, it comes as no surprise that many of us are making changes to our daily lifestyles and behaviours – with almost half of us (49%) willing to sacrifice our comfort at home to keep bills down.

In fact, last year, 75% of homeowners around the world reduced their energy use in winter, through actions such as...

- Turning off lights around the home – 63%
- Lowering the temperature – 48%
- Unplugging electrical devices – 48%
- Reducing hot water usage – 42%

It's great to see many of us are taking steps to reduce our energy use but knowing where to start and what will be most effective can be a challenge.

In this handy guide, we'll help you get a better understanding of where you might be overspending when it comes to energy usage, and provide some top tips on the improvements you can make within the home and to your habits, that will really help to make a difference when it comes to reducing your bills, without needing to radically change how you live.

75%

of homeowners around the world **reduced their energy use in winter**

02

What does the average energy bill look like?





After record energy bills, it makes sense that more of us are now looking to get a better understanding of our energy usage, and what exactly makes up our monthly bills.

First, let's take a look at which appliances in our homes are the biggest energy consumers. The logical assumption is that the bigger the appliance, the more energy it is going to take to run.

However, that isn't necessarily always the case.

A typical energy bill for a semi-detached house can be broken down into the following...

- Heating and cooling – including hot water used for our showers and taps – accounts for 78% of the average energy bill
- Appliances, like washing machines, dishwashers or fridges, typically make up 12% of total bill costs
- Cooking – oven and induction stove – contributes another 6%
- Lighting accounts for only 2% of total energy costs
- EV charging isn't included in standard household energy statistics yet, but 2025 data shows that charging an EV at home is responsible for roughly a 30 – 40% increase in total home electricity consumption

Did you know that heating, cooling and hot water actually accounts for **the majority of your energy consumption?**

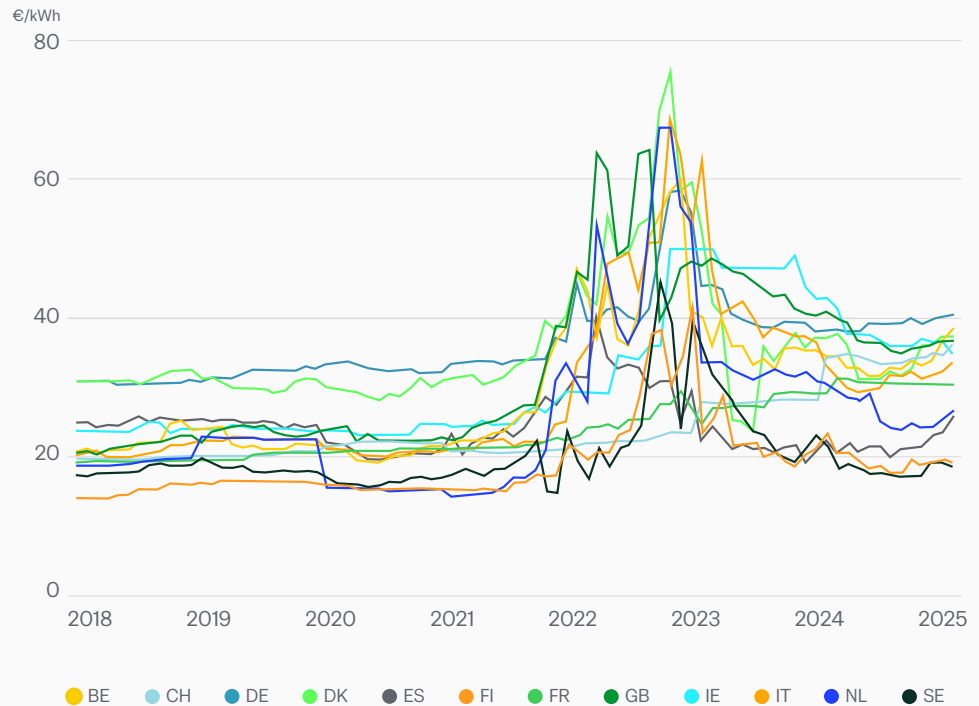
78%

Source: <https://www.odysseumure.eu/publications/policy-brief/households-efficiency-trends.html>

As our homes require a growing amount of electricity to power our various appliances and devices, many household budgets across Europe have been impacted by rising electricity prices, which have seen a significant surge over the past few years.

Looking at the historical price data for electricity in the graph below, the positive news is that we are now seeing signs of slow-down in the growth of electricity prices, but costs are still much higher than they used to be.

Fig. 1 - Household Energy Price Index
By Energie-Control Austria, MEKH & VaasaETT 2024



Source: <https://www.energypriceindex.com/price-data>

To minimise the impact of these higher energy costs, the necessity to become smarter about managing our energy consumption is now crucial. The great news is, there are areas around the home where you can better manage and reduce your energy consumption.

03

Findings





Finding #1

5 hidden places you might be overconsuming energy

The increasing cost of energy has certainly put a strain on household budgets across the world, so being able to identify your energy guzzlers and where you can make savings is crucial. But where in the home might you be overconsuming without realising?



1. Heating your home

When it comes to our home heating, there are a number of ways in which you could be overspending; from having the thermostat set too high or your heating running for too long, to having the boiler set to a high flow temperature of around 70°C. Additionally, many of us tend to leave the heating on in rooms we aren't using or have to heat the whole house due to how the heating system has been designed, which leads to higher energy bills.



1. 2. Vampire devices

Vampire devices refer to those that still draw energy, even when they are set to standby mode, including gaming consoles, televisions, and smart speakers to name a few. They typically account for 10% of total energy bills.



1. 3. Inefficient light bulbs

If you've not changed the light bulbs in your home in some time, you may find that you're still running older, inefficient bulbs, which consume more energy. Switching to LED light bulbs is an impactful choice, cutting lighting costs by 70-80%, plus they also tend to last longer and have a lower environmental impact.



1. 4. Old appliances

Outdated appliances, such as refrigerators and washing machines, contribute silently to excessive energy consumption. Most appliances across Europe will have an EU Energy Label, which ranks the appliance on a scale of G, being the worst, to A+++ , which is the best. Meanwhile, in the United States, the Energy Star label will help you identify which appliances are the most efficient.

Similarly to old appliances, faulty appliances can also cause your energy bills to be higher than usual, so spotting these and swiftly replacing them can help to reduce unnecessary energy consumption.



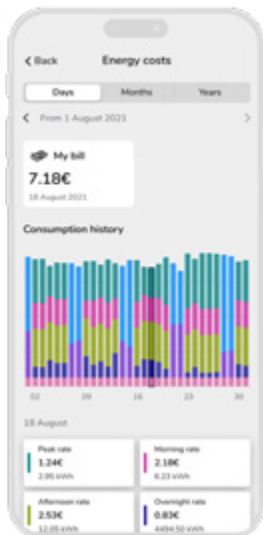
1. 5. Faulty appliances

The importance of understanding how much we consume, from which appliance and when those appliances are being used is crucial.

You'd be forgiven for thinking this might be a complex task that requires lots of complicated data, but you'll be glad to know there are solutions available that can give you all the information you need to know in a simplified, yet meaningful way, which can make all the difference.

A Home Energy Management System (HEMS), which monitors real-time usage, is an ideal first step on this journey to understanding, with data available often able to spotlight abnormal consumption or potential waste usage like heating some empty rooms or vampire loads, old appliances, etc.

For example, with a solution like Wiser, it's never been easier to identify the hidden energy-guzzlers in your home. Working in a tandem with PowerTag, a tiny energy sensor that can be placed over the main incomer in the electrical panel, Wiser is fed with data from all around the home about the electricity consumption, showing precisely what each appliance consumes real time. By communicating with Wiser, homeowners can easily visualise their energy consumption and start to see where they can take action, typically reducing their energy consumption up to 8% on average.





Finding #2

3 easy ways to reduce energy bills at home

According to our research, 65% of homeowners are looking for ways to reduce their energy consumption, but over a third of people (35%) are unsure of how to do so.

65%

However, when looking at the most common action being taken to reduce energy use, our survey found that tackling lighting came out on top and while this is a great start, it only impacts between 2-3% of the average energy bill. Instead, here are three simple and effective ways to make your energy bills more manageable, through reducing consumption and optimising usage.

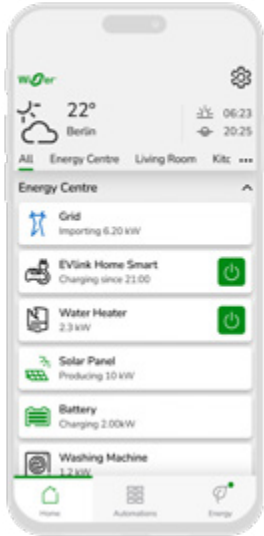


1. Check your tariff

Understanding your energy tariff is paramount. Typically, homes operate on flat, variable, or dynamic tariffs. Variable tariffs incentivise off-peak consumption, while dynamic tariffs adjust rates based on real-time demand.

By knowing your tariff and shifting usage to cheaper hours, substantial savings can be achieved. Turning this understanding into action is key – however, activating your most intensive-energy loads at the right time when the tariff changes is rather complicated to do in practice.

This is where automated energy management systems like Wiser can optimise energy consumption, slashing costs significantly and easing the burden on the individual.



1. 2. Smarter heating

As we explored earlier, heating and hot water accounts for a significant part of our energy bills, making it a key area to address. Smart heating solutions like Wiser can help you save up to 30% in energy use thanks to its multi-zoning capabilities (19% savings) and smart features like Away Mode and Eco Mode (16%), and can even pause the heating while it detects an open window or track the outside temperature to adjust heating schedules and maximise efficiency.



1. 3. Automate your energy usage

Incorporating a Home Energy Management System (HEMS) also enables automated energy management, which will optimise appliance usage to run during the most cost-effective time periods.

This could be achieved in a number of ways, such as...

- Shifting energy-guzzling loads, such as EV charging, to run during off-peak hours as to capitalise on lower tariffs
- Shutting off vampire loads – electronic devices that continue to consume energy while on standby or not in use – to consume energy
- Giving you real-time visualisation of your energy use, to identify appliances that are functioning abnormally and overconsuming
- Efficiently managing surplus solar energy, either by storing it in a battery to be used during peak hours instead of drawing from the grid, or utilising it to run large loads such as the water tank

As technology continues to advance, the future of home energy management looks promising, with innovations like Home Energy Management systems (HEMS) helping to further optimise energy use and reduce running costs without requiring any input.



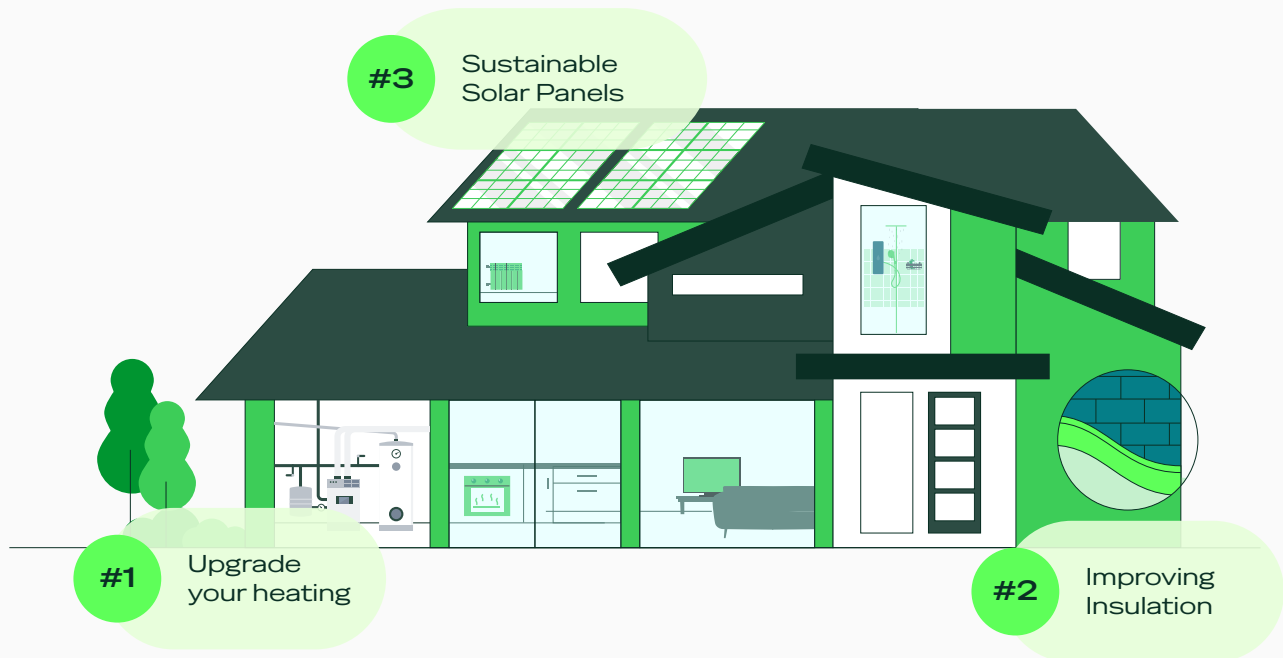
Finding #3

What home improvements could help you save energy?

Alongside the new technology being introduced to homes around the world to reduce energy spend, there are also upgrades you can make to the fabrication of your home.

But what works best is very much down to the individual - should you start with a major investment in becoming energy self-sufficient or are smaller changes to your home more realistic for you right now?

Here are some of the most popular energy saving home improvements and how they could work for you:



#1. Upgrade your heating

Perhaps the most common and accessible home energy improvement you can make is to your heating system. This can be done in a number of ways, including...

- replacing your old inefficient boiler with a new higher-rated alternative
- lowering the flow temperature from 70° to 50° C
- flushing your system to remove any debris that may be causing cold spots on your radiators

Investing in smart heating controls and better managing how you heat your home can also be highly effective and affordable, delivering impressive energy savings and a genuine quantifiable return on investment. By having complete control over your energy usage in the home, you can reduce your bills by at least 30% through features like multi-zone heating control and smart modes.

The Wiser smart heating system allows homeowners to create multiple zones within the home using smart radiator thermostats, each with independent room-by-room heating control.

As well as offering heating control that can be adjusted remotely from anywhere in the world, Wiser also features a number of energy-saving Smart Modes, including Eco Mode and Away Mode to help maximise performance and reduce energy bills. As a Home Energy Management system (HEMS), Wiser can not only provide an overview of your energy use at home, but also automate it to help you save on your bills.

Investment: Average €5 per square metre

Potential savings: 30%

Return on investment: 1 to 2 years depending on the energy tariff in the country

Compliant heating system: gas or electric, radiator and underfloor heating or a mix of both, compliance with some types of heat pumps

#2. Improving Insulation

A well-insulated home can prevent heat loss during the colder months and keep your home cool in the summer, reducing the amount of energy used by heating and cooling systems. It can be a relatively unintrusive solution, often contained to an attic or loft.

The potential for energy bill reductions as a result of insulation work is estimated to be around 30% - however the set-up costs can be high and in turn, it will take longer to see a return on investment.

Investment: €10,000 - €30,000

Potential savings: 20-30%

Return on investment: Up to 30 years

#3. Sustainable Solar Panels

A significant long-term investment in sustainable living, solar panels are a game-changer. By converting sunlight into electricity, solar panels lower your reliance on conventional energy sources and are a step towards energy independence. They can also generate excess energy that can be stored for later use or sold back to the grid.

The upfront cost of installing solar panels can be substantial and the return on your investment will take some time, so it's worth exploring what subsidies and grants are available to offset the upfront costs. Plus, the cost of solar PV panels dropped by 89% globally between 2010-2022 according to the International Renewable Energy Agency (IRENA)*, so there's never been a better time to invest.

*Source: <https://www.irena.org/News/pressreleases/2023/Aug/Renewables-Competitiveness-Accelerates-Despite-Cost-Inflation>

Investment: From €7,000

Potential savings: 50-70% up to self-sufficiency when coupled with battery back-up and intelligent HEMS system, depending on the solar production capacity, the location of the installation, etc.

Return on investment: 10-15 years



Finding #4

What Might Homes of the Future Look Like?

In years gone by, predicting what homes of the future might look like would have likely focused on all manner of new appliances and gadgets to make our daily lives and routines easier and more comfortable.

Crucially now, our homes of the future need to be more sustainable too as we continue to face the imminent challenge of reversing the impact of global warming.

Energy consumption is the number one contributor to CO₂ emissions, so by tackling energy usage and being more energy wise around the home, we are also addressing the carbon issues impacting the planet. Luckily, small individual actions can have a huge impact for our planet.

Here are three key sustainability-focused changes you can expect to see become a top priority in years to come, as homes of the future start to take shape:

Renewable Energy Sources

Renewable energy sources are already featuring heavily in sustainability and energy saving policies and legislation, so expect to see huge strides forward in this field in years to come.

Examples of this include:

- **Solar panels** – Australia has the highest residential solar adoption rate at 37.7%, followed by the Netherlands (24%), Japan (21.5%), Czech Republic (15.1%) and Germany (12.3%)¹
- **Heat pumps** – Norway is leading the way when it comes to heat pumps, with 1 heat pump installed for every 3.4 people, closely followed by Finland (1 heat pump per 4.1 people) and Sweden (1 heat pump per 4.4 people)²
- **Small wind turbines** – North America has dominated the small wind turbine market over the past few years, with the market expected to grow at a compound annual growth rate of 9.2% between 2022 to 2030³

¹<https://www.tigoenergy.com/post/a-solar-powered-future-residential-adoption-on-a-global-scale>

²<https://www.theecoexperts.co.uk/heat-pumps/top-countries>

³<https://www.grandviewresearch.com/industry-analysis/small-wind-market>

Energy Self-Sufficiency and Storage

With more people investing in renewables for their own homes, this also helps many of us become less reliant on the grid, and more self-sufficient when it comes to energy. This can be crucial in areas of the world where power outages are a regular occurrence, whether that be due to grid unreliability or extreme weather conditions.

Excess energy can be stored in batteries, which can be drawn down on during times of grid instability, or used as free energy during the evening, when typically, you would rely on the grid.

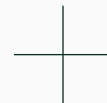
Smart Integration

Eco-friendly homes of the future will harness technological advances to seamlessly support you in managing your energy production and consumption habits.

Steps towards this are already being taken and we see Home Energy Management Systems (HEMS) like Wiser becoming more useful, intelligent and commonplace in years to come. In fact, 59% of people expect a newly built home to be equipped with smart home products, and 45% think it makes a property more desirable.

59%

of people expect a newly built home to be equipped with smart home products



45%

think it makes a property more desirable.

Perhaps this one goes without saying; but right now, we may only be at the very start of understanding the true potential of a smart home and how technology can work in unison with our homes to revolutionise our energy consumption.



When adding new electrical loads, integrating them all into one single app can make monitoring much easier. Without this, you end up with a jumble of apps – one for your solar panels, one for EV and one for heating & hot water – that can't communicate with each other and makes it practically impossible to make the best decisions about your home energy. Instead, by integrating them into **one app like Wiser**, you get **complete visualisation of your home's energy**, from production and storage through to monitoring and control.

Plus, Wiser can help offer **proactive changes** that can increase your self-sufficiency and decrease your energy consumption from the grid. For example, on a sunny day, Wiser will collect energy from the solar panels throughout the day, which is stored in a battery, which can then be used during the evening to heat the water tank and charge your EV, meaning you don't need to rely on the grid during peak hours!

AI technology

As we navigate the complexities of our world, Artificial Intelligence (AI) emerges as a powerful ally that will help us effectively manage the intricacies of energy management within our home.

By harnessing the vast amounts of data from our electrical appliances and major loads, and combining this with a detailed understanding of our individual lifestyles and habits, as well as fluctuating energy costs and external factors like weather patterns, AI will be able to radicalise our home's energy usage through predictive control.

Let's look at how this could impact a home with an electric vehicle for instance...

Step 1

An AI powered system will know how many miles you travel to work each day and what time you need to leave in the morning.

Step 2

It will then factor in your overall energy needs during a typical day, and will particularly focus on the big energy loads: heating, cooling, water heater and EV charging.

Step 3

With this information, it will work out the best time to charge your EV, making sure it runs during off-peak hours when the cost is cheaper, whilst still ensuring you're ready to go in the morning, all without overloading your home's electrical capacity.

Step 4

Instead of charging the vehicle to full, an AI system may potentially charge the vehicle for a shorter period so there's enough mileage for you to travel to and from work, if this could result in cost savings.

We are rapidly moving towards a future where homes intuitively respond to our needs and operate with unprecedented efficiency. But this is not a virtual reality or a science fiction concept; at Schneider Electric we are experts at blending data with expertise, and with 150 years of experience and innovations in managing electricity around the home – through circuit breakers, electrical panels, switches, sockets and home energy apps – we are ideally positioned to bring this futuristic technology come to life in a way that will benefit us all.

AI technology, 100% developed in-house, is now offering a truly unique solution in home energy management, analysing the data around our electrical consumption and making this available in the Wiser app. When integrated with the intelligent electrical panel, the AI function will help homes to meet their energy goals, whether that be energy production, storage, monitoring or control.



Finding #5

Home energy health checklist

If you're ready to start making a change and saving energy at home, here's a quick recap of some of the things you can be doing to make a difference...

1 Explore grants for incorporating renewables into your home, or to upgrade the fabrication through things like loft insulation

2 Install a **room-by-room heating control** system and set temperatures based on occupancy and time of the day

3 Check your **energy tariff** and whether you can shift the energy intensive appliances to a moment when the rate is lower

4 **Insulate and draught-proof** your walls, windows and doors

5 **Replace old light bulbs** with LED alternatives

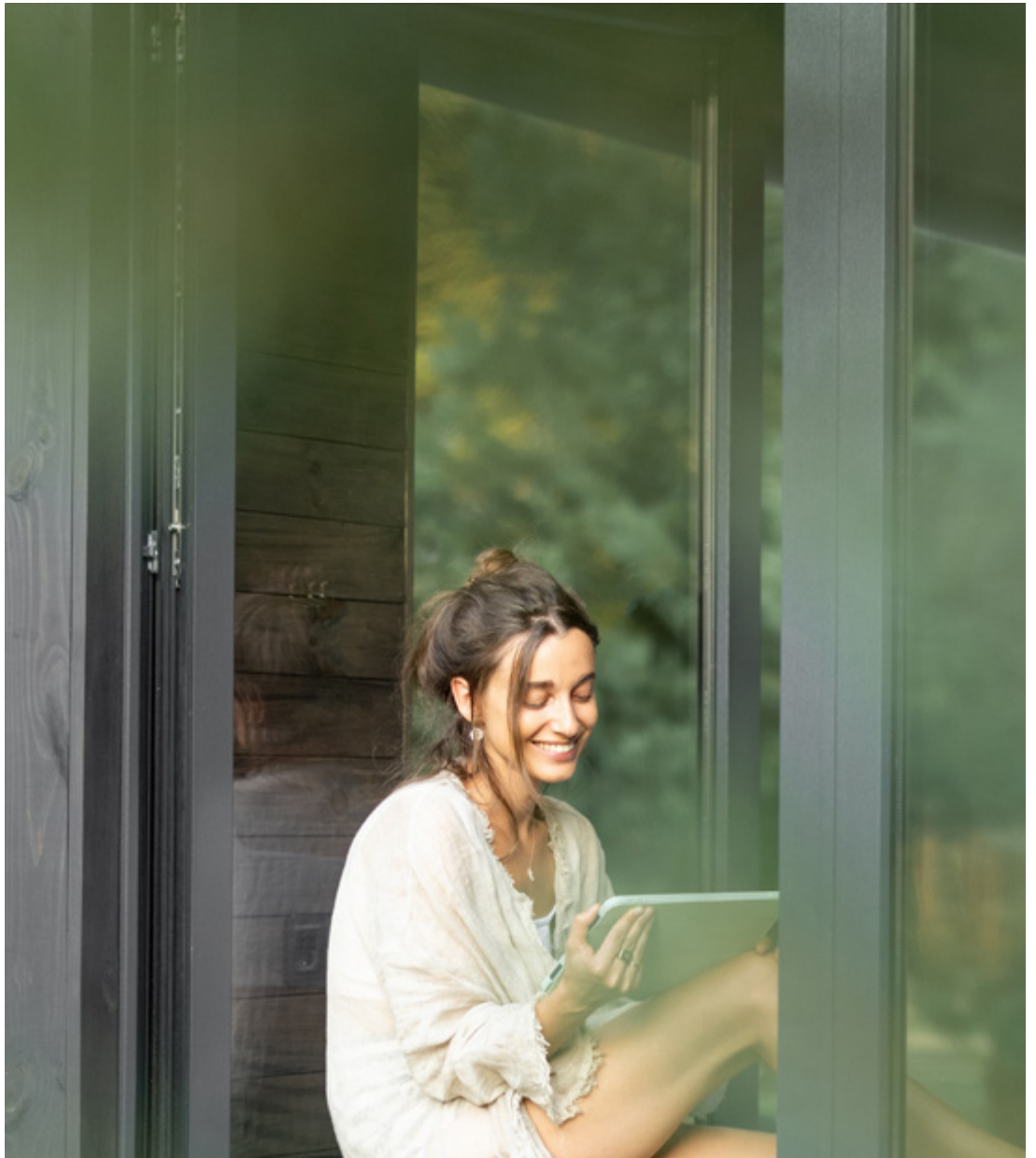
6 **Turn off appliances** on standby mode and unplug any devices not in use, either

7 **Service your boiler**, lower the flow temperature

8 Run your washing on a **lower temperature**

04

Conclusion





Here to help.

The energy crisis has had a profound impact on how we view our energy use, making it more visible to us than ever before. **These challenging times have forced us to find ways to reduce energy consumption.** with many of us compromising on comfort in order to pay our bills.

At Schneider Electric, we are passionate about helping people to be wiser with their energy usage.

Today, it is more important than ever before that we tackle our energy usage – not just to combat the rising energy costs, but also to help reduce our carbon emissions, of which over 20% of those generated from energy are produced by residential homes.

This challenge is very much a shared responsibility, and everyone should want to play their part – after all, small actions done collectively can have a big impact.

As well as helping people to better understand the role energy has to play in shaping the future of our planet, we are also committed to providing solutions that can make this easier like Wiser, which provide crucial insights into energy usage, allowing you to make informed decisions and take charge of your utility bills.

For more information, visit:

<https://www.se.com/ww/en/work/campaign/be-energy-wise>

Additional resources

For more information about better managing your energy use, further information can be found online:

1. UK – Energy Saving Trust

<https://www.iea.org/topics/global-energy-crisis#energy-saving-tips>

2. France – Key steps to save energy

<https://www.ecologie.gouv.fr/chaque-geste-compte>

3. Netherlands – Climate campaign

<https://zetookdeknopom.nl>

4. USA – Energy Saver

<https://www.energy.gov/energysaver/energy-saver>

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Create an energy efficient home

