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The Electric Future is Coming, But Not Without Struggle

The transition to all-electric living comes with a litany of challenges, but at present, it's the least-worst alternative available for kicking the CO₂ habit.

AS I WRITE THIS, I've just received a press release announcing that the National Association of Home Builders (NAHB) and the propane gas industry have **linked arms in opposition to new building codes** that fast-track electrification of housing, by way of code changes.

This shouldn't surprise anyone. The NAHB has fought against building performance upgrades for decades. It dug in, for example, against low-flow toilets. It resisted residential fire sprinklers. The specter of its opposition to electrification codes, in my opinion, should serve as a bellwether. When NAHB takes a stand against change, it's a safe bet to back the other side.



New tools. Technology such as induction cooktops means that conversion from gas to electric living has little impact on modern comforts and expectations. SOURCE: COURTESY OF WHIRLPOOL/KITCHENAID

But, technological advancements don't always succeed. Right now, the smart money is on whole-house electrification, powered by solar photovoltaics. But as we've learned firsthand while partnering with Steve Easley to remodel a house in Arizona, change isn't always easy.

Easley's shift from partial gas energy to all-electric living proved harder than expected. His home required additional panel capacity, for instance. Transformers on the street may need to be upgraded to handle the load required to charge electric vehicles, induction cooktops, heat pumps and hybrid water heaters, particularly if his neighbors follow the same evolution.

In addition, utilities hope to slow or stop the "renewables + electric" future. Florida Power and Light, for example, has

underwritten a solar-killing bill in that state to end net metering. Oklahoma utilities want to **charge consumers a \$1,400 "exit fee"** to switch from gas to electric.

Home battery storage offers a path around these all-electric roadblocks. But batteries come with challenges of their own. At present, home battery sellers rely on fear (they call it "**peace of mind**") to sell power storage. These fears include power outages, hurricanes and arbitrary utility hikes. Manufacturers face mineral resource shortages. There's only so much lithium to go around, and car makers **have begun acquiring it** at a furious rate. Until and unless affordable, more sustainable options, such as **salt-based** or **iron-based batteries** achieve commercial success, home energy storage may remain a "first serve" amenity for the fortunate few.

Solar panels, wind and hydroelectric energy must be allowed to quickly overtake fossil fuels as our go-to energy source if we're to have any chance of mitigating the perils of runaway climate conditions. The disruptive force is global pollution.

That's not to deny the prospects of a bigger tech disruption in our energy future. Fusion generators, for example, have **made enormous strides**. We could, by mid-century, create "stars in a bottle" on Earth. That's unlikely, however, if we don't kick fossil fuels rapidly.

Chances are you've already taken steps to move the needle toward electric living. It bears reminding, however, that the best time to go electric is during the new construction phase, when walls are open, floorplans fanciful and nail guns blazing. A home with low ACH (air changes per hour), advanced windows, proper solar orientation and an unvented attic won't require the BTU firepower of a gas boiler to stay warm.

If you want examples of homes that are already electrified or good candidates for conversion, this year's selection of the best sustainable projects needs little introduction. We have the technology. We have the talented builders and architects. We have sustainability heroes and bold initiatives from cities large and small. Let's commit to the Manhattan Project of our time, and make all-electric living an all-American success story. **GB**



Matt Power
Editor-in-Chief

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White Glove Installation by Viewrail Employees

Family-owned **Viewrail** has been exceeding builder and homeowner expectations with its stunning floating staircase systems since its founding in 2002. But what makes the Goshen, Ind.-based company even more exceptional came about over the past 12 months.

When COVID shutdowns, supply chain breakdowns, the labor shortage, and a runaway housing market slammed the building industry, Morris and his team took a breath amid the noise—and then got laser-focused on solving builders' most pressing issues.

STAIRS AND RAILING ARE ALL WE DO

Morris emphasizes that Viewrail's secret sauce is design. "If we don't have the right design, nothing else matters," he says. "And we have the right design—our designs are on point, a modern aesthetic that works beautifully in today's homes."

While the company's designs speak for themselves, getting to that polished

endpoint means addressing all the steps that come first. "We have taken all our modern designs and applied a high level of software sophistication to them through our proprietary CAD-based design technology," Morris says. "In fact, we can show our customers 3D renderings in 10s of minutes, not 10s of hours. The ability to do this with VRI—and the investment we have made in it—has really given architects and builders a great ability to visualize how the Viewrail product can enhance their designs and builds."

During the high-tech design process, the team also addresses building code and engineering issues so builders don't have to worry about passing inspections or having to site-adjust faulty designs.

Once the design and shop drawings are completed, the company manufactures the components in its plant. "As soon as the customer says 'Go' we can manufacture, deliver the product, and have it installed in as little as three weeks," Morris says.

SELF CONTAINED MEANS IN COMPLETE CONTROL

Viewrail's amazingly short turnaround time for a custom staircase or rail project is possible because the company controls its own pipeline. "We have been nearly immune to supply chain problems because we have vertical integration in aluminum, wood, steel, and glass," Morris explains.

The command of raw materials and a well-honed design and manufacturing process put Viewrail in a good place to weather disruptions in the housing industry. However, there was one more missing link to a perfect process. "One thing that blindsided us in 2021 was delivery," Morris says. "Truck availability



"We have five modern stair designs that cover the full range of what customers want in modern design, and we have the manufacturing capability, design ability, and code authorization to build these. You have to have all of these aspects to produce a perfect product. If you are missing one piece of this sequence, you simply can't do it."

LEN MORRIS, CEO, VIEWRAIL

was difficult, and coupled with the high damage rate our heavy products suffered on third-party-owned trucks, we knew we had to solve the problem."

Viewrail bought a truck fleet to address the dearth of quality truck delivery services. "This was an ambitious undertaking, but necessity is the mother of invention and we felt caught without a lot of options," Morris explains.

Rounding out its complete control of the process, Viewrail tackled the stubborn labor shortage by hiring and training full-time installers. "We put these installers through great training and then give them a vehicle and all the right tools—everything they need for perfect installations," Morris says. "Installing is what they do every day, and it's why we are speedy."

SUSTAINABILITY AS A GOAL

While Morris and his team, which includes his wife and two sons, have always kept sustainability at the forefront as a general rule, the company's shift to handling deliveries gave them a surprising green lift.

"One of the huge benefits of having our own delivery is that we massively reduced product packaging," Morris says. "We now pack our products in reusable blankets and no longer use foam. We reuse sawdust from the manufacturing process and corrugated cardboard as packing material."

"I have been on the warpath against our usage of plastics and foam," Morris adds. "Now that we deliver the stair systems ourselves, we have reduced our use of plastic by 75 percent."

LOOKING TO THE FUTURE

2022 promises to be a big year for Viewrail as it expands its installer and fleet base. But Morris keeps his focus squarely on the main strength of Viewrail: extraordinary designs. "I have seen much of the world's best architecture—from Shanghai to St. Petersburg to Greece—and I have spent a lot of time thinking, looking, and designing," he says. "I am on the jobsite every week, talking to installers and homeowners and builders, keeping my ear close to the ground, and continuously bringing new ideas back to the company. From there, our R&D folks work through new designs that work beautifully for today's homeowners."

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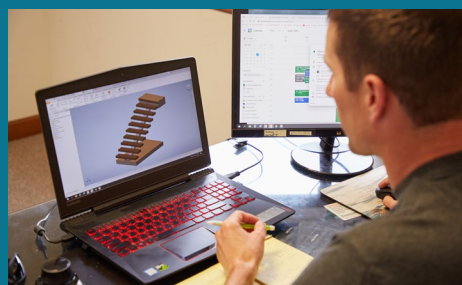


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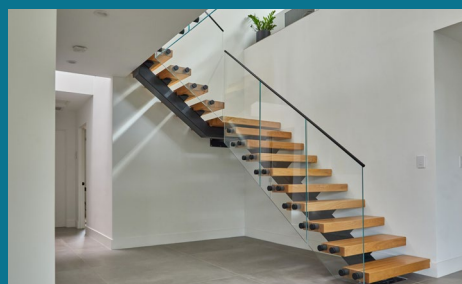
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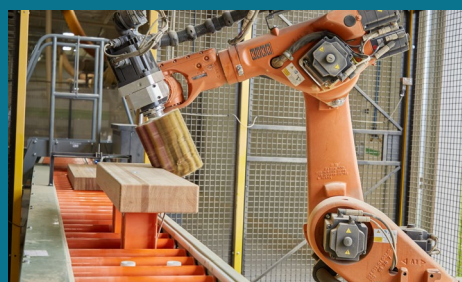
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6
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SUSTAINABLE CITIES OF THE YEAR: We honor Boston, Massachusetts, Ithaca, New York, and Parry Sound, Ontario, Canada for their different steps toward swapping carbon emissions for net zero status.

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SECOND LIFE: Felicity House shines above its peers, thanks to optimized insulation, durable roofing and synergy with its historic neighborhood.

MOST INNOVATIVE

EVERYTHING IN ISOLATION: This 'Wattage Cottage' offers a glimpse at sustainable features that one day might be part of every home.

BEST NET ZERO

BEAUTY WITH A CONSCIENCE: More than just a stellar design feat, this modern masterpiece proves that net-zero performance and comfort can coexist

MOST SUSTAINABLE MULTIFAMILY

DOUBLE DENSITY: SYMBI's Duplex One brings a sustainable two-step to the Washington, D.C. housing market.

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READY FOR THE NEXT ONE: The road to Puerto Rico's hurricane recovery has led to Mi Casa Resistente, a catastrophe-ready tiny home with a big mission.

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Sustainability Awards 2022

A stylized illustration of a sustainable city. In the foreground, a white and green high-speed train travels from left to right. Behind it, there are several green buildings of different shapes and sizes. One building has solar panels on its roof. To the left, a green wind turbine stands on a small hill. The background features rolling green hills and a light blue sky with white clouds.

Green Builder's annual Sustainability Awards recognize people and cities that are leading by example when promoting why and how to go green.

This year, we honor our Sustainability Superhero, Tim O'Brien, and the cities of Boston, Massachusetts, Ithaca, New York, and Parry Sound, Ontario, Canada, as Sustainable Cities of the Year. All are demonstrating tremendous leadership in their efforts to solve environmental challenges. Congratulations to all of our winners.

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SUSTAINABLE
CITIES OF THE YEAR

Ground Rules

SUSTAINABILITY SUPERHERO

Tim O'Brien has three keys to success: planning, open mindedness and sharing what you know.

BY ALAN NADITZ

For Tim O'Brien, it all started with a little thing called building science, at a time when the phrase wasn't quite in vogue yet. This was in the mid-1990s, when there was also a new thing called LEED certification that some builders were starting to work toward. Both caught the civil engineer's ears, and soon he was taking an employer-sponsored course that delved into the latest performance-enhancing techniques for building homes.

Fast-forward into the early 2000s. O'Brien was working for a regional builder, and was involved with a home construction program through CertainTeed. The builder was also a devoted participant in the U.S. Environmental Protection Agency's ENERGY STAR program, with all of its homes undergoing that certification, O'Brien says.

These programs further enhanced O'Brien's knowledge of structural engineering and ways to improve a home's energy efficiency. "I just ate that stuff up," he says.

Then the recession hit. "For the builder I was working for at the time, it was all about cutting costs," O'Brien recalls. "He was no longer going to do the Energy Star program, and I felt that was a mistake, because it was really starting to gain traction."

So, in 2007, O'Brien—Green Builder's 2022 Sustainability Superhero—did what any construction specialist does during an economic downturn: He started his own company. He and a business partner, Mike Neumann—who would go on to launch SunVest Solar two years later—opened **Tim O'Brien Homes** (TOBH) in Milwaukee. It would expand into Madison, the state capital, in 2012.

The construction firm had a mantra: Every new home would have third-party LEED certification, as well as certification through one or more energy efficiency programs, including Energy Star, Wisconsin's Focus on Energy, and the city of Madison's Green Built Home Program. "Our focus was on energy certification, and then green-built home certification," O'Brien says. "That was going to be our marketing differentiation. We both believed in it; it was the right way to build a home."



Forward thinker. Tim O'Brien has made a living out of presenting the positives from sustainability-focused homes, from environmental benefits to cost efficiency. CREDIT: COURTESY OF TIM O'BRIEN HOMES

GREEN BUILDER®
Sustainability
Awards 2022



Winning combo. Red Fox Crossing, Wisconsin's first solar-powered net-zero neighborhood, is a sustainability crown jewel for Tim O'Brien Homes and partners Neumann Developments and SunVest Solar. CREDIT: COURTESY OF TIM O'BRIEN HOMES

NO NICHE MARKETING

In the late 2000s, green building was a niche item among Madison area builders. Their projects topped out at 20 homes. O'Brien and Neumann believed the marketplace standard could be 100 to 150 homes. "We knew the home was not going to be the cheapest on the market, but it was going to provide the best value for our customers," O'Brien says. "Our customers needed to be able to understand that value."

TOBH offered free energy efficiency upgrades—but "we could never get people to take them," O'Brien recalls. "So finally, I decided I was just going to bite the bullet and add this cost into our homes, and we're going to sell it to consumers as best we can. If I believe that this is the right combination of air sealant and insulation additions that we can use to place our home above the certification requirements, I'm also going to stress that it's going to provide a more energy-efficient and comfortable home."

All of the enhanced features would remain—there was to be no downgrading to close a sale. In the long run, the persistence paid off. "We started to hear about it on our year-end surveys: 'We can't believe how comfortable this home is and how low our energy bills are,'" O'Brien notes. "People are now experiencing the benefits, things that they never would have if changes in terms had been made at the time of purchase."

THE GRAND PLAN

By 2008, O'Brien had been heavily involved in the local home builders association for several years, when one of the other members approached the group with a proposal: He wanted to make "The Home of the Future," a structure that would define what the typical house would look like in 20 years. O'Brien and other association members contributed; the home featured structural insulated panels (SIPs), greywater recycling, recycled plastic shingle roofing, a photovoltaic array and a solar water heater, and even a permeable concrete driveway made with recycled content.

In 2009 came "The Energy Producing Home," which called for the conversion of a natural gas dwelling into one run entirely on solar. It was, effectively, an early foray into electrification, according to O'Brien.

The energy producing home evolved into a grand plan: A completely net-zero neighborhood. That project, Red Fox Crossing in nearby New Berlin, opened in 2018 and featured 34 homes of 1,800 to 3,200 square feet that were each primarily powered by 6- to 8-kilowatt (kW) solar arrays. They were ENERGY STAR, EPA WaterSense and EPA Indoor airPLUS certified. The grand opening model, Savannah, is one of Wisconsin's first three homes to be certified as a Zero Energy Ready Home (ZERH) by the U.S. Department of Energy (DOE). Red Fox Crossing is also the state's first net-zero community.



Bright ideas. Special features such as upgraded countertops, insulation and lighting are included as part of the purchase price—and most customers couldn't complain.

CREDIT: COURTESY OF TIM O'BRIEN HOMES

TRAINING GROUND FOR TRADES

Red Fox Crossing served as a springboard for other TOBH net zero communities around Madison. In turn, O'Brien's projects have provided training grounds for high school students considering careers in home construction. Over the past 12 years, the company has worked with several high schools in and near Madison, offering apprenticeships through its School Building Trades program. There are currently four high schools participating; each one has 12 to 15 students enrolled annually.

Students work alongside a TOBH construction team and contracted trade partners to build a home from start to finish in a project neighborhood. They spend a minimum of three hours per day on site and are exposed to all facets of housing construction. Finished homes are later sold to community residents.

"Our trades typically end up hiring three to seven kids out of the program at some point, once they graduate high school," O'Brien says. "These folks have become plumbers, electricians, HVAC technicians, carpenters, siding experts—we even have one from about seven years ago who has since started his own carpentry company."

O'Brien is working with another builder to start a similar apprenticeship in a neighboring county. "There's a lot of demand for this program," O'Brien says. "For us, it meets one of our core values: to embrace social responsibility. This really gets into our community involvement, providing an outdoor classroom for kids to learn and focusing on educating people on our green message."

ALL ZERH ON THE HORIZON

The big goal now, according to O'Brien, is for every home built by the company from 2023 on to be ZERH. There's also the EPA's upcoming ZERH 2.0 program, in which TOBH will build an all-electric version of an older, not-quite-off-fossil fuels house located down the street. The two will be virtually identical in terms of appearance and size, and will be compared for differences in factors such as utility costs, indoor air quality and overall air envelope over a one-year period. "It's going to be a traditional Tim O'Brien home with a natural gas furnace, water heater and stove against a home that is all electric," O'Brien says. "We're very excited to see the results."

TOBH's results speak for themselves. Fifteen years of success, more than 2,200 home certifications, and dozens of building awards. O'Brien says he couldn't have done it without the help of others in the industry. "There are so many people I want to thank, who are industry leaders in their own ways," he says. "Gene Myers (Thrive Home Builders), Sam Rashkin (architect and author), Suzanne Shelton (Shelton Group), Gord Cooke (Construction Instruction), Ron Jones (Green Builder Media), and of course Mike (Neumann) and so many others. They're all huge influencers that helped me get to where I am today." **GB**

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Workforce generator.

Each year, construction students from school districts in the Madison, Wisconsin area practice their trade on one of Tim O'Brien Homes' new dwellings, such as this one by the School District of New Berlin's crew in 2020.

CREDIT: COURTESY OF SCHOOL DISTRICT OF NEW BERLIN

GREEN BUILDER® Sustainability Awards 2022



Leading by Example

SUSTAINABLE CITIES OF THE YEAR

BY GREEN BUILDER STAFF

As we pass the sober benchmarks of the climate crisis, decarbonization has become a rallying cry for urban planners. This year's Sustainable Cities winners are taking different steps toward swapping carbon emissions for net zero status. Congratulations to Boston; Ithaca, New York; and Parry Sound, Ontario, Canada!

Green goals. Boston has made sustainability a major priority for the next several decades, aiming to reduce carbon emissions by 50 percent by 2030, 80 percent by 2035 and 100 percent by 2050.

CREDIT: R. BOED/FICKR

LARGE MUNICIPALITY

Boston, Massachusetts

The city's first cross-laminated timber project opens the door to multi-story, wooden net-zero structures.

GREEN BUILDER®
Sustainability
Awards 2022

As one of the nation's largest cities, Boston also has one of the more-extensive climate action plans. By 2030, the "Athens of America" hopes to make severe cuts to production of greenhouse gases (GhGs), increase net zero status in buildings, and work toward minimizing the impact of climate change, as the city heads toward carbon neutral status by 2050.



New approach. Described as a Passive House Demonstration Project, this near-net-zero multi-family dwelling in Roxbury, Boston, has brought similar projects to the city. CREDIT: FORBES MASSE STUDIO

POPULATION
675,647

1ST U.S. CITY
TO REQUIRE LARGE BUILDING
PROJECTS TO BE LEED
CERTIFIABLE

SOLID WASTE REDUCTION
GOAL BY 2030
80%

SOURCE: DSIRE

A project by the architects from the Massachusetts of Technology (MIT) spinoff Generate Architecture + Technologies (GAT), and design and construction firm Placetaylor, fits right in. The five-story building in the city's Lower Roxbury district is made from cross-laminated timber (CLT), which eliminates most of the GhG emissions associated with standard building materials. The 14-unit structure is Boston's first full CLT building and is so energy efficient that its net carbon emissions come to essentially zero, according to GAT CEO John Klein.

Most attempts to quantify a building's GhG contributions focus on the building's operations, especially its heating and cooling systems. But the materials used in a building's construction, especially steel and concrete, are also major sources of carbon emissions and need to be included in any

realistic comparison of different types of construction.

Wood construction has tended to be limited to single-family houses or smaller apartment buildings with just a few units, narrowing the impact that it can have in urban areas. But recent developments—involving the production of large-scale wood components, known as mass timber; the use of techniques such as CLT; and changes in U.S. building codes—now make it possible to extend wood's reach into much larger buildings, potentially up to 18 stories high.

Several other CLT-related projects have since gotten underway in Boston. The city's efforts mirror those in other cities such as Chicago, Milwaukee and Portland, Oregon.

"There's a definite climate crisis," says Colin Booth, Placetaylor's strategic director. "The city needs to do its part in helping to address it."

Final chapter. If all goes as planned, Ithaca, New York's reliance on natural gas, propane and other fossil fuel-based energy sources will come to an end by 2030. Taking their place will be green sources such as solar and wind. CREDIT: PAUL SABLEMAN/FICKR



MID-SIZED MUNICIPALITY

Ithaca, New York

While fossil fuel-based energy heads into its final years, clean air-driven electricity gears up to be the city's power source by decade's end.

GREEN BUILDER®
Sustainability
Awards 2022

Say goodbye to natural gas, propane and other (GhG) generators in Ithaca, New York. If all goes according to plan, all 6,000 of the city's buildings will be decarbonized and electric powered by 2030. That setup will be the first of its kind for any city across the country, and will take place up to 20 years before most others, according to Luis Aguirre-Torres,



Research partner. Cornell University has been Ithaca's main green energy proponent for decades via solar farms, environmental studies and pollution-removal efforts. The university will work with the city as it attempts to go all-electric by 2030. CREDIT: KEN LUND/FICKR

POPULATION
32,103

400,00
METRIC TONS OF CO₂
PRODUCED ANNUALLY

AVERAGE ANNUAL SAVINGS
FOR HOMEOWNERS
\$60,000
FROM DECARBONIZATION OVER 10-15 YEARS

Ithaca's director of sustainability.

Buildings account for nearly 40 percent of GhG emissions in the United States. Ithaca's initiative is projected to cut about that much from the city's overall carbon footprint—saving approximately 160,000 tons of carbon dioxide by 2030, according to Aguirre-Torres. That's the equivalent of the emissions from about 35,000 cars driven for a year.

Ithaca has about eight years to achieve the full decarbonization goal set forth by the city's Green New Deal plan passed in 2019. Aguirre-Torres says implementing this program could get the city halfway there within the next three to four years.

The program aims to tackle 1,600 buildings within the first three years, and then complete the remaining 4,400 buildings by decade's end. Aguirre-Torres says the program will operate on a voluntary basis in the beginning, but believes

it could eventually become mandatory. He added that they are working to make the program as affordable as possible for those that participate.

Decarbonization and electrification of buildings in the city will mean installing solar panels and replacing natural gas stovetops with electric ones. It will also involve installing more energy-efficient heat pumps. In summer 2021, the city passed legislation banning use of natural gas and propane on new or renovated construction, which means all of Ithaca will eventually switch to electricity, Aguirre-Torres notes.

The director admits the project is a massive undertaking, but it's also one that someone has to lead the way with. "It may sound crazy," he says. "But if we can demonstrate that it can be done, we know it can be replicated all over the United States."

New era. Parry Sound is transforming from a fossil fuel-based city to one driven by sustainable power sources such as solar arrays, electric batteries and smart water management. CREDIT: THOM MORRISSEY PHOTOGRAPHY



SMALL MUNICIPALITY

Parry Sound, Ontario, Canada

This Canadian town fast-tracks net zero goals with grants and First Nations wisdom.

GREEN BUILDER®
Sustainability
Awards 2022

A waterfront town in the southern region of Northern Ontario, Parry Sound's human presence expands and contracts enormously each year, booming from 6,000 up to about 100,000 residents during the summer tourist time.

"One advantage we have is that we're not exactly a tourist destination," notes Forrest Pengra, the town's manager of



Energy goal. Electric vehicles (EVs) are in Parry Sound's future. As of late 2021, the city had 22 EV charging stations, 12 of which are Level 3, or fast-charging, according to [chargehub.com](https://www.chargehub.com). CREDIT: CANADIAN ELECTRIC ASSOCIATION

POPULATION
6,408

37%
OF CO₂ EMISSIONS FROM
REGION'S BOATS

NUMBER OF UNESCO BIOSPHERE
RESERVES IN CANADA
13

infrastructure and technology. "We're sort of the commerce hub for the region." Tourists cascade into surrounding areas seasonally to enjoy the lakes, camping, hiking and so on, but they come and go from Parry Sound when they need supplies, food or an outing.

Despite this rapid influx and exodus, this small town is making rapid strides toward decarbonization by modernizing its grid, installing solar arrays, adding battery storage to town buildings, putting in EV charging stations and installing smart hot water controls. The city has also had a major financial boost: a \$2.9 million federal government grant, part of the Smart, Proactive, Enabled, Energy Distribution – Intelligently, Efficiently and Responsively (SPEEDIER)—smart grid project. The town is on track to become one of Canada's first net-zero communities.

"The net zero ambition comes straight from the mayor," Pengra adds, "and that makes a big difference."

Key to that goal, Pengra adds, is a collaborative, localized

approach. "We're one of a bunch of small municipalities that have come together under the Integrated Community Energy and Climate Action Plans (**ICECAP**), a partnership with First Nations," he says. "We all put money into the Georgian Bay Biosphere. I think our contributions were \$14,500, and that gives us a full profile."

With that profile, the town can benchmark its progress toward various environmental goals. "We've just completed benchmark one," Pengra notes, "and are now working on adaptation, benchmark two. We're also part of a **UNESCO Biosphere Reserve**. That's been beneficial in many ways too."

It's no coincidence that these benchmarks mirror some of the ancient stewardship principles of the First Nations people in the region.

"They base their decision making on planning for seven generations," Pengra says. "I think we can learn a lot from that."

Learn more about Parry Sound at its [website](https://www.parrysound.ca).

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GREEN HOME OF THE YEAR AWARDS 2022

BY GREEN BUILDER STAFF

SOMETIMES, THE OLD ADAGE “LOCATION, LOCATION, LOCATION” MAKES ALL THE DIFFERENCE. The 2022 Green Home of the Year winners offer the right perks: they're environmentally friendly, well constructed, energy efficient and creatively designed. But our grand winner topped them all thanks to its sustainable new “old look” within an existing neighborhood.

Our expert panel of judges evaluated projects in terms of overall sustainability, resilience, synergy with the environment and surrounding neighborhood, affordability, creativity and the depth of science employed. Here are their choices for the most exemplary and imaginative green homes of 2022.

THE JUDGES



JUAN M. FERNANDEZ founded CVF Homes in 2005, focusing on infill development, and building energy- and water-efficient homes with great design. CVF Homes certifies 100 percent of its homes to the U.S. Department of Energy (DOE) Zero Energy Ready Home Program. It is a proud winner of DOE's Housing Innovation Award in 2019 and Honorable Mention in 2020. CVF Homes is a member of Build San Antonio Green and has received multiple sustainability awards from the city.

Fernandez is a member of Energy and Environmental Building Alliance (EEBA) and serves on the city of San Antonio's planning commission technical advisory committee. He is a past member of the San Antonio Water System Community Conservation Committee (CCC) and past co-chair of the South Texas chapter of the U.S. Green Building Council (USGBC).

He received his Mechanical and Electrical Engineering bachelor's degree from the Monterrey Institute of Technology (ITESM) in Monterrey, Mexico.



CAROL ORONA was born and raised in New Mexico. She is a creative and innovative architectural designer specializing in green high performance and passive solar adobe construction. She holds bachelor's and master's degrees in architecture from the University of New Mexico, and has a passion for uniting the art of architecture with the science of building.

With more than 30 years' experience, she has advanced knowledge in building science, resulting in structures which surpass international energy codes, and integrate water conservation and healthy indoor environments.

As an early innovator in testing and certifying custom homes with Build Green New Mexico and the National Green Building Standard, Orona has led her company to national recognition as a Home Innovation Research Labs LEGACY Green Partner of Excellence.



STEVE BYERS is the CEO of EnergyLogic, an applied building science company based in Colorado, with offices across Colorado and in Hawaii. He is a graduate of the United States Air Force Academy and has been involved with building science since 1993.

Byers has two key philosophies involving EnergyLogic. One is to meet the daily challenges of managing and growing a company “without losing our soul in the process.” The other is to work with “the most committed and creative people imaginable, doing good work in the world,” because he is “my best self when I'm with these people.” He is honored to lead the team at EnergyLogic.

Byers' wife Wynne is the chief culture officer for EnergyLogic (which explains a great deal of his success). He has two amazing daughters as well.



Second Life

Felicity House shines above its peers, thanks to optimized insulation, durable roofing and synergy with its historic neighborhood.

The Felicity House, Green Builder's Green Home of the Year grand winner, started out as a property that had not aged gracefully. Built in the early 1900s, the Bellingham, Washington residence had many toxic materials, did not meet current building code standards due to extremely steep stairs and low ceiling heights on the second floor, and was extremely uncomfortable, due to the lack of insulation and air sealing.

From the Judges

"This home demonstrates that any design can be built to be green."



CREDIT: REBECCA GREENWOOD/GREENWOOD PHOTOGRAPHIC ARTS

Project Stats

NAME: Felicite House, Bellingham, Washington

BUILDER: Jason Wheeler, Instinct Builders, www.instinctbuilders.com

ARCHITECT/DESIGNER: Dan Welch and Zach Jorgensen, [bundle] design studio, www.bundledesignstudio.com

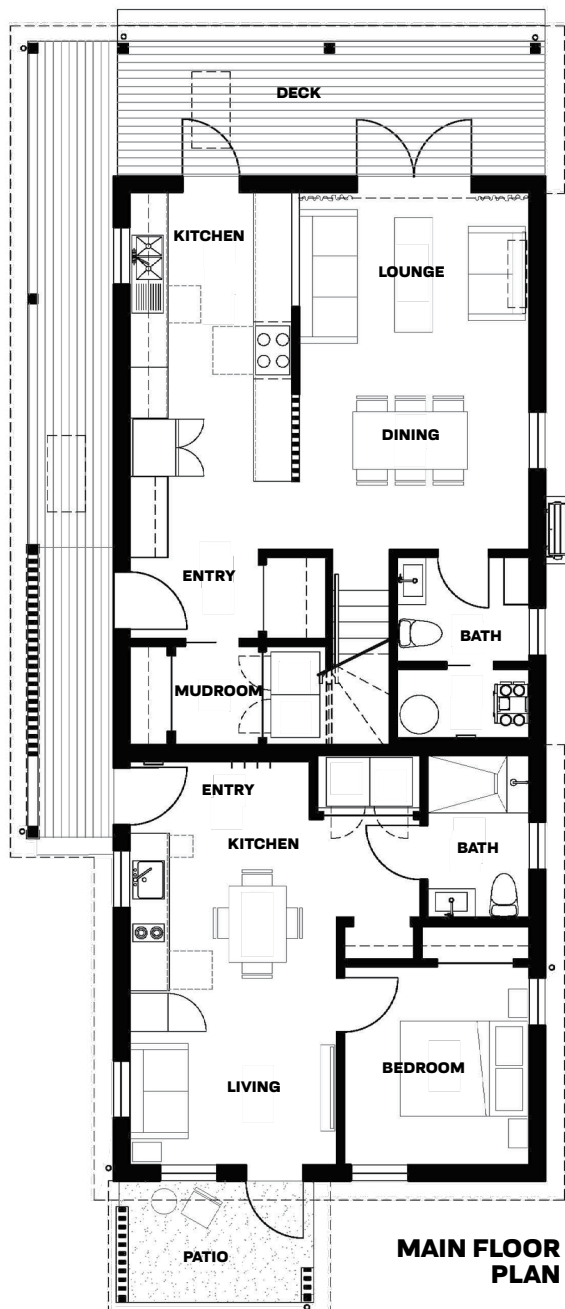
DEVELOPER: Nicole and Dawn Kimberling, Blind Eye Books, www.blindeyebooks.com

INTERIOR DESIGNER: Nicole and Dawn Kimberling

PHOTOGRAPHER: Rebecca Greenwood, Greenwood Photographic Arts



Inner beauty. Felicite House features environmentally friendly elements throughout the house, such as stairs and floors made with sustainably sourced wood and water-saving fixtures in the bathrooms.



After a review of the existing home, the solution was simple: The whole thing had to go. But getting the job done was not as easy. Located in the historic York Neighborhood, where most homes were built between 1890 and 1910, any new structure needed to blend in with its elders. “The owners wanted a house that was more modern in performance but wouldn’t stand out against the neighboring buildings,” says Dan Welch, founder of architecture firm [bundle] design studio. “Although the house has a more

contemporary appearance and layout than its neighbors, using the historic massing makes the new house fit seamlessly into the existing fabric of the neighborhood.”

Nicole Kimberling, the home’s co-owner, agrees. The concept was to design a net-zero, passive-style house “where we could age in place on the same lot where we had already lived for 20 years,” she notes.

The existing early 20th century structure was replaced by a two-story, two-bedroom, 1,275-square-foot unit, which serves as a home and business location for Kimberling and co-owner Dawn Kimberling. There is also a 450-square-foot accessory dwelling unit (ADU) studio that is currently a rental, but will eventually become a retirement home once the Kimberlings choose to retire, according to Nicole Kimberling.

They’re already planning ahead. To accommodate mobility needs that accompany growing older, the house was designed with a discreet ramp. Meanwhile, the studio incorporates ADA features such as a curbless shower, wet room style bathroom, a full kitchen and on-site laundry.

SMART NUMBERS

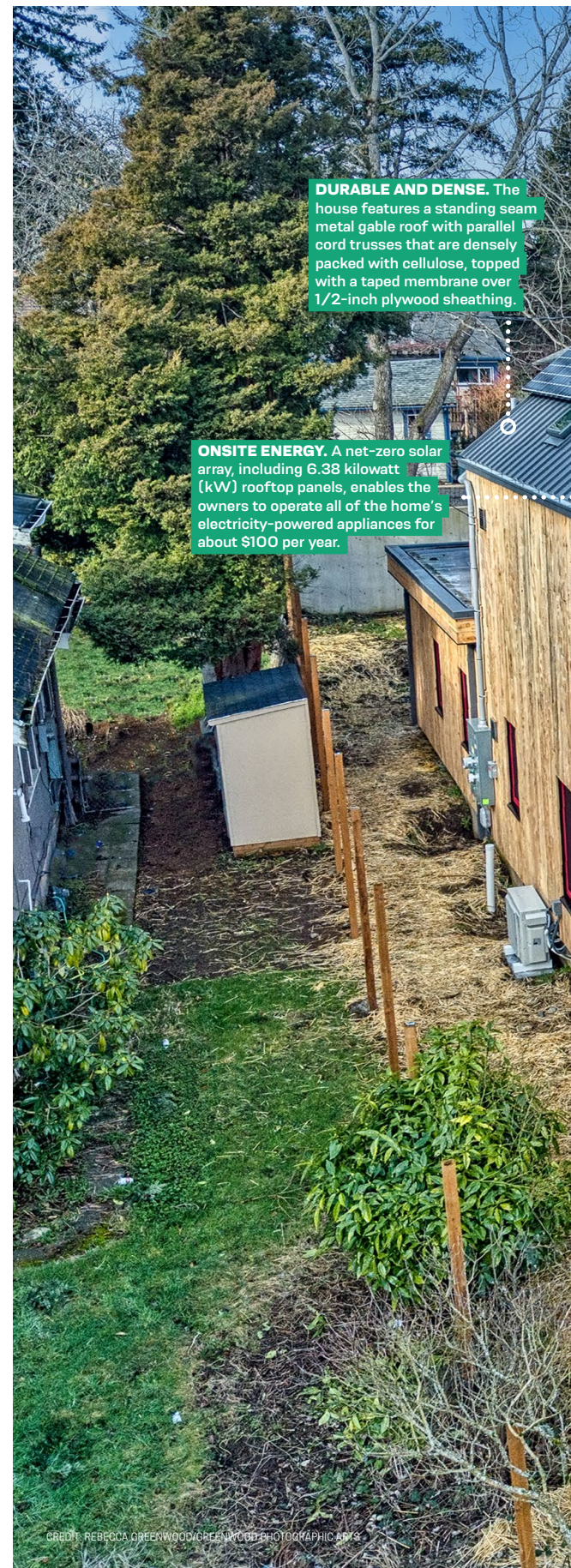
Welch and project builder Jason Wheeler, founder of Bellingham, Washington-based Instinct Builders, utilized Passive House strategies to achieve a high level of comfort and energy efficiency. (The house and the ADU have Home Energy Rating System [HERS] Index ratings of zero and 13, respectively.) These strategies included high performance windows

! Factoid

When State officials advised against holiday travel and meeting with family due to COVID-19, the construction crew continued to work on the Felicity House during Thanksgiving, Christmas Eve and New Year’s Eve.

DURABLE AND DENSE. The house features a standing seam metal gable roof with parallel cord trusses that are densely packed with cellulose, topped with a taped membrane over 1/2-inch plywood sheathing.

ONSITE ENERGY. A net-zero solar array, including 6.38 kilowatt (kW) rooftop panels, enables the owners to operate all of the home’s electricity-powered appliances for about \$100 per year.



CREDIT: REBECCA GREENWOOD/GREENKNOB PHOTOGRAPHIC ARTS



RECLAIMED SIDING. Siding—about 1.25 inches thick—is made from reclaimed Juniper cedar. This gives the home a long-lasting exterior, while preserving forestlands.

HIDDEN ASSETS. Walls consist of carbon-sequestering insulation—including a cork exterior and cellulose cavity—which help the home earn a Home Energy Rating System (HERS) Index score of 0.

THE RIGHT GLASS. Triple pane, argon-filled, low e-glass windows with a solar heat gain coefficient (SHGC) of 0.43 and U-Factor of 0.15 keep the home's heat loss and gain at a minimum during winter and summer, respectively.

Key Components

APPLIANCES: Main house: 30-inch Samsung induction range, 24-inch Bosch dishwasher, 36-inch counter depth Bosch refrigerator, Beko compact heat pump dryer, Beko compact clothes washer.

ADU: 18-inch Bosch dishwasher, 24-inch Bosch refrigerator, 24-inch Beko wall oven, 15-inch JennAir induction cooktop, Beko compact heat pump dryer, Beko compact clothes washer.

BUILDING ENVELOPE: Exterior insulation: Thermacork; WRB: Proclima Fronta Quattro; KlimaGuard air sealing tape

CABINETS, SHELVES, MILLWORK: Smith & Vallee custom prefinished birch

CAULKS AND SEALANTS: Pro Clima Aerosana Visconn sealant

COUNTERTOPS: Formica

EXTERIOR FINISHES: Open joint rainscreen Restoration Juniper siding

FOUNDATION: Floor joists have 16-inch R-43 dense-packed cellulose

HVAC/DUCTS: Diakin ducted and ductless mini split; central heat pump, 12.2 heating seasonal performance factor (HSPF) rating, 17.7 SEER, A/C variable-speed compressor

INSULATION: Dense packed cellulose (wall cavity); 2-inch Thermacork (exterior insulation)

LANDSCAPING: Future green roof

LIGHTING: 100 percent LED

RENEWABLE ENERGY SYSTEMS (SOLAR, WIND, ETC.): 6.38 kW photovoltaic solar array

ROOF: Gable roof: 16-inch parallel cord trusses dense-packed with cellulose, topped with taped membrane, 2x battens for air gap, half hand plywood sheathing, self-adhered membrane, standing seam metal roof. Flat roof: 2-by-10 rafters dense-packed with cellulose, ½-inch plywood sheathing taped, R-12 tapered polyisocyanurate foam board, TPO membrane.

VENTILATION: Main house: Zehnder CA 350; ADU: Zehnder CA 180 heat recovery ventilator (HRV), energy recovery ventilator (ERV); MERV 13 filters, boost switches in bathrooms

WATER CONSERVATION: Low-flow fixtures, PEX piping, compact plumbing

WATER HEATING: A.O. Smith 2.90 energy factor (EF), 80-gallon heat pump water heater

WINDOWS, SKYLIGHTS, PATIO DOORS: Triple-pane, argon-filled, low-e2, fiberglass frame; Cascadia windows with 0.15 U-Factor, solar heat gain coefficient (SHGC) of 0.43.



Long-term money saver. Low-flow fixtures, PEX piping and compact plumbing lead to extreme water conservation, and put the property on the road to an estimated \$41,500 in household savings by 2051. CREDIT: REBECCA GREENWOOD/GREENWOOD PHOTOGRAPHIC ARTS



Study session. A naturally lit room with yard access via a low-e door serves as a study and unofficial household library. CREDIT: REBECCA GREENWOOD/GREENWOOD PHOTOGRAPHIC ARTS



A long view. The main home's kitchen features a hallway's worth of environmentally sound cabinetry, fixtures, flooring and lights—all leading up to a Home Energy Rating System (HERS) Index rating of zero. CREDIT: REBECCA GREENWOOD/GREENWOOD PHOTOGRAPHIC ARTS

(triple pane, with 0.15 U-Factor), continuous insulation (including exterior insulation), and heat recovery ventilation (70 cubic feet per minute [CFM] and 40 CFM, respectively).

“Rather than fighting against the historical nature of the neighborhood, the building was designed to embrace the traditional gable form,” Welch says. “In doing so, the design simplified many of the energy efficiency details.”

For example, most of the surrounding buildings had limited roof overhangs. This design element was used to make clean transitions from wall to roof with the air barrier and continuous exterior insulation, Welch notes.

The owners also wanted to prioritize sustainable construction materials and methods. Felicity House was crafted with simple lines, minimal trim, zero-VOC finishes, and a rewarding pallet of colors and textures.

Carbon-sequestering insulation (cork exterior and a cellulose cavity), and near-Passive House air tightness (the main home clocks in at 0.88 Air Changes per Hour [ACH] at 50 Pascals pressure; the ADU is at 1.5 ACH 50).

Using the most efficient mechanical systems and a 6.38 kilowatt (kW) net-zero solar array, Felicity House is self-powered, Kimberling adds. A typical electric bill for each home is about \$10 per month.

WEATHER WISE

Because the home is in the rainy Pacific Northwest, the building still needed protection from the weather. As most of the surrounding historic houses have front porches, simple flat roofing that could be used below as covered porches and above as roof decks was designed. “These flat roofs provide weather protection to the building and

occupants,” Welch says. “[They also] create a working platform for future maintenance of the building, roof and photovoltaic (PV) system.”

For the siding and decking, [bundle] design studio chose juniper which, like cedar, has natural oils that increase durability. Welch considers juniper a sustainable choice, as it is sourced from grassland restoration projects in Eastern Oregon where the trees are being removed because they use much more water than native species. In addition, much of the cladding is reclaimed, making it an even greener option.

“The siding will ensure that the home ages beautifully with time,” Welch says. “We expect the owners will be sitting on the front porch waving to neighbors on the sidewalk, as has been happening at this site for the last 100 years.” **GB**



What's next?

DAN WELCH, FOUNDER OF ARCHITECTURE FIRM [BUNDLE] DESIGN STUDIO:

"On San Juan Island, we have two single Passive Houses that are entering construction in early 2022."

"Currently under construction in Bellingham, Washington, we have one single-family passive house, one detached accessory dwelling unit (DADU) passive house, and one very large high performance art/music studio for professional creative artists."

"In design, we have three passive house DADUs, one whole house energy renovation, and three single-family passive houses."

"There is LOTS going on...and WE ARE HIRING! It's very hard to find qualified people."





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time of year, LG is
always in season.



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Right angle. A 5-foot overhang shades half of the home's south-facing windows in summer, but allows house-warming sunlight during winter thanks to its angled metallic roof. CREDIT: COURTESY OF SIPA



Green lavatory. Water-conserving fixtures—faucet, toilet, showerhead—as well as energy-saving LED and natural lighting, abound in the bathroom. CREDIT: COURTESY OF SIPA

Everything in Isolation

This 'Wattage Cottage' offers a glimpse at what one day might be sustainable features of every home.



When someone stays at the “Wattage Cottage” in Cuyuna, Minnesota, to get away from it all, they’re getting their wish. The 1,222-square-foot recreational rental house, known as the Cuyuna Project, has almost no connections to the outside world. Sitting on 6 acres in the mountainous Cuyunas Lakes region, Green Builder’s 2022 Most Innovative Green Home of the Year winner is completely off grid and self-sustaining.

From the Judges

“Proof that a great thermal envelope with high efficiency systems can have low enough draw that it can be operated with solar panels and storage batteries.”

Project Stats

NAME: Cuyuna Project, Cuyuna, Minnesota
BUILDER: Tom Puzak, Puzak Properties
ARCHITECT/DESIGNER: Tom Puzak, Puzak Properties
DEVELOPER: Tom Puzak, Puzak Properties
SIP MANUFACTURER: Energy Panel Structures, epsbuilding.com
PHOTOGRAPHER: Structural Insulated Panel Association (SIPA)

Light minded. Extra-large, solid U-Factor windows throughout the home offer energy-saving natural light. CREDIT: COURTESY OF SIPA



! Factoid

Tom Puzak's love of mountain biking led to the Cuyuna Project being constructed a mile away from advanced-level bike trails.

According to Lee Bergum, general manager of Energy Panel Structures, manufacturer of the structural insulated panels (SIPs) that make up most of the two-bedroom, one-bath house, the Cuyuna Project was "built to showcase what the house of the future might look like."

Builder and property owner Tom Puzak, founder of Puzak Properties, says the project resulted from his frustration with the status quo. "Today's 'typical' home is closer to the opposite of the values that I think should be expressed," he says. "I wanted this house

to be small, efficient, use all of its space wisely, be environmentally friendly, use the sun to provide energy and light, and beautiful and inspiring through design and quality materials...yet use no extra materials nor extra money."

Doing so, Puzak notes, required some radical approaches that have since helped people understand that it is possible to have a home of their dreams without draining their bank accounts.

WITHIN THE WALLS

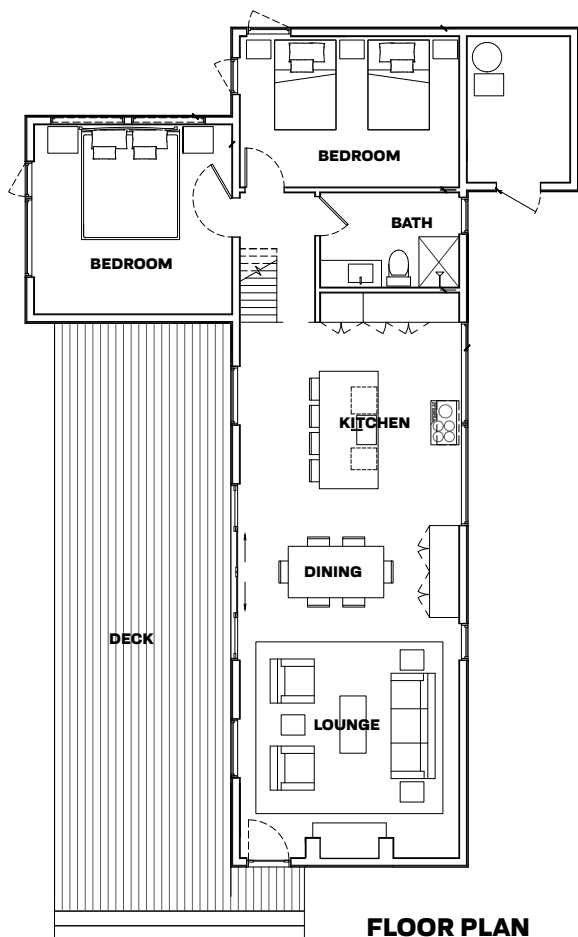
The process starts with the SIPs, which are primarily 6-inch-thick and 9-inch-thick for the walls and ceiling. The SIPs made it possible to erect the wall system in a single step, meaning less chance for installation errors, according to Bergum. "SIPs enabled this project to save cycle time and reduce on-site waste, using an A-grade plywood

interior as an SIP's skin as the interior finish," he notes. "Virtually no drywall, mud, paint or flooring was used."

The design also includes Andersen 100 Series windows with glass upgrades and 0.24 U-Factor, and Andersen 200 and 800 series for doors; a 96 percent efficient Westinghouse combination boiler to support in-floor embedded heat; LED lighting throughout; and air conditioning provided via a 23 SEER minisplit combined with a heat pump. The house also uses well water (from a 330-foot-deep well) and a septic tank.

The home features a 5-foot roof overhang designed to provide cooling shade in the summer, but allow additional sun in the winter as the sun's angle shifts, for passive heat gain.

"Technology has been developing much faster in the home-building sector than the pace at which home



FLOOR PLAN

builders are adopting it,” Puzak noted, in a report from [GearJunkie](#). “It’s hard for production builders to adopt new ideas when the average home buyer does not know what is possible.”

GRID? WHAT GRID?

In keeping with its “no connections to the outside world” mantra, the Cuyuna Project gets all of its energy from an array consisting of 15 ground-mounted, 310-watt solar panels, and 80 kWh of lithium ion battery storage (consisting of dozens of upcycled batteries purchased from a hospital that no longer needed them for emergency backup). Hence the nickname, “Wattage Cottage.”

Off-grid status is a rarity in Minnesota, given the area’s long, harsh winters, which includes numerous days with sub-freezing temperatures. To combat this, the cabin’s insulating properties are about three times that



At ground level. The Cuyuna Project is warmed by radiant floor heat, which eliminates loss of warmth through air duct use.

CREDIT: COURTESY OF SIPA

Key Components

APPLIANCES: KitchenAid (all)

EXTERIOR FINISHES: Benjamin Moore exterior paint

GARAGE DOOR: LiftMaster MyQ garage door opener

HEATING: Westinghouse combination boiler supporting in-floor radiant heat.

HOME CONTROLS: Google Nest Cam IQ; Google Nest thermostat; Lutron Caseta smart light switches; Lutron Serena smart blinds

HVAC/DUCTS: 23 SEER minisplit combined with a heat pump; Lunos E2 HRV system

INSULATION: Structural Insulated Panels (SIPs): 6-inch and 9-inch walls rated R-30 to R-40-plus; ceiling R-60

LANDSCAPING: 330-foot deep well for fresh water

LIGHTING: LED

RENEWABLE ENERGY SYSTEMS (SOLAR, WIND, ETC.): OutBack Radian system solar inverter; 50kWh lithium ion battery bank; 310 watt REC solar panels; SpaceX Starlink satellite internet.

ROOF: Galvanized metal

STRUCTURAL: Structural Insulated Panels (SIPs): 6-inch and 9-inch walls rated R-30 to R-40-plus; ceiling R-60

WINDOWS, SKYLIGHTS, PATIO DOORS: Andersen 100 Series windows with glass upgrades and 0.24 U-Factor; Andersen 200 and 800 series for doors

of a typical home, Puzak notes.

The only mandatory attachment to everyday life is in the Wi-Fi supplied by satellite internet provider SpaceX. The Starlink service enables smart control of everything from indoor lighting to the garage door opener, as well as the solar array.

Other regular home amenities abound. The kitchen features ENERGY STAR appliances, which contribute to the home’s net zero certification from the U.S. Department of Energy. The stove is gas powered, as is the fireplace.

Bathroom and kitchen fixture are water-smart. And, for renters who still need one more connection to society, Puzak includes a classic “do it yourself” product: an espresso machine. **GB**

What’s next?

TOM PUZAK, FOUNDER, PUZAK PROPERTIES:

“I am building another SIP house in Minneapolis right now. It will be larger and more radical in both form and function.”



Beauty with



From the Judges

"Incorporating passive design techniques and state of the art technology, this home utilizes the natural environment to enhance the efficiency and conservation brought about through building science."



Sensible landscaping. Low maintenance native and drought resistant plants beautify the landscape and have minimal impact on the local environment, a region beneficial to birds, butterflies, and bees. CREDIT: MARK ADAMS/MARK ADAMS MEDIA

a Conscience



More than just a stellar design feat, this modern masterpiece proves that net zero performance and comfort can coexist.

In the rolling hills surrounding Austin, Texas, perched on the edge of a cliff, the Skyview Independent project provides panoramic views of beautiful Texas Hill Country. Green Builder's 2022 Green Home of the Year winner in the Best Net Zero category perfectly melds clean, modern lines with natural materials and low-impact design details, all aimed at super efficiency.

Project Stats

NAME: Skyview Independent, Driftwood, Texas

BUILDER: David Dalgleish, Dalgleish Construction, www.dalgleish.net

ARCHITECT/DESIGNER: Alan Barley, Barley/Pfeiffer Architecture, www.barleypfeiffer.com

LANDSCAPE ARCHITECT: Steven K. Domigan, www.stevedomigan.com

INTERIOR DESIGNER: Jan Niels, IDG Interiors, www.idginteriors.com

PHOTOGRAPHER: Mark Adams, Mark Adams Media



Leisure time. Abundantly daylighted communal spaces indoors encourage family and friends to gather and connect. CREDIT: MARK ADAMS/MARK ADAMS MEDIA



Tight space. Beds are in easy-to-heat and low energy consuming confined quarters downstairs. CREDIT: MARK ADAMS/MARK ADAMS MEDIA



CONSTRUCTION SIGHT. Building orientation, use of prevailing breezes, extended roof overhangs, and strategic window placement were important factors in the design of this energy-efficient home.

PHOTOVOLTAIC PERFECTION. An extensive roof-mounted solar array produces between 95 percent and 110 percent of the electricity needed to run the home.

NATURAL GOOD LOOKS. Locally sourced materials were used, including a limestone veneer from a nearby quarry, for the exterior of the structure.

HIGH-LEVEL H₂O. All water needs, outdoor and domestic, are provided through a 50,000-gallon rainwater collection system.

CREDIT: MARK ADAMS/MARK ADAMS MEDIA

“Our client was looking to build a wonderful family retreat on ranch land outside of Austin,” says Peter Pfeiffer, president of Barley/Pfeiffer Architecture. “We showed him how to make the retreat very energy conserving by design, and water independent via smart water management coupled with extensive rainwater collection.”

Challenged by the remote location in the unforgiving Texas heat, passive design strategies and climate responsive design concepts were implemented. Building orientation, use of prevailing breezes, extended roof overhangs, a floating radiant barrier

roof system, and strategic window placement were important factors in the design of this energy-efficient home.

Using available natural resources, the high-performance structure is designed to be comfortable without air conditioning, and its self sufficiency is assured through a roof-mounted solar array that produces, on average, 100 percent of the electricity needed to run the home. All water needs, outdoor and domestic, are provided through a 50,000-gallon rainwater collection, storage, and filtration system.

When possible, locally sourced materials were used, including a limestone

veneer from a nearby quarry for the exterior of the structure.

Healthy living is assured through superior indoor air quality strategies, including a high-performance air filtration system, and low toxicity materials and finishes. Skyview has a tightly enveloped structure when needed, but with the flexibility to open functioning windows to harness prevailing breezes when weather permits.

Abundantly daylit communal spaces indoors, as well as an inviting patio with a fire pit and pool, provide breathtaking scenery to encourage family and friends to gather and connect.

Additionally, the owners function as conservators for roughly 200 acres of an undeveloped habitat for native landscape and indigenous wildlife. In the small, developed area near the house, only low-maintenance native landscaping species were planted, such as the drought-resistant Texas Mountain Laurel, which is beneficial to regional birds, butterflies and bees.

“It helped to have a very open-minded and enlightened client,” Pfeiffer says. “They wanted a luxurious home and retreat—but wanted it to tread very lightly on the land.” **GB**

Key Components

APPLIANCES: Thermador

BUILDING ENVELOPE: Icynene spray foam insulation and Tyvek Commercial Wrap D

CABINETS, SHELVES, MILLWORK: Robern Uplift Series medical cabinet

ELECTRICAL: Kohler backup generator

EXTERIOR FINISHES: Sherwin-Williams

FIXTURES: The Galley kitchen sink

GARAGE DOOR: Traditional steel overhead door

HVAC/DUCTS: American Standard element central vac

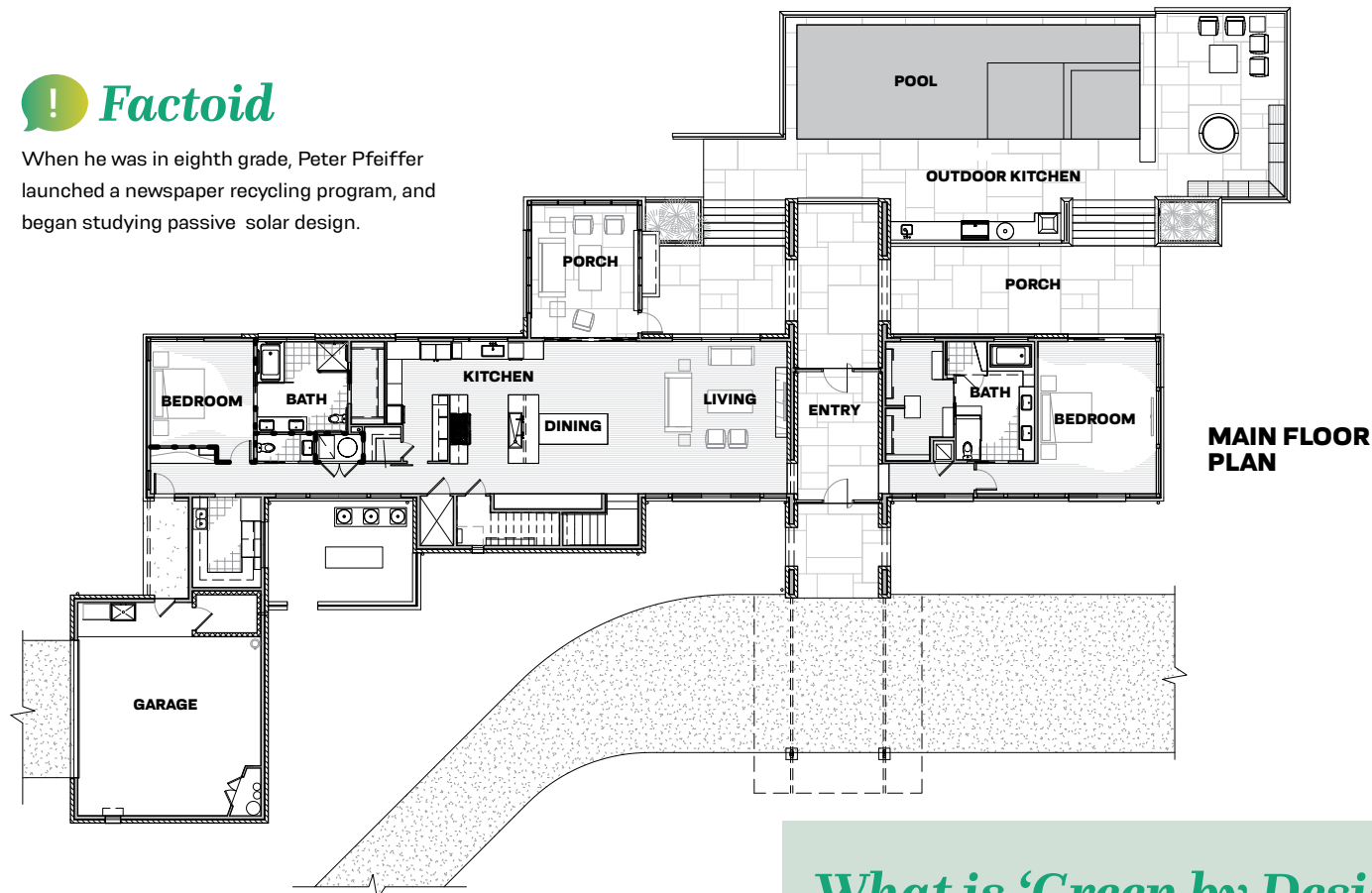
INSULATION: Icynene spray foam insulation and Tyvek Commercial Wrap D

PLUMBING/PLUMBING FIXTURES: Metlund D'Mand hot water circulation pump

WINDOWS, SKYLIGHTS, PATIO DOORS: Taylor MDF-SUPA interior doors; Cavity Slider pocket door hardware; Marvin clad doors and patio slider; Steelcraft PV storm resistance door; Western Window Systems Series 900 hinged doors

! Factoid

When he was in eighth grade, Peter Pfeiffer launched a newspaper recycling program, and began studying passive solar design.



The green life. Dining and kitchen areas include numerous sustainable elements, such as solar-powered LED lighting, low U-Factor windows, and naturally sourced wood for cabinets. CREDIT: MARK ADAMS/MARK ADAMS MEDIA

What's next?

PETER PFEIFFER, PRESIDENT, BARLEY/PFEIFFER ARCHITECTURE:

"We are presently working on a number of Zero Energy commercial buildings and homes like Skyview Independent. They are located throughout Texas, including far west Texas' Big Bend area. Zero energy homes and buildings have been our specialty for more than 30 years."

What is 'Green by Design'?

A key part of the success of the Skyview Independent project came from "Green by Design," something environmentally concerned architects subscribe to very much—but rarely hear or see addressed in the media.

According to Peter Pfeiffer, president of Barley/Pfeiffer Architecture, the premise is that before one resorts to buying energy-saving "gizmos" (such as tankless water heaters, energy efficient appliances and light bulbs, or solar panels) for their new home or remodel, there are much more effective steps to take. They include advising the client to make informed choices through the process of comprehensive "Project Programming." Pfeiffer notes that this is critical, because often, "clients have no idea of the negative consequences of their desires."

For example, a dark-colored (black) exterior color scheme may be all the rage these days, but choosing it, it will also greatly add to the air conditioning load, discomfort and electricity consumption of the home, according to Pfeiffer. "Programming also makes the client really consider if they indeed need all the spaces and features they list on their wish-list—because building bigger makes for more consumption during construction, and for the rest of the life of the home," he notes. "It's professional guidance counseling for the single-biggest investment in most people's lives. [And] it has to be done before the process of drawing up the plans."

The next step is organizing the spaces in the preliminary floorplan design to respond to the home's setting and its microclimate (such as solar orientation, prevailing breezes, or ambient noise). "We call this the 'climate-responsive organizational diagram,'" Pfeiffer notes. "These early design decisions can affect far greater energy savings than any of the 'gizmos' mentioned earlier. And, unlike the gizmos, once these design features are baked into the design, they last the lifetime of the home, and do not require constant upkeep and maintenance."



Double



CREDIT: JAMES LOREN PAYNE/J. LOREN PHOTOGRAPHY

Density



Switch hit. A smart home control system means it's easy to turn the unit's LED lights on and off, and helps the house maintain a net zero status. CREDIT: JAMES LOREN PAYNE/J. LOREN PHOTOGRAPHY



Cleaning up. Zero-VOC acrylic latex paint is used throughout the home. CREDIT: JAMES LOREN PAYNE/J. LOREN PHOTOGRAPHY



Environmental commode. SYMBI Duplex One features four bathrooms. Each is outfitted with low-flow toilets and faucets, plus a water smart shower head. CREDIT: JAMES LOREN PAYNE/J. LOREN PHOTOGRAPHY

SYMBI's Duplex One brings a sustainable two-step to the Washington, D.C. housing market.

What good is a sustainable home if there's no way for people to enjoy it? That's the question that construction specialists Nicole Tysvaer, Matt Kulp and John Linam asked themselves a few years into collaborating on custom new homes and remodels around the Washington, D.C. area.

Project Stats

NAME: SYMBI Duplex One, Mt. Rainier, Maryland

BUILDER: Nicole Tysvaer, SYMBI Homes, www.symbihomes.com

ARCHITECT/DESIGNER: John Linam, Jr., SYMBI Homes

LANDSCAPE ARCHITECT: Annette Cimaroli, Your Landscape Design

DEVELOPER: Nicole Tysvaer, SYMBI Homes

PHOTOGRAPHER: James Loren Payne, J. Loren Photography

From the Judges

"Amazing rainwater collection and filtering system, complete with solar system and a gas backup generator."

Key Components

APPLIANCES: Frigidaire 10.1 cubic foot top freezer apartment size refrigerator; Frigidaire built-in dishwasher with *BladeSpray* wash arm; Samsung 19.1 cubic foot freestanding 4-door counter depth refrigerator; Samsung 6.3 cubic foot slide-in electric convection range oven; Frigidaire 1.8 cubic foot over-the-range microwave oven; Samsung 1.9 cubic foot 950 watt built-in countertop microwave; Maytag 4.8 cubic foot front load washer; Maytag 37.3 cubic foot electric front load dryer.

BATH FIXTURES: Rachal 49-inch wall-mounted single bathroom vanity set; TOTO *Drake* 0.8/1.28 gallons per flush (GPF) dual-flush two piece elongated toilet; Delta *Linden Monitor 17 Series Dual Function Pressure Balanced Shower Only with In2ition Shower Head and Integrated Volume Control*; Delta *Monitor 17 Series Dual Function Pressure Balanced Shower System with Integrated Volume Control*; Vigo *Noma* 1.2 gallons per minute (GPM) single-hole bathroom faucet.

COUNTERTOPS: Recycled Paperstone; Caeserstone

ENVELOPE: Benjamin Obdyke *FlatWrap HP* house wrap, Slicker *MAX 2SQ*, *HydroFlash LA* liquid flashing material, *HydroFlash UV+* flashing tape, *Invisiwrap UV*, and *Batten UV*; Allura housewrap and rainscreen; Lignia open joint rainscreen.

EXTERIOR FINISHES: Allura lap siding; Allura board-and-batten; Lignia open joint thermal wood accents; Sherwin-Williams exterior paint.

FLOORING: Amorim *Wise Cork* flooring; porcelain tile; LIGNIA flatsawn thermal wood.

HOME CONTROLS: Brilliant *Smart Home System*; Resideo by Honeywell smart leak detector

HVAC: Mitsubishi heat pump HVAC system

INTERIOR FINISHES: Sherwin Williams *Harmony* zero VOC interior acrylic latex paint.

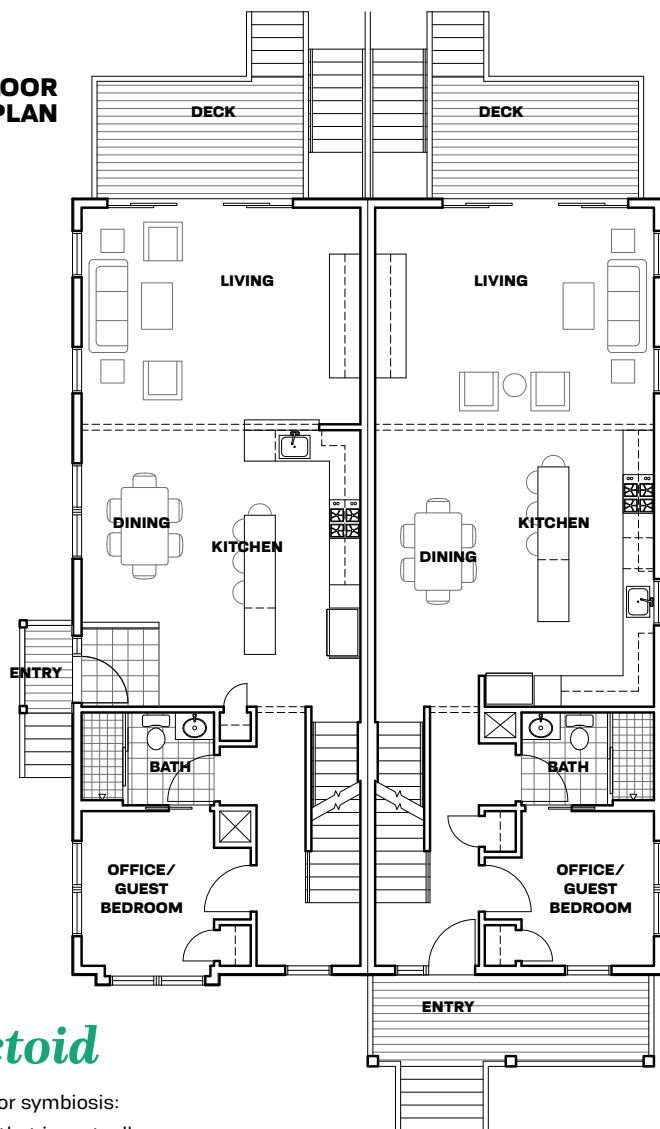
KITCHEN: Pyramid solid surface countertop basin sink; Delta *Essa* single handle pull down touch activated kitchen faucet; Signature Hardware *Sitka* stainless steel single bowl undermount kitchen sink with sound dampening; Signature Hardware *Ravenel* single handle pull-down kitchen faucet.

LIGHTING: LED

PLUMBING/PLUMBING FIXTURES: WaterSense plumbing fixtures

WINDOWS, SKYLIGHTS, DOORS: Marvin *Signature Essential* (windows) and Marvin *Elevate* (doors); Kwikset *Milan Passage Door Lever Set*.

MAIN FLOOR PLAN



! Factoid

SYMBI is short for symbiosis: To build in a way that is mutually beneficial for people and planet.

In 2018, they decided it was time to handle matters themselves when it came to sustainable housing. “We are all passionate about sustainability, but found few opportunities to build green in the custom market,” says Tysvaer. “Therefore, after completing three energy-efficient prototypes and creating a model that could be replicated on a larger scale, we launched SYMBI as our real estate development company.”

After more than five years of research and prototype development, SYMBI completed its first demonstration project, “SYMBI Duplex One,” in March 2021. The Mt. Rainier, Maryland project – which is Green Builder’s 2022 Home of the Year winner in the Most Sustainable Multifamily Residence category—was built as a side-by-side

duplex of five bedrooms and four full bathrooms, as well as a one-bedroom basement apartment with separate entrance.

Key features of a SYMBI home include air and water filtration, biophilic designs that connect home to nature, a highly insulated pre-fabricated shell, U.S. Department of Energy (DOE) Zero Energy Ready Home (ZERH) certification, and ongoing home performance monitoring.

Other sustainability features include an energy-efficient five-zone Mitsubishi heat pump HVAC system, advanced thermal moisture protection with an exterior Benjamin Obdyke *Slicker MAX* rainscreen, WaterSense plumbing fixtures and LED lighting throughout, eco-friendly Amorim *WISE Cork* flooring,

CREDIT: JAMES LOREN PAVNE / J. LOREN PHOTOGRAPHY



GREAT GLASS. Energy-efficient Marvin Signature Elevate Essential framed glass doors have a U-Factor of 0.29.

HEATING UP. A variant refrigerant flow technology-driven Mitsubishi HVAC system includes a ductless unit in the great room. The home also features MERV 13 air filtration, for optimal indoor air quality.

GOOD WOOD. Kitchen cabinets are constructed from Forest Stewardship Council certified, sustainably sourced wood.

QUIET RANGE HOOD. An Air King LE300A range hood with continuous speed operation constantly and quietly expels stale air from the house.

GAS FREE. The all-electric induction cooktop supports produces less particulate than gas, and supports the home's superior IAQ credentials.

Sherwin-Williams *Harmony* zero VOC paint, age-in-place first floor design, and advanced air and water filtration. The home also features beyond code-level insulation (R-22 walls and R-47 roof).

According to Tysvaer, who is now SYMBI's CEO (Kulp and Linam serve as the company's vice president of production and vice president of design, respectively), Duplex One was designed with replication in mind. Built on a single-family lot, the units boast higher ceilings and more glass to create spaciousness and maximize storage.

"We started this company with a theory that we could build to a smaller footprint, load up our homes with a host of sustainable features, sell for a price point similar to conventional

construction, and appeal to a whole new generation of buyers," she says. "We exceeded our expectations!"

As a result of the lack of net zero new construction around the D.C. area, SYMBI Duplex One sold out half way through the construction process. Both units were purchased by millennial couples with a deep appreciation for SYMBI's environmental consciousness, Tysvaer notes.

In addition, the project spawned a waitlist of interested buyers. "SYMBI's enlightened approach to home building has achieved a very desirable sweet spot in green residential construction, filling the gulf between mass-produced prefab affordable housing projects and the super high-end custom net zero homes unattainable to most," Tysvaer

What's next?

NICOLE TYSVAER, CEO, SYMBI HOMES:

"We are currently working on the SYMBI Regeneration House in Hyattsville, Maryland, a 19th century Victorian restoration and deep energy retrofit with an 850-square-foot modern in-law suite addition. Our plan with Regen House is to achieve nearly net zero, but keep to a budget, with a return on investment (ROI) of 5-10 years on the efficiency upgrades."

"During this project, we will launch the nonprofit Retrofit Lab, opening the space to educate contractors and homeowners on how to improve comfort, lower utility bills, and reduce their carbon footprint in older homes."

says. "Duplex One incorporated a holistic pathway to sustainability, while also reflecting a superior level of craftsmanship, quality and beauty." **GB**



FROM LEFT:

Turnkey resilience. Mi Casa Resistente blends in with other homes in its neighborhood, but offers a package of standout sustainable features, including solar power, low-e windows and an underground greywater system.

CREDIT: FERNANDO ABRUÑA

Siting and shading. The home's positioning and use of natural shade help keep the house comfortable even on hot sunny days.

CREDIT: FERNANDO ABRUÑA

Indoor meets outdoors. The pergola side patio and the 12-foot-wide integrated living/dining/kitchen area appears much larger when four jalousie doors are fully open. CREDIT: FERNANDO ABRUÑA





Ready for the Next One



The road to Puerto Rico's hurricane recovery has led to Mi Casa Resistente, a catastrophe-ready tiny home with a big mission.

When Hurricane Maria hit Puerto Rico in September 2017, things were a mess. Identified by the United States National Hurricane Center as the deadliest Atlantic hurricane to strike the Caribbean in almost 20 years, Maria resulted in nearly 3,000 deaths and \$100 billion in damage, obliterated the nation's power grid and communications network, destroyed or damaged more than 65,000 homes, and left 10,000 people homeless—half of whom still were as of 2020.

Project Stats

NAME: Mi Casa Resistente (My Resilient House), San Juan, Puerto Rico

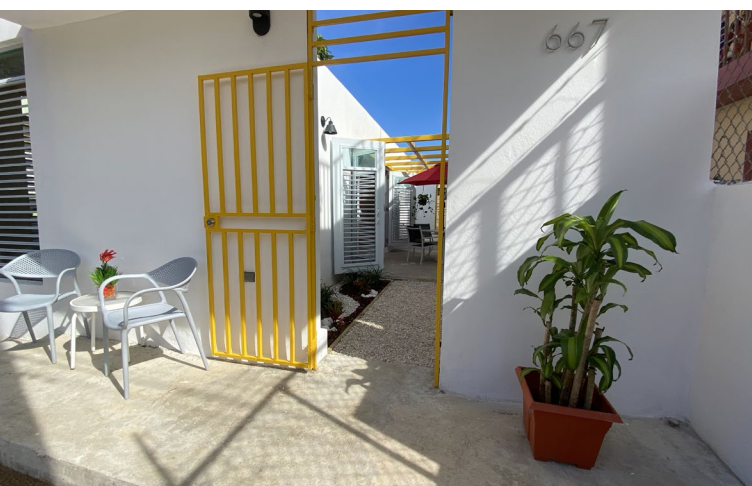
BUILDER: Peter David Torres, Professional Home Builders

ARCHITECT/DESIGNER: Fernando Abruña, architect, Abruña & Musgrave, Architects, www.abrunaandmusgrave.com

PHOTOGRAPHER: Fernando Abruña

From the Judges

"An excellent example that sustainability and resourcefulness comes from designing and building for the climate with simple concepts."



Key Components

ALTERNATIVE BUILDING SYSTEMS: M-Due (M2) structural insulated concrete panels (SIPs) at roof

APPLIANCES: Jangada gas stove; recycling bins by Curver and Sterilite

BUILDING ENVELOPE: M-Due (M2) SIPs at roof; 6-inch cavity concrete blocks at walls

CABINETS, SHELVES, MILLWORK: Locally sourced from community cabinet maker; bathroom vanity by Garrido Bros. & Co.

CAULKS AND SEALANTS: DAP Products

COUNTERTOPS: Formica plastic laminate

DOORS AND HARDWARE: Air Master aluminum operable *Jalousie* doors with integrated vandal resistant bars and low e-glass transoms; Toledo interior hardware

ELECTRICAL: Schneider Electric *Square D* main distribution panel; HYDROMAXX *Flex* electric conduits; Hampton Bay ceiling fans and lights

EXTERIOR FINISHES: Ecológica Carmelo *Special Cement Plaster Mix*

FLOORING: Behr gray floor paint

FURNITURE: Capri department stores, Puerto Rico

INSULATION: 4-inch expanded polystyrene

LANDSCAPING: Donation by Abruña & Musgrave, Architects

LIGHTING: EcoSmart LED interior bulbs, Feit Electric exterior bug lights, Dark Sky-rated *Home Decorators Collection* exterior light fixtures

PAINTS AND STAINS: Behr

PLUMBING/PLUMBING FIXTURES: Mediterraneo shower console; Elkay kitchen sink; Glacier Bay 1.28 gallons per flush (GPF) toilet, Nature's Head composting toilet

RENEWABLE ENERGY SYSTEMS (SOLAR, WIND, ETC.): KiloVault *RES-Q* portable power system.

ROOF: BULL-BOND *PRO-ONE* cool roof coating

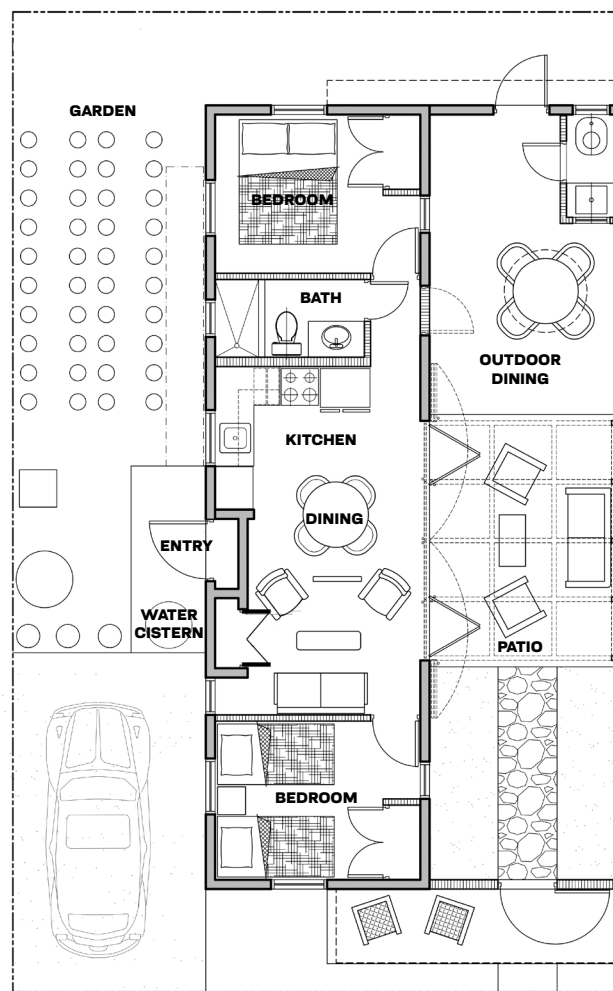
VENTILATION: Air Master natural ventilation with operable aluminum *jalousie* doors and windows

WATER HEATING: Stiebel Eltron inline electric water heater

WATER MANAGEMENT (INDOOR/OUTDOOR): Columnar 200 gallon polypropylene rainwater harvesting, gravity-fed cistern; 500 gallon rooftop mounted polypropylene utility fed cistern

WINDOWS, SKYLIGHTS, PATIO DOORS: Air Master aluminum operable *jalousie* doors with integrated vandal resistant bars and low e-glass transoms; low-e glass transoms

FLOOR PLAN



Into this scenario stepped San Juan-based Abruña & Musgrave, Architects, which responded to a call for a Puerto Rico architectural design competition to help provide an affordable sustainable and resilient home to Hurricane Maria victims. The result was Mi Casa Resistente (My Resilient House), a prototype, highly sustainable tiny home (and Green Builder's 2022 Green Home of the Year in the Best Right-Sized Shelter category).

This is a 528-square-foot two-bedroom (expandable to three) resilient dwelling on a 1,715-square-foot lot in Puerto Rico's Caño Martín Piña area. "Passive green, energy conservation and resiliency strategies are incorporated throughout the design," notes Fernando Abruña, the project's architect and co-owner of Abruña & Musgrave, Architects, with project designer Margaret Musgrave.

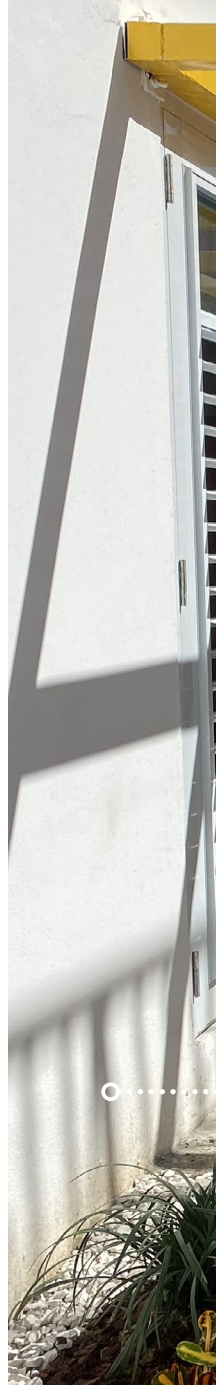
A 64-square-foot balcony and a graveled parking area are provided. A 42-foot-by-12-foot volume with a front facade that extends to the side adds

privacy to an interior side patio. This simple volume is peppered with operable jalousie windows and low-e glass transoms (the solar heat gain coefficient [SHGC] is an impressive 0.40) for daylighting and natural ventilation.

Walls are built with 6-inch concrete masonry units (CMUs) and reinforced concrete columns. R-20 structural insulated concrete roof panels mitigate solar heat influx and reduce CO₂ emissions through less use of cement. Four jalousie doors that connect the interior spaces with the 372-square-foot side garden/patio and its pergola shape the emblematic space that enhances the tropical climate and informal life style, Abruña notes.

A "JUST IN CASE" CLAUSE

After what happened to Puerto Rico during and after Hurricane Maria, Abruña & Musgrave, Architects set up Mi Casa Resistente with numerous backup elements in case such an event occurs again.



! Factoid

Mi Casa Resistente is valued at \$95,000. A similar home in the U.S. would cost about \$165,000, according to Zillow.

INSULATED ROOF. R-20 structural insulated concrete roof panels help mitigate solar heat influx. They also reduce the embodied energy of the structure by cutting back on the total amount of cement used in the roof.

HIGHER GROUND. To reduce the chance of flooding during the heavy rain season, the home was built on property that is 30 inches above street level.

TEMPERED RIGHT. Operable jalousie windows and low-e-glass transoms with a solar heat gain coefficient (SHGC) of 0.40 provide daylighting and natural ventilation.

AFFORDABLE ENVELOPE. Walls are built with 6-inch concrete masonry units (CMUs) and reinforced concrete columns. These helped create a home that required less raw material, time and energy to produce.

NOTHING WASTED. An underground greywater system irrigates outdoor plants.

The home's centerpiece is a portable solar power plant capable of storing 1.5 kilowatts (kW) per day. The product enables an ENERGY STAR 1 kilowatt hour (kWh) per day refrigerator to operate continuously in case of utility failures during catastrophic events. An additional 500 watts allow for a microwave oven, a fan and two LED lamps. LEDs and anti-bug lights are used throughout the house.

This dwelling unit has an inline water heater and is ready for a future 2 kW photovoltaic system and a solar water heater. A roof mounted 500-gallon, utility fed, potable water cistern

acts as a reserve in case of system failures. A 200-gallon rainwater cistern on the left side of the house operates by gravity, making it usable even during power failures. WaterSense fixtures are located in the bathroom and a composting toilet in the powder room within the interior side patio. An underground greywater system is also provided at the back patio.

The prototype construction was sponsored by CMP Community Land Trust, the Engineers and Surveyors Association and the Architects and Landscape Architects Association. Two units were built with the beneficiary's

What's next?

FERNANDO ABRUÑA, ARCHITECT AND CO-FOUNDER, ABRUÑA & MUSGRAVE, ARCHITECTS:

"This compact two bedroom prototype design is being used to develop larger two-, three-, and four-bedroom units for hurricane- and earthquake-affected communities using the Career Academy & Technical School (CATS [Masonry]) Building System."

participation; a third one will begin soon. All architectural/engineering services were pro-bono. Total cost for the fully furnished and equipped prototype was \$95,000. **GB**



The Bunker Residence's sustainable assets are found above and below ground.

When it comes to the Bunker Residence—Green Builder's 2022 Green Home of the Year in the Mainstream Green category—environmentally friendly construction boils down to three letters: SIP.

Project Stats

NAME: Bunker Residence, Tofte, Minnesota

BUILDER: Anton Moody, owner, Taiga Design+Build, www.taigadesignbuild.com

ARCHITECT/DESIGNER: Anton Moody, owner, Taiga+Design Build, www.taigadesignbuild.com

PHOTOGRAPHER: Anton Moody, Structural Insulated Panel Association (SIPA)

What's next?

ANTON MOODY, OWNER, TAIGA DESIGN+BUILD

"We are currently working on a few projects, one for Seattle-based Olson Kundig, and one for Duluth, Minnesota-based Salmela Architect and Twin Cities, Minnesota-based Imprint Architecture. Once those projects are wrapped up, we will continue with a neighborhood of eight high-efficiency homes in Grand Marais, MN."

Passionate



GREEN IS GOOD. Large southern windows allow for natural heating in the winter, and large shade trees provide extra cooling in the summer.

STAR PLAYER. The home features all-LED lighting, electric car charging stations and ENERGY STAR-certified appliances, making it a power miser—a major benefit during Minnesota's frigid winters.

Performance

From the Judges

"Beautiful use of SIPs in an unconventionally shaped home!"

SIMPLY SIP. Easy-to-install 6-inch R-30s and 10-inch R-50s helped speed construction time and reduce energy needed to build the home.

HEAT SEALED. Loewen windows, with a U-factor of 27, help bring the Home Energy Rating System (HERS) Index rating down to 28.

CREDIT: COURTESY OF SIPA



Stellar cellar. An underground wine storage area also serves as a gathering spot for guests, families and others who want to socialize under energy-saving LED lighting. CREDIT: COURTESY OF SIPA



Complete package. The Bunker Residence includes features such as SIPs, radiant heating, energy-saving appliances, and smart smoke and carbon detectors push this home toward net zero performance.

CREDIT: COURTESY OF SIPA



Weather barrier. The home's south-facing windows enable year-round natural climate control. CREDIT: COURTESY OF SIPA

Key Components

ALTERNATIVE BUILDING SYSTEMS: Structural insulated panels (SIPs) with Neopor foam core by Energy Panel Structures

APPLIANCES: Wolf, Subzero and Fisher & Paykel Automotive (electric car charging, etc.): Tesla charging station

BUILDING ENVELOPE: SIPs with Neopor foam core by Energy Panel Structures (walls R-26, roof R-50, floor R-50)

CABINETS, SHELVES, MILLWORK: Semi-handmade front and panels, IKEA boxes

COUNTERTOPS: *Richlite* by Richlite

DECKS: *lpe* by Advantage Lumber

ELECTRICAL: All LED, by Philips-Lightolier and others

EXTERIOR FINISHES: ZALMAG cupped tiles by Millennium Forms; Cambia *Thermally Modified Poplar* by Northland Forest Products installed over rain screen over Henry *Blueskin VP100*

FIRE PROTECTION: *Nest Protect* smoke and CO2 detectors. No suppression.

FIREPLACE: House: *Regency City Series* corner unit. Cabin: *Regency Contura*. Roof Deck: *Modfire ASTROFIRE*

FLOORING: Durramen Concrete Coating over *Gyp-Crete* floor underlayment

GARAGE DOORS: Clopay

HVAC/DUCTS: Navien boiler and on demand hot water maker; in floor heat throughout; Slant/Fin *Monitron* electric boiler; Mitsubishi mini-split unit.

INSULATION: Neopor foam in SIP panels (R-26 walls, R-50 floors, R-60 roof)

LANDSCAPING: Native planting by Taproot Landscaping, hardscaping by Taiga Design+Build

LIGHTING: Peak Electric/Taiga Design+Build

PAINTS AND STAINS: Sherwin-Williams

PAVERS: Techo-Bloc

PLUMBING/PLUMBING FIXTURES: Kohler

ROOF: EPDM rubber over tapered foam by Duluth Roofing

VENTILATION: Fantech

WATER HEATING: Navien

WATER MANAGEMENT (INDOOR/OUTDOOR): Native planting green roof on house, Taiga

DESIGN+BUILD AND TAPROOT LANDSCAPING

WINDOWS, SKYLIGHTS, PATIO DOORS: Loewen windows and doors

The stylish, 3,120-square-foot single-family home in Tofte, Minnesota, was constructed on Lake Superior's often-windy northern shore. This made it essential that the house have an airtight envelope and exceptional insulation to help make it as energy efficient as possible, according to Anton Moody, owner of Taiga Design+Build in nearby Grand Marais, Minnesota.

Moody's choice was clear: He used structural insulated panels (SIPs), a product that he has worked with many times. "[Anton] finds the pre-engineering, ease and speed of installation and air tightness superior to conventional framing," notes Lee Bergum, district sales manager for Energy Panel Structures, the manufacturer of the SIPs used during construction. "SIPs save time and labor costs. The roof panels enabled this project to get closed in faster, using less energy expense during build."

The designer/builder used 6-inch Neopor R-30 walls and 10-inch Neopor R-50 panels for the roof. The SIPs helped the Bunker Residence to an estimated Home Energy Rating System (HERS) Index of 28 and a blower door test result of 0.89 air changes per hour (ACH).

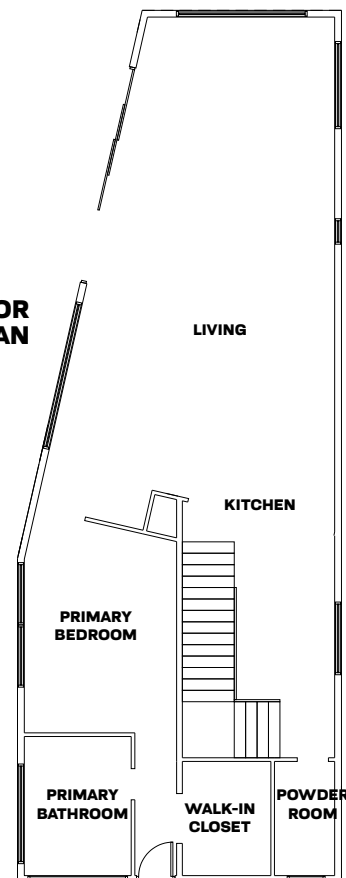
GETTING WARMER

The home also features dual fuel, in-floor, radiant heat. The primary heat source for the hydronic fluid is an interruptible Slant/Fin *Monitron* electric boiler with 100 percent efficiency. The secondary source is a Navien propane boiler with 95 percent efficiency, which also serves as a secondary source of domestic hot water.

An EcoTech air exchanger provides outside air. Loewen windows (with 0.27 U-Factor) and doors throughout, total LED lighting, and low-volatile organic compound (VOC) paints complete the overall green construction end of the project.

The house offers expansive views of the lake in all directions. Large southern windows allow for natural heating

FLOOR PLAN



! Factoid

In 1999, Minnesota native and future Taiga Design+Build owner Anton Moody was exploring the high desert mountains of Baker City, Oregon and realized that he would seek out a landscape of similar scale and beauty when he returned to Minnesota. Grand Marais is where he found it.

in the winter, while large shade trees provide extra cooling during summer.

"The clients wanted us to build a piece of art they could live in, while remaining true to our standard of energy efficiency and quality materials," Moody says. "It was a fun back and forth between us as we found opportunities to create spaces they desired."

Such opportunities included reclaiming old foundation as a place where the owners could house their wine collection and share their passion of wine. There are also large exterior glulam beams for aesthetics, and a walkout deck over the kitchen that allows for entertaining. "The view is breathtaking," Bergum notes. "The home is very efficient, quiet and withstands the harsh winds of Lake Superior. This was a fun project." **GB**



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Building a better world by building a better business

You have seen the data. Climate change is a reality and the impact on our planet is already here. But that does not mean that there is not still an opportunity to act to reduce greenhouse gas emissions and limit the negative consequences to our environment and quality of life.

Many businesses in the building construction industry are recognizing the opportunity they have to support this goal, both in the products they manufacture as well as their own operations. ROCKWOOL is one such company that is taking an aggressive leadership position. Here's how:

Stone wool insulation products help deliver on climate goals and support equitable, healthy and resilient communities.

- ROCKWOOL transforms naturally abundant volcanic rock into stone wool, creating safe and sustainable products that help people and the communities where they live, learn, work and play to thrive.
- Energy efficiency in buildings is essential to addressing the global climate and economic challenges we all face. ROCKWOOL insulation is a key measure in delivering a high performing building envelope.
- Building renovation has the potential to provide an immediate and effective economic stimulus, strongly supporting local and small businesses while creating well-paying, green jobs.

ROCKWOOL is committed to sustainable practices and decarbonizing its own operations.

- Sustainability is integral to our business strategy. Our strategy is based upon three principles: using less, greening the rest and addressing climate hazards.
- We actively contribute to 10 of the UN Sustainable Development Goals (SDGs) and have set six additional sustainability goals and two science-based targets which equate to an ambitious one-third reduction of ROCKWOOL's lifecycle (Scope 1,2, and 3) greenhouse gas emissions by 2034.



- We're also moving to less carbon-intensive energy sources for our manufacturing, including converting factories using fuel-flex operations from coal to gas. Our newest facility in the United States started operations in the summer of 2021 powered only by natural gas.

ROCKWOOL stone wool insulation products are part of the solution to the challenges of climate change.

- We leverage the properties of the most abundant resource in nature to help overcome the complex global challenge of climate change. Our products come from nature and give back to nature.
- The insulation performance of stone wool products will not change during the lifetime of a building; the thermal properties and dimensional stability DO NOT deteriorate over time.
- Same goes for fire resistance and acoustic performance of ROCKWOOL stone wool products.
- They are the ideal material selection for building fire-resilient structures: stone wool insulation will not ignite, contribute to the spread of flames or release toxic smoke.
- Stone wool insulation also offers superior water-repellant properties, keeping buildings comfortable and dry all while resisting the growth of mold.

Stone wool provides a wide range of benefits to buildings and people by creating more durable, resilient and comfortable structures. Our products help create buildings that are fire-safe, provide excellent moisture control, resist mold and mildew, and are quieter and more comfortable, despite the trends toward density and more extreme weather."

- Rory Moss, President,
ROCKWOOL North America



For more information about our sustainability efforts or products, please visit www.rockwool.com



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And, with Square D™ Energy Center, it's easy to add and manage backup energy sources such as solar, batteries, and generators.

Learn more about the full line of connected home solutions at our site.

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Energy efficiency, even on the go. Wine refrigerators from Signature Kitchen Suite—available in stainless steel and panel-ready options—include multiple temperature zones for wine. Plus, all SKS appliances can be controlled with smart technology. This is a useful energy-saving feature for Cooper for when she travels.

CREDIT: BRIAN COLE PHOTOGRAPHY



ATTAINABLE SUSTAINABILITY

A Millennial's New Green Remodeled Home

Many older homes lack the energy-efficient design features of more recently built residences. The ReVISION House Austin addresses the challenges of adapting an existing dwelling to match the sustainability goals of today's younger home buyers.

BY MICHELE LERNER

The 1980s and 1990s are known for big hair and big houses with cathedral-style ceilings, often referred to as McMansions. Today, the **median age of owner-occupied homes** in the United States is 39, which means that plenty of people own a home that was built in 1982.

Just four percent of owner-occupied homes today were built in 2010 or later, according to the National Association of Home Builders. The result: Even if young buyers would prefer an energy-efficient smart new home, they may be forced to buy a home that is ripe for remodeling.

"We have to address the existing built environment if we want to meet our climate goals," says Sara Gutterman, CEO and co-founder of Green Builder Media. "These homes are not energy efficient, not healthy, and not resilient."

The New Plan



Home Details

PROPERTY LOCATION: Georgetown, Texas, in the San Gabriel River Estates neighborhood

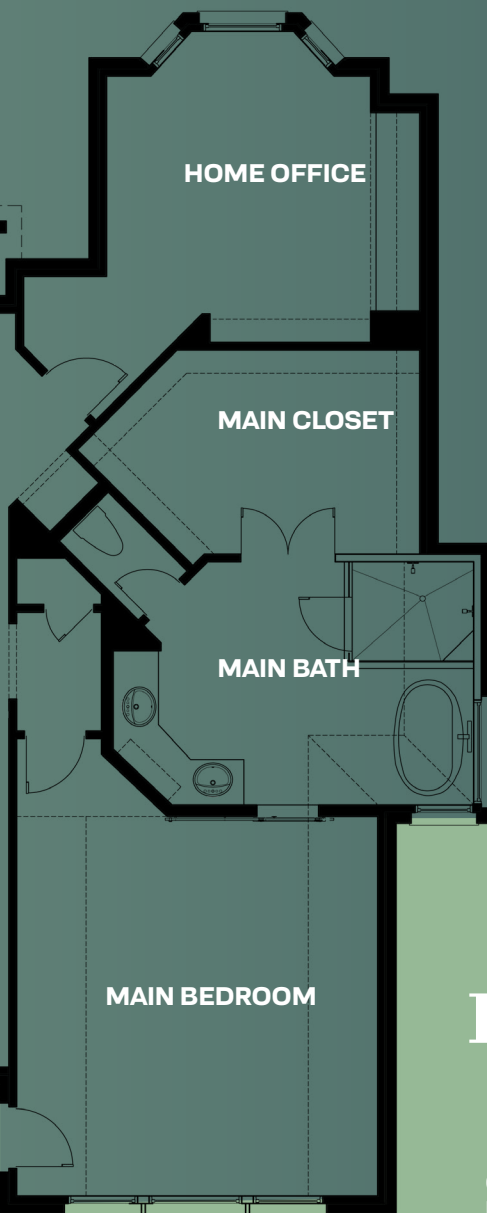
AGE OF HOUSE: Built in 1998

ORIGINAL SQUARE FOOTAGE: 3,445 square feet

REMODELED SQUARE FOOTAGE: All remodeling within original 3,445-square-foot footprint

LOT: 1.98 acres

TYPE OF CONSTRUCTION: Stick frame clad with stone



Year-round power. An array of LG's 350-watt NeON 2 solar modules were added to Cooper's house to produce power for her electric vehicle and for reliable power in case of a repeat of the Texas grid failing during a storm.

CREDIT: BRIAN COLE PHOTOGRAPHY

Before



Green Priorities

Austin millennial Tiana Cooper, owner of the ReVISION House Austin, wanted to improve her house to match her priorities within a finite budget.

“Tiana’s house is a perfect example of an older, larger house that we could renovate to be more sustainable in order to show how this can be done with older housing stock around the country,” says Gutterman. “Ultimately, our goal was to achieve a baseline level of sustainability rather than go to a ‘space shuttle’ level of green that’s unattainable for people on a budget.”

For Cooper, a blogger, foodie, and traveler, the top priorities were cooking, and replacing the multiple types of flooring in the house with an aesthetically pleasing look that could stand up to her dogs. She also wanted a healthier house with better indoor air quality to ease her allergies and to improve its energy efficiency, including the swimming pool.

The ReVISION project was an ideal collaboration for Signature Kitchen Suite. “Our appliances are designed for individuals who are passionate about cooking, and want that luxury experience combined with technological innovation and efficiency,” says Rod Gower, SKS senior regional sales manager. “With industry-only features such as built-in sous vide, to wine column refrigerators with a *Signature Sommelier* app that allows you to manage your collections in never-before-seen ways, we were able to deliver the culinary precision, performance and style to this ‘technicurean’ homeowner and address her desire for smart, healthier and greener living.”

Replacing the HVAC system created several benefits for Cooper, including lowering her energy bills and improving the home’s comfort

level and efficiency.

“We were excited to dive in and help this millennial homeowner tackle issues such as addressing the inconsistent temperature fluctuations in various areas of the home—a major pain point—to increasing the overall efficiency of the space and help reduce her utility bills,” says Lorie Quillin-Bell, marketing director for the air conditioning technologies division of LG Electronics USA.

LG installed two highly efficient and high-performance HVAC systems. “One was retrofitted into an existing ducted system and the second was a ductless system, both connected to the outdoor heat pump,” Quillin-Bell says. “We delivered a more efficient, comfortable environment for the homeowner, while also helping reduce the home’s overall environmental footprint.”

Features such as solar modules from LG Electronics and insulation from Greenfiber make the home more energy efficient, while the central vacuum system from H-P Products improves Cooper’s indoor air quality by removing allergens and dog hair from her rooms.



Dream weaver.

Cooper’s Austin home has wonderful high ceilings and big windows in the primary suite, which also once included carpet that attracted dog hair and was a magnet for allergens. New floors from Mohawk provide cleaner, environmentally friendly surfaces that contribute to Cooper’s healthier home.

CREDIT: BRIAN COLE PHOTOGRAPHY





Living color. Mixing textures can be as important as using contrasting colors to create interest in a home. Cooper's rough-hewn stone fireplace in the family room offsets the smooth white walls, polished wood floors and sleek modern kitchen.

CREDIT: BRIAN COLE PHOTOGRAPHY



Form and function. The big footprint of Cooper's house and lack of insulation made it inefficient, especially in Austin's heat. Cooper's light and airy color palette and decorating style help keep the house looking cool, while the addition of two new HVAC systems and Greenfiber insulation work together to improve energy efficiency. CREDIT: BRIAN COLE PHOTOGRAPHY



Technicureans unite!

Wood and metal barstools offer guests a place to relax at the breakfast counter while Cooper, a self-proclaimed foodie, enjoys cooking with the modern stainless-steel appliances from Signature Kitchen Suite in the large kitchen. (Psst: If you don't know what a technicurean is, it's a foodie who cooks with high-technology products.)

CREDIT: BRIAN COLE PHOTOGRAPHY

**RIGHT: Green, clean,
and lustrous.**

The Viatera Quartz counters from LX Hausys America, in Adagio Gold, are 93 percent quartz and created using an eco-friendly manufacturing process.

CREDIT: BRIAN COLE PHOTOGRAPHY



BELOW: Subtle nod.

Wood doors and a light fixture with wrought iron detailing provide rustic contrast to the clean white walls and neutral modern furniture in Cooper's living room. They also provide a transition from the aesthetic of the exterior (which was not in the budget for an update) with the new contemporary interior.

CREDIT: BRIAN COLE PHOTOGRAPHY





Air of sophistication. A clean color palette, a sleek contemporary sink from BOCCHI and new Mohawk flooring create the modern look Cooper wanted to update her 1990s bathroom without requiring a complete—and costly—bathroom overhaul. CREDIT: BRIAN COLE PHOTOGRAPHY

Value-minded

But Cooper also wants a beautiful home that reflects her values. In the kitchen and bathrooms, she chose *Viatera Quartz Surface* and *HI-MACS Solid Surface* products from LX Hausys America. Since the products are manufactured in the United States using eco-friendly processes and have exceptional durability, they are a good fit for today's sustainability-minded homeowner, says Claudia Mueller, marketing director for LX Hausys America.

Cooper's priority for the floors was to find durable products that are attractive and yet fit in her renovation financial plan. Her flooring choices from Mohawk include *UltraWood*, *Pergo Extreme*, and *Ever-Strand*, all products that can stand up to water drips from swimming in the pool as well as dog traffic.

And speaking of the pool: Cooper put as much emphasis on the outside of the pool as the inside of the house. "We love to show how rewarding it is to bring an older pool up to modern standards," says Dave MacNair, vice president of marketing for swimming pool equipment supplier Hayward. "It's not hard to accomplish, and it checks so many boxes because it's easy to do. It provides huge efficiency improvements and big increases in pool enjoyment by getting rid of red eyes and putting pool control on your smartphone."

"We did this project with millennials, for millennials, to tap into their priorities and demonstrate how they can be met even when there are budget constraints," says Gutterman.

Green Builder is proud to showcase the results of this millennial show home project on the following pages. Don't forget to check out the Product Guide, which gives the details on all the innovative, sustainable, and health-conscious products and systems used in the home.



Clean, clear and efficient. The aging swimming pool at Cooper's house got an upgrade that includes new equipment from Hayward to increase its energy efficiency and reduce the amount of harmful chemicals in the water.

CREDIT: BRIAN COLE PHOTOGRAPHY



Wide Ranging. The 48-inch *Dual-Fuel Pro Range* from Signature Kitchen Suite includes a unique sous vide function and induction cooktop. In addition, the home upgrade includes SKS 30-inch *Combination Wall Oven With Steam*, offering the ability to cook foods with less oil. CREDIT: BRIAN COLE PHOTOGRAPHY

"The ReVISION House Austin project was an ideal collaboration for Signature Kitchen Suite, as our appliances are designed for individuals who are passionate about cooking, and want that luxury experience combined with technological innovation and efficiency. With industry-only features such as built-in sous vide, to wine column refrigerators with a *Signature Sommelier* app that allows you to manage your collections in never-before-seen ways, we were able to deliver culinary precision, performance, and style to this 'technicurean' homeowner and address her desire for smart, healthier and greener living."

**ROD GOWER, SKS SENIOR REGIONAL
SALES MANAGER**

Product Guide

The ReVISION House Austin was made possible by the contributions of sponsors that are dedicated to creating today's most innovative homes. Read on for details on all products showcased in the home.

SIGNATURE KITCHEN SUITE (SKS)

For homeowners who are passionate about cooking, and appreciate technological innovation and peak performance, this suite hit all the hot buttons. Cooper's appliances come with Wi-Fi integration, so that she can control them with SKS's app. Installed products include:

Signature Kitchen Suite 48-inch *Dual-Fuel Pro Range with Sous Vide & Induction*, the first range with built-in sous vide function. This means that food is vacuum sealed and immersed in warm water. The induction cooktop function cooks using electromagnetism, directly heating the pots and pans, allowing for quicker cooking time, minimizing heat loss and reducing energy consumption.

Signature Kitchen Suite 30-inch *Combination Wall Oven With Steam* not only reduces the loss of nutrients in food, but eliminates the need for cooking oil, greatly reducing emissions.

Signature Kitchen Suite's 30-inch *Integrated Column Refrigerator and*



Simple Power

With its sleek commercial look, the PowerSteam 24-inch dishwasher matches the rest of the Signature Kitchen Suite.

CREDIT: BRIAN COLE PHOTOGRAPHY



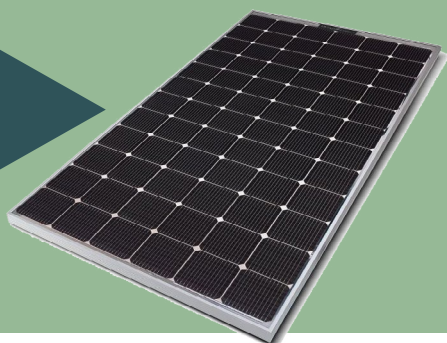
Smart Fridge

Cooper settled on a well-appointed column refrigerator to accommodate her cooking interests. Both models are enabled for remote operation, ENERGY STAR certified and offer precise preservation technologies.



Power House

Installed by NATiVE Solar, the 12 kilowatt solar array features 35 NeON 2 panels from LG Solar, each rated at 350 watts.



Power Player

LG's 54,000 BTU Ductless Mini Split Heat Pump Inverter provides heating and cooling.



Freezer runs on an inverter compressor. Artificial intelligence will even switch it to "Energy Save Mode" at times when Cooper is less likely to open the fridge. Similarly, "Vacation Mode" on the app also allows her to save energy when traveling. SKS refrigerators have a wetter evaporator that holds humidity, so it actually allows you to keep vegetables fresh longer.

ALONG WITH:

- SKS 36-inch *Counter-Depth French Door Refrigerator with Craft Ice*
- SKS 48-inch *Pro-Style Wall Hood*, which communicates directly with range, so burners and fans are synchronized and IAQ ensured
- Two SKS 18-inch *Integrated Column Wine Refrigerators*
- 24-inch *PowerSteam Stainless Steel Dishwasher* (two—one in kitchen and one in butler's pantry)
- 24-inch *Microwave Oven Drawer* in the butler's pantry

SOLAR MODULES

The Austin house is reducing its carbon footprint with 35 high-efficiency 350-watt panels from **LG**. These NeON 2 modules, installed by NATiVE Solar, are designed to deliver a maximum power output of 12.25 kilowatts (based on the inverter type).

The jet black panels produce impressive power per square foot, meaning they occupy less roof space than some other modules to create the same amount of electricity. The panels also have an exceptional temperature coefficient. So, when temperatures hit extremes, the solar modules will continue to perform efficiently.

LG HVAC DUCTLESS MINI-SPLIT PACKAGE

A new multi-zone heating and air conditioning system offers vastly better performance than the old HVAC system in the Austin house. It's not only the fact that insulation levels in much of the house will be increased. It's also the fundamental difference between old and new HVAC technology.

LG's inverter compressors raise the efficiency bar even higher than standard heat pumps because they run at variable speeds. That means that they ramp up to necessary speed, and do not draw a massive surge of power. Unlike conventional systems that cycle on and off, an inverter compressor ramps up or down to match the capacity needed to maintain the ideal comfort levels. On top of this, variable speed units are more compatible with battery storage. If Cooper adds a battery bank to the home's solar array later, she'll be able to run her HVAC during a power outage.

Cooper's install included: an LMU540HV Multi F-MAX Inverter Heat Pump outdoor unit (shown), and a single zone LUU420HHV. Tied in with these outdoor units are indoor units, including an LAN090HSV5 (ARTCOOL MIRROR) in the pantry. The package also included an LVN361HV4, which is a 4-way variable speed air handler (VAHU), capable of 36,000 BTU cooling, or 40,000 BTU heating, and another LVN420 4-way VAHU, with slightly higher output. These units provide rapid response heating or cooling for the home.

LX HAUSYS COUNTERTOPS AND SURFACING

The Austin house features a range of countertop, surface and flooring products from **LX Hausys**, including quartz (Viatera) and solid surface



Sun Kissed

With shades of gold, *Calacatta Sol* surfacing in the master bath adds a high-end luster and is part of the *Viatera* line.



Midas Touch

With similar gold highlights, *Adagio Gold* manufactured countertops from LX Hausys contain up to 93 percent quartz. You'll find them in ReVISION House Austin's kitchen.

CREDIT: BRIAN COLE PHOTOGRAPHY



Retractable Help

Chosen specifically to deal with excessive dog hair from the family pet, the whole-house vacuum from H-P Products includes a retractable hose.

(*HI-MACS*). The company also makes resilient flooring (*HFLOR*).

Several countertops, along with the kitchen backsplash, are made with a quartz-based manufactured product called *Viatera*. This ultra-durable material is not only beautiful, but more sustainable than most quarried stone. It contains up to 93 percent natural quartz, resulting in high durability and higher tensile strength than natural stone products, which typically contain between 20 and 60 percent quartz.

MASTER BATH: *Calacatta Sol* meets the ongoing trend toward bright whites. Available in a polished finish, it has a striking white appearance, fused with shades of gold, with large-pattern veins and set upon a backdrop of warm, twirling hues.

KITCHEN COUNTERTOP: *Adagio Gold*. This new color is designed with a soft, yet brilliant base, and features thin gold veins, to create a sense of brightness and accent in any room.

KITCHEN BACKSPLASH. As a creative, low-maintenance detail, *Viatera* quartz has been installed in place of tile as a continuous, modern backsplash design. Along with the two colors described above, popular backsplash colors include:

Gotham—One of two colors from the all-new *Urban Collection*, *Gotham* is a concrete-inspired design that brings an edgy, industrial look softened by unique marbling. Stone-gray hues and whisper-thin neutrals bring a sleek and sophisticated look.

Carbo—With a dark base, shot through with long diagonal light grey veins running, *Carbo* takes inspiration from *Soapstone*.

**Note that Viatera colors contain up to 93 percent natural quartz, resulting in advanced durability and higher tensile strength than natural stone products, which typically contain between 20 to 60 percent quartz. Non-porous, Viatera is easy to clean and maintain and offers hygienic benefits. Unlike other stone products, Viatera does not require sealing. It's also NSF certified.*

LAUNDRY COUNTERTOP. This top is made from *HI-MACS*, a solid surface material that is super durable, non-porous and commercial-ready. Cooper chose Gray Teak as the color, from the *Wood Collection*. This contemporary collection displays intricate, realistic, weathered wood grain patterns and knots.

H-P PRODUCTS CHAMELEON CENTRAL VACUUM

With a retractable hose, automatic hose lock and a dual-seal system, this quiet, efficient whole house vacuum puts itself away, and keeps dander and pollutants indoors down. **H-P Products'** *Chameleon* vacuum delivers everything that the unit picks up into a container in the garage, keeping dust and dirt far from living spaces.

The whole-house vacuum was a priority for Cooper, who is a dog owner and a foodie. Those two passions are not ones that she would ever want to have crossover. *Chameleon* takes pet hair and dander completely out of the home, not simply tossing it into the air the way



Sound Crusher

Along with its insulating factor, GreenFiber's *Sanctuary* cellulose insulation reduces the amount of sound that makes it through walls or joists dramatically.

SANCTUARY: ESSENTIAL SPECS

- 60% reduction in sound power
- 25% reduction in heating and cooling costs
- Made from 85% recycled material
- Coverage Area (square feet): 48.8 at R-19
- ENERGY STAR certified
- Formaldehyde free
- Limited lifetime warranty
- R-Value per Inch: 3.7



CREDIT: BRIAN COLE PHOTOGRAPHY

Recycled Flooring

The Austin house features Mohawk's *UltraWood* throughout. Specially designed to resist spills and stains, it's made with 85 percent recycled material.

some conventional vacuums do.

A sealed bag in the remote canister can be removed easily, without spilling or the need for additional cleanup. The bags, however, last for up to a year, so replacement is not a regular chore. This part of the unit's mechanics could also be located in a basement or mechanical room, and one hose can access 2,200 square feet, so there's no need for switching hoses to reach different rooms, unless you want extras for convenience.

Designed to last for the lifespan of the home, *Chameleon* not only has health benefits, but it also reduces the need to replace whole-house furnace or ventilation filters.

GREENFIBER SANCTUARY RECYCLED INSULATION

Made with 85 percent post-consumer recycled paper, **GreenFiber** cellulose insulation has been designed to fill even the smallest cracks and crevices in walls, ceilings or attics. Its unique formula makes it especially effective not only at insulating, but also at sound attenuation. In Cooper's remodel, it's being used to "silence" noise from laundry and appliances between walls, and provide places to work at home or find quiet sanctuary throughout the home.

Sanctuary cellulose locks in 1.34 tons of carbon dioxide during the lifetime of a typical home. That's the equivalent CO₂ absorbed by about 807 trees. The product installed at Austin, *Sanctuary* has an insulating value of about R-3.7 per inch. So for a 6-inch conventionally framed wall, Cooper can expect center-of-wall R-20.5 (5.5 inches by R-3.7 per inch).

MOHAWK'S ULTRAWOOD FLOORS

In the main living spaces at ReVISION House Austin, **Mohawk's** *UltraWood* hardwood floors offer water-resistance, easy cleaning and durability. Mohawk brands these qualities as *EasyClean*, *WetProtect*, and *EverLast* technology. The flooring also offers premier protection from dents, scratches, soil and stains. The boards can be installed with minimal tools and labor via a glueless locking system. Other products installed at the Austin house include:

PERGO EXTREME. For the laundry room, *Pergo Extreme* luxury vinyl tile was chosen for its durability and ease of cleaning. This product line is dent proof, waterproof, kid proof and pet proof (important, since Cooper is a dog owner). It also resists fading, stains and scratches, and muddy boots won't grind dirt into the surface.

EVERSTRAND CARPET: Mohawk's *EverStrand* carpet was used in the bedrooms. Not only is the carpet 100 percent recycled, but it's also formulated to resist stains and dirt. To create this carpet, Mohawk diverted more than 50 billion plastic bottles from oceans and landfills. This plastic will serve for many more years as *EverStrand* carpet.

BOCCHI CONTEMPO STEP-RIM SINK

BOCCHI supplied several sinks for the ReVISION House Austin. What makes these sinks special is not just their handsome look, but also the fact that they are made from fireclay, a 100 percent natural, recyclable product. It's fundamentally a refractory clay that has high aluminum content.



CREDIT: BRIAN COLE PHOTOGRAPHY

Elegant Utility

BOCCHI's fireclay *Contempo* sink is not only functional and spacious, but also made from 100 percent recyclable fireclay.



The company has just doubled down on its sustainability efforts. According to its website, "Any unfinished, unfired material can be repurposed into new products, resulting in zero waste. In the United States, select industrial landfills will accept customers' old sinks to be recycled, and in the company's home country of Turkey, sinks are repurposed into road construction material. In addition, BOCCHI requires that its production process yields zero hazardous waste."

"Sustainable processes and the use of materials that benefit the planet have always been the core of who we are and what we do at BOCCHI," explains Akgun Seckiner, chief executive officer at BOCCHI.

Bocchi supplied luxury sinks for the Austin ReVISION House: a 36-inch sink for the kitchen, and a 33-inch *Sotto Sink* (60/40 split) in the butler's pantry, plus another model for the bath.

HAYWARD POOL PRODUCTS

Upgrading the pool filtration, lighting and controls offered Cooper the potential for major energy saving, at the same time giving her more control over pool maintenance. Replacing the single-speed pump with a variable speed model alone is likely to reduce monthly energy costs for pool filtration by more than half. Here's a rundown of some of the new product features from **Hayward**:

1.85HP TRISTAR VARIABLE SPEED PUMP (HL3290OVSP)

The *TriStar VSP* is industry-leading in terms of energy efficiency, saving up to 90 percent in energy costs, and can modulate its speed, meaning the pump slows down or speeds up, depending on the current demand.

OMNI SMART HUB CONTROLLER (HLH485RELAY)

Hayward's *Omni Smart Hub* controller takes care of scheduling and integrates in-app smart control. It controls a full range of equipment, including pumps, heaters, lighting, sanitization, water features and more. The *Alexa*-capable hub can be controlled with just your voice.

DE FILTER (DEP-60 W/SP0425)

Engineered with cartridge convenience and Diatomaceous Earth (DE) technology, Hayward's DE filter is simple and fast to maintain but provides superior water clarity. The DE filtration offers exceptional dirt-trapping capabilities, while a reduced number of pleats significantly decreases cleaning time. This filter significantly reduces water consumption and chemical use.

HAYWARD QUICK CLEAN ROBOTIC CLEANER (RC9990CUB)

With a four hour complete cleaning cycle for walls, floor, coves and waterline, the *Quick Clean Robotic Cleaner* proves quick and efficient. In a rush? The *Quick Clean* technology lets you run a fast 90-minute cycle for a speedy touch-up. The on-board pump delivers intense vacuum power to suck up dirt and debris. The system runs separately from the pool's filtration system and reduces the frequency of filter backwash cycles.

COLORLOGIC LED POOL LIGHTS (LPCUS11100)

Ten fixed colors and seven color-changing light shows while reducing energy use by 86 percent is made possible with Hayward's *ColorLogic* LED pool lights. Perfect for steps, beach entries and fountains as well,





Pool Gear

Installed equipment includes (left and counterclockwise) Hayward's *Quick Clean Robotic Cleaner*, a Paramount *Clear O3+UV2* filtration add-on, a diatomaceous earth (DE) filter, a remote controller, energy-efficient LED lighting, and a super-efficient filter pump.



Multi-Featured Opener



The LiftMaster system interconnects with a security camera and smart home connectivity. The system can send alerts to a smartphone and allows remote access for deliveries.

you can instantly navigate to desired color and dim lights at increments of 20 percent.

UV203 KIT ULTRA CLEAR (006422004000)

Hayward recently acquired the Paramount Leisure line of pool products. The Austin house project will include the Paramount *Clear O3 +UV2 System*, a filtration accessory that instantly kills 99.9 percent of harmful bacteria, viruses, fungus, and algae. The green angle? It also reduces chemical demand by up to 60 percent. The ozone and UV work together to increase efficiency of chlorine while creating a cleaner and healthier pool environment.

LIFTMASTER 8500W GARAGE DOOR SYSTEM

Along with a Wi-Fi-enabled, powerful garage door opener, **LiftMaster's** latest opener, installed at the Austin ReVISION House, includes a full-featured smartphone-ready *myQ App*.

The wall-mounted *8500-W* garage door opener reduces noise and vibration, while freeing up ceiling space.

From the *myQ App*, Cooper will be able to track and control garage access from anywhere. For example, she can give remote access for Amazon deliveries, set it up for *Amazon Key In-Home Delivery* service, or receive security alerts whenever the door is accessed.

For enhanced security, the automatic garage door lock deadbolts the door automatically after closing, and connected LED lights illuminate every inch of the garage, with 1,500 lumens. **GB**

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Schneider Electric

Square D—Home made energy efficient.

se.com/us/connectedhome

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Signature Kitchen Suite

A Perfectionist's Playground

signaturekitchensuite.com

COVER 2

Viewrail

Simply Stunning. Stunningly Simple.

viewrail.com

COVER 4

Westlake Royal Building Products

Everything you can imagine.

westlakeroyalbuildingproducts.com

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COMING NEXT ISSUE

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PRODUCTS

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2022

Our annual product-centric issue highlights 50 of the year's most sustainable offerings. We'll also share our yearly analysis of brand loyalty and awareness.

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Make Way for Miracles



Ron Jones
Co-Founder and President
Green Builder® Media
ron.jones@greenbuildermedia.com

ON OCCASIONS THAT ARE FAR TOO RARE, a reader is fortunate enough to experience a piece of written wisdom, sometimes a single sentence, that causes him or her to stop, go back, read it again, and then be unable to move on from the profound simplicity that has been expressed.

A few months ago, I received as a gift a copy of “The Overstory,” a novel that earned author Richard Powers the 2019 Pulitzer Prize for Fiction. I am told that more than one of my acquaintances had recommended bringing it to my attention, for which I am humbly grateful.

As expressed by one of the characters in the book, Powers wrote, “when you cut down a tree, what you make from it should be at least as miraculous as what you cut down.”

Over the years I have come to realize that writers and builders have much in common. A writer, at least one working in English, attempts to create a meaningful message by taking the 26 letters of the alphabet and arranging them on a page in a particular combination and order that has not been seen before—something I have struggled to do many times, with limited success.

Similarly, a builder selects from a finite list of materials and products in an effort to assemble something worthwhile, a structure that meets a predetermined set of outcomes and that will have value. This process requires the skill, talent, resources and determination of a great many people, but in the end, the results, like the written words, are there for all to see. As with the writer, the builder alone is responsible for the final product.

By extension, the place where the builder works is much like the page on which the writer lays down the words. But unlike the blank sheet or empty screen, that location, that site, will forever be an essential and integral aspect of what gets built there. I suppose we could debate whether or not this would apply to an orbiting space station, for example, but I would argue that it occupies a specific place and exists in the context of where it is at any given moment in time.

Back on the ground, what we observe as common practice are sites being prepared with convenience, uniformity and expediency in mind. Tracts are routinely stripped, leveled and processed to maximize profitability, with little or no regard for what naturally existed there. Topographic features, geologic anomalies and any and all forms of flora and fauna are summarily bladed away to make room for homogenization.

The greater misfortune, however, may be the loss of creative opportunity that this model of development fosters. Maybe that’s why we are left with monotonous, repetitive, uninspired subdivisions and communities that are not much more than glorified warehouses for people to occupy. It defines the disconnect between the built environment and the natural world.

Like the writer, the builder can opt to aspire to a higher expression of his or her craft, but it does require making a conscious choice. It’s the difference between memorable and forgettable. With apologies to the author Powers, I’d like to suggest that whatever you build on a site should be at least as miraculous as what you have to remove to make room for it. **GB**

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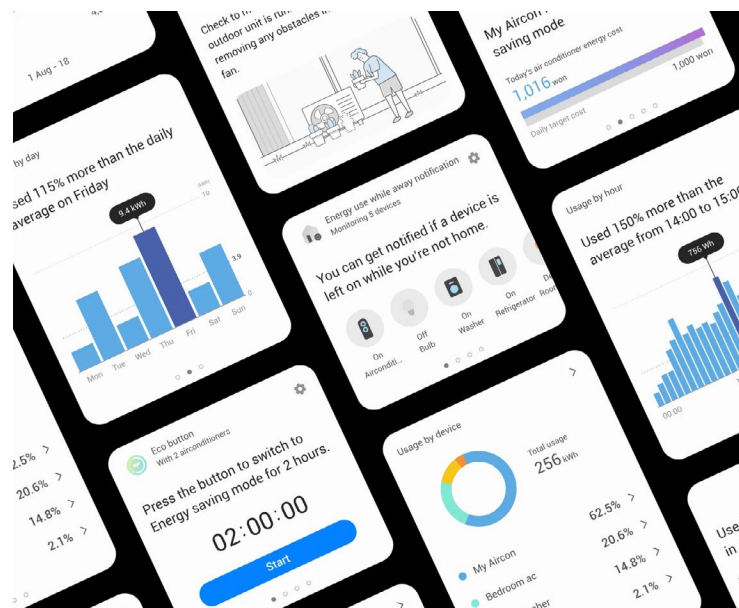
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