

Schneider Electric
White Paper

Transforming homes from smart to smart and sustainable

The path to net zero
in the new electric world

Life Is On

Schneider
Electric



Executive summary

Since arriving in our homes, smart technology has put welcome conveniences at our fingertips. Worried that you didn't turn off the stove after leaving for a holiday weekend? Want to create your perfect movie-watching ambience without getting up from your sofa? Need to make sure your security system is alarmed? We can now monitor and adjust the status of the appliances and gadgets in our smart homes at any time, from anywhere, directly from our smartphones. However, with a growing demand for energy in our homes in recent years – and exacerbated by the COVID-19 pandemic – it is becoming increasingly clear that we need our living spaces to be not only smart but also sustainable. The fact is, sustainability today is a global priority. And everyone has a role to play.

A recent study commissioned by Schneider Electric examines attitudes toward energy use and smart home technology across 4 countries in the United States and in Europe. The good news is, smart home technology is going mainstream, with consumers embracing the cost savings, energy efficiency, and home security that it delivers. However, homeowners are less aware that residential buildings will soon be the single largest source of the world's carbon dioxide, responsible for up to 34% of such emissions.¹

The study, which included 4,000 respondents from the United States, France, Germany and Sweden, revealed that consumers largely believe industrial facilities and transportation are responsible for carbon emissions; few cite residential buildings. And when it comes to reducing energy use, most people place responsibilities on business and government rather than themselves. Nevertheless, the majority of consumers believe it is important to reduce their carbon footprint and the amount of energy they use at home.

Bottom line: If we are to achieve net zero emissions globally by 2050, our homes must become more sustainable. And homeowners, along with home builders, property developers, architects, and contractors, are essential players in this effort. Solutions exist today that will allow us to make our homes not only smart, but sustainable, as well.



About the authors

Christophe Melle is the CMO of the Home and Distribution Division at Schneider Electric, the global specialist in energy management and automation. His leadership is focused on bringing solutions to residential and small business customers, as well as consumers' homes, through the company's network of channel partners, including distributors, electricians, and interior designers. Prior to joining Schneider Electric in 2017, he held various marketing and business leadership roles at Philips and HP. He holds a master's degree in mechanical engineering as well as a Philips-internal MBA done in collaboration with Wharton.

Jai Thampi, Senior VP Strategy & Innovation at Schneider Electric's Home & Distribution division, is an established thought leader in strategy, digital transformation, and corporate innovation in B2C and B2B domains. An international keynote speaker, and twice recipient of the 'Most Impactful Smart Cities Leader' global award in 2020 and 2019, Jai also serves as advisor on the board of tech startups in Asia, and has previously held leadership roles in leading multinationals like Cisco, Electrolux, Philips, and Belkin.

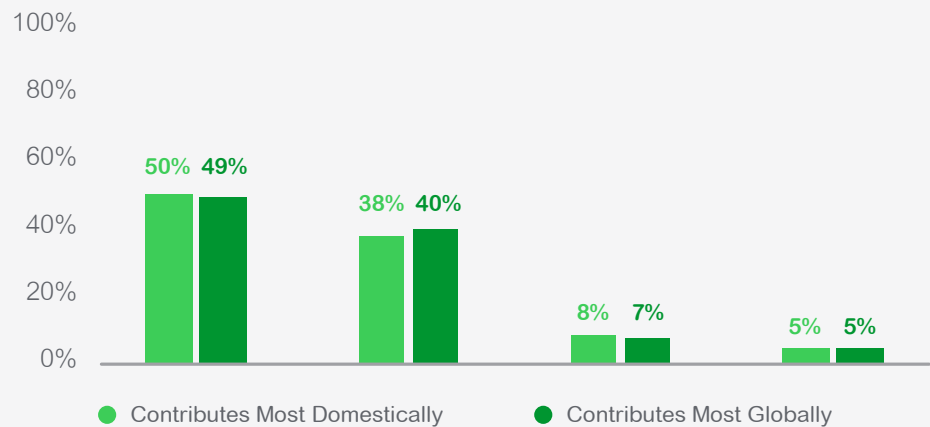
¹ <https://theconversation.com/5-charts-show-how-your-household-drives-up-global-greenhouse-gas-emissions-119968>

Making our homes more sustainable

If our homes are to become more sustainable, they must change. Residential buildings are responsible for more than a third of worldwide carbon dioxide emissions², yet most homeowners are unaware of the impact that their homes are having on our climate.

According to the recent study conducted by Schneider Electric, only 48% of consumers in the United States feel it is their personal duty to reduce energy use at home, and less than one in four feels guilty about the amount of energy they use. Furthermore, most consumers think that large businesses, such as industrial centers and the transportation industry, hold the most responsibility for carbon emissions.

Fig.1 - Perception on the main contributors to carbon emissions



Source:

Schneider Electric sustainable homes survey, Q3 2020

While **34%** of carbon dioxide emissions come from homes, Industrial facilities and the transportation sector are viewed as the top contributors to carbon emissions by a wide margin.

Less than 1-in-10 rank residential buildings as the top contributor – in fact, two-thirds say residential buildings contribute the least among the four sectors, particularly Americans.

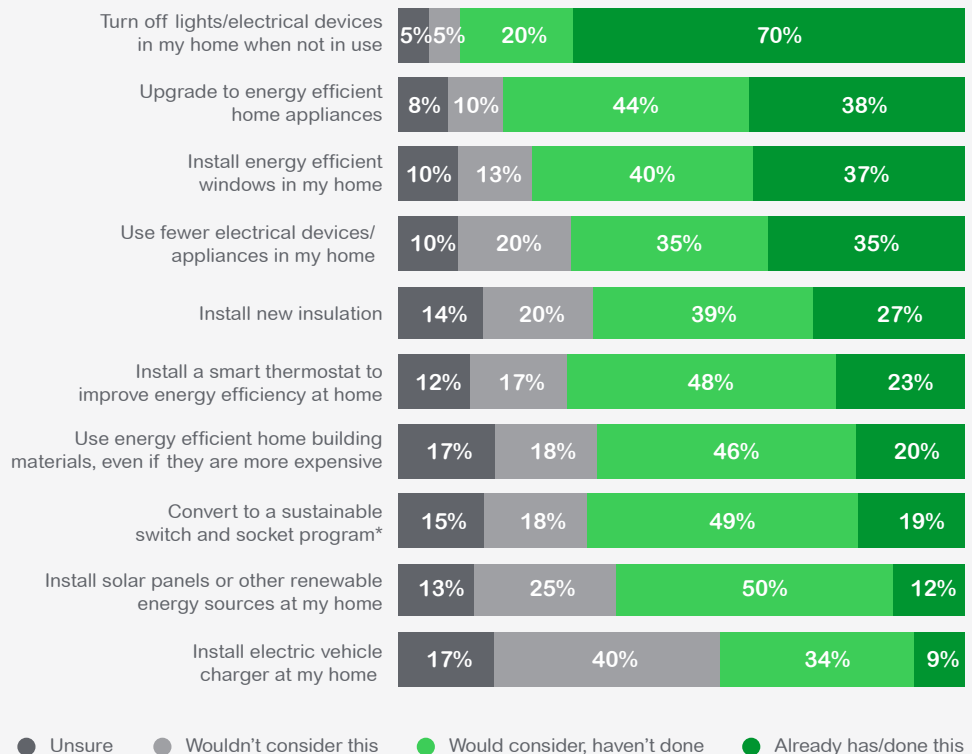
Even though they don't link it to sustainability, energy efficient solutions is a high concern for consumers. Home Builders have a big opportunity to answer concerns from their customers, while at the same time, creating the net zero homes of the future.

² <https://www.pbs.org/newshour/science/5-charts-show-how-your-household-drives-up-global-greenhouse-gas-emissions>

Nevertheless, 45% of homeowners are looking for ways to reduce the amount of energy they use, and 31% would like to find an easy way to track their energy use at home. These last two statistics are encouraging. Active energy management is essential to making homes more sustainable. And while homeowners may embrace this practice primarily to reduce their energy consumption and cost, active energy management will also lessen their home's carbon footprint and work toward making it a sustainable building.

**Fig.2 - Consideration of Ways to Be Sustainable At Home
Among Total**

Though they don't push that as the top priority for their homes, consumers are still looking for ways to make their home more sustainable, and they especially seek for energy savings



*Note: Only German consumers were asked about this action

Source:

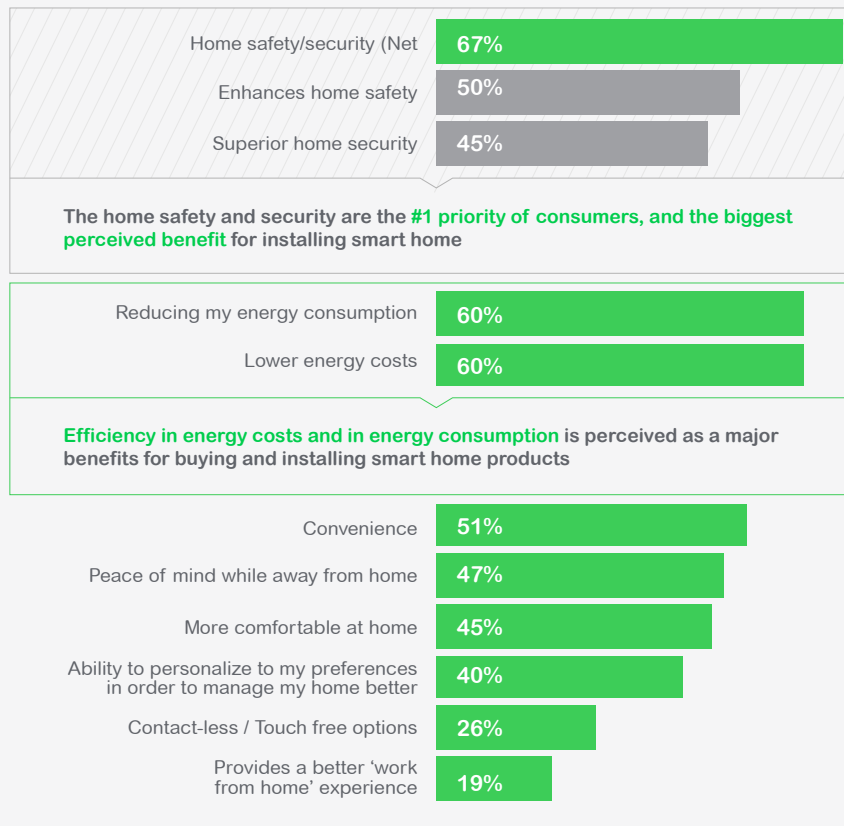
Schneider Electric sustainable homes survey, Q3 2020

Meeting resiliency challenges

Escalating energy use at home in recent years has generated two growing concerns. The first involves electrical faults. Electrical fires cost homeowners in the United States and Europe more than **3,6 billion every year**³, and much of this damage can be avoided if we make our homes more resilient.

The second concern relates to sustainability and the impact of carbon emissions on the environment. Extreme weather events due to climate change, including wildfires, storms, and heatwaves, are increasing in both frequency and intensity. Such weather not only endangers lives, but also represents an ongoing threat to power continuity, which is crucial to life at home. This is compounded by the record number of people now working and learning from home. According to findings from the Schneider Electric study, 67% of consumers place safety and security at the top of the list of smart home benefits, followed by reduced energy consumption and costs, which are mentioned by 60%.

Fig.3 - Safety, security and energy efficiency are high in the perceived benefits of smart home technology



Source:

Schneider Electric sustainable homes survey, Q3 2020

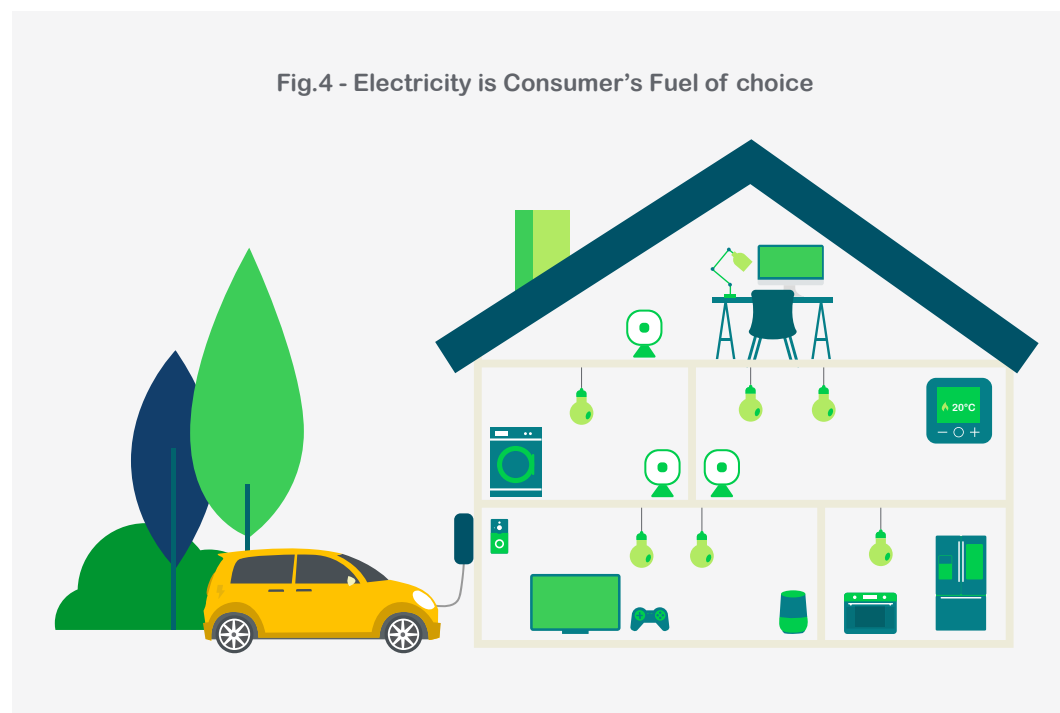
³ Observatoire National de la Sécurité Électrique for EU, Electrical Safety Foundation International (ESFI) for the US

The ubiquitous connectivity made possible by smart technology helps ensure protection against fire and natural threats, as well as dangers posed by humans. Electrical products and processes that meet cybersecurity certification standards guard against cyber threats. Energy management software optimizes usage efficiency.

And electricity options beyond traditional providers, thanks to microgrids and onsite energy generation and storage, ensure power continuity in the event of outages. The pandemic has heightened the importance of such continuity, especially in the US where 38% of consumers now place a stronger priority on having reliable, high-speed access to the Internet.

Countering consumption with efficiency

Demand, not supply, drives energy transitions. Our lives at home involve more electric gadgets and appliances than ever before, with electricity becoming consumers' fuel of choice for cooking, lighting, and powering household electronics. A growing number of people are now charging electric vehicles at home, representing a significant new increase in home electricity use. At the same time, the cost of energy is rising.



In response to this one-two punch to a homeowner's wallet, the best defense is to practice active energy management. By combining smart devices with energy management software, homeowners can take control of their electricity consumption and achieve optimal efficiency.

As noted earlier, lower energy costs and reduced energy consumption are among the top benefits identified by homeowners who own a smart home device. This is especially true of Boomers, with 75% of them more likely to focus on the benefits of cost savings in their consideration of smart home technology.

A comprehensive home energy management system provides the ultimate payoff, delivering hyper-efficiency while advancing sustainability. In the near future, net zero homes will be possible as demand-side management solutions couple multiple energy sources, including onsite and microgrid supplies, with the loads of everything from appliances and EVs to HVAC systems.

Adding a personal touch

Smart solutions make life easier, increase safety and comfort, and add value to residential properties. According to the Schneider Electric study, 37% of consumers say that smart home technology makes a home or rental more desirable.

Source:

Schneider Electric sustainable homes survey, Q3 2020

Fig.5 - Attitudes Towards Smart Home Products

37%

think that smart home makes their home more desirable

32% Sweden
34% France
35% Germany
48% US



The continuing pandemic is likely to reinforce this perception. In the new normal, the need to carve out places within the home that cater to the needs of each family member has gone from a nice-to-have to a must-have. Smart technology and digitization make it possible, giving us greater control over our home's functionality while enabling us to create spaces that foster productivity, comfort, and well-being.

Architects, home builders, and contractors are taking notice of consumer interest in smart home technology, and for good reason. According to the Schneider Electric study, 36% of consumers believe smart home products should be standard in newly built homes.

Fig.6 - Attitudes Towards Smart Home Products

41%

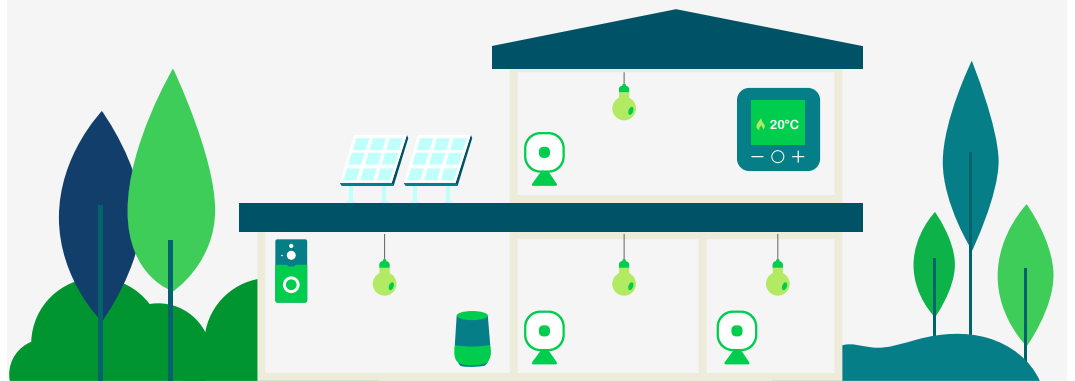
would expect a newly built home or apartment **to be equipped with smart home products**

25%

would **pay more** for a home, condo, or rental if it came **equipped with smart home technology**

Source:

Schneider Electric sustainable homes survey, Q3 2020



In the future, residential living will be a more personalized experience, with smart technology enabling the home to interact with individual family members and provide actionable insights and advice for each of them. For example, your smart home system can tell you when to do your laundry or run your dishwasher based on your utility's time-of-use electricity rates; help you plan your solar energy usage based on upcoming weather forecasts; automatically adjust lighting in different rooms at different times of day based on the season; and so much more.

Living smart after Covid-19

Extrapolating from the Schneider Electric study's finding that 37% of respondents have considered changing their homes since the onset of the pandemic, as many as 3.3 million of the residents of New York City could be in the process of moving or have already done so. With this flight to less densely populated suburbs and the countryside, new construction is on the rise, as well as retrofits of existing homes.

Fig.7 - Consumers willing to change housing since pandemic

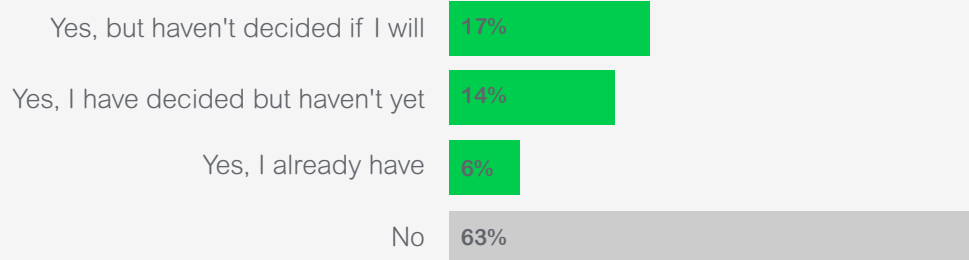
37%

have considered changing housing since pandemic, among which 6% already did

43% US
37% Sweden
35% France
34% Germany

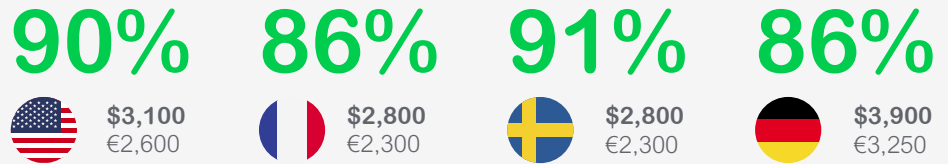
Source:

Schneider Electric sustainable homes survey, Q3 2020



Accompanying these relocations is a willingness by consumers to make changes to reduce their energy use. Already 70% are turning off lights and electrical devices in their homes when they are not in use. Consumers are also ready to invest in solutions that may help to conserve energy, with on average willing to invest €2600 on energy efficient home improvements in the next three years.

Fig.9 - Willingness to invest in energy efficient home improvement and desired average budget for it in the next 3 years.



Source:

Schneider Electric sustainable homes survey, Q3 2020

Fig.9 - What does €2,600 in Smart Home Tech Products look like?
 US Consumers willing to invest roughly €2,600 on Home Energy Efficiency upgrades in next three years



In the post-Covid world, consumers will have more control over their home’s energy usage, making it easier to conserve resources and reduce the impact on environment and their home energy bills.

The path to net zero homes

Net zero homes are growing in popularity because they produce as much energy as they consume, resulting in a zero energy bill and a carbon-neutral home. There is an ever-increasing array of tools and technologies that make net zero homes achievable, including:

- Solar panels
- Energy-efficient certified appliances
- Geothermal pumps
- Smart thermostats
- Weather-sealed doors and frames
- Radiant floor heating



According to Navigant Research, net zero housing stock is expected to increase by 28% between 2019 and 2028, from 57,800 households to 534,500.⁴ And nearly half the world's GDP is now generated in places where regulators have set or are proposing to set targets to bring carbon emissions to net zero by or before 2050.

⁴ <https://www.smart-energy.com/industry-sectors/energy-grid-management/global-net-zero-energy-homes-market-record-28-growth/>

An essential component of net zero homes is an energy management system. Wisely by Schneider Electric lets people monitor and control their energy use through smart technology.

The Wiser approach to sustainable homes

Wiser is a fully open system, able to interact with different platforms and devices, and allowing users to monitor their home's connected and non-connected devices with a mobile app. Among its capabilities, the Wiser solution:

- Keeps tabs on a home's electrical activity from anywhere via a phone or tablet
- Provides insights into energy use for greater savings
- Sends mobile alerts when appliances turn ON or OFF
- Works with ecosystems like Amazon Alexa®, Google Home™, and integrates with many leading interoperable smart home devices

Wiser™

Smart and Sustainable Homes

Wiser also lets homeowners set energy usage goals, estimate monthly energy bills, and take proactive action to cut energy waste. If your home is solar-equipped, you can view solar generation, take advantage of cheaper, off-peak energy, and monitor the return on your solar investment. Safety concerns? The system detects electrical use and sends notifications via the app, like when your garage door opens or if you forgot to turn off your curling iron.

Conclusion

If the world is to meet ambitious goals for climate-neutrality by 2050, residential buildings must play an essential role. Currently they are responsible for up to 34% of carbon dioxide emissions. A study by Schneider Electric shows that many consumers embrace smart technology for the energy efficiency and cost savings that it delivers. They also believe it is important to reduce their home's carbon footprint. Solutions are available now to put homes on the path to net zero emissions, including Wiser by Schneider Electric. Equipped with these proven tools, homes can become more sustainable, resilient, efficient, and personalized. Homeowners will be able to save money and energy while doing their part to save the planet.

Key Report Findings

- 1 With many topics of concern competing for consumers' attention, 'energy efficiency' resonates better than sustainability or climate change.**

Two-thirds of consumers feel home energy efficiency is important, while only half feel carbon emissions are a threat and that reducing their home's carbon footprint is important.
- 2 Consumers believe industrial facilities and transportation are responsible for carbon emissions – few fault residential buildings. And, most place responsibility on business and government to reduce energy usage rather than on themselves.**

Less than half feel it's their personal duty to reduce energy use at home and less than 1-in-5 feel guilty about the amount of energy they use; however, 41% are still looking for a solution to track energy use and ways to reduce home energy costs – though it can't be at the expense of comfort.
- 3 Privacy, cybersecurity, and cost are barriers to smart home tech adoption; however, energy & cost savings potential – plus increased home security & safety – keeps consumers interested.**

Just under half of consumers would be concerned about their privacy while using smart devices and think that smart home tech is just too expensive, but the same proportion are also interested in how these products can reduce home energy bills, and over two-thirds recognize the safety/security benefits of smart home tech. There's also a general openness to upgrading to energy efficient appliances, installing a smart thermostat, and using energy efficient home building materials – even at an additional cost.
- 4 People acknowledge smart home tech makes life easier, makes their home more comfortable, and makes a home more desirable, but top benefits across countries are reducing energy consumption and lower energy costs.**

Across device types, consumers who have smart home tech are satisfied with their purchase and would do so again. They cite ease of use and energy savings are their top motivators for purchasing.
- 5 Despite covid-19-related work, education, and lifestyle shifts, less than half (4-in-10) have considered changing their housing situation. Among those who are looking for a change, a smart tech-equipped home could be a selling point for some.**

The changes consumers seek in a new home are mixed as some are looking for a larger home, yet 1 in 5 are looking for a smaller home. A private outdoor space is also a key attribute of an ideal home today. A quarter of consumers would pay more for a home with smart home technology, and more than a third find it does make a home more desirable and feel it should be a standard in new construction – particularly among American consumers: half say they expect smart home tech to be a standard in new builds, and they're more likely than other countries to pay a premium for smart tech-equipped homes.

To review the complete study or for more information, visit se.com/ww/en/work/campaign/homes-of-the-future.

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