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GREEN BUILDER[®]

November/December 2023 / www.greenbuildermedia.com



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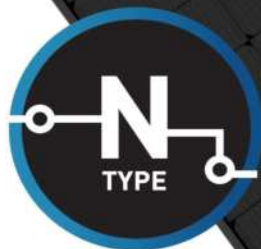
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Motivation? Nothing motivates corporate boardrooms like taxes that cut into their bottom line. CREDIT: AI GENERATED IMAGE

I read a [thoughtful article](#) by freelance writer Katarina Zimmer this week, suggesting that human beings might still turn the tables back on the climate emergency. The author cites research by Tim Lenton of the University of Exeter in the United Kingdom, suggesting that we're not living up to our potential in terms of actively changing course.

The key is money. Make "dirty" choices cost more than clean ones, and change will follow. For example, in the UK, operating coal plants became unprofitable in 2015. Since then, the island has almost completely evolved beyond coal, faster than most believed possible. In Norway, EVs account for 80 percent of new car sales, despite climate skepticism. The key? Remove taxes for purchasing one, and reduce what commuters pay for tolls. Bada bing.

We live in an upside-down world. Let me give you just two examples of destructive normalcy that could be "flipped" into positive results in the U.S.: electricity production and transportation, the two biggest polluters in the nation.

Flying is cheaper than trains. Airlines received \$43.97 billion in federal subsidies in 2022. Amtrak got \$4.3 billion the same year. Going by train emits [about 30 times less CO₂](#), not to mention the high-altitude impacts of plane travel. Yet, you can fly from Boston to Houston round trip for about \$124. The lowest-priced train trip would be about \$441. Flip it.

Fossil fuels are far more subsidized than solar or wind. Although it's tough to get an accurate read, fossil fuel subsidies in the U.S., based on our percentage of global pollution, add up to about \$1 trillion in 2022. By comparison, solar got about \$15.6 billion. That's double what it got in 2021, thanks to the infrastructure bill passed by the Biden Administration, but it's still only 1.56 percent of what finite fossil fuels gobbled up. Flip it.

FLIP IT

Want systemic change? Make clean choices **cheaper than dirty ones.**

Let's talk about carbon taxes. Nobody likes taxes, but without them, our increasingly inequitable society would look even more polarized. Real-world use of carbon taxing shows a rapid impact on corporate behavior. CEOs can turn on a dime, it turns out, when profits are on the line, converting to "greener" modes of traveling, transporting goods, packaging and manufacturing almost overnight.

In the UK, Zimmer notes that "the nail in [coal's] coffin was a [carbon tax](#) the government introduced in 2013, charging companies around \$14 and later \$27—for every ton of carbon it burned. Though modest, it was just enough to create a [tipping point](#) where coal, the most carbon-intensive form of energy, became more costly to burn than gas."

Coal plants soon were sitting idle, as companies sought to avoid the tax. That's what we call a positive tipping point. Hitting one is not some distant milestone. It's as simple as a policy change that makes burning fossil fuels more expensive than installing solar; eating meat more expensive than buying organic vegetables; flying to Walt Disney World three times as costly as taking the train; building a net zero house 20 percent cheaper than one that just barely squeaks past the code (not to mention the lifetime savings on operation and maintenance).

It's not fair to blame homeowners and builders for the brunt of climate woes. We play a part in the problem (and the solution), but a relatively small one when compared with transportation, agriculture and energy. Big business needs to make big changes, even if we convert all of the nation's housing stock to net-zero, low-impact living.

So the next time you hear a talking head on your TV use the term "carbon tax," don't dive for the remote. As I've said for many years, we need carrots and sticks to get industry to change rapidly. Right now, however, it's time to double down on sticks. Make bad behavior hurt. The reality is that our old system of living and making things isn't just dirty, it's mired in inefficiencies that are costing us more every year. Flip it. **GB**



Matt Power
Editor-in-Chief

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Home Prices Set for Downward Turn?

The loss of baby boomers and arrival of younger buyers could correct the market, according to Wall Street's 'Oracle.'

Historically low house supplies in the U.S. have led to skyrocketing prices since the beginning of the pandemic, when demand surged and mortgage rates were relatively low. But a generational shift will result in a significant price correction over the next few years, according to a report by renowned financial analyst [Meredith Whitney](#).

Whitney, once referred to as "the Oracle of Wall Street" after she predicted the financial crisis of 2008, says "it's just a matter of time" before the balance between supply and demand changes and home prices come tumbling down.

A big catalyst will be baby boomers, the youngest of whom are approaching age 60 and are putting homes on the market in an effort to downsize and save money. Meanwhile, as of 2021, only 10 percent of homeowners were under age 35, according to the U.S. Census. The flood of available houses will drive prices down and give younger generations a chance to become first-time home buyers, Whitney says.



Downtime? A generational change—where retiring baby boomers leave the housing market—will bring the days of higher home prices to an end within the next few years. CREDIT: FSTOP123/ISTOCK

Various economic factors mean prices are likely to drop more significantly in states like Pennsylvania, Connecticut, New Jersey and Illinois. However, the correction should not lead to a crash of the market, Whitney stresses. **GB**

Heat Pump Market to Double by 2030

A coalition of 25 governors plans to add 20 million units to the residential housing market by decade's end.

In an effort to transform the U.S. building sector and phase fossil gas out of new and existing buildings by switching to clean energy, 25 governors have committed to installing 20 million heat pumps in homes by the end of the decade. That will more than double the U.S. Energy Information Administration's recent count of 18 million heat pumps in homes nationwide, according to a release by the climate action coalition [U.S. Climate Alliance](#) (USCA).

USCA's announcement comes as the heat pump industry is on the upswing. According to USCA, in 2020, for the first time, more U.S. homes used electricity for space heating than natural gas. In every month of 2022, heat pump shipments have outpaced those for gas furnaces. A heat pump can also save the average homeowner about \$370 annually.

According to USCA, this new commitment will turbo-charge those



Pumped up. Heat pumps are the choice of 25 governors who hope to double the number of units in the residential housing market by 2030. CREDIT: WELCOMIA/ISTOCK

trends and bring the U.S. in line with the pace of heat-pump adoption of the European Union, which is targeting 30 million heat pump installations this decade. Panama Bartholomy, executive director of the Building Decarbonization Coalition, calls the announcement "the clearest signal yet that America has gone all-in on heat pumps." **GB**

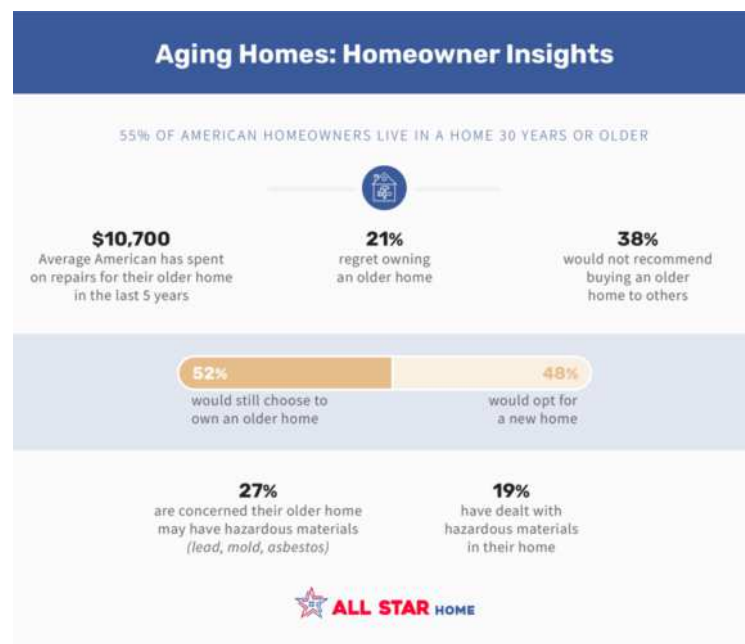
Old Homes Mean Age-Old Problems for Owners

One-third of owners would not recommend buying a home that is more than 30 years old to others.

More than half of all American homeowners live in a house that is at least 30 years old. More than 1 in 5 regret it. And yet, most homeowners would rather live in an older dwelling instead of a newer one. Those are key findings from a survey conducted by Raleigh, N.C.-based housing renovation firm [All Star Home](#).

In general, older homes do not sit well with U.S. buyers. According to the survey, 38 percent of people who own dwellings of 30-plus years would not recommend buying an older home to others. Twenty-seven percent of owners are also concerned about the presence of hazardous materials such as lead, mold and asbestos; 19 percent have already dealt with such problems.

Still, “the charm of an aging home trumps the sometimes tricky challenges and necessary repairs,” [the company notes](#). Those who want an older home



Old time charm? Owning a home that was built before 1993 is a mixed bag—some people are paying tribute to a classic, while others think it’s too expensive to upkeep. SOURCE: ALL STAR HOME

should start their search in some classic locales: The cities with the most dwellings built before 1939 are Buffalo, N.Y., St. Louis, Cleveland, Pittsburgh and Boston. People who prefer newer residences can begin a search in Nevada, Arizona, Alaska, Florida and Texas. **GB**

All-Electric Homes Can Help Conquer CO₂ Emissions

Local policies aimed at cities and towns can clear the air just as well as national ones.

Passing policies that require electrification on all new residential construction nationally would eliminate almost 140 million metric tons of carbon dioxide between 2023 and 2030—the equivalent of stopping more than 156 billion pounds of coal from being burned, according to a new report by three U.S. environmental research groups.

The report, “[Roadmap to Fossil-Free Homes: Where Local Building Electrification Policies Would Have the Greatest Impact](#),” by Stand.earth Research Group, SAFE Cities, and Lead Locally, offers a large-scale overview of the emissions reductions possible nationwide via local-level building-electrification policies. “This new research makes it clear that ensuring new buildings are all-electric from the start prevents decades of locked-in emissions,” says



Cleaner skies. Requiring new homes to be all-electric will prevent the burning of billions of pounds of coal for energy over the next seven years.

CREDIT: MADMAXER/ISTOCK

Nathan Taft, senior campaigner for SAFE Cities. “[It also] affirms how essential it is that these policies are implemented rapidly in as many places as possible.”

But implementation doesn’t have to be universal for mass effect. The findings show that targeting policies to specific areas can be exceptionally effective. For example, 52 percent of gas emissions from residential buildings constructed between 2023 and 2030 could be eliminated by passing policies in just 63 metropolitan areas and their surrounding counties. **GB**

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FEATURES

12

THE STATE OF SUSTAINABLE BUILDING 2024: RESIDUAL EFFECTS

Despite high interest rates, elevated home prices, inflation, and inventory shortages, the housing sector marches on.

BUILDERS: BY THE NUMBERS14

COGNITION Smart Data reveals marked progress in the adoption of sustainable products and technologies, and cautious optimism about the market.

CONSUMERS: BY THE NUMBERS20

Inflation and high interest rates have caused consumers to cut back spending on travel, entertainment and home renovations.

NOTABLE TRENDS23

Companies with decarbonization strategies have positive brand equity, create more loyal employees and customers, and mitigate risk better than those without.

CLIMATE DISCLOSURE: CHANGES AFOOT27

As demand for decarbonization and ESG expands, so does the need for enhanced accountability, transparency and reporting requirements.

32

VISION HOUSE SUSSEX: THE BIG REVEAL

Vision House Sussex is ready for its closeup.

40

THE FOREVER HOUSE: FROM BUILDING SCIENCE EXPERIMENT TO FOREVER HOME

Building science experts converted an uncomfortable 1970s energy guzzler into a home for the 21st century and beyond.

50

MARIPOSA MEADOWS: THE HAND OF MAN

A forever home is more than the first reaction to “curb appeal.”



DEPARTMENTS

02 Editor's Note

06 News

56 Housing 2.0

64 Tailgate

HERE'S A SAMPLE OF WHAT'S INSIDE:

“The biggest benefit to selling an all-electric home to homebuyers was not cost savings, but rather reducing the homeowners’ environmental impact and being able to offer healthier, higher performance, and more-comfortable homes.” **PAGE 14**

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Residual Effects

Despite high interest rates, elevated home prices, inflation, and inventory shortages, the housing sector marches on.



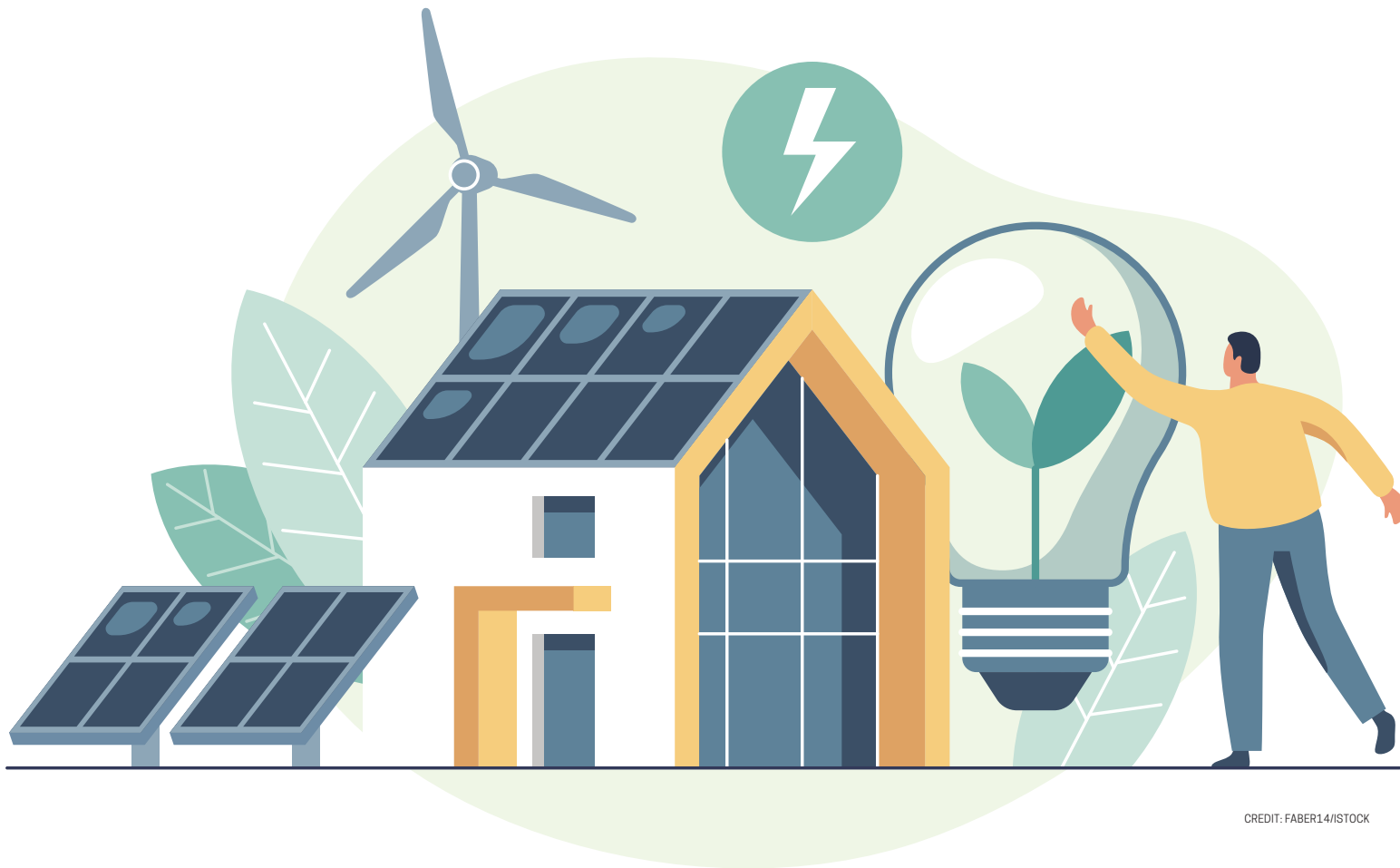
BY SARA GUTTERMAN

Strange are the market dynamics in the housing sector these days. Even with the financial pressures caused by inflation and high mortgage rates, new home starts and sales are surprisingly stable, mostly due to low existing home inventory levels and solid millennial and Gen Z household formation rates.

While economic conditions are forcing builders to offer incentives such as mortgage buydowns, reduced prices, and discounted upgrades, the majority of builders indicate that they are optimistic about the housing market and

believe that Inflation Reduction Act (IRA) incentives will have a positive impact on their businesses by increasing demand for energy efficiency upgrades and electrification technologies.

Consumers are certainly feeling the squeeze, reporting that they're cutting back on expenses by up to 20 percent, but their interest in sustainable homes continues to grow. Financial conditions are driving increased awareness about operations and maintenance costs, and consumers express willingness to invest in energy efficiency, electrification, healthy home, water, smart home, and solar plus storage upgrades if it will lead to reduced cost of homeownership over time.



CREDIT: FABER14/ISTOCK

BUILDERS: BY THE NUMBERS

Green Builder Media's market intelligence division, **COGNITION Smart Data**, keeps its finger on the pulse of builder and consumer insights. A recent survey revealed marked progress in the adoption of sustainable products and technologies, and cautious optimism about the market.

Builder respondents from coast to coast and representing a broad spectrum of housing categories (entry level, move up, semi-luxury, luxury, custom, multifamily, and mixed-use) indicated that they are selling homes mostly to millennials, followed by Gen Xers, baby boomers, and Gen Zs.

These builders conveyed that the biggest challenges impacting their ability to sell homes are material prices, inflation and interest rates, labor challenges, and mortgage rates.

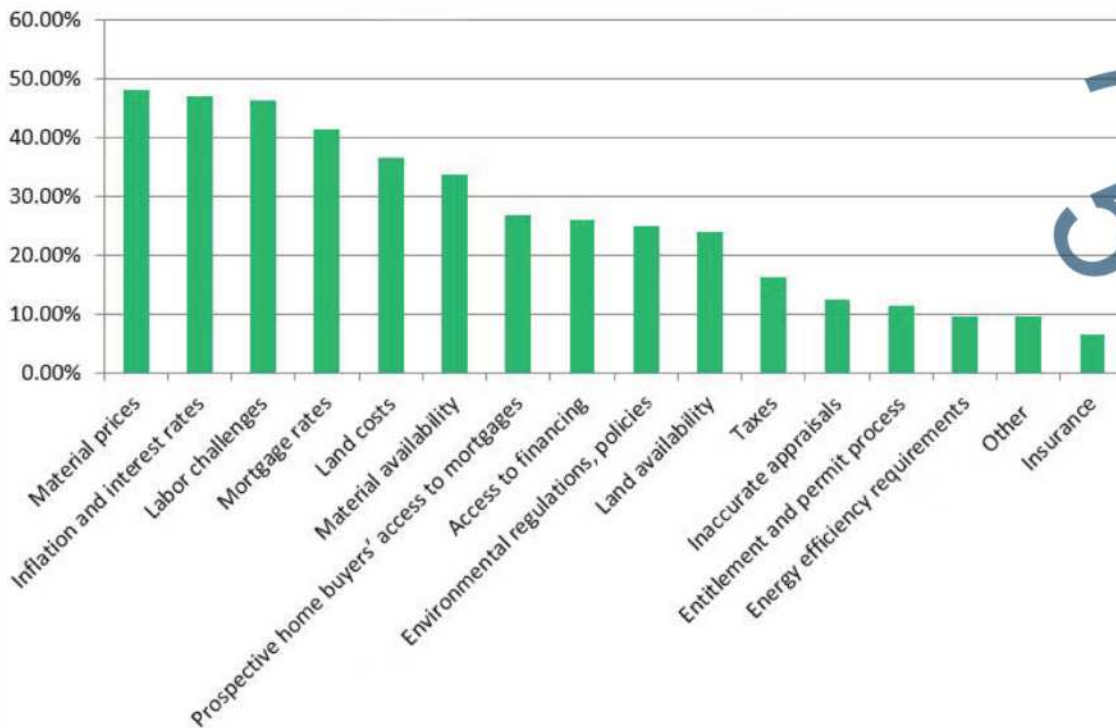
Due to economic conditions, builder respondents are offering mortgage rate buydowns, reduced home prices, and free or discounted upgrades in order to boost sales.

Forty-seven percent of builder respondents say that they are reducing home prices by 1 to 3 percent, 35 percent are dropping prices by 4 to 6 percent, and 15 percent are slashing prices by 7 to 10 percent.

Builders are also cutting costs in the office, reducing spending on staffing, sustainability upgrades for their projects, and general business growth.

Fifty-one percent of builders report that they have ratcheted back their business spending by less than 10 percent, but 34 percent report that they are cutting business spending in the 11 to 20 percent range.

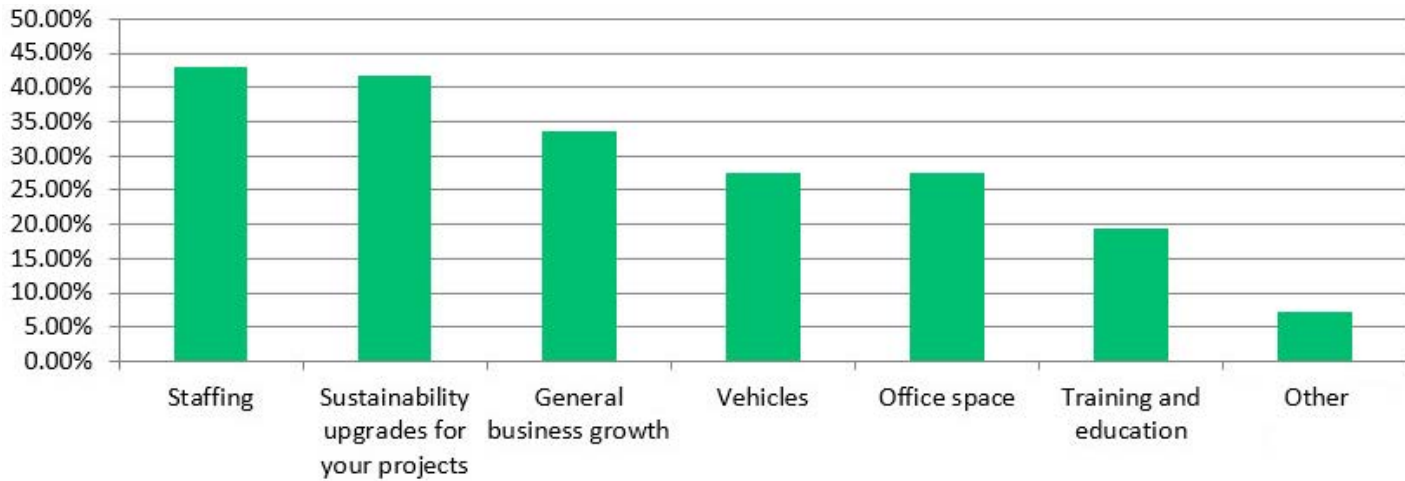
Are any of the following impacting your ability to sell homes?



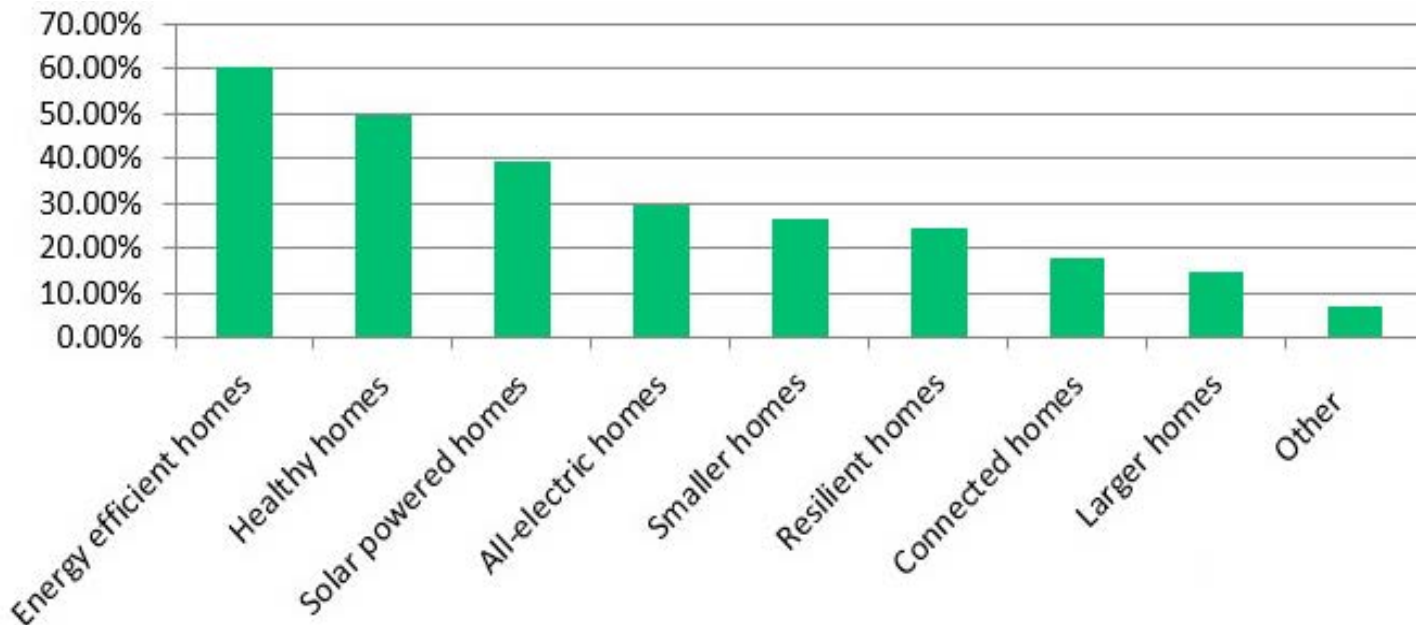
Are current economic conditions causing you to do any of the following to boost sales?



Have inflation and high interest rates caused you to curb spending in any of the following areas in your business?



How has consumer demand changed in your market? Do buyers want:





Continuous impact. COVID is no longer directly impacting the construction business, but builders still feel a pandemic hangover in terms of labor shortages and supply chain issues.

DANIEL INGELHART/ISTOCK

While 55 percent report that COVID is no longer impacting their business, 45 percent still feel a hangover from the pandemic, mostly in the areas of labor shortages and supply chain issues.

Forty-five percent of builders claim that climate events are impacting their ability to get insurance for projects.

Some good news for the sustainable building sector: Builders report a marked increase in demand for energy efficient, healthy, solar powered, all-electric homes. In fact, 60 percent of builders report that more of their customers want energy-efficient homes, 50 percent say that interest in healthy homes has increased, and 40 percent claim that buyers now want solar powered homes.

Builder respondents report an uptick in interest in energy-efficient insulation, windows, doors, and lighting, as well as smart home systems, heat pump technology, and solar plus storage systems.

Indicating a shift away from the lowest upfront cost valuation metric to full cost, builders assert that their homebuyers are willing to pay more for sustainability upgrades if they will lower their ongoing cost of homeownership. These upgrades include:

- Solar plus storage (75 percent)
- Energy efficiency (71 percent)
- Electrification (70 percent)
- Healthy home (70 percent)
- Smart home (62 percent)
- Resiliency (61 percent)
- Water conservation (54 percent)

To address changes in the housing market, 38 percent of builders are considering incorporating modular and prefab homes and systems into their offerings, 32 percent are considering pursuing

multifamily projects, and 30 percent are looking into affordable housing using IRA or other government subsidies. Sixty-eight percent are using their products to address the vastly underserved “missing middle” housing category in their markets.

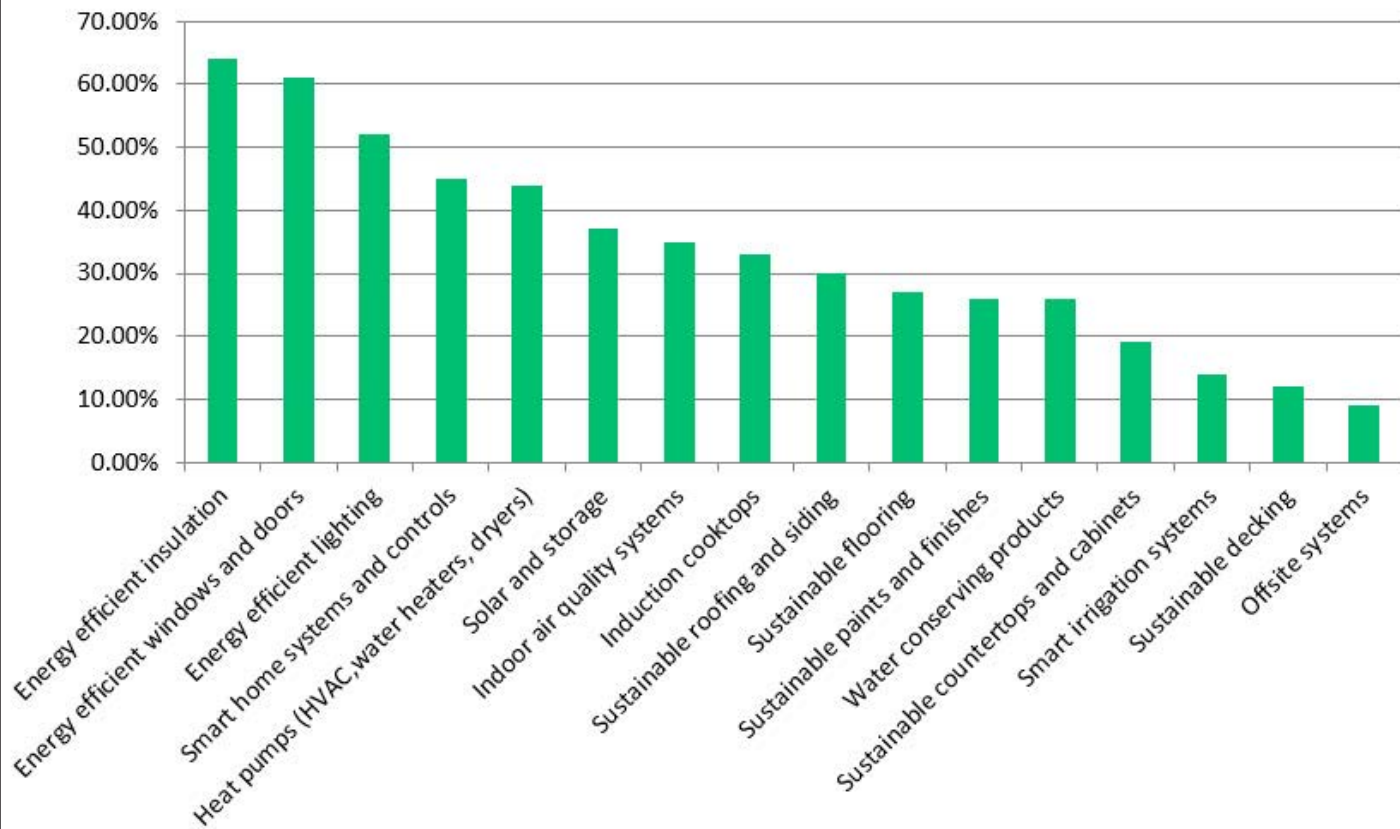
When asked about Environmental, Social and Governance (ESG), builders report that they’re engaging in strategies such as:

- Building energy-efficient homes equipped with efficient appliances and systems
- Considering adaptive reuse, retrofitting, building smaller (right-sizing buildings), and dematerialization design strategies (e.g., structural system optimization)
- Implementing programs to retain employees and heighten employee satisfaction
- Implementing board compensation and oversight policy for ESG

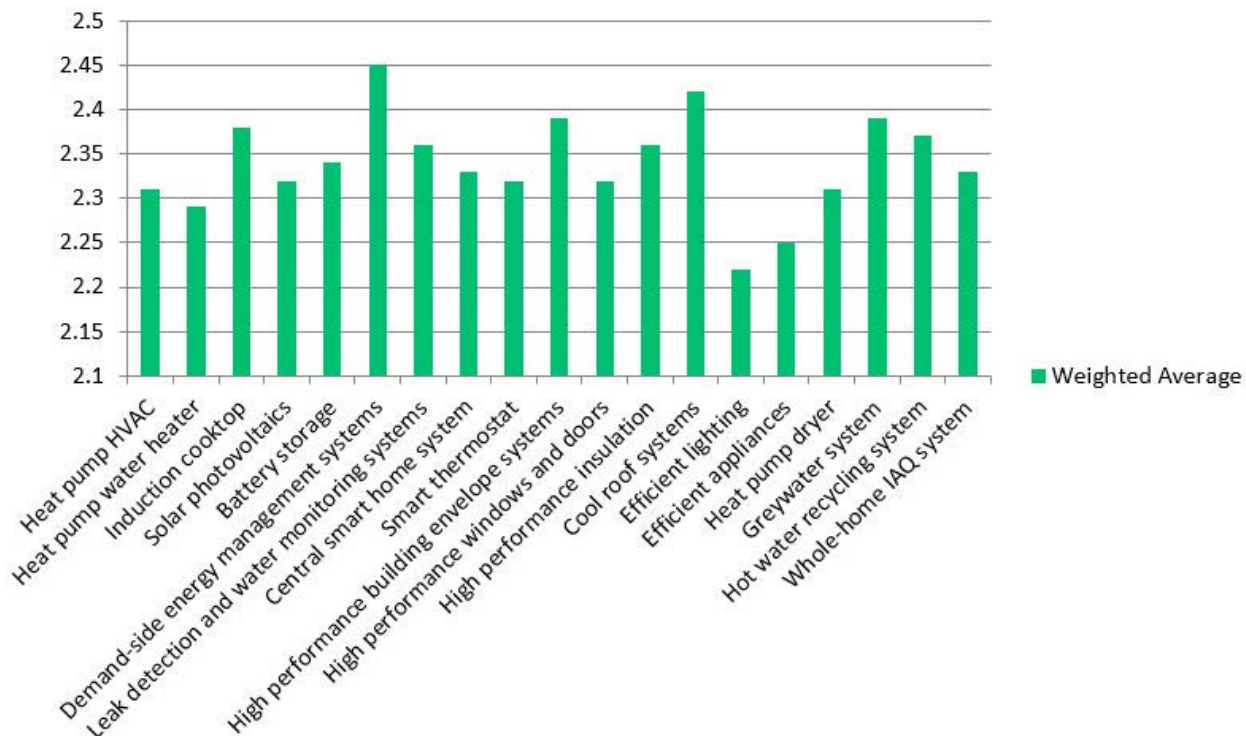
Overall, builders have a positive sentiment with respect to market conditions. While they recognize that home prices and mortgage rates remain high, fueling affordability concerns, they claim that low inventory, cooling inflation, a robust jobs market, and solid housing fundamentals give them confidence that the housing market will remain strong.

Even though they remain concerned about labor challenges, material shortages, and supply chain issues, more than 75 percent of respondents said that they are optimistic about the long-term prospects of the housing market. Nearly 85 percent of builders report stable finances and access to funding, and they point to a solid construction backlog that they believe will carry them into 2024 and beyond.

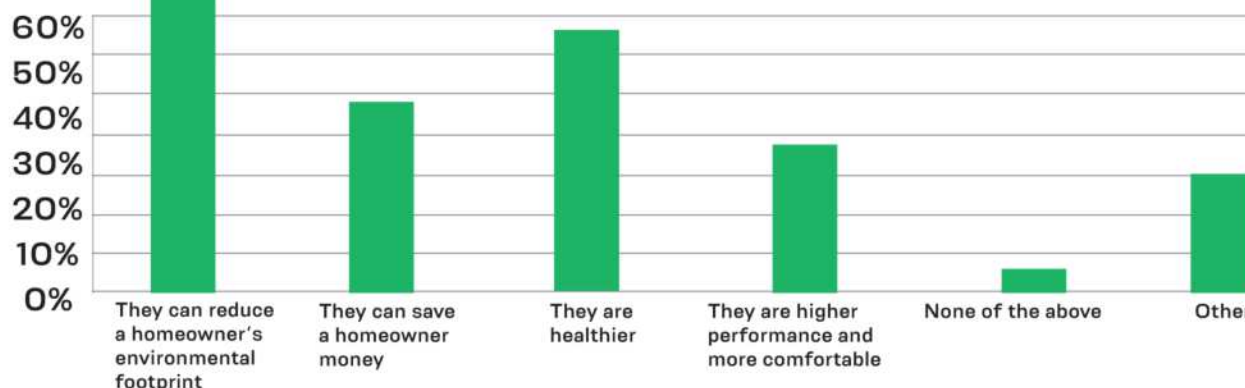
Are you seeing increased demand for any of the following?



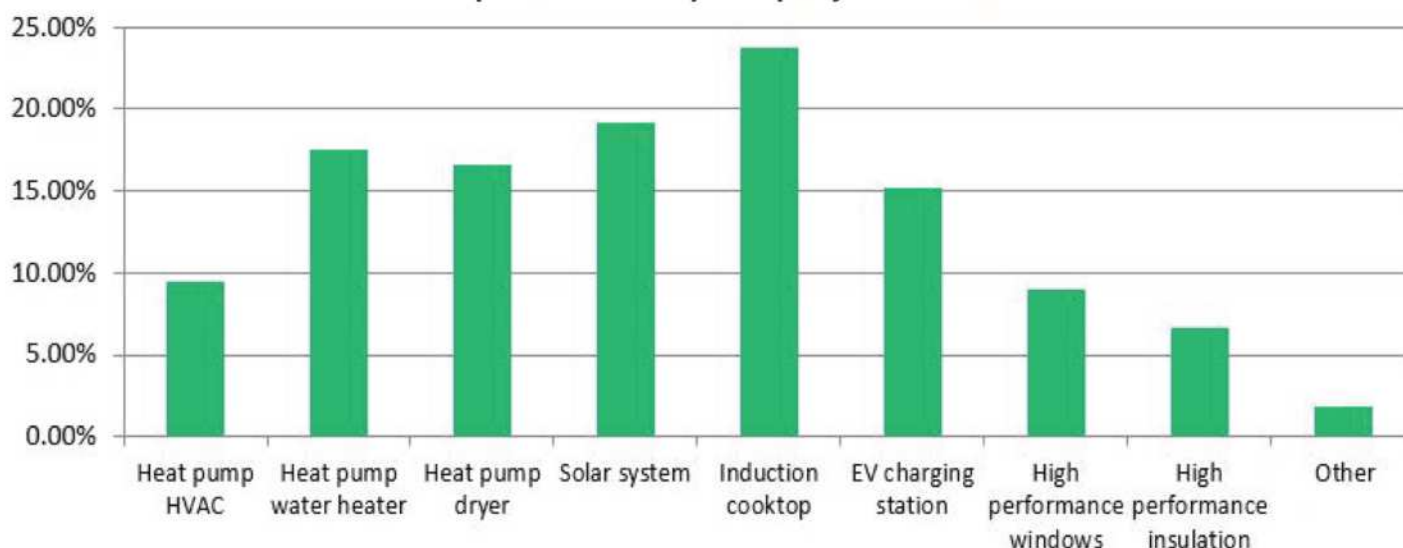
How willing are you to embrace the following technologies?



What are the biggest benefits to selling an all-electric home to homebuyers?



Will you use IRA incentives to install any of the following products in your projects?



Respondents reported a high level of interest in embracing energy-related technologies such as demand-side energy management systems, high performance building envelope systems and insulation, cool roof systems, and induction cooktops. They also reported high interest in water solutions such as greywater systems and water management devices—reflecting steadily growing demand by consumers and municipalities for solutions that will yield a net zero energy and water result.

Nearly 75 percent of builders claimed that they are interested in building and selling all-electric homes. The 25 percent that were unwilling or unsure expressed concerns about fluctuations in future grid-tied energy costs.

Builders indicated that the biggest benefit to selling an all-electric home to homebuyers was not cost savings, but rather reducing the homeowners' environmental impact and being able to offer healthier, higher performance, and more-comfortable homes.

More than 60 percent of respondents indicated that they plan to use IRA funding for upcoming projects, as well as tax credits for their business operations.

They also claim that IRA funding has incentivized them to offer more

energy efficiency, electrification and solar plus storage upgrades.

Specifically, respondents claimed that they will use IRA incentives to install products such as induction cooktops, solar systems, heat pump technologies (water heaters, HVAC, and dryers) and electric vehicle (EV) charging stations in their projects.

KEY TAKEAWAYS

When correlating these builder insights with recently gathered [data](#) about consumer preferences, purchase drivers, and behaviors, it's clear that there is unprecedented opportunity to transform the built environment for all stakeholders involved in the home design, construction, and buying process.

Windfall funding from the IRA and Infrastructure Bill will drive the adoption of sustainable products and enabling technologies, allowing manufacturers to fast-track product development, builders to enhance the value of their projects, and homeowners to access cost-effective energy efficiency and electrification upgrades.

If we do this right, the homebuilding industry will jump light years ahead of where we are today in a short amount of time. **GB**



Money minded. Consumers are having a tough time deciding how they want to spend their income when it won't go as far, thanks to inflation—a fact that is impacting home sales nationwide. CREDIT: Z WEI/ISTOCK

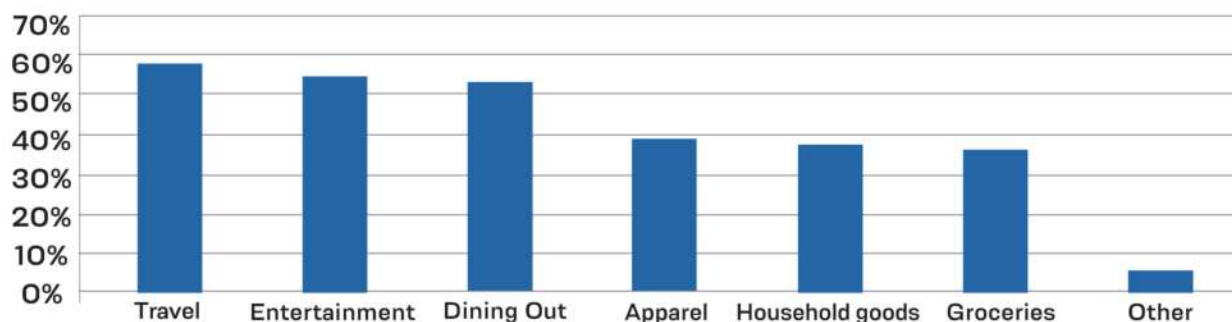
CONSUMERS: BY THE NUMBERS

Analysis of the consumer responses to the recent COGNITION survey provided equally interesting insights. Consumers report that inflation and high interest rates have caused them to cut back spending on travel, entertainment and dining out. Forty percent of consumer respondents indicated that they are curbing spending by 11 to 20 percent.

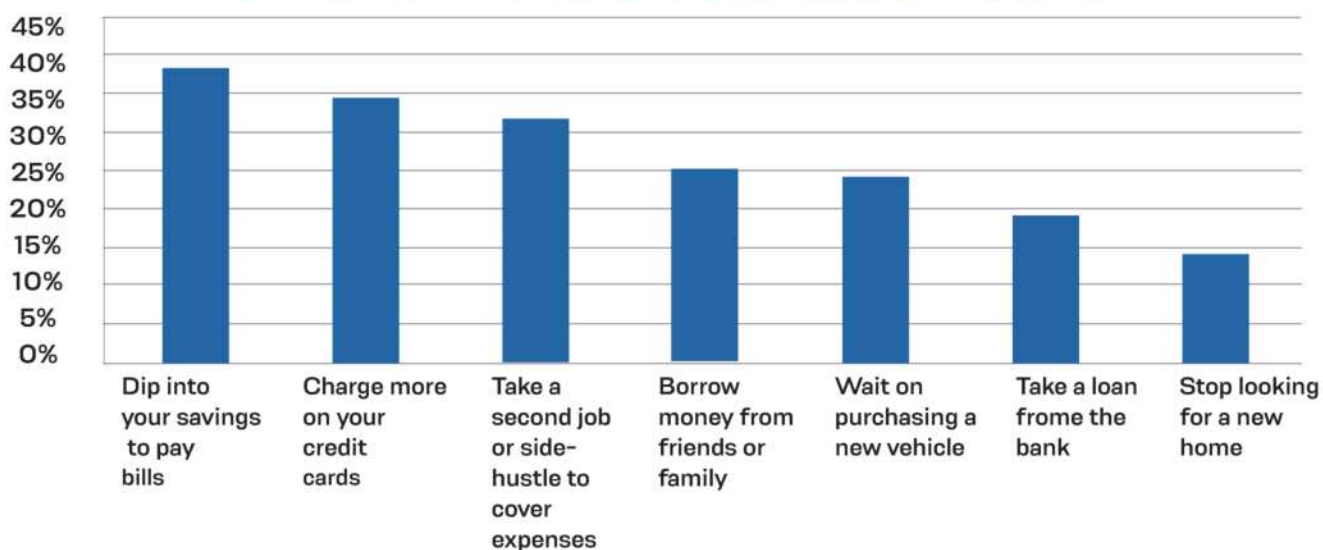
Due to current financial conditions, 39 percent of consumers report that they have had to dip into savings to pay bills, 35 percent are charging more on credit cards, and 31 percent are taking on a second job or side-hustle to cover expenses.

Consumers are clearly struggling: 45 percent say they're having a hard time covering daily expenses and 31 percent are having problems keeping up with things such as utility bills and home renovations.

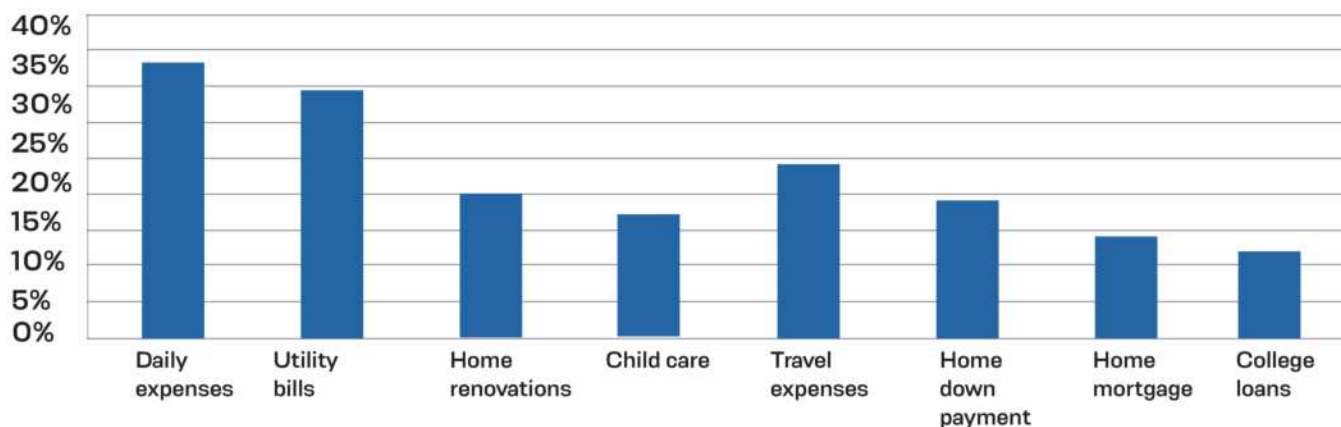
Have inflation and high interest rates caused you to curb spending in any of the following areas?



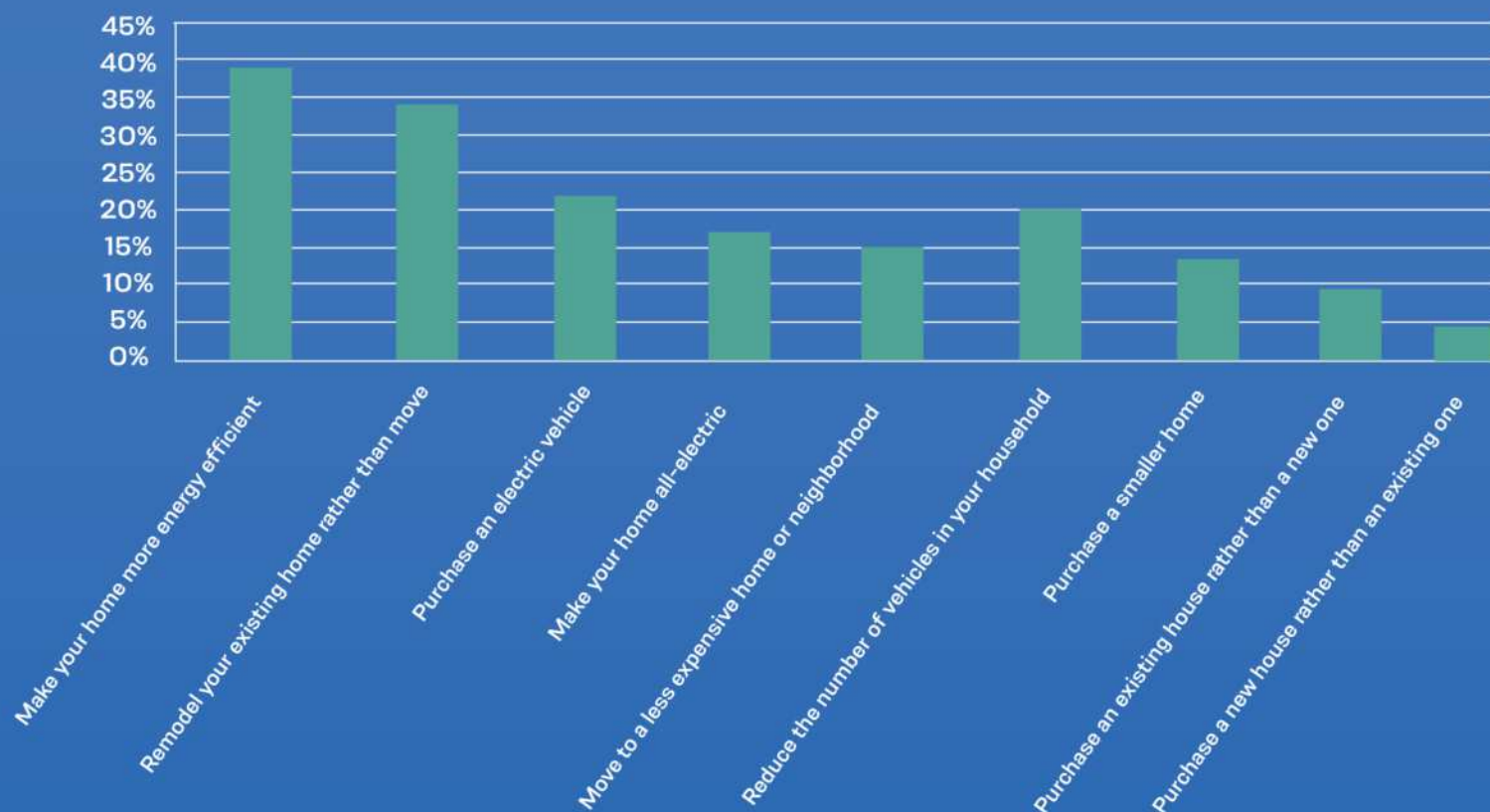
Due to current financial conditions, have you had:



Are you having trouble affording:



Given current economic conditions, are you more inclined to:



Given current economic conditions, 39 percent of consumers report that they're inclined to make their home more energy efficient, 35 percent plan to remodel rather than move, 21 percent plan to purchase an EV, and 18 percent plan to convert their home to all electric.

Forty-eight percent of consumers say that they're more focused on long-term value and ongoing operating costs when purchasing a home, showing a marked change in how buyers make homebuying decisions, and indicating that lowest upfront cost is no longer the only—or best—metric to use when valuing a home.

Forty-six percent of consumers report that climate events are impacting their ability to obtain insurance for their homes. **GB**

NOTABLE TRENDS



As we analyze and interpret our COGNITION data and what it means for our annual *State of the Industry* report, we recognize some notable trends.

MOMENTUM FOR DECARBONIZATION

Our economy is quickly **decarbonizing** as countries, companies, and individuals find ways to reduce their environmental footprint and minimize carbon emissions. The process is facilitating innovation at an unparalleled scale, unleashing potential for colossal capital gains across all sectors of the economy.

In the building sector, the conversation is quickly shifting from net zero energy, which measures the ongoing operations of a home or building, to net zero carbon. This takes into account the embodied carbon from material extraction, transportation, manufacturing, installation, operations, all the way through to end-of-life-use for the products and materials.

COGNITION data shows that consumers are a central force in driving the transition to decarbonization. Consumers believe that companies with decarbonization strategies have positive brand equity, are more innovative, create more loyal employees and customers, and mitigate risk better than those without.

Consumers are actively taking steps to decarbonize their own lifestyles by driving EVs, increasing the energy efficiency of their homes, reducing waste, converting their homes to all-electric, and installing solar.

Consumers say that they're willing to pay more for packaging, vehicles, apparel and even homes that are decarbonized.

What does that mean for homes? It means that they're purchasing products and materials that will increase energy efficiency: high-performance insulation, windows, doors, roofing and building envelope systems, electrification technologies such as heat pumps for HVAC, water heating and dryers, and induction cooktops. They will also demand side energy management systems, as well as EV chargers.

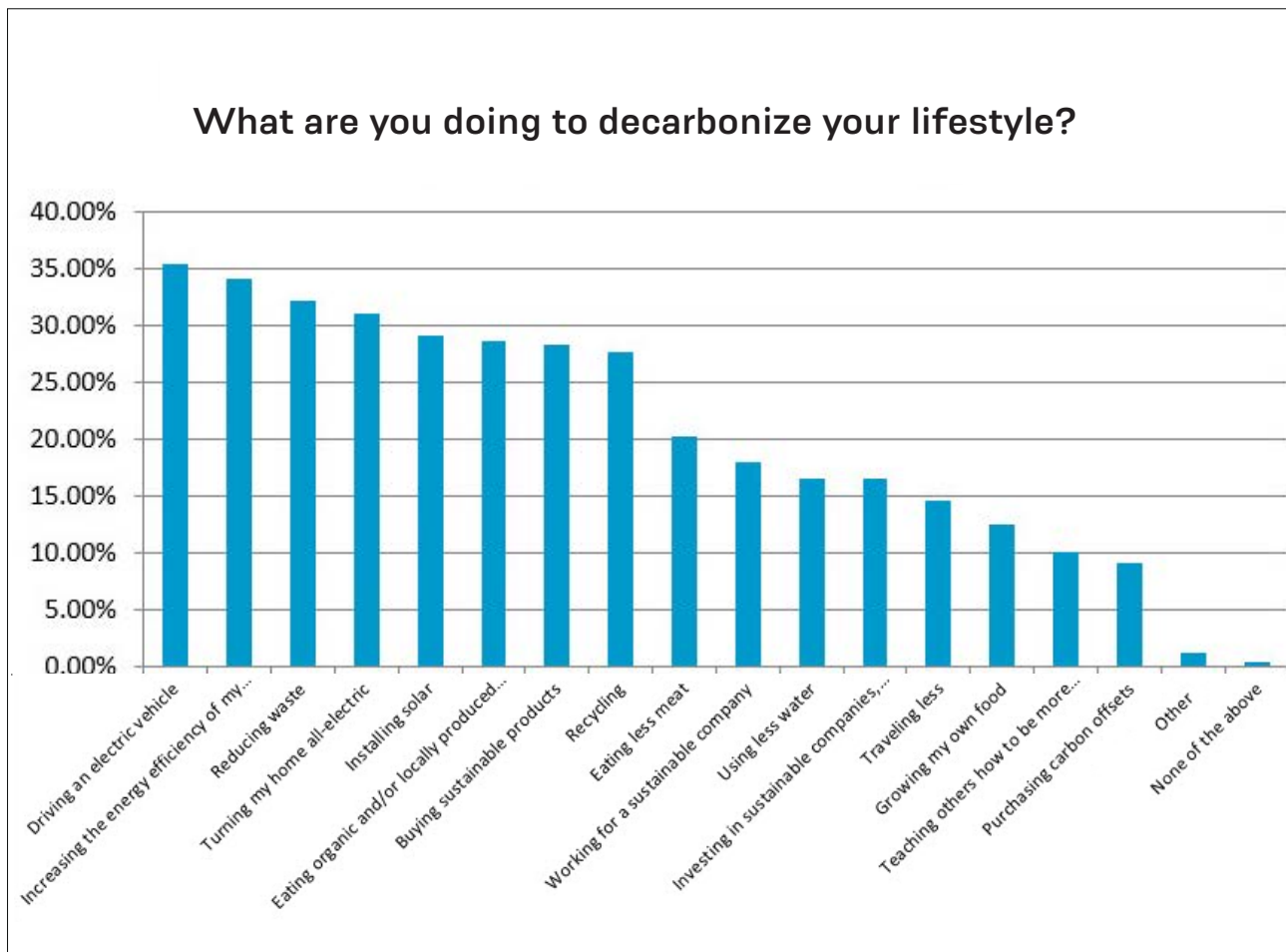
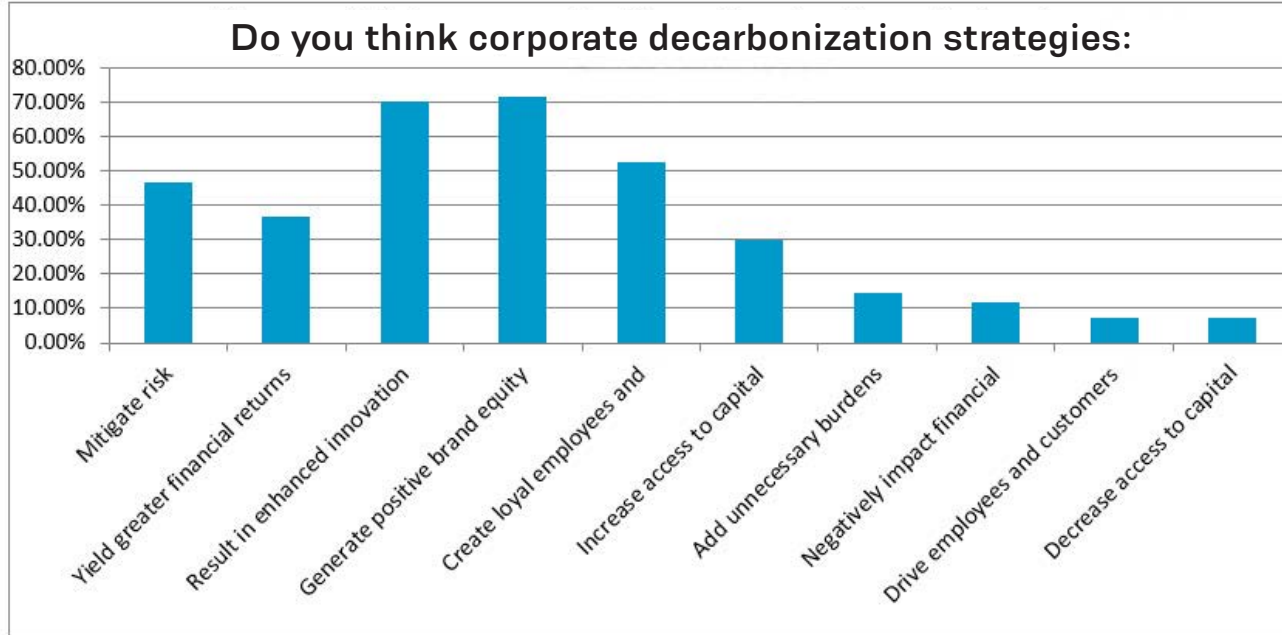
RISE OF NET ZERO CARBON HOMES

According to the **International Energy Agency (IEA) 2023 Net Zero Roadmap**, which outlines scenarios to keep the planet under 1.5 degrees Celsius warming, demand for a decarbonized built environment can't grow fast enough. The report highlights the need to double the annual rate of energy efficiency improvements for homes and buildings and dramatically increase the pace of electrification of homes and buildings through the adoption of heat pumps and other advanced technologies.

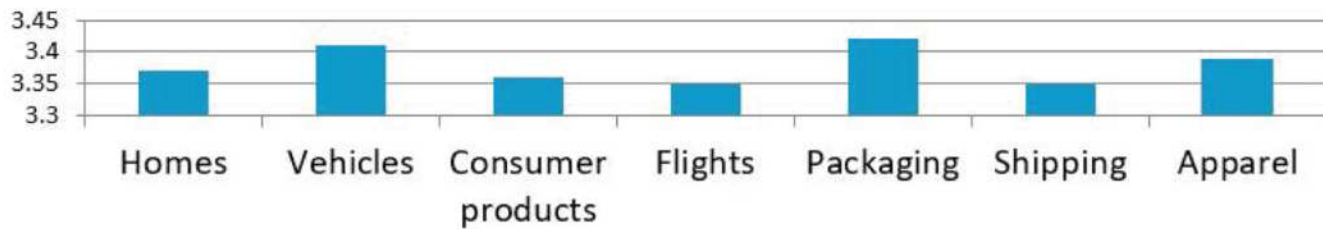
Fortunately, the topic of net zero carbon homes seems to be creeping into the vernacular of many leading builders—not just the hardcore greenies such as Thrive Home Builders, but some national production builders as well, such as KB Home, Meritage, Beazer, and Pulte.



Worthwhile purchase. Net zero homes such as The Cove community in Sacramento are also stylish and affordable—two key traits that attract new homebuyers. CREDIT: COURTESY OF BEAZER HOMES



Are you willing to pay more for decarbonized solutions in the following areas?



Net zero carbon homes include:

- High performance building envelope systems, insulation, windows, doors and roofing to optimize energy efficiency
- Renewable energy, namely solar plus storage
- Electrification technologies such as heat pumps for HVAC, water heating, and clothes dryers, and induction cooktops
- Demand-side energy management systems that help manage energy usage with peak load shifting and time of use pricing to reduce grid stress and save money

Today, getting to net zero carbon requires a painstaking process of meticulously implementing best sustainable design, construction and building science practices, specifying materials with low embodied carbon and Environmental Product Declarations (EPDs) or equivalent certifications, and, at least for now, purchasing high-quality carbon offsets.

No doubt, the process of creating a net zero carbon home is intricate at best in today's market. But, just like green building has evolved over the years, so, too, will decarbonizing the built environment. The more builders set out on the journey, the less opaque the process will become.

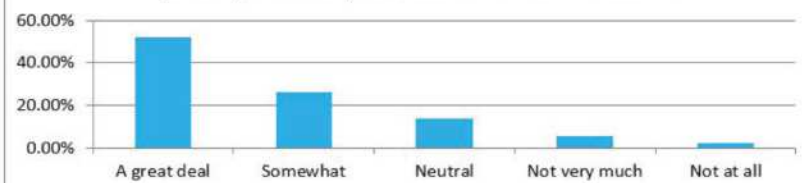
THE ESG IMPERATIVE

Beyond decarbonization, consumers—and investors—are pulling through commitments to Environmental, Social and Governance (ESG) strategies. COGNITION data shows that 60 percent of consumers believe that companies with strong ESG strategies are more likely to have greater long-term financial success than those without, and nearly 75 percent have stopped purchasing products from a company because of concerns over their sustainability practices.

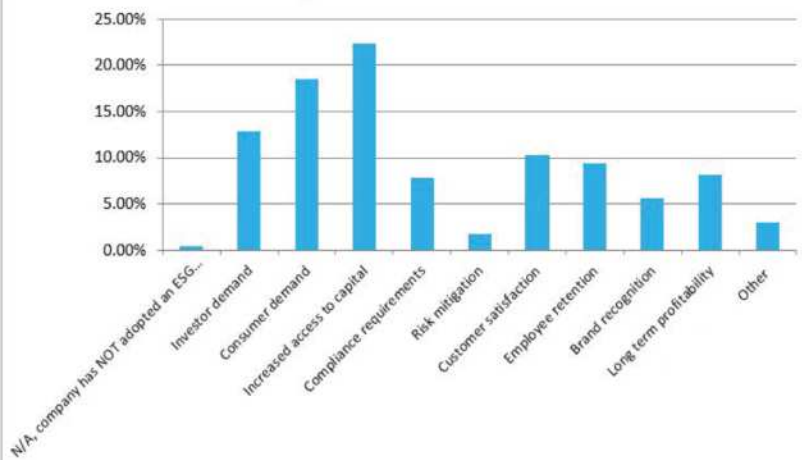
More than 75 percent of consumers also indicate that they are more likely to choose a home or residence from a company with strong ESG commitments, and interestingly, customers now believe that companies with stalwart ESG practices have higher quality products than those without.

Builders are adopting ESG practices at unprecedented rates, primarily to increase their access to capital and respond to mushrooming consumer and investor demand.

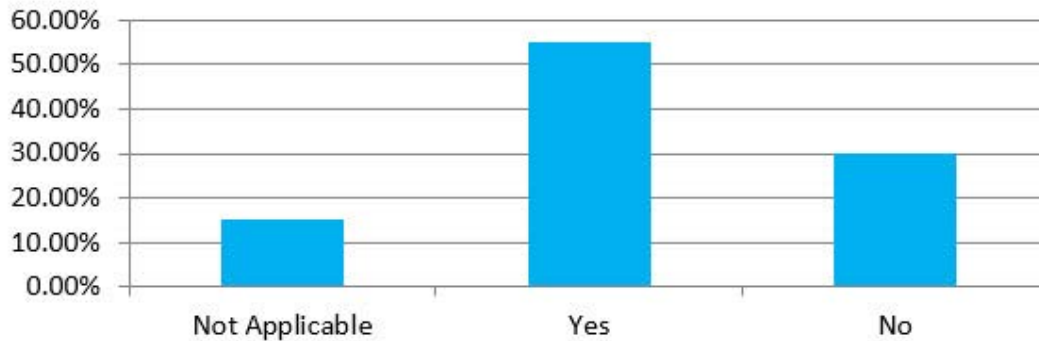
How much do you believe that a company's ESG practices impact the quality of its products or services?



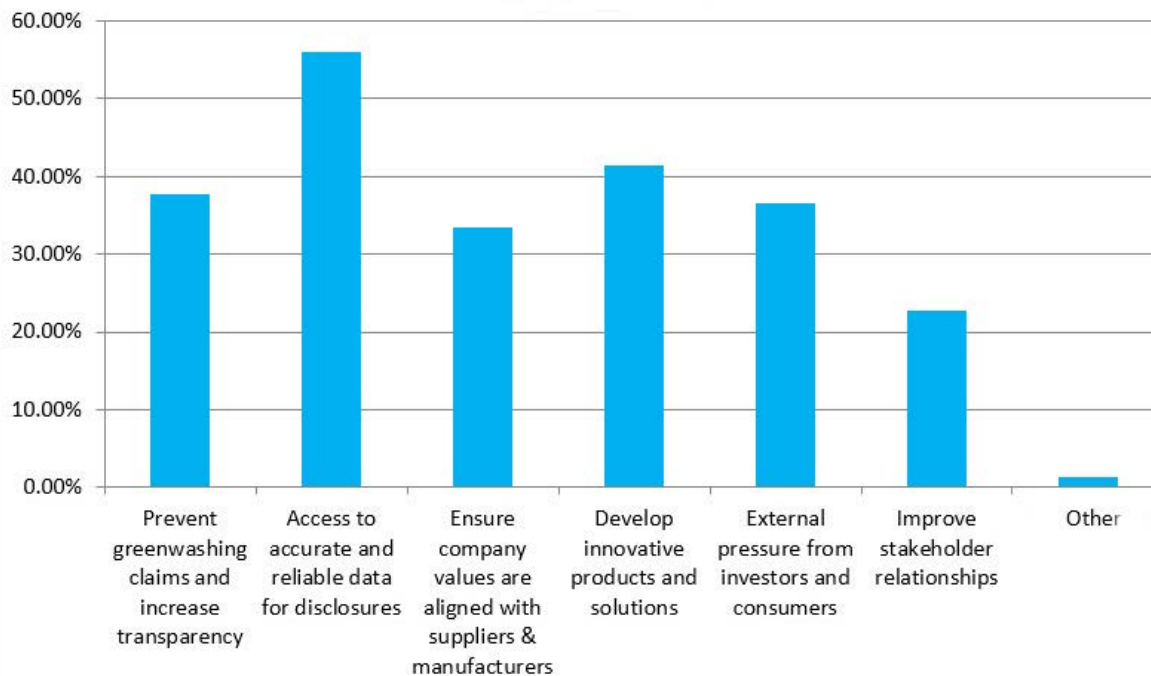
What is the main driver of ESG adoption for your business?



When financing land for residential or commercial development, have loan officers required your company to have an ESG policy?



What are the main drivers of your company for building a sustainable supply chain?



Fifty-five percent of builders report that their lenders are now requiring ESG policies when they apply for financing. An increasing number of builders are now requiring that their suppliers and vendors have ESG strategies and practices in place, mostly so that those builders can access accurate and reliable data for their own reporting and disclosures. They can also access more innovative products and solutions, prevent greenwashing claims and increase transparency, and respond to growing external pressure from investors and consumers. **GB**



Golden state? Two new California climate laws require large companies to report climate emissions and disclose climate-related financial risks. CREDIT: JASON JOHNSON/ISTOCK

CLIMATE DISCLOSURE CHANGES AFOOT

As demand for decarbonization and ESG expands, so does the need for enhanced accountability, transparency and reporting requirements—especially since consumer trust is at historically low levels.

In an effort to get in front of reporting requirements, California Governor Gavin Newsom passed the [Climate Corporate Data Accountability Act](#) (SB 253), a landmark climate rule mandating that large companies report climate emissions. He also enacted

[SB 261](#), requiring disclosure of climate-related financial risks, in accordance with recommendations from the [Financial Stability Board](#).

While the new climate laws face opposition and will likely see their day in court, they represent an important inflection point in State and Federal climate legislation.

California, the world's fifth-largest economy by Gross Domestic Product (GDP) and home to tech industry behemoths such as Apple, Google and Microsoft (all of which





support the recently passed climate legislation), has long been the harbinger for progressive climate and environmental policy. Other states such as New York, Colorado, and Massachusetts are keeping a keen eye on what's happening in California.

The state's climate disclosure laws precede similar rules that will soon be announced by the Securities and Exchange Commission (SEC). However, California's Climate Accountability Act looks more like regulations that are currently in place in the European Union (EU) through the Corporate Sustainability Reporting Directive (CSRD), rather than the SEC's version.

Companies that do business in the EU, regardless of whether they're headquartered there or listed on a public exchange, must report in 2026 on 2025 climate data if they have a balance sheet total exceeding 20 million euros, a net turnover (annual sales minus value-added tax) of 40 million euros, or an average of more than 250 employees over the financial year.

California's laws will apply to public and private companies that do business in the state and make more than \$1 billion in annual revenue per calendar year. The SEC's proposed climate disclosure rules, by contrast, will only apply to public companies that report to the SEC.

One notable difference between the CSRD, California requirements and the SEC's impending rules has to do with the reporting of Scope 3 carbon, which are emissions from third-party supply chain partners. The CSRD and California programs require Scope 3 disclosure. While the SEC had included Scope 3 in its original proposal, it's unlikely that this requirement will remain in the final rule due to industry and political pushback.

Critics of the climate disclosure laws assert that smaller companies will likely feel the biggest impacts, assuming a level of regulatory burden that could impede their ability to remain viable. They also argue that

companies that don't emit a substantial amount of their own emissions but engage with vendors, clients, other stakeholders who do—such as banks, investors, law firms and other professional service firms—will be directly impacted and might be forced to make some hard decisions about which customers and partners they retain.

To prepare for California's new climate disclosure laws, it's important for companies of all sizes—not just the ones that meet the \$1 billion revenue threshold, but also the ones that sell to, interact with, and service them—to start thinking about the measures needed to comply with the ultimately inevitable shift in climate disclosure requirements.

The good news: While it's still in a nascent phase, there are many ways to measure and report climate impacts and carbon emissions. The first step involves creating a cross-functional team that is responsible for data collection, measurement, accounting and reporting, with representatives from various company divisions.

And, since the California legislation will require third-party validation of disclosures, it's not too early to start looking for the right partner.

To help companies in the building industry get a head start on climate disclosure and carbon emissions, Green Builder Media has put together a working group of more than 65 of the smartest minds in the sector, called "ESG for Building." The group is developing a set of defining principles that building industry companies can use as a roadmap for creating and augmenting ESG strategies. Green Builder Media's goal is to release the defining principles by the end of 2023.

TO LEARN MORE, GO TO:

www.greenbuildermedia.com/esg-framework-for-building-industry to sign up for the "ESG for Building RSS" feed. **GB**

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during times of
intense change.



SAM RASHKIN



Green Builder Media and Sam Rashkin have joined forces to launch Housing 2.0, a comprehensive training and education program designed to teach building professionals how to prepare themselves for the massive transformation that the housing sector is currently experiencing.

The program helps building professionals design and construct higher performance, healthier, more sustainable homes, optimizing the total housing user experience with an estimated 30 to 70% hard cost savings/added value.

THE HOUSING 2.0 PROGRAM INCLUDES:

6-PART WORKSHOPS (offered quarterly) that explore the Housing 2.0 fundamentals

6 ONLINE COURSES with national thought leaders that delve into key topic areas like integrating digital technology, demystifying zero carbon, advanced health controls and sensors, offsite construction, and biophilic design

HANDS-ON ACTION GROUPS that allow building professionals to apply the Housing 2.0 fundamentals to real projects

COGNITION Smart Data insights into market trends, market influencers, purchase drivers, behavioral patterns, and innovations transforming the market

RASHKIN'S SECOND BOOK, titled *Housing 2.0, A Builder Guide to Surviving Disruption*

ARTICLES, BLOGS, VIDEOS, AND EXTENSIVE EDITORIAL COVERAGE generated by Green Builder Media's award-winning editorial team

This program is perfect for anyone in the home building industry—CEOs who want to strategize new directions for their business, niche and production builders who want to offer a new product or serve a new demographic. Or how about access to this program as the ultimate perk to attract new hires or to reward stand-out employees?

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AN ADAPTABLE ENERGY MANAGEMENT SYSTEM

Amid the ongoing transition toward electrification, energy management systems are becoming increasingly important.

BY SAMANTHA CARLIN

Energy management systems play a pivotal role in optimizing energy use within homes and buildings. With energy management systems, home and building owners can benefit from cost savings, reduce emissions, contribute to grid stability, and seamlessly integrate renewable energy sources. As technology continues to advance, smart load management systems will become even more critical for an electrified future.

“Leviton continues to equip homeowners with the necessary insights to control their expenses and environmental impact, focused on meeting tomorrow’s electrical needs via a single app for lighting, load control, and EV charging,” says Justin Berghoff, senior director of business development and product management for Leviton. “As a natural progression of Leviton’s expertise, we’re excited to give homeowners more power to manage their energy usage and an improved breakdown of total production/consumption via the *My Leviton* app.”

The company is now offering a scalable and modular smart energy management system that is specifically designed for load management to optimize energy consumption and improve overall efficiency.



The Smart Load Center line is uniquely modular and cost-effective; smart circuit breakers can be intermixed with standard circuit breakers to allow homeowners the flexibility to build smart functionality into their load center as desired or needed.

Leviton’s innovative *2nd Gen Smart Circuit Breakers* paired with the *Whole Home Energy Monitor* provide control of a home’s electrical system. The *Smart Circuit Breakers* take up the same space as traditional circuit breakers and don’t require any additional wiring. With this system, homeowners gain insights into energy usage from the grid and alternate energy sources like solar, battery, and generator power.



The new *Whole Home Energy Monitor (LWHEM-2)* enables the features of the *2nd Gen Smart Breakers*. *LWHEM-2* is the smart solution for residential electrical systems. It provides the homeowner with real-time, whole-home energy use data.



When connected to the *My Leviton* app, the *Whole Home Energy Monitor* enables features such as turning *Smart Circuit Breakers* on/off from anywhere, scheduling breaker activity to benefit from peak time of use rates, and automating the shedding of nonessential loads.

The *My Leviton* dashboard provides a quick view of Leviton smart lighting devices and car chargers, plus an intuitive summary of real-time total energy usage, including a breakdown of what sources are currently powering the home and top consuming circuits by kWh. Homeowners can view the data by day, week, billing period, and year-over-year with charts to identify trends in historical energy usage and opportunities to adjust behaviors and save money.

Additionally, the *My Leviton* app provides peace of mind with alerts and notifications for any unusual electrical activity. Users are informed about when and why a circuit trips, high or low voltage events, if the breaker fails a self-test, or if communication is lost. The *Smart Anomaly Detection* option alerts homeowners if unusual activity is identified, such as a freezer malfunctioning, or an HVAC system running excessively.

Leviton’s adaptable and vertically integrated platform makes it simple for any household to reap the benefits of managing and monitoring their energy consumption.

For more information, go to <https://leviton.com/smartbreakers>

For indoor mounting, the **Leviton Load Center** features a white enclosure housing white circuit breakers, creating an aesthetically appealing unit. An optional observation window in the cover allows users to see at-a-glance operating state of all the circuit breakers without opening the cover.



ALL PHOTOS COURTESY OF BRIAN SLAWSON PHOTOGRAPHY

VISION House Sussex: THE BIG REVEAL

Drum roll please...VISION House Sussex is ready for its closeup.

BY MARC HUMINLOWYCZ

After seven months of meticulous design and production, Tim O'Brien Homes has unveiled its VISION House Sussex model/demonstration home in the Vista Run community near Milwaukee, Wisc. The Birchwood Model showcases next-generation, mainstream green home building that optimizes performance, sustainability, occupant health and resiliency at a price point that's attainable for working-class American families.

The project, a partnership with Green Builder Media and key product suppliers, is the latest foray into sustainable building from Tim O'Brien Homes, a company that has built 2,000 homes with the best design, building science practices, and green features since 2007. Home Energy Rating Score (HERS) is a national index that rates houses on an energy use scale—the lower the rating, the more energy efficient the home. Homes constructed to building code score about 100; By contrast, every Tim O'Brien home scores an average HERS of 45.



CLOCKWISE FROM LEFT:

Peak time perfect. JinkoSolar's *Eagle Continental* solar panels, batteries and a power inverter provide the homeowner economizing electricity rates by charging during off-peak times and using the batteries during on-peak.

Not-so-heavy metal: The home's insulated garage door is Windsor Door's *Windsor Model 73I*, which is made from sheet steel with 76 percent recycled content.

Got it covered. The outside walls of VISION House Sussex are clad in *HardiePlank*, a fiber cement product composed of Portland cement, sand, water, cellulose fibers, and proprietary additives that will protect the home from wind, rain and snow. PHOTOS COURTESY OF BRIAN SLAWSON PHOTOGRAPHY

Over the past months we've talked about VISION House Sussex and its impressive sustainability, health and occupant comfort. These features include superior insulation, water-proofing and water conservation, indoor air quality, radon mitigation, energy-saving windows, mechanical systems and solar energy with battery storage. Now that the home is complete, let's look at the design, finish and convenience features that make a house a home.

INDOOR ELEMENTS

When it comes to overall design, Tim O'Brien Homes' mantra is "space in the right place," based on lifestyle—not too big, not too small. VISION House Sussex features an open concept design, with conveniences such as a master bedroom walk-in closet, "drop your stuff" areas, a walk-in pantry, good cabinetry layout and circulation in the kitchen, "de-stress" zones in the home and phone charging stations where they should be.

The kitchen pantry and the bedroom closets are all fitted with intelligent shelving systems from **Organized Living**. Products include *FreedomRail*, an easily adjustable shelving solution that offers homeowners the flexibility to change components to suit their lifestyle, with no tools needed; VUE solid shelving; and *Lifetime Ventilated*, strong fixed wire shelving with an

epoxy powder coating that resists cracking, chipping, peeling and discoloration.

With the exception of tiled areas, all finished floors in VISION House Sussex are manufactured by **Mohawk Flooring** in Georgia. Mohawk's *Everstrand* is a premium, sustainable polyester carpeting made from 100 percent recycled PET plastic using the company's patented *Continuum* process, which creates a clean, strong and comfortable product with excellent stain resistance for eco-conscious homeowners. (Mohawk accounts for 1 out of every 3 PET plastic bottles recycled in the U.S.) The fiber is solution-dyed, meaning the color is built into the fiber and won't wear off, fade or stain.

Short for "revolutionary wood," Mohawk's *RevWood* flooring installed in VISION House Sussex is a PVC-free laminated floor product designed to mimic the appearance of hardwood flooring while offering enhanced durability and ease of maintenance. With a moisture-resistant high-density fiberboard core, Signature technology printed wood veneer, a protective wear layer and *WetProtect* technology for water-tight joints and a waterproof finish, it's highly resistant to moisture, stains, fading and scratching.

The kitchen backsplash, shower walls and floors in VISION House Sussex come from **Daltile**, America's leader in natural



FROM LEFT:

Looks like the real thing. Mohawk's *RevWood* flooring is a PVC-free laminated floor product that mimics the appearance of hardwood flooring while offering enhanced durability and ease of maintenance.

Full house. VISION House Sussex features numerous sustainable products, including water conserving sink fixtures, LED and natural lighting, and a PVC-free laminated floor product. PHOTOS COURTESY OF BRIAN SLAWSON PHOTOGRAPHY

stone, porcelain and ceramic tile. The company's *Mesmerist* kitchen backsplash tile offers a natural and handmade look and uses *Simpliclean* technology for easy cleanup. *Articulo* porcelain tile with *Stone Decorative Accent* on the home's shower walls offers a travertine look, and a seamless design which can also be used on floors, walls and countertops. Shower floors are *Uptown Glass Matte*, a hexagonal pattern in alabaster that's made from 98 percent recycled material. All Daltile bathroom products feature *Climatepro* and *Simpliclean* technology for durability and easy cleaning.

Kohler, a family-run American manufacturing company founded in 1873 with products sold worldwide, is based just a few miles north of where VISION House Sussex is located, making it a natural choice for the home's kitchen and bathrooms. The company's EPA

WaterSense-certified *Bellera 560* kitchen faucet in *Vibrant Stainless* features touch control to switch between three water flow types: stream; *Sweep* spray, which creates a wide, forceful blade of water for stubborn stuck-on messes; and *Boost* technology, which increases flow rate by 30 percent. Kohler *Caxton* oval undermount sinks grace the home's bathrooms.

EXTERNAL ELEMENTS

Speaking of water conservation, VISION House Sussex is fitted with a **Phyn** whole home water leak detection system. *Phyn Plus* protects the home from leaks, conserves water and saves homeowners money by accurately detecting leaks across multiple flow sources in the home. The device continually measures microscopic water changes to recognize the unique "voice" of every water



fixture. When a faucet runs, Phyn knows it's a faucet. If the faucet leaks, an alert is issued.

Inside the home, low-volatile organic compound (VOC) paints were applied on all walls, ceilings and trim to limit odor and potentially harmful gasses. An abundance of windows (high-performance ENERGY STAR) fill the home with natural light, accented by a comprehensive lighting package that includes energy-efficient LED lights.

The outside walls of VISION House Sussex are clad in **Hardie's HardiePlank** a fiber cement product composed of Portland cement, sand, water, cellulose fibers, and proprietary additives that will protect the home from wind, rain and snow.

The home's insulated garage door is the *Windsor Model 73l*, which is made from sheet steel with 76 percent recycled content. It's made by **Windsor Door**, a company based in Little Rock, Ark., whose products are measurably sustainable, manufactured with predominantly recycled content and CFC free.

Controlling the garage door is a *Secure View Ultra-Quiet Belt Drive Smart Opener with Camera*, a dual LED lighting manufactured by

ABOVE:

Clean sweep. Kohler's EPA WaterSense-certified *Bellera 560* kitchen faucet features touch control to utilize *Boost* technology, which increases water flow rate by 30 percent. PHOTO COURTESY OF BRIAN SLAWSON PHOTOGRAPHY

LiftMaster, which offers two-way audio communication and monitoring/controlling of home access (paired with a *myQ Video Keypad* and app for a phone or tablet), and an integrated lighting system that brightens high-traffic areas outdoors.

JinkoSolar's Eagle Continental solar panels drive the energy system in VISION House Sussex. *Eagle's* solar panels, batteries and a power inverter provide the homeowner with backup electricity in case of power outages and "peak shaving"—economizing electricity rates by charging during off-peak times and using the batteries during on-peak.

Nearly all of VISION House Sussex runs on electric power. The exception is the *Carrier Performance 96* condensing gas furnace. This dual fuel system, according to Tim O'Brien, will be used to heat the home only on the coldest days. Most of the time, it will

TESTED AND CERTIFIED

VISION House Sussex, like every Tim O'Brien home, goes through rigid quality control and certification processes to ensure a comfortable and worry-free home. "In the finishing stage, we do a 'manager quality walk' to give the home a different set of eyes once the flooring and carpeting are in, and schedule any last-minute paint touch-ups and cleaning before the customer moves in," says Tim O'Brien.

During the quality walk, the home's HVAC system was balanced, all supply and return ducts were tested and cleaned, **Aeroseal** duct cleaning technology was applied, and third-party technicians rigorously tested for air quality and air leakage. Finally, the home received certifications from EPA Indoor AirPLUS, Green Built Home and Wisconsin Focus on Energy New Homes.

On the day that homeowners take possession of their new home, Tim O'Brien staff take them on an educational "how it all works" walk-through and leave them with a homeowner's manual and instructional video once the keys are handed over.



FROM TOP:

Easy handling. Daltile produces its *Mesmerist* kitchen backsplash tile, which offers a natural and hand-made look, and utilizes *Simpliclean* technology for easy cleanup.

Room with a view. Master bedroom suites, with walk-in closets and natural glass windows, serve as an example of intelligent green energy management.

Environmentally friendly carpet. Mohawk's *Everstrand* is a premium, sustainable polyester carpeting made from 100 percent recycled PET plastic.

LAUNCHING POINT

On Sept. 9, 2023, an open house and ribbon-cutting ceremony for VISION House Sussex generated a lot of interest from a good turnout of curious visitors, according to Tim O'Brien. "People were really excited about what we've done, with lots of questions, especially about the solar panels and storage batteries," he reports. "They loved the idea of having their own mini utility company using the power they generate."

There was also a lot of interest in the home's indoor air quality features, such as the energy recovery ventilator (ERV) and the *Active Sub-Soil Venting System*, especially with the prevalence these days of wildfire smoke, allergens, pollution from cars and radon, O'Brien adds. "They also liked to see sustainable products used in the home," he says.

Smooth steps. Shower floors are Daltile *Uptown Glass Matte*, a hexagonal pattern in alabaster that's made from 98 percent recycled material.

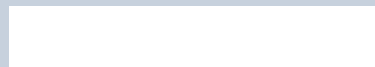
use electricity, which will reduce the home's carbon emissions, but natural gas will be an option during severe weather. *Performance 96* can be controlled with the **Ecobee SmartThermostat With IntelliSense and Voice Control**, which tailors itself to homeowners' schedules, comfort preferences and outside weather.

FINAL THOUGHTS

According to Tim O'Brien Homes president Tim O'Brien, VISION House Sussex is the culmination of a partnership between the company, Green Builder Media and leading product manufacturers. They share a common vision: to showcase a production model home for consumers and building professionals that optimizes performance, sustainability, health and wellness, intelligence and resiliency—at an attainable price point.

"Our ambition is to make a positive impact by continually improving our home building process to deliver our customers a wonderful experience that reduces the level of stress in building a home," O'Brien says. "It is this innovative approach that defines us. We are very grateful to Green Builder Media and to our sponsors for this excellent opportunity!" **GB**

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Learn more at carrier.com/residential.





Worth the wait. Completing ReVISION House Scottsdale took several years, courtesy of a pandemic, supply shortages and other unplanned setbacks. But the end result was an all-electric, passive-designed dream home for owners Steve Easley and Susan Raterman.

CREDIT: SAMANTHA CARLIN/GREEN BUILDER MEDIA



THE FOREVER HOUSE: FROM BUILDING SCIENCE EXPERIMENT TO FOREVER HOME

Building science experts converted an uncomfortable 1970s energy guzzler into a home for the 21st century and beyond.

BY MICHELE LERNER



THE FOREVER HOUSE

When two industry experts bought a house in Scottsdale, Ariz., in July 2019, they never dreamed it would take more than three years and a gut job before they could complete their “Forever Home.” Now, Steve Easley, an internationally recognized building science expert and founder of Steve Easley & Associates, and his wife Susan Raterman, CIH, an experienced indoor air quality consultant, and founder and president of The Raterman Group, are ready to enjoy the ReVISION House they designed to demonstrate best green building practices, as well as for their personal sanctuary.

“We’re two scientists who get excited when we test our automated indoor air quality system to see what happens when we light a candle,” Raterman jokes.

On a more-serious note, the couple chose the property because they knew it needed extensive renovation. It is also within walking distance of shops and restaurants, and it offers a serene view of a lake and golf course.

The house has a perfect north-south orientation, which is very important in Arizona, where there is such extreme heat, according to Easley. “When we moved into the house in December 2019, we knew we wanted to reconfigure the upper level,” he says. “But then we discovered that the 1970s-era house had significant structural issues, including termite damage and natural gas pipes that were installed with thread protectors instead of pipe couplings, which was dangerous.”

Except for one wall, the entire house had to be gutted down to the slab. This provided an opportunity to rebuild with 2-by-6 framing, allowing for additional, much-needed insulation.

“The old house had two natural gas furnaces and two air conditioning systems,” Easley says. “At 110 degrees outside, we couldn’t get the [inside] temperature below 84 degrees.”

WORKING FROM THE OUTSIDE IN

Easley and Raterman started with a passive design. For example, two large porches with overhangs on the south and west sides of the house reduce heat exposure in the summer.

“We designed the house with plenty of natural ventilation and air flow to limit the need for air conditioning even on warm days,” Raterman says. “There’s almost always a breeze off the golf course and the lake, so even when the weather is in the 80s, we don’t always need to turn on the air conditioning.”



ABOVE: Beautiful effort. Easley and Raterman chose their dream house partially due to its lakeside and golf course-viewing location, and partially because of a chance to create a state-of-the-art sustainably focused home. PHOTOS BY SAMANTHA CARLIN/GREEN BUILDER MEDIA

The windows and glass doors also contribute to reducing the home’s energy consumption. Locally manufactured windows and glass doors have *Cardinal* glass, which has three low-E layers that block 80 percent of the sun’s energy.

“That’s especially important anywhere in the Southwest,” Easley says. “There’s an i89 coating on the inside that reduces heat gain by conduction and reflects the heat back into the house in the winter.”

The house has an R-35 wall system, well ahead of the typical R-20 version in most new Scottsdale

homes, Easley says. They started with half-inch-thick Dryvit synthetic stucco, which has a fiber reinforced base coat that also increases resilience with 1.5-inch **DuPont Thermax R-10** continuous insulation behind the exterior stucco. The house is wrapped with DuPont Tyvek Stucco Wrap weather barrier. All windows and doors are flashed with DuPont Flexwrap and Straight Flash.

“We added two inches of DuPont Froth-Pak closed-cell foam inside the walls, then added another 3.5 inches of Huntsman open cell spray foam insulation covered with 5/8-inch drywall,”



Under cover. The home's passive design included large porches with overhangs on the south and west sides of the house to reduce heat exposure in the summer. PHOTOS (left and right) BY SAMANTHA CARLIN/GREEN BUILDER MEDIA



Power plan. All windows and glass doors include three low-E layers that reflect 80 percent of the sun's energy.

Easley says. "The goal was to get lots of insulation and thermal mass so we can 'flywheel' through the 3 p.m. to 8 p.m. peak energy times of day without running the A/C."

To further protect the house from moisture, they installed a quarter-inch *LathNet* rainscreen lath over the *ThermaX*, followed by the Dryvit synthetic stucco.

"Anytime you apply foam over a wood-based sheathing, moisture management is really critical, Easley says. "This rainscreen lath creates a small gap between the stucco and the foam that allows water to drain out."

The roof is R-70, compared to a typical R-38 roof, with resilience and energy conservation properties.

"The unvented attic system starts with 5/8-inch ceiling drywall, 11 inches of Huntsman open cell spray foam, then 2 inches of their closed cell spray foam adhered to the bottom of the OSB roof deck," Easley says. "We waterproofed the roof deck with Barrett *Black Pearl* membrane and installed 4 inches of DuPont *DeckMate XPS* insulation over it."

The final waterproofing was 1 to 3 inches of closed cell foam with Henry *AcryShield A550* elastomeric membrane that reflects 93 percent of the sun's heat.

"The 2 inches of closed cell spray foam insulation essentially glues the trusses to the bottom of the roof deck and that increases wind uplift resistance by 300 percent," Easley says.

BREATHING NEW LIFE INTO AN OLD HOME

The tight envelope of the home requires special attention to indoor air quality (IAQ), especially because Maricopa County has some of the worst ozone and particulate pollution in the country, Raterman says.

"We started with our design choices, such as low VOC materials to eliminate hazards," Raterman says. "We chose surface materials from [MSI Surfaces](#) with [GREENGUARD](#) Indoor Air Quality Certification and Green Label Plus certified carpet. [Sherwin-Williams SuperPaint with Air Purifying Technology](#) reduces airborne VOCs from cabinet finishes and furniture or from cooking."



Fresh air assistant. The Sherwin-Williams interior paint used helps indoor air quality by reducing volatile organic compounds from cabinets and furniture.

PHOTO COURTESY OF STEVE EASLEY

Next, Easley and Raterman installed [Broan-NuTone AI Series](#) energy recovery ventilators (ERV), a self-balancing system, on the first and second levels of the house.

"It can be tricky to get the ERV system to balance the right flow of air inside and outside, and the Broan-NuTone system does it automatically," Easley says. "We've had 57 days this year that were over 110 degrees. This system takes that hot air and pretreats it to get it down to 83 degrees. That puts less pressure on our HVAC system to cool it down further."

The ERV has a MERV 13 filter that removes 85 percent of particles that are 1 to 3 microns in size, Raterman says.



Twice the benefit. To conserve energy, the Forever House features roofing with R-70 insulation, a product that is 22-25 inches thick—about 1 foot more than the R-38 used on most homes in the area. PHOTO COURTESY OF STEVE EASLEY

Since the couple was in the design stage for their home early in the pandemic, they created a “quarantine room,” a guest area with a private bathroom, and its own HVAC zone and ERV to keep the air clean and separate from the rest of the house, Raterman says.

“We also installed a Broan-NuTone *Overture* ventilation controller that constantly monitors the air quality and automatically turns on the ERV or bath fans as needed,” Raterman says. “Monitoring indoor air quality parameters is more common in commercial spaces, so it’s great for us to have this in a residential setting constantly operating in the background to monitor CO₂, fine particulate matter, VOCs and humidity. If you burn something in the kitchen, you can also use a switch to turn the ERV to boost mode.”

BRINGING ENERGY EFFICIENCY TO NEW HEIGHTS

The *Overture* system helps save energy since it automatically starts and stops the ERV, based on the home’s real indoor air quality, not a formula that requires a fan to run constantly. Given Arizona’s climate, the HVAC system is also an important component of the Forever Home’s energy use.

“We have seven Mitsubishi Electric heat pumps so that each room has its own zone,” Easley says. “We can control each room individually from an app or use a remote control.”

The **Mitsubishi Electric** systems include inverter-driven heat pump ceiling cassettes and one ducted multi-position inverter-driven heat pump for the primary bedroom. The system



Controlled environment. Mitsubishi Electric systems include inverter-driven heat pump ceiling cassettes that can run at different speeds with minimal temperature swing throughout the house.

CREDIT: SAMANTHA CARLIN/GREEN BUILDER MEDIA



Quality air indoors. Broan-NuTone’s energy recovery ventilation system includes free-standing sensors that switch on the appropriate fan when humidity and pollutants are detected. CREDIT: SAMANTHA CARLIN/GREEN BUILDER MEDIA

runs at variable speeds to save energy, and there’s almost no temperature swing, Easley says.

“The HVAC is extremely quiet, which we really appreciate because before we remodeled the air conditioning system sounded like a train that woke us up every time it turned on,” Raterman says. “Sound, comfort and indoor air quality are entwined, and this system has a big impact on how you feel in the home.”

The couple will install **Schneider Electric’s** *Wiser Energy* monitoring system with Wi-Fi-enabled switches and outlets that will continuously keep them informed about all energy being used in the house.

“Vampire loads of electricity from things like TVs that use energy even when they’re not on can be as much as 8 percent of your energy bill,” Easley says. “The *Wiser* system can be used to turn off outlets and turn them back on, even remotely when we’re not there.”

Easley and Raterman are committed to an all-electric house and chose **KitchenAid** and **Whirlpool’s** energy-efficient appliances, including an induction cooktop for the kitchen, as well as a ventless heat pump clothes dryer.

To further a desire to electrify, Easley and Raterman installed a **FireMagic** 220-volt electric grill and **Modern Flames** electric fireplace that has a 100-inch-wide video LCD screen to display a fire.

RIGHT: Modern flames. The Orion all-electric fireplace uses a 100-inch-wide video screen to provide extremely realistic flames and the sound of an actual fire with no onsite emissions. It can output 5,000 to 10,000 BTU.

CREDIT: SAMANTHA CARLIN/GREEN BUILDER MEDIA



Dining done right. The all-electric home includes **KitchenAid** energy-efficient appliances such as an oven and induction cooktop for the kitchen.

CREDIT: SAMANTHA CARLIN/GREEN BUILDER MEDIA





Backyard beauty. Both front and backyard uses the synthetic *ForeverLawn*, which provides a natural green color without requiring water. CREDIT: SAMANTHA CARLIN/GREEN BUILDER MEDIA

WATER CONSERVATION TECHNIQUES AND PRODUCTS

Water conservation is particularly important in the desert Southwest. Easley and Raterman went beyond the first step of introducing low-water usage plants to their property.

“We have a system so that plants are zoned according to their water needs,” Easley says. “Some plants may need water once a week, while others need it two or three times a week, so we planted accordingly and only water when absolutely necessary.”

Rachio *Smart Sprinkler Controllers* were installed to control the in-ground irrigation system with smart home devices for more efficient watering.

The grounds also include **ForeverLawn**, a synthetic product that Easley says adds “a green and calm” element to the property without water. The swimming pool also includes energy and water conservation features.

“We used Hayward’s variable speed pumps for the swimming pool, which uses up to 36 percent less energy than other pumps,” Easley says.

Hayward’s smart automation panel allows the pool to be controlled remotely, so the pump functions can be reduced when no one is home.

The hardscaping on the property includes stain-resistant **Belgard** *Mirage* porcelain paver products that also reduce heat retention. They were supplied by **Pioneer Landscape Centers**.

Water usage is controlled indoors with the **Rheem** *ProTerra* heat pump water heater, which exceeds the requirements for both ENERGY

STAR and DOE Zero Energy Ready Home (ZERH) certifications.

“The heat pump water heater takes heat from the air and uses one-fourth of the energy of a traditional water heater,” Easley says. “We also used FlowGuard for our plumbing system, which only circulates water when it’s needed.”

The ability to keep tabs on the home is complemented by a **Vivint** smart home management system, which includes water leak and glass break sensors, along with an array of security elements such as doorbell cameras and special locks, smart lighting and other monitors.

The couple is also installing a *Phyn Plus* auto shutoff water valve. “Vivint notifies us about leaks or if the system detects smoke and will automatically alert the police or fire department if needed,” Easley said. “We have a fire sprinkler system with **BlazeMaster** CPVC piping, too.”



Leisure time. Clean energy usage extends to recreation, such as with a FireMagic 220-volt electric grill. This grill has zero onsite emission and can reach a temperature of 700 degrees. PHOTO COURTESY OF FIREMAGIC



On the lookout. A Vivint smart home management system includes an array of security elements such as indoor, doorbell and exterior cameras. CREDIT: SAMANTHA CARLIN/GREEN BUILDER MEDIA



Stepping up. The stairs are a mono stringer floating stair case from ViewRail. The stair system was prefabricated offsite and installed efficiently onsite.

CREDIT: SAMANTHA CARLIN/GREEN BUILDER MEDIA

LESSONS FROM THE FOREVER HOME

Raterman and Easley designed the house for the long term, with a first-floor primary suite in case they someday have mobility issues, along with materials that are durable and resilient to climate issues. Raterman is eager to settle into the house to set up the pantry and other storage systems installed by [Organized Living](#), and to become an expert induction cooking chef.

“The systems in the house are all designed for comfort, quiet and ease of use,” Raterman says. “The real key to all the automated systems we have is that manufacturers have made them easy to use and to integrate with our phones.”

Permitting delays, the pandemic, supply chain disruptions and labor shortages all contributed to the long timeline between the initial home purchase and the completion of the Forever Home, Raterman says.

“The house is a system with lots of parts, so as we were building, we realized how important it is to have some overlap with various tradespeople. This wasn’t always possible because of the pandemic situation and labor shortages,” Raterman says. “In any remodeling project, it’s important to be mindful of how everything works together and have open communication between the contractors.”

Easley’s recommendation to others building or undertaking a major remodel like theirs is to encourage building as much as possible offsite.

“We weren’t able to take the additional time to get permits for SIPs [structural insulated panels] after it took us nine months to get the construction permits,” he says. “I recommend using panelization or even modules as much as possible to save time and reduce construction lags.”

Easley and Raterman’s goals with this project were to demonstrate cost effective, sustainable and innovative ways to build a resilient, durable, healthy and aesthetically pleasing high-performance house in the midst of a harsh climate. They’re both extremely pleased with the end result: A quiet desert oasis to showcase the progress that science and technology have made towards a more-sustainable way of building and living. **GB**

Forever green. A water-free version of a putting green can be as much fun as the real (and water-requiring) thing. CREDIT: SAMANTHA CARLIN/GREEN BUILDER MEDIA



Seeing is believing. The Forever House’s innovative designs include wall-sized glass doors that provide lots of natural light and make access into and out of the home extremely easy. All of the glass doors are covered with overhangs or porches to deflect direct sunlight. CREDIT: SAMANTHA CARLIN/GREEN BUILDER MEDIA



It’s a (good) living. Energy-efficient Halo LED lights from Cooper Lighting Solutions, and all-electric appliances and an automated indoor air quality system help create an exceptional environment for a dream home. CREDIT: SAMANTHA CARLIN/GREEN BUILDER MEDIA





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*Reduces VOC levels from potential sources like carpet, cabinets and fabrics and works to reduce unwanted household odors.

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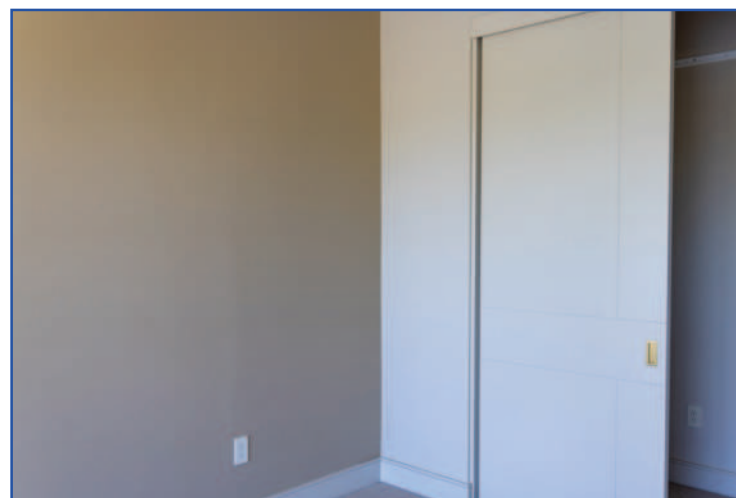
BY SAMANTHA CARLIN

At the ReVISION House Scottsdale, healthy indoor air quality is of utmost importance. The two owners, industry experts Susan Raterman, CIH, an experienced indoor air quality consultant and founder and president of The Raterman Group, and her husband Steve Easley, an internationally recognized building science expert and founder of Steve Easley & Associates, have taken the past three years to meticulously design and build their “forever home.”

From the bottom up, every choice the pair made had health and wellness in mind – opting for GreenGuard-certified and low VOC emitting products, as well as a whole home ventilation system.

“Our overall goal in the home in terms of health and wellness was really to design the home to eliminate toxins and materials that can become hazardous to the greatest extent possible,” explains Raterman.

For their interior paints and finishes, Raterman and Easley opted for neutral, contemporary tones to achieve a timeless look. They selected Sherwin-Williams's zero-VOC paints to enhance the home's beauty, durability, and indoor air quality.



In their offices, Raterman and Easley went with duo-tone paint to open up the space and enhance their video call background. CREDIT: SAMANTHA CARLIN/GREEN BUILDER MEDIA

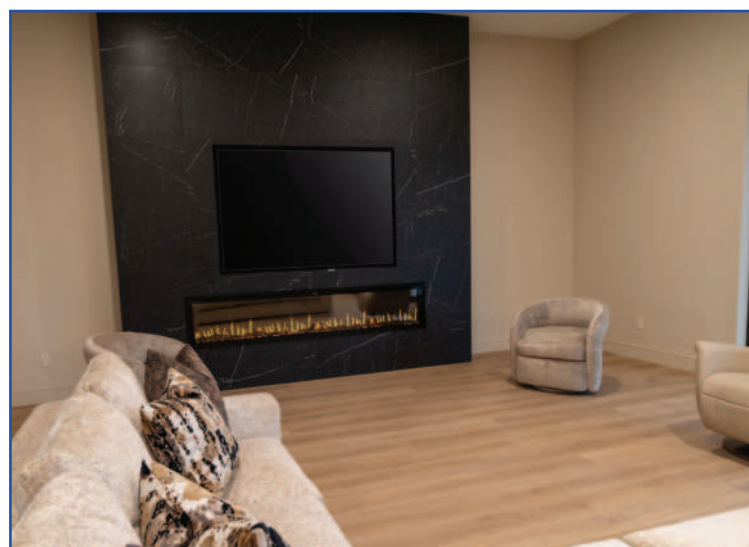
“We picked Sherwin-Williams' SuperPaint® with Air Purifying Technology* because it contributes to better indoor air quality by helping reduce VOC levels from potential sources like carpet, cabinets and fabrics,” Raterman says. Additionally, odor-eliminating technology breaks down unwanted household odors from smoke, cooking or pets, and antimicrobial agents help inhibit the growth of mold.

For the bathrooms, the couple chose SuperPaint® with Sanitizing Technology** to keep their walls sanitized 24/7. This durable paint is easy to apply and provides ongoing bacterial action, in killing 90 percent of certain bacteria even after repeated contamination.

With Sherwin-Williams' SuperPaint®, Raterman and Easley can move in feeling comfortable that their home is resilient.

*According to Sherwin-Williams, the length of time SuperPaint® with Air Purifying Technology Interior Acrylic Latex actively reduces odors and VOCs depends on the concentration, the frequency of exposure and the amount of painted surface area.

**EPA registered paint that kills 99.9 percent of Staph (*Staphylococcus aureus*), *E. coli* (*Escherichia coli*), MRSA (*Methicillin-resistant Staphylococcus aureus*), VRE (*Vancomycin-resistant Enterococcus faecalis*) and *Enterobacter aerogenes* on painted surfaces within two hours of exposure.



For their main living areas, Raterman and Easley chose from The Living Well color collection, which includes the different colors, landing on Canvas Tan.

CREDIT: SAMANTHA CARLIN/GREEN BUILDER MEDIA

Comforts of home. Mariposa Meadows merges modern technology with classic design for a “home sweet home” feel. CREDIT: SARA GUTTERMAN/GREEN BUILDER MEDIA



The Hand of Man

A FOREVER HOME IS MORE THAN THE FIRST REACTION TO 'CURB APPEAL.'

BY RON JONES

The International Space Station has been in orbit for almost a quarter century. NASA is making plans to construct units for human habitation on the moon, followed by expansion on to Mars. There are “permanent” shelters and facilities atop both poles of our home planet. Entire communities can be water around the world. There is no apparent limit to our reach as we construct the built environment.

Yet, contact with the landmarks is the first step necessary to initiate the built environment as we know it. To know and respond to a “place” takes time, patience, and attention. It’s not all about the first reaction we call “curb appeal.” It requires collaboration, compromise, a series of adjustments.

The first impression of the Mariposa Meadows home’s long initial incline of its gravel driveway is that, while it is generally straight, it looks like a pretty steep climb. The thought occurs that it might be a little scary coming back down when it is covered with ice or snow, a condition not uncommon this far above sea level. But the driveway faces due south, maximizing the opportunity for the sun to melt and drain snow quickly, and helping to dry any moisture that remains. Of course, a little caution is always recommended.

The remainder of the drive, which totals about 900 feet and features an elevation gain of 100 feet, consists of a couple gently sloped runs divided by a pair of hairpin turns. Such is the price exacted for vehicle access in the mountains, but the resulting



Liquid nature. Natural water sources in the form of creeks and springs are a lifeblood for a rich diversity of flora and fauna. CREDIT: SAMANTHA CARLIN/GREEN BUILDER MEDIA

sense of misdirection is quite intentional and intriguing. After that final turn, the compound unfolds ahead, vertically and laterally, in the midst of the aspen forest that has so perfectly screened its presence from the public roadway below.

PRIVATE PERSONA

All of the buildings and constructed elements attempt to reflect and complement the natural composition that informs them. The verticality of the architecture is in response to the soaring aspens. The color palette borrows from their light bark and dark “eyes,” as well as the soils and rocks where they are anchored. The topography and geology have combined to instruct us as to the siting limitations of each structure.

This can be a place of extreme weather,

especially in winter, when snow is often measured in feet, not inches. Summer storms can be violent, with explosions of thunder and powerful winds that batter and drive the rain. The thinner atmosphere means especially high levels of damaging ultraviolet (UV) radiation that must be taken into consideration.

Still, no concern is as great as the potential threat of wildfire. Nothing else commands our attention and vigilance to the same degree. We know well our place as mere visitors here.

A U.S. Forest Service road, occasionally “maintained” by the county, bisects the property, a private holding that exists, in fact, by virtue of its having been homesteaded in the 1800s. Per an historic Federal program, the quarter section (160 acres)



Construction crew. At first, a family of beavers seemed like a nuisance with their natural dams. But later it became clear that the dams helped maintain a water source for irrigation.

CREDIT: LARRY LAMSA/CREATIVE COMMONS 2.0



Range rover. Resident moose roam the meadows and luxuriously dine in the stream that passes through the property. CREDIT: SARA GUTTERMAN/GREEN BUILDER MEDIA



Homemade energy. Mariposa Meadows is entirely off grid, so all electrical power generation takes place onsite via solar panels. Buildings have very small environmental footprints.

CREDIT: SAMANTHA CARLIN/GREEN BUILDER MEDIA

was deeded when this part of the young state of Colorado came under the jurisdiction of the government. Decades later, the almost 1.7 million acres of national forest that now surrounds it were designated as such, leaving small parcels of private property (like this one), known as “inholdings,” to capture the imaginations of individuals for whom there is never too much elbow room.

MOTHER NATURE'S LESSONS

The magic ingredient in all of this is, of course, water. Without it there would be little or no chance of long-term human occupation—for better or worse, depending upon who you ask. At Mariposa Meadows, a substantial perennial creek meanders through the property and is the lifeblood for an environment that allows a rich diversity of flora and fauna to thrive here. Additionally, another somewhat smaller stream, much of which flows unseen beneath layers of rough rock, cuts through the landscape on a tangent to join the larger creek farther downstream. The two riparian

zones are quite distinct but essential to the overall ecosystem. Finally, there are two live springs from which cold, pristine water from somewhere deep in the mountainside bubbles to the surface year-round.

The State has granted surface water rights to the property, amounting to three cubic feet per second, which we divert through a series of mostly hand-dug irrigation ditches and gated turnouts. These allow us to efficiently gravity feed water to where it is most needed during the summer growing season. In the beginning, we had to wrestle with determined native hydrologists—a family of beavers—who would plug our flume every night with tree branches, mud and rocks. Each morning, our first task was to unplug the obstruction so we could access water for another day. Eventually, the beavers consumed too much of the edible vegetation in the immediate area and, as is their habit, relocated to another section of the creek to erect a new dam and lodge.

At first, we were relieved by this development. But we later learned a hard lesson when

high water runoff washed out what remained of the beavers' old dam, which they no longer maintained. This left a much-diminished pool that was too shallow to supply our ditches. Now we will need to resort to manmade structures and systems to replace what we had previously taken for granted. We now realize that nature will never run out of lessons for us, as long as we're willing to pay attention.

WOODED WONDERLAND

This land offers vistas of imposing mountain peaks, approachable forested hillsides and varieties of geologic formations. But the defining feature is the extensive mountain meadow, within the quintessential Colorado high country, at its center. The amazingly diverse mixture of grasses and other plant species were surely what attracted the homesteader to begin with. Combined with the aforementioned luxury of plentiful water, it was ideal for livestock grazing and afforded some opportunities for haying.

Today, grazing is incidental. It occurs when

Sight seeing. The land offers vistas of imposing mountain peaks, approachable forested hillsides and varieties of geologic formations.





Blending in. All three buildings and constructed elements attempt to reflect and complement the natural composition that informs them.

CREDIT: SAMANTHA CARLIN/GREEN BUILDER MEDIA

trespassing cattle, who summer in the high parks in the surrounding national forest on grazing leases, are driven down for the winter, with many headed to market. They are present sporadically for only a few weeks in the late summer and early fall. Ironically, the property has long been fenced to restrict their access, although the old fences are in disrepair and exist nowhere near the actual boundaries of the private ownership. Over time, we have removed much of the derelict barbed wire and rotted posts, replacing them with more accurately located, wildlife-friendly fencing as part of ongoing efforts to preserve the nutritional value of the meadows for the indigenous species.

This is what is known in the West as “open range,” which means that it is our responsibility to fence the cattle out, not the task of the rancher who owns the herd to stay away. Part of our primary long-term objective is to benefit the area’s wild species through constant improvement of growing conditions, soil, irrigation and plant mixture to maximize the land’s value for the moose, elk, and mule deer that are

the ecosystem’s primary herbivores. Predator species and a wide range of smaller mammals, birds, and a myriad of insects and invertebrates enjoy the ideal conditions as well. So, paradoxically we erect and tend fences to protect wild land and animals.

Still, our presence and activities must be taken into account as part of the overall calculations. By its very nature, construction is invasive and disruptive. The excavation of the driveway came first, then the drilling of a domestic water well, followed by careful siting of the building footprints aimed at minimizing the inevitable impact on the landform and forest that dominates this part of the acreage. We deliberately and patiently considered the location and condition of each tree, rock formation and boulder with an eye toward preserving the natural integrity of the site to the best of our ability, while pursuing maximum utility and enjoyment of such a beautiful and remote natural environment.

A POWERFUL LESSON

We are entirely off grid, so all electrical power generation takes place onsite. By necessity, we kept the building sizes compact with small footprints and held to very disciplined square footage. The total conditioned space in the three

buildings (which provide four dwelling units and include a heated garage/workshop), has been limited to 4,000 square feet. Only 60 percent of that total is at ground level, with the balance in second-story spaces. Generous outdoor living areas and amenities add to the livability and enjoyment of this remarkable setting; they are intended to keep occupants in constant connection with as much nature as possible.

We have only begun to unlock the secrets that surround us here. We have already come to know that our ongoing presence is not guaranteed and that it requires a commitment to stewardship and protection of the matrix of natural systems that combine to create a place of such serene natural wonder. We also recognize that the bounty surrounding us does not exist for our benefit alone and that it belongs to, and must be shared with, many species.

To imagine, to create, to build are all irrepressible parts of who we are. But the privilege of working here requires the maintaining of balance; of respect for what awaited us when we arrived. Our handprints must be tempered with humility. An acceptable reconciliation of the built environment and nature is our ultimate objective. Only time will reveal whether we have achieved the harmony we endeavor to compose. **GB**

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To learn more about the VISION House

Mariposa Meadows, visit: <https://www.greenbuildermedia.com/vision-house-mariposa-meadows>.



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HOUSING 2.0

DISRUPTIVE INNOVATION, PART II: 'WHAT' HOUSING DISRUPTION (OUCH, INDEED)

A worsening trade shortage is a sore subject for builders. Here are four innovations to **relieve the pain**.

BY SAM RASHKIN

This is Sam Rashkin's latest in a series of articles based on his second book, "Housing 2.0: A Disruption Survival Guide." It is intended as a roadmap for high-performance builders to become the most successful in the industry.

As noted in my previous article ("Why' Housing Disruption," [September/October 2023 issue](#)), builder pain thresholds appear to be at their breaking point with five converging crises: a lack of user experience readiness, affordability, trades, productivity, and digitization. There are vast opportunities to improve the housing user experience (UX), and homebuyers have vastly greater information with which to identify industry laggards. Homebuyers have reached their affordability limits in a growing number of markets, and already there is evidence of significant migration from high-cost to low-cost markets. Builders know they need a longer-term solution for a rapidly growing trade shortage that is projected to get much worse. The missed cost savings incurred due to the industry's low productivity and increased use of digitization are becoming too much to absorb in the retail price of housing. In short, it's time for disruption.

The good news is there are four underutilized, market-ready innovations that can mitigate the severe pain. They are:

- UX Optimization
- Mass Customization
- Digitization as a Service (DaaS)
- Offsite Construction

INNOVATION #1: UX OPTIMIZATION

Steve Jobs, the founder of Apple Corporation, is famous for this quote: "If you keep your eye on the profit, you're going to skimp on the product. But, if you focus on making really great products, then the profits will follow." Seems so simple. The financial outcome in the case of Apple has been astounding. In 2011, the company had more cash reserves reported than the entire U.S. Treasury. In contrast, the predominant focus for the housing industry is on minimal first cost. This is profoundly evident with my frequent audience survey question, "What does 'builder grade' mean?" That's because I always get the same resounding response shouted back at me: "Cheap!" I'm baffled, wondering how an industry that sells the ultimate consumer product can be complacent with the common consumer perception that builders left to their own devices always choose the cheapest option.

My book, "[Housing 2.0: A Disruption Survival Guide](#)," uniquely advocates using the Apple business model, with a dominant focus on making great homes to ensure the profits will follow. At its core is a comprehensive framework for consistently optimizing the homeowner UX, one that includes 5 key UXs, 19 strategies, and more than 160 best practices (Figure 1). This framework is based on extensive research and over eight years of vetting with hundreds of housing professionals. And most importantly, in addition to a superior UX, substantial cost savings are achieved by minimizing waste and complexity and optimizing systems integration. As a result, this innovation delivers better homes for lower cost and is immediately actionable for all housing professionals.



By the letters. A homebuyer's user experience, or UX, is the No. 1 factor in how well a home builder succeeds in getting its job done. CREDIT: ANDRANIK HAKOBYAN/ISTOCK

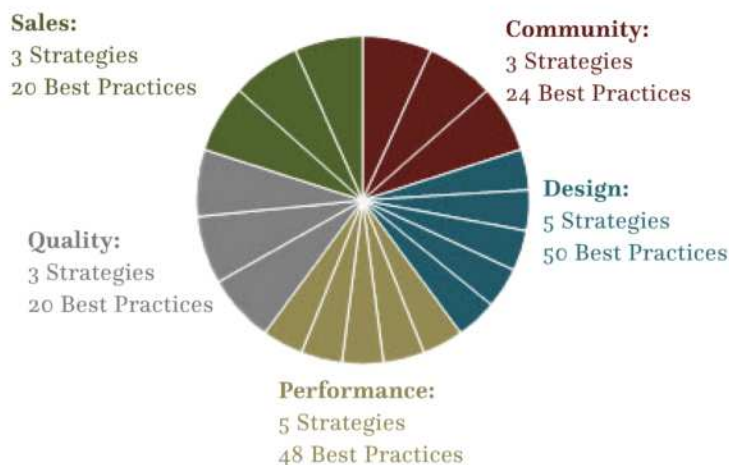


Figure 1: Housing UX optimization framework

INNOVATION #2: MASS CUSTOMIZATION

Personal observations suggest builders offer way too much customization to their homebuyers, which adds cost and stress. While this assessment is highly controversial to many of my builder friends, evidence backs it up. For instance, while at a large custom builder conference a few months ago, the builder panels I attended frequently featured stories about clients overwhelmed with all the decisions they had to make. They literally broke down in tears, became exhausted, or occasionally slipped into marital conflict. Much more limited choices carefully curated by experts and optimized for design, performance and quality can provide perceptions of significant choice and a much better consumer sales experience.

An analogous example demonstrating the business case for less customization is the huge success of Costco, the second-most trusted company in the U.S. in 2023, according to the annual Axios Harris 100 poll. Its compelling and unique retail business model consists of offering substantially lower consumer choice with expertly curated products at fair prices. The result is much more limited product stock keeping units (SKUs), creating immense buying power, low retail markup and high inventory turns that have solidified the brand's value proposition over time. These observations lead to two theories. First, mainstream

builders can't afford all the customization currently being provided. And second, a perception of significant customization in new homes can be created at much lower cost, with limited design options expertly applied to a standard set of internal and external building blocks. This is mass-customization.

Among the impressive but limited examples of mass customization, I often cite a new development called **Lago Place by Younger Homes** in Lake Travis, Texas. Figure 2 shows a simple set of building blocks for the lower, ground, and upper levels that can be combined into 25 different home plans, with diverse choices relative to interior living, outdoor living and amenities. This, along with impressive use of "Housing 2.0" design optimization best practices, results in substantial cost savings from minimized waste and simplicity along with fully integrated systems. However, mass customization remains a highly underutilized innovation in the housing industry.



Figure 2: Mass-customized development

INNOVATION #3: DIGITIZATION AS A SERVICE (DAAS)

The digitization process creates a virtual twin of a product on the computer that enables optimization of design, materials, waste reduction, systems integration, assembly, quality and risk reduction. Every other major industry fully digitizes products before going into production. Companies would be crazy to not leverage these benefits. It's time for housing to broadly leverage them as well, because they directly relieve the pain imposed by many of the crises confronting this industry.

An example of a fully digitized home is shown in Figure 3. Once design UX is optimized with mass customization, the added cost of digitization can be amortized by applying the optimized building blocks repeatedly on multiple projects. The key to deploying digitization is that the industry will need to transition from basic users of building Information modeling (BIM) to power users.

INNOVATION #4: OFFSITE CONSTRUCTION

The U.S. is stuck at 2 to 3 percent market penetration for offsite construction, while countries like Germany and Japan have grown to 20 percent, and Sweden leads globally with about 85 percent. The obvious benefit from higher market penetration is substantial relief from a declining workforce, along with significant productivity improvements. In addition,

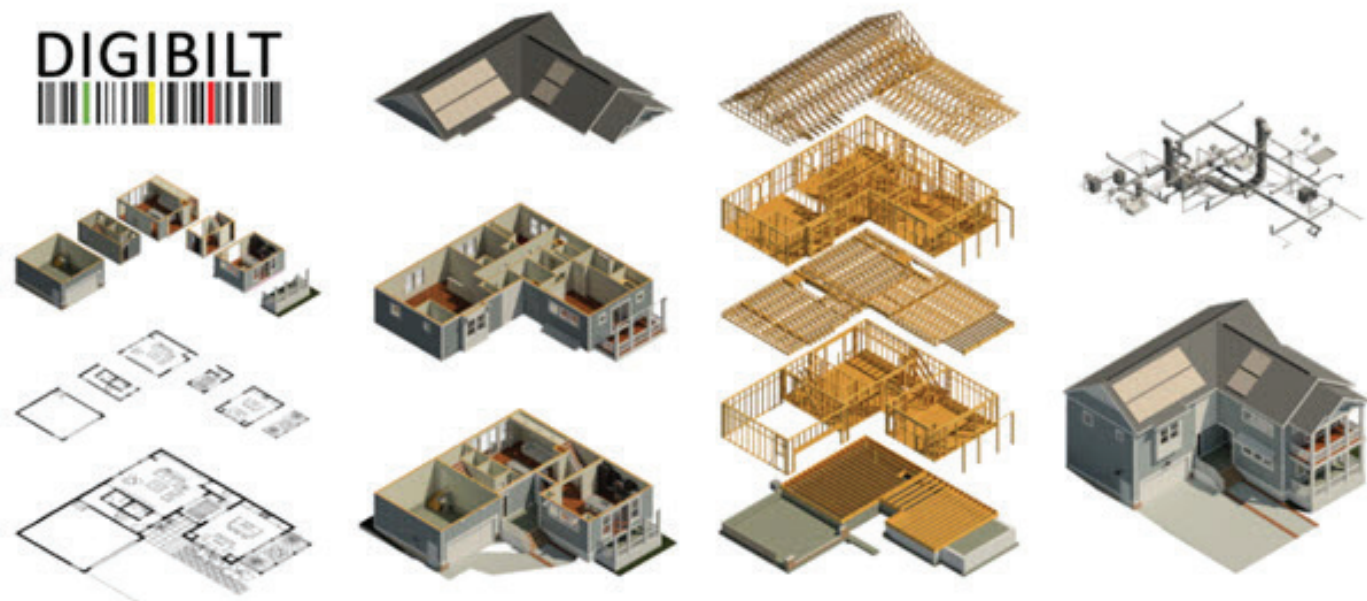


Figure 3: Digitized home constructs a home on computer with fully integrated systems

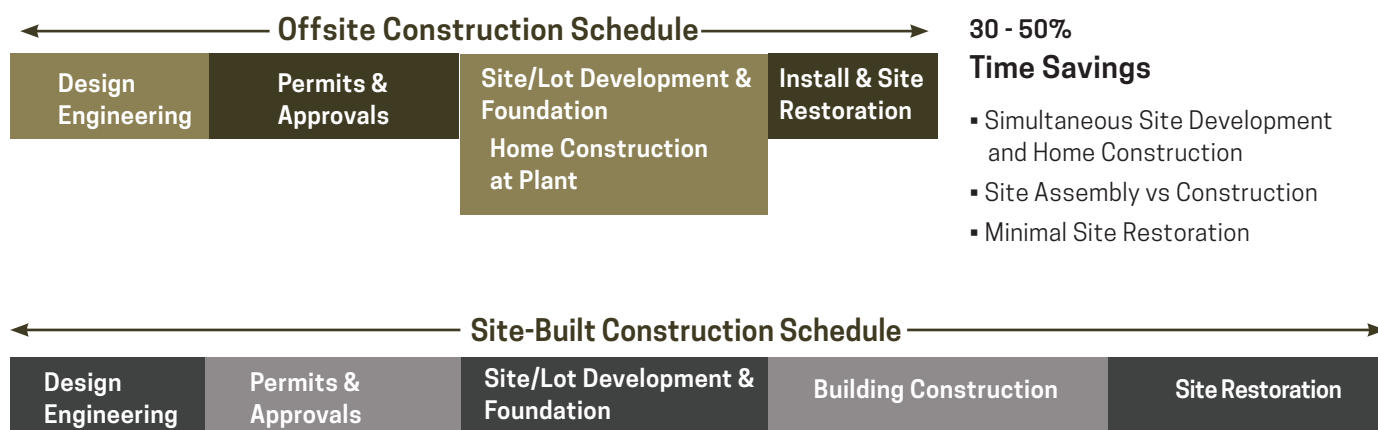


Figure 4: Offsite construction cycle time reduction

tion, offsite production also ensures reduced cycle time, improved quality, greater accuracy, stronger assemblies, less rework, and huge waste reduction.

For example, consider the cost benefits from reduced cycle time, where the construction schedule can be easily shortened by 30 to 50 percent, or approximately 30 days (see Figure 4). If operation costs are \$500 to \$800 per day, this cycle time reduction would be worth \$15,000 to \$24,000 to a builder's bottom line. **GB**

Sam Rashkin's two-decade career as a licensed architect includes serving on national steering committees for the U.S. Green Building Council (USGBC)'s LEED for Homes, Green Builder Media's Green Builder Guidelines, the Environmental Protection Agency (EPA)'s WaterSense label, and EPA's Indoor airPLUS label. He has partnered with Green Builder Media to develop the [Housing 2.0 program](#), which empowers building professionals to design and construct higher-performance, healthier and more-sustainable homes at a fraction of the cost.

The Housing 2.0 program is sponsored by JinkoSolar, LP Building Solutions, Mitsubishi Electric, Panasonic Healthy Indoor Solutions, Schneider Electric, and Sunnova.

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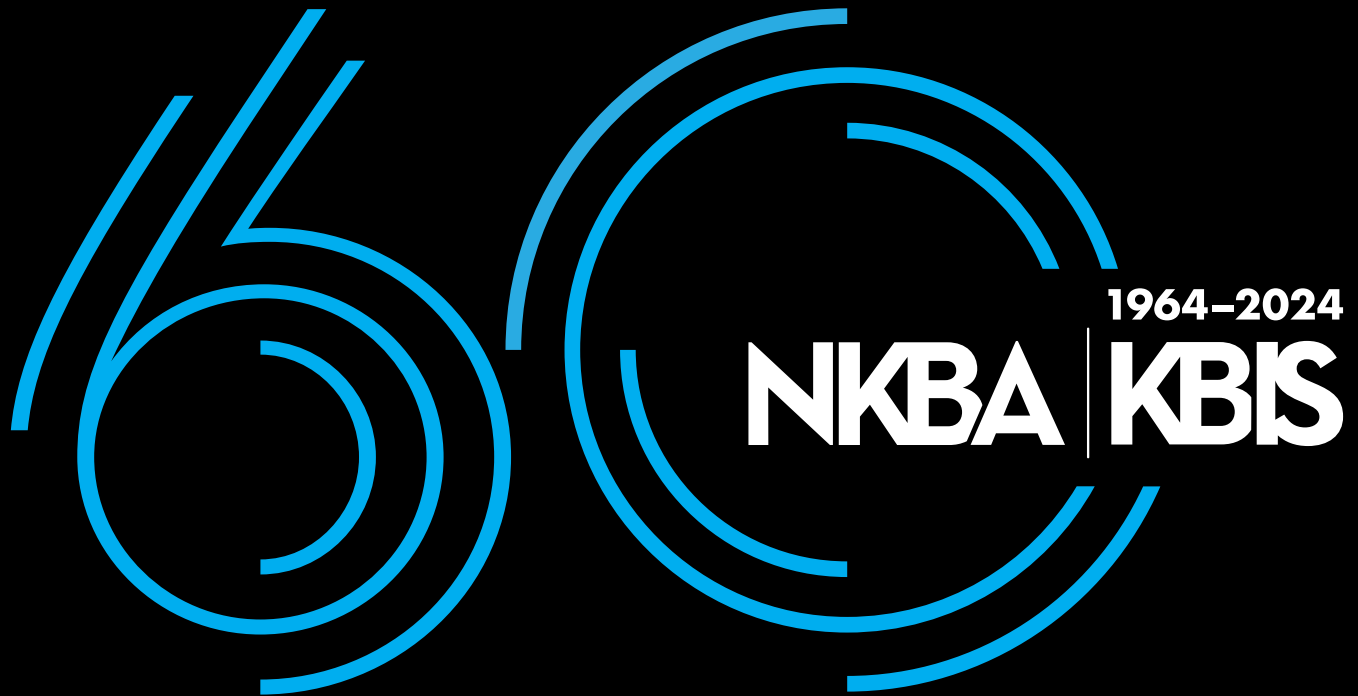
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TAKING THE TIME TO GIVE THANKS



Ron Jones
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S ometime ago I was struck by the realization that the magic of “overnight delivery” doesn’t eliminate any necessary tasks; it just lets us put them off longer. Never mind that the cost of the service goes up astronomically as the time window closes, even though the end result, like the deadline itself, is essentially unchanged.

Procrastination seems to be largely a first world luxury, at least when it comes to everyday chores. A case in point would be my recent engagement in the dreaded battle of kitchen oven cleaning. I had known for a long time that it would have to be done but it was always easy to find excuses to focus on other “important” activities that needed my attention.

However, Thanksgiving’s big bird eventually found its way into the freezer and the time came when the extended period of thawing would need to commence. It seems there was no way out: I had to face the beast.

Now, I must share the truth that the oven in question is a dandy, not only large and accurate but with lots of bells and whistles, one of those being the self-cleaning feature.

I confess that I gave it quick consideration. After all, there were many other things I could be doing. But knowing how much energy it takes to attain the temperatures required for the considerable duration of the operation, not to mention the inevitable smoke and collateral heat that it generates, I rounded up the baking soda, vinegar and other necessities, including what I correctly suspected would be a considerable portion of elbow grease.

The job took what seemed like hours (and a lot of complaining) to complete. In the end, the oven wasn’t as perfect as new, but it was pretty darned good—enough so that I will be proud to introduce the gobbler to it when the time comes.

All of this sounds pretty trite, I know. But while the story being shared is true, it is part allegory as well, and hints at why we find

ourselves giving thanks in the first place. While weighing my options related to this “inconvenience,” I kept coming back to images I had watched on the local news a couple of days prior.

This particular report shared the plight of a group of migrants from Latin America who have been given permission to temporarily stay in our country while they seek more-permanent status and the opportunity to secure better lives for themselves. The group consisted of a few dozen families, including children and infants, and many of the men were forced to sleep in cars under a bridge while they spent their days searching for work.

These men professed to have a variety of valuable skills, including some specific to the construction sector. Unfortunately for them, the employment opportunities in that locale proved to be more limited than they had been led to believe. Some basic shelter and food were being provided by the surrounding community, but those finite resources were rapidly dwindling.

Like millions of disadvantaged and displaced people around the world who struggle to find basic necessities like shelter and adequate sustenance, these migrants also lacked all but the most rudimentary cooking options. Open fires fueled with scrap materials, charcoal and even dung are the reality for many.

At a time when it is harder than ever to find willing, dependable help—nowhere more evident than in our industry—it is really difficult and frustrating to watch people suffer when they are eager to do whatever it takes just to have a job. So, it feels more than a little entitled for me to complain and put off cleaning a marvelous appliance that will deliver the centerpiece of an opulent holiday meal.

I’m not going to pretend that I am necessarily looking forward to cleaning the oven next time around; that would simply be untrue. But when that time does roll around, I hope to not regard it as something I “have” to do, but rather as something I “get” to do. And when it comes to putting things off, as I am sure I will, counting my blessings will not be among them. **GB**



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