

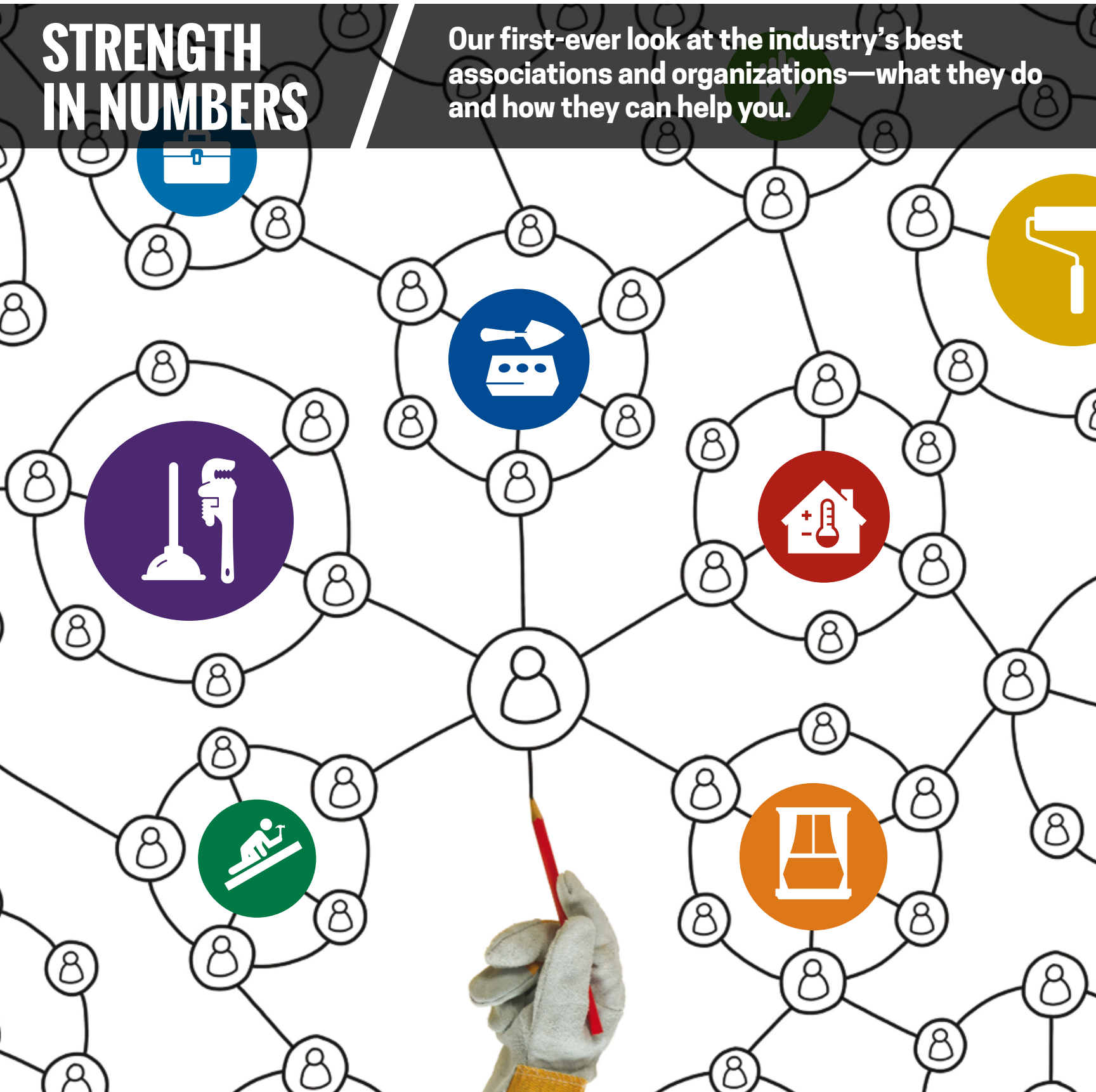
Award-Winning Coverage of Sustainable Construction, Products and Lifestyles

# GREEN BUILDER<sup>®</sup>

May/June 2018 / [www.greenbuildermedia.com](http://www.greenbuildermedia.com)

## STRENGTH IN NUMBERS

Our first-ever look at the industry's best associations and organizations—what they do and how they can help you.



Do you want to know  
about a problem with your  
water heater before you're  
ankle-deep in water?

Or after?

### Now a Water Heater Intelligent Enough to Prevent Emergencies

Introducing Triton™. With the industry's only all-inclusive leak detection and prevention system with smart monitoring technology and auto shut-off, now you can take care of problems before they're a giant headache.

Rheem® innovation helps eliminate emergencies and protect the businesses you manage with Triton:



Avoid water damage  
with auto shut-off



Monitor tank health with  
systematic health checks



Connect to BMS with  
built-in BACnet port

Thanks to this breakthrough product, the history of commercial water heaters will now be divided into two eras: before Triton—and after.

Visit [Rheem.com/Triton](https://Rheem.com/Triton)

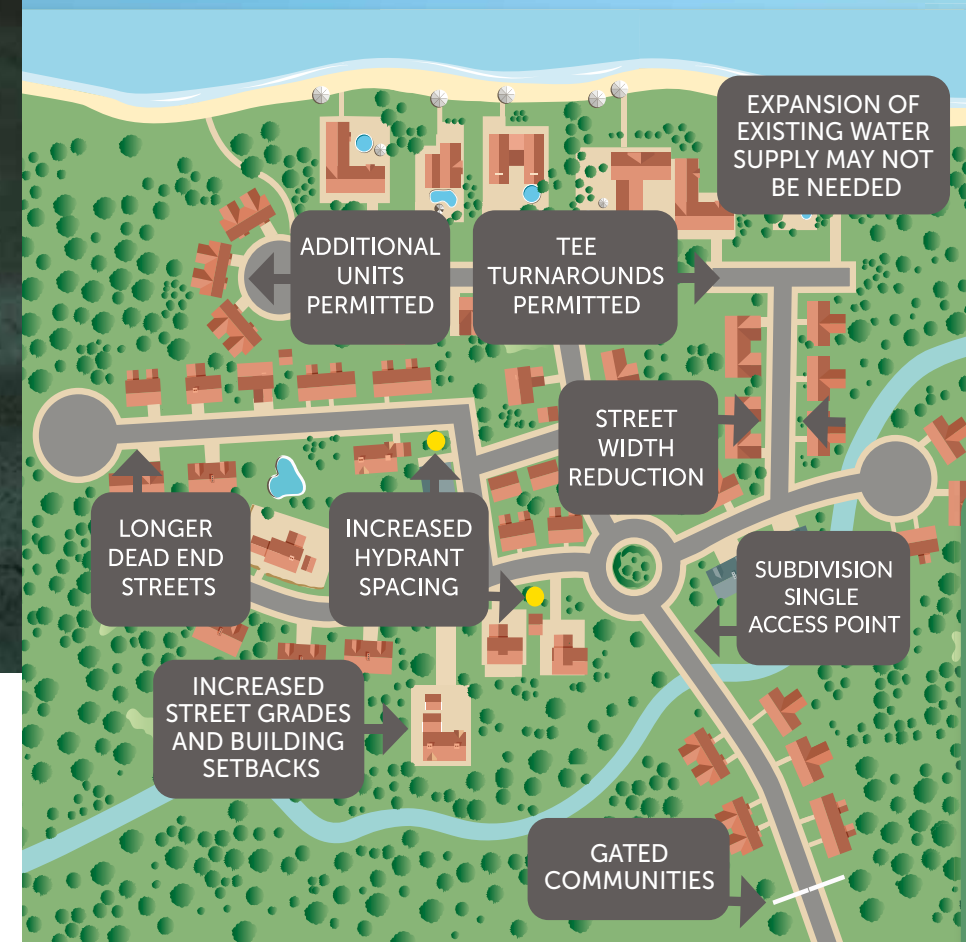


TRITON™

# These Incentives Improve Community Safety and Provide Developer Savings

In exchange for installing home fire sprinklers in entire developments, authorities having jurisdiction can offer locally negotiated trade-ups as incentives to developers. These incentives may include:

- Street-Width Reduction
- Longer Dead-End Streets
- Tee Turnarounds Permitted
- Increased Street Grades and Building Setbacks
- Additional Units Permitted
- Expansion of Existing Water Supply May Not Be Needed
- Increased Hydrant Spacing
- Subdivision Single Access Point
- Gated Communities



### HOME FIRE SPRINKLERS PROTECT THE ENVIRONMENT\*

Reduce greenhouse gas emissions by 98%

Reduce fire damage by up to 97%

Reduce water usage to fight a home fire  
by as much as 91%

Reduce water pollution

\* Environmental Impact of Automatic Fire  
Sprinklers, FM Global, 2010



### Home Fire Sprinklers: A Win-Win for Your Entire Community

Home fire sprinkler incentives can reduce construction costs, while protecting residents and firefighters, and help to protect the environment.

[homefiresprinkler.org/crr](https://homefiresprinkler.org/crr)

Visit HFSC in Booth #2366  
2018 Pacific Coast Builders Conference (PCBC)  
San Francisco June 27 & 28

©2018 Home Fire Sprinkler Coalition

## Associations—The Good, the Backward and the Possible

**M**OST BUILDING PROFESSIONALS—builders, small architect firms, designers and so on— don't have enough time left in the day to impact political events, regulatory changes and employee standards on their own. We know, for example, that about half of homebuilders have fewer than 10 employees, and about 80 percent have receipts under \$1.5 million. Unlike their big builder brethren—Lennar, Pulte and Toll Brothers, for instance—the little guys don't have marketing divisions, lobbyists or even HR departments that can spend a week chasing down new labor pools, sending their trades to update classes or even securing better insurance.

The U.S. Census shows that between 2007 and 2012, the number of residential builders declined by half. In 2012, according to analysis [<https://bit.ly/2LPdb3R>] of the Census by the National Association of Home Builders (NAHB), the majority of residential construction businesses were self-employed independent contractors, accounting for 81 percent of all residential building construction (RBC) and specialty trade contractor (STC) establishments, and 83 percent of land subdivision firms. They also accounted for more than half of workers in RBC, 41 percent in land subdivision and 31 percent in STC.

Although the latest Census figures aren't available, it's clear that those numbers have been on the rise. The industry is recovering, but it may never achieve the density of the last boom days.

Historically, a major perk of joining an association was (and still is in some cases) the offer of various types of discounted insurance. One form of these shared plans, Association Health Plans, became much more regulated in the 1990s. The NAHB is pushing to increase AHP flexibility. That's political pressure that's well placed—an example of an association pursuing goals that could benefit all small businesses.



The mere presence of an association or organization, however, is not an automatic good. Legacy can become a roadblock to industry progress. NAHB's membership [<https://bit.ly/2kDK2wc>], for example, does not reflect the times. NAHB's associate members (everyone but builders, who account for 32 percent of membership) skew 96 percent white, with a median age of 56. The industry

also struggles to attract women—estimates put females in the construction workforce at 3 percent to 8 percent.

This is not to say the individuals in the building industry are especially “anti” diversity. Most of the builders and tradespeople I've known over the years are simply too busy to spend time trying to change the “big picture.” They depend on organizations and associations to do this for them. When they don't, the industry looks out of touch. Is it any wonder young people are not joining the ranks?

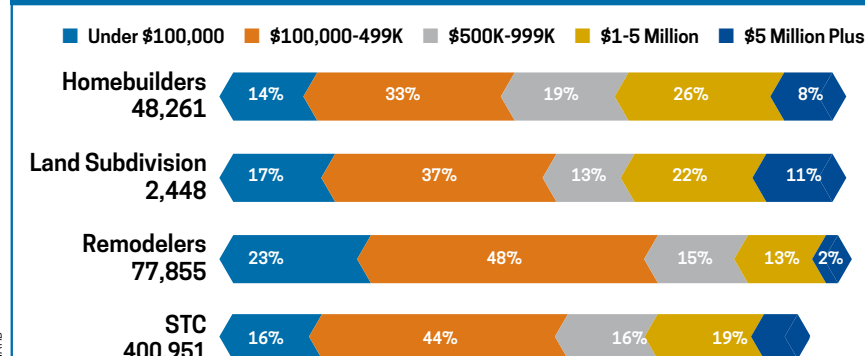
Not all organizations are as retroactive as the NAHB. Many of the groups highlighted in this special report demonstrate that progress is possible, if the leadership and mission is progressive. The Portland Cement Association, for example, has embraced R&D, pushed for greater sustainability, and generally helped keep the cement industry from getting an environmental black eye. The same is true for the National Fire Protection Association, with a strategy

for protecting lives of the public and emergency respondents.

Also included in our roundup are organizations that exist to make buildings and products better, such as RESNET. Others, such as the Painting and Decorating Contractors of America, focus on improving the strength of an entrepreneur's business. Their relevance goes without saying.

Instead of reinforcing an outdated world view, associations and building organizations have the chance to step into a void—real support for small business people. By focusing on what members really need—more affordable healthcare, better building code knowledge, access to research and a “message” that attracts young people and minorities—they can bring the whole industry forward, and make it vibrant and well regarded. **GB**

Chart 2. Establishments by Annual Receipts



SOURCE: NAHB

**Who's building?** Data from the last Census portrays an industry mostly made of small companies.

## Progress means moving water flawlessly and efficiently.



We provide connections our customers can rely on. We create forward-thinking design that dramatically reduces materials usage. And we innovate technologies that increase water quality and efficiency. And (most importantly) we care. Find out more about Uponor's intelligent water solutions at [uponor-usa.com](http://uponor-usa.com)

## We mean progress.

GREEN BUILDER® MEDIA PRESENTS

# THE ALIGN PROJECT

BY Kasita

## RENDEZVOUS WITH REALITY

**THE ALIGN PROJECT** is a one-year demonstration project designed to challenge entrenched ideas about how we live in the U.S. and offer suggestions for how we can align our lifestyles with our changing socio-economic and environmental realities.

Whether we like it or not, the changing climate is demanding a sweeping overhaul of the way we live. Fortunately, advances in high-performance products and enabling technologies are providing viable solutions for enhanced efficiency, resiliency, sustainability, and connectivity.

The centerpiece of The Align Project is Kasita's small-footprint, net-zero, connected independent dwelling unit. The precision-engineered home takes advantage of every



square foot of space and comes with Kasita's smart home technology platform, which seamlessly integrates devices, appliances, lighting, and mechanical systems.

Recognizing that sustainable living extends beyond the home, The Align Project will also focus on revamping our cities, energy infrastructure, mobility solutions, and finances, highlighting sustainable choices that align with our moral compass to ensure a flourishing future.



### Visit The Align Project

#### Solar Power International

Sep 24-27 2018, Anaheim, CA

#### CES

Jan 8-11 2019, Las Vegas, NV

#### Design & Construction Week

February 19-21 2019, Las Vegas, NV

#### Project Sponsors



TOYOTA



LOXONE



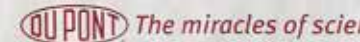
#### For More Information

Visit [www.greenbuildermedia.com/vision-house-the-align-project](http://www.greenbuildermedia.com/vision-house-the-align-project) or email Cati O'Keefe at [cati.okeefe@greenbuildermedia.com](mailto:cati.okeefe@greenbuildermedia.com)



# Tyve HomeWr

Call 1-800-44-TYVEK WWW.CONSTRUCTION.TY



DuPont™  
FlexWrap™ NF

# BUILT FOR EFFICIENCY

DuPont™  
Tyvek®  
Building  
Envelope  
Solutions

### Keep the weather out. And the comfort in.

Build added durability, weather protection and energy efficiency into every home. DuPont™ Tyvek® weather barriers provide superior air and water holdout while allowing the building to breathe. When Tyvek® weather barriers are installed with DuPont™ Flashing Systems, you provide further protection against damaging and costly leaks from outside elements. That means greater confidence for you and lasting value for your customers.

[weatherization.tyvek.com](http://weatherization.tyvek.com)

FOR  
GREATER  
GOOD™

Copyright © 2018 DuPont. All rights reserved. The DuPont Oval Logo, DuPont™, For Greater Good™, Tyvek®, Tyvek® HomeWrap® and Tyvek® FlexWrap™ are trademarks or registered trademarks of E.I. du Pont de Nemours and Company or its affiliates.

## Rising Sun: Mandatory Solar Gets Green Light in California

PV builders and manufacturers could see major growth once the requirement takes effect in 2020.

CALIFORNIA HAS BECOME THE FIRST STATE to require solar panels on most new single- and many new multi-family homes. The California Energy Commission (CEC) voted unanimously on the mandate, which applies to all building permits issued as of Jan. 1, 2020. The requirement is projected to increase home construction costs by \$25,000 to \$30,000, according to the CEC.

New homes are not required to reach net-zero status, but it will offer homebuilders incentives, such as a compliance credit for installation of home storage batteries. The devices enable construction of smaller solar arrays, because excess energy will be available when needed, CEC Commissioner David Hochschild says.

The mandate does not apply to homes where solar isn't practical, such as when a roof is in permanent shade, or if the roof is not big enough for an array that can fully power the home. The regulation also does not apply to remodels or to multi-family buildings that exceed three stories.

The requirement offers good news for builders. Only about 20 percent of current single-family homes have built-in solar capacity. Upping that total to 100 percent will mean increased business for photovoltaic panel installers and manufacturers. It will also help bring the cost of solar even



**Sun power.** Once required only in select cities, solar energy-powered new homes will be a standard in California starting in 2020.

closer to that of electric power, according to a report by the Lawrence Berkeley National Laboratory.

Those not totally on board with the requirement, such as the Orange County Building Industry Association, have expressed concern that it will drive up the price of new homes and push more buyers out of the market, making the state's housing crisis worse.

Other entities, such as the City of Lancaster, note that it and many other California cities have had solar mandates in effect for years, with very little negative impact on housing prices or sales.

## GAS UP YOUR DELIVERY TRUCK, GO GREEN

This new fuel card means extra money for sustainable nonprofits.

DELIVERING SUPPLIES OR TRAVELING to a worksite may now help the environment. Boston-based nonprofit Green Gas has unveiled a gasoline payment card that reverses a vehicle's environmental impact at the pump by making a donation to a green cause for every gallon of gasoline purchased.

According to Green Gas Executive Director Kyle Kornack, 10 cents for every gallon goes toward efforts such as carbon offset projects that are certified by third-party auditors to neutralize members' carbon footprints. In addition, an optional phone app rounds up the price of gasoline purchases and donates the spare amount to climate



**Sustainability perk.** Pumping gas can now do more than fill the tank. It can also help fund local and national green projects and education efforts.

change-related causes such as environmental nonprofits nationwide that are working on sustainable transportation, community resilience and environmental justice issues.

The card has been called a mechanism for new type of "carbon tax" that is voluntarily chosen and privately invested, Kornack notes. This can make a real difference for the health of local communities and the planet at large. "Many people are looking for a way to channel their frustration about the negative impact of climate change, and this may be that outlet," Kornack adds. "Simply put, we are all looking to do more. [Here's a chance] to translate this sense of helplessness into powerful and enduring environmental impact on the ground—one gas tank at a time."

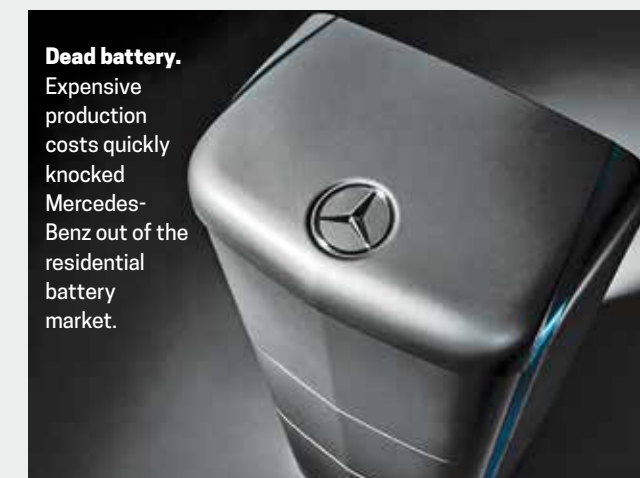
Interested persons may learn more at [www.greengasmovement.org](http://www.greengasmovement.org).

## Mercedes-Benz says goodbye to residential batteries

Despite early optimism, high costs have the automaker pulling the plug on home energy storage.

MERCEDES-BENZ'S FORAY into the residential battery market is over in less than two years. The automobile giant announced it is discontinuing manufacture of all home solar storage batteries and dissolving its Energy Americas subsidiary later this year.

According to Mercedes-Benz spokesperson Madeleine Herdlitschka, the company is leaving the market because stationary batteries—a variation of those for its automobiles—have proven too expensive to sit in someone's house. "It's not necessary to have a car battery at



home," Herdlitschka told *Greentech Media*. "They don't move, they don't freeze. It's overdesigned."

Mercedes-Benz began manufacturing home batteries in November 2016 with the goal of giving market leader Tesla a run for its money. Unlike Tesla, which at the time lacked name recognition with its now-popular *Powerwall* product, Mercedes-Benz had considerable market power, particularly after partnering with photovoltaic rooftop giant Vivint Solar in May 2017.

The company exits the market at a time when residential batteries are finally becoming popular. GTM Research estimates that 2018 sales could increase by up to 300 percent compared to last year.

Herdlitschka told *Greentech Media* that Mercedes-Benz will continue with its electric vehicle program, which includes production of a long-range EV beginning in 2019. But customers who also want home batteries for their cars will need to acquire them elsewhere.

## UE researchers mix up stronger, greener concrete

New graphene composite could extend lifespan by more than 100 percent.

RESEARCHERS AT THE UNIVERSITY OF EXETER in the United Kingdom have developed a graphene-infused composite that can make concrete stronger and greener, and potentially reshape how buildings, bridges and other structures are built.

The new material, created with nanotechnology, is twice as durable and four times more water resistant than traditional concrete, according to UE researcher Monica Craciun. The inclusion of graphene also reduces the amount of materials required to make concrete by about 50 percent, resulting in a significant reduction of carbon emissions.

"Our cities face a growing pressure from global challenges on pollution, sustainable urbanization and resilience to catastrophic natural events," Craciun says. "This new composite material is an absolute game-changer in terms of reinforcing traditional concrete to meets these needs."

Exeter researchers believe the new technique could lead to discovery of other nanomaterials that can be incorporated into concrete, further modernizing the construction industry worldwide. "Finding greener ways to build is a crucial step forward in reducing carbon emissions around the world and help protect our environment as much as possible," lead researcher Dimitar Dimov says. "It is a crucial step in the right direction to make a more sustainable future for all concerned."



**Rock solid.** Researchers in the U.K. have unveiled a concrete hybrid that is stronger, cheaper and more environmentally friendly than the basic version used by construction crews worldwide.

# Third-party-owned residential solar now second-best among users

A stronger lending market entices homeowners to buy, not lease.

HOMEOWNERS IN 2017 bought more solar power systems with cash or loans than with leases or power purchase agreements (PPAs)—the first time since 2011. The shift is attributed to an increasingly competitive market for borrowing, according to market analysis and advisory firm Wood Mackenzie.

The market for third-party ownership (TPO) via leases or PPAs is expected to drop to about 33 percent over the next five years as companies such as Vivint Solar and Tesla opt for other financing methods, lead researcher Allison Mond says. Currently, the TPO market share is estimated at 38 percent, down from 41 percent in 2017.

The figures are a stark contrast to the

commercial sector, in which leases and PPOs are expected to account for 78 percent of solar systems by 2021, up from a projected 53 percent in 2018, Wood Mackenzie notes. Much of this success stems from the fact commercial customers are able to acquire very customized

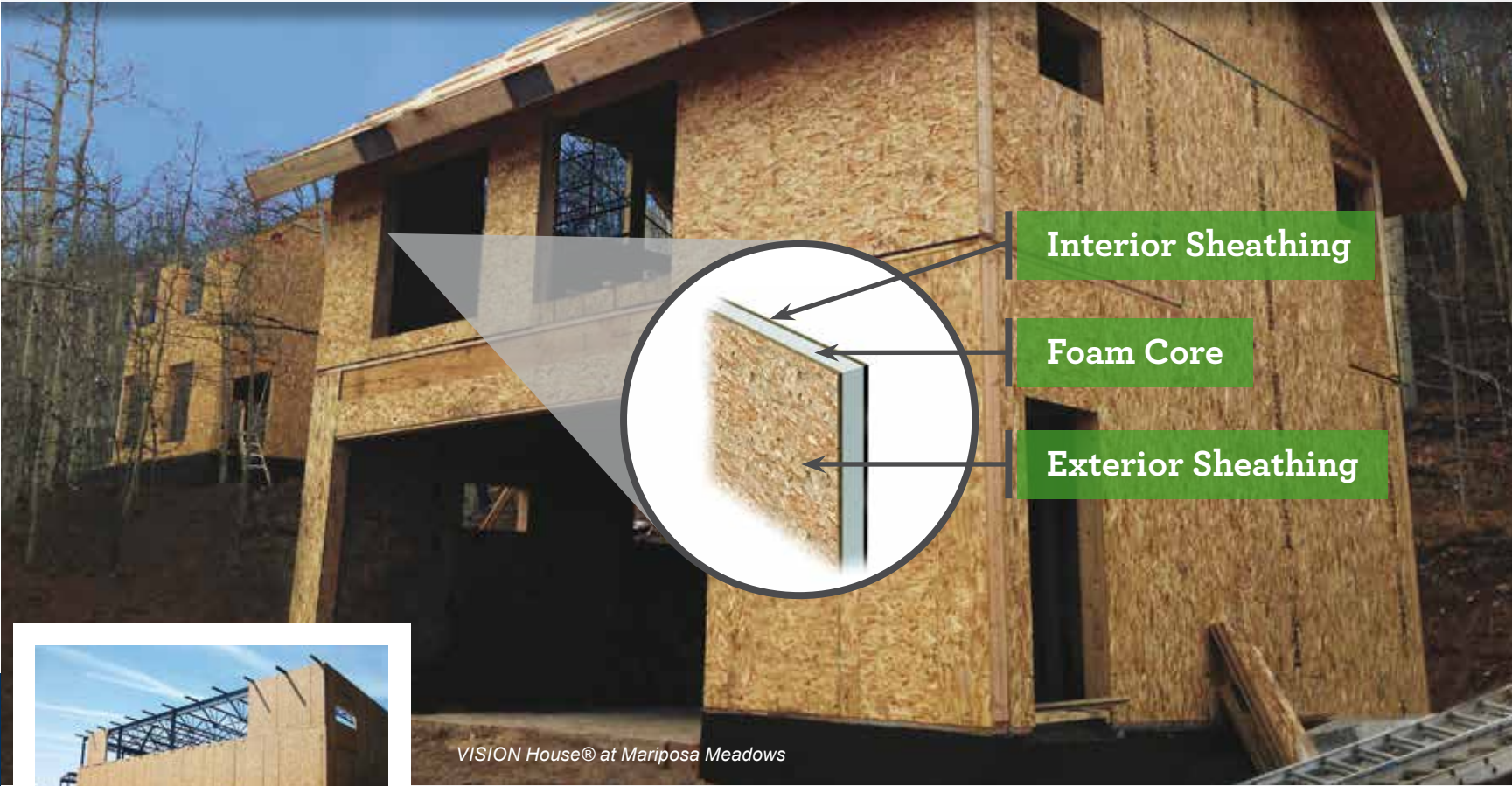
agreements compared to those for residential solar buyers.

Wood Mackenzie identifies Mosaic as the nation's No. 1 residential financier, slightly ahead of Sunrun. With TPOs, Sunrun tops Tesla and Vivint Solar.



**A big switch.** Customer-owned solar power systems are expected to dominate the market by 2023, thanks to ever-favorable lending programs.

# Saving the environment one panel at a time



Green Builder® Media chose structural insulated panels (SIPs) as the most effective way to create an airtight and energy-efficient building envelope for their new net-zero energy Sustainability Institute at Mariposa Meadows.

- ⊕ Airtight building envelope
- ⊕ Resource efficiency
- ⊕ Resiliency
- ⊕ Continuous insulation
- ⊕ Reduced waste
- ⊕ Faster construction

Visit [sips.org](https://sips.org) to contact one of SIPA's 30 manufacturers today.



**inter solar**  
connecting solar business | NORTH AMERICA

North America's Premier Exhibition and Conference for the Solar Industry  
MOSCONE CENTER, SAN FRANCISCO

**JULY  
10-12  
2018**  
[www.intersolar.us](http://www.intersolar.us)

- Hear it here first – Be a part of the first major U.S. solar-plus-storage event of the year
- Make business connections that matter – Meet 500 exhibitors & network with 16,000 professionals from across the world
- Be in the center of three exciting industries – Learn what's next for solar, energy storage, & smart renewable energy



— for more information, visit —  
[sips.org/mariposameadows](https://sips.org/mariposameadows)

# GREEN BUILDER®

Volume 13, Issue 4  
May/June 2018  
Published by Green Builder® Media

## GREEN BUILDER MAGAZINE EDITORIAL OFFICES

PO Box 97  
Lake City, CO 81235  
360-376-4702  
[www.greenbuildermedia.com](http://www.greenbuildermedia.com)

## GREEN BUILDER MEDIA LEADERSHIP

**Sara Guterman** CEO  
[sara.guterman@greenbuildermedia.com](mailto:sara.guterman@greenbuildermedia.com)  
360-376-4702 x101

**Ron Jones** President  
[ron.jones@greenbuildermedia.com](mailto:ron.jones@greenbuildermedia.com)  
360-376-4702 x102

**Cati O'Keefe**  
Chief Development Officer /  
Editorial Director  
[cati.okeefe@greenbuildermedia.com](mailto:cati.okeefe@greenbuildermedia.com)  
360-376-4702 x105

## ADVERTISING SALES

**Craig M. Coale** Publisher  
[craig.coale@greenbuildermedia.com](mailto:craig.coale@greenbuildermedia.com)  
360-376-4702 x103 or 512-344-9754

**Scott Cunningham** Southeast  
[scott.cunningham@greenbuildermedia.com](mailto:scott.cunningham@greenbuildermedia.com)  
678-576-1487  
AL, AR, FL, GA, NC and SC

**John Clemens** West Coast  
[john.clemens@greenbuildermedia.com](mailto:john.clemens@greenbuildermedia.com)  
951-404-7000  
AZ, CA, NV, OR and WA

## AUTOMOTIVE ADVERTISING SALES

**Dawn Rivard**  
[dawn@focusmm.net](mailto:dawn@focusmm.net)  
586-214-0635

## EDITORIAL

**Matt Power** Editor-in-Chief  
[matt.power@greenbuildermedia.com](mailto:matt.power@greenbuildermedia.com)  
207-619-2713

**Alan Naditz** Managing Editor  
[alan.naditz@greenbuildermedia.com](mailto:alan.naditz@greenbuildermedia.com)  
916-681-2057

**John O'Brien** Art Direction  
[john.obrien@greenbuildermedia.com](mailto:john.obrien@greenbuildermedia.com)  
207-865-9908

**Therese Workman** Copy Editor  
[info@greenbuildermedia.com](mailto:info@greenbuildermedia.com)

**Melissa Smith** Web Editor  
[melissa.smith@greenbuildermedia.com](mailto:melissa.smith@greenbuildermedia.com)

## PRODUCTION

**Mary Kestner** Production Manager  
[mary.kestner@greenbuildermedia.com](mailto:mary.kestner@greenbuildermedia.com)  
360-376-4702 x107

## CIRCULATION

**Mary Kestner**  
[mary.kestner@greenbuildermedia.com](mailto:mary.kestner@greenbuildermedia.com)  
360-376-4702 x107

## GENERAL INFORMATION

[admin@greenbuildermedia.com](mailto:admin@greenbuildermedia.com)  
360-376-4702 x109

## FINANCE

**Dan DeGolia** Chief Financial Officer  
[dan.degolia@greenbuildermedia.com](mailto:dan.degolia@greenbuildermedia.com)  
303-503-1000

**Hannah Judson** Controller  
[hannah.judson@greenbuildermedia.com](mailto:hannah.judson@greenbuildermedia.com)  
970-397-5483

ISSN 1559-4971

The trademark and service mark  
GREEN BUILDER is registered under  
the U.S. Trademark Act for a variety of  
goods and services.

[www.greenbuildermedia.com/  
subscribe-togreenbuilder](http://www.greenbuildermedia.com/subscribe-togreenbuilder)  
Click above to subscribe to  
*Green Builder* magazine today!

[www.greenbuildermedia.com/  
about-green-builder-media](http://www.greenbuildermedia.com/about-green-builder-media)  
Click above to learn  
more about  
Green Builder® Media.

**MISSION STATEMENT:** "Our mission is to effect meaningful, positive change for a better world. As advocates for sustainability, we provide mind-expanding information that catalyzes and inspires commitment to sustainable living."

## Problems with your subscription?

For assistance, please contact  
Mary Kestner, Project Coordinator  
[mary.kestner@greenbuildermedia.com](mailto:mary.kestner@greenbuildermedia.com)  
360-376-4702 x107

## Subscription Information

Subscribe to *Green Builder* magazine  
and receive valuable information about  
how to increase your bottom line,  
differentiate your business and  
change the world. At \$39.95, it's an easy  
return on your investment. Just go to  
[www.greenbuildermedia.com](http://www.greenbuildermedia.com) and click on  
"subscribe." To unsubscribe or change  
your address, email your name,  
company and address to:  
[mary.kestner@greenbuildermedia.com](mailto:mary.kestner@greenbuildermedia.com).

*Green Builder* has reduced its  
environmental impact through  
ZeroFootprint Offsets  
[www.zerofootprintoffsets.com](http://www.zerofootprintoffsets.com).  
Almost all of the natural resources used  
to produce *Green Builder* will be  
returned to the environment by planting  
trees and restoring watersheds.  
Also, greenhouse emissions will be  
mitigated through carbon offsetting.  
(Printed on recycled paper.)



**NEW! SUBSCRIBE TO  
OUR NEWSLETTERS**  
[www.greenbuildermedia.com/  
enewsletter-subscribe](http://www.greenbuildermedia.com/enewsletter-subscribe)



[@greenbuildermag](https://twitter.com/greenbuildermag)  
[@visionhousegbm](https://twitter.com/visionhousegbm)



[www.instagram.com/greenbuildermedia](https://www.instagram.com/greenbuildermedia)



[facebook.com/GreenBuilderMedia](https://facebook.com/GreenBuilderMedia)



[pinterest.com/greenbuilder](https://pinterest.com/greenbuilder)

## GREEN BUILDER® Digital Archive

Looking for a specific building  
science article about fly ash or  
wood-burning stoves? Trying to  
remember the details of a great green  
house featured in *Green Builder*?

Now you can find digital versions of those  
archived stories and issues online—free to our  
print subscribers. We've been steadily adding  
past issues to our content archive, and the  
collection is almost complete. **Just go to our  
website: [www.greenbuildermedia.com](http://www.greenbuildermedia.com),**  
and click on "Magazine" to find the archived  
content you need.

# Panasonic

## Select Fresh

## Healthy indoor air all the time.

Panasonic introduces further progress for designing healthy homes. As a standalone or paired with our multi-speed exhaust fans, WhisperFresh Select™ brings fresh, filtered supply air from outdoors into the home and helps create balanced ventilation in tightly-built, energy efficient dwellings.

Now it's easier to meet ventilation requirements for green building standards. Powered by our intelligent ECM motor and Pick-A-Flow™ airflow selector, WhisperFresh Select's precision ventilation helps you design beyond code and create healthier living environments.

Select fresh at [whisperfreshselect.com](http://whisperfreshselect.com)



**WhisperFreshSelect™**  
VENTILATION FAN





# TABLE OF CONTENTS

FEATURES

**Allied Interests: The Evolving Role Of Associations** .....15  
They inform, educate, certify and advise members to help them get the job done right. Here's a look at how some of the green building industry's key associations keep everyone at the top of their game, and what some of their members have to say about it.

**The Align Project: A Rendezvous with Reality** .....44  
Green Builder® Media and green builder Kasita are partnering on a smart, modular, net-zero accessory dwelling unit designed to challenge ideas on how we want to live.

**The millennials are coming...sort of** .....49  
Millennials are just as eager to nest as previous generations. They just don't have the same opportunities their parents and grandparents enjoyed.

DEPARTMENTS

**EDITOR'S NOTE** .....02

**GREEN BUILDING NEWS** .....06

**PRODUCT FOCUS** .....52

**COGNITION** .....56

**CODE ARENA** .....58

**SMART CITIES** .....60

**TAILGATE** .....64

HERE'S A SAMPLE OF WHAT'S INSIDE

“I bring new ideas; concepts that are integrated yet rarely thought about as a combined whole. And I get to work with people who have been in the business, some as long as 50 years. It’s essential to my work to be able to bounce ideas off these people.”

(Page 25)

ON THE COVER  
STRENGTH IN NUMBERS

Visit us at [www.greenbuildermedia.com](http://www.greenbuildermedia.com) for up-to-date news analysis, case studies, new green projects, code and reg updates, thought-provoking blogs, cutting-edge products and much more.





# HIGH PERFORMANCE HOME SUMMIT 2018

OCTOBER 16-18 | SAN DIEGO, CA



**EARLY BIRD PRICING THROUGH AUGUST 31<sup>ST</sup>**

Join us in sunny San Diego, October 16-18, at the **MUST-ATTEND** event of the year for builders, raters, analysts, and architects committed to finding solutions for producing high-performance buildings.

**Presentations will cover topics of special interest including:**

- Defining, building and selling a Healthy Home
- Resilience in the Built Environment
- Impact of Policy, Code and Title 24 on Design and Construction
- Building the Home of the Future with Innovation, Cost Efficiencies and Sustainability
- Water Efficiency & Conservation

FOR MORE INFORMATION, PLEASE CALL **952-881-1098**  
**WWW.SUMMIT.EEBA.ORG**  
**nancy@eeba.org | cristen@eeba.org**

# COMMUNITY SOLAR POWER SUMMIT

**JULY 18 – 19, 2018**  
Minneapolis, MN

## **Community Solar: The next big renewable energy market**

The Community Solar Power Summit, produced by the Coalition for Community Solar Access (CCSA), brings together leading community solar businesses, utilities, non-profits, and policymakers for an exclusive two-day event — featuring in-depth conversations with national community solar thought leaders from CCSA, the Solar Energy Industries Association (SEIA), Smart Electric Power Alliance (SEPA), with sessions about current trends and policies, and targeted matchmaking and networking opportunities.

**Learn more at**  
[www.events.solar/community-solar](http://www.events.solar/community-solar)

## **Over 20,000 will be in California this September.**

North America Smart Energy Week, is the largest gathering of solar, smart energy, energy storage, and hydrogen fuel cells executives in North America looking to grow their renewable portfolio for businesses and communities. Anchored by the flagship event, Solar Power International, North America Smart Energy Week brings together an extensive alliance of renewable energy leaders for four days of networking, accredited educational events, and innovation that moves the industry forward.

**Learn more at**  
[www.solarpowerinternational.com](http://www.solarpowerinternational.com)

# NORTH AMERICA SMART ENERGY WEEK

**SEPTEMBER 24-27, 2018**  
Anaheim, CA

# The Evolving Role of Associations

## ALLIED INTERESTS

From mentors to policy advocates, associations aligned with the green building industry are keeping everyone at the top of their game.

**BY ALAN NADITZ AND GREEN BUILDER STAFF**

AN INDUSTRY ASSOCIATION is like a stage manager—not in the spotlight, but always there to maintain order and make sure everyone has what they need to get their jobs done right. They inform, educate, certify and advise. They help stimulate an exchange of ideas between colleagues and competitors. And they keep the construction industry in a forward-thinking mode. When we approached these key, behind-the-scenes construction industry representatives, they happily put the word out about what they've accomplished and how they plan to lead green building into the next decade. Members also enthusiastically chimed in about what their associations have done to make them more competitive and sustainably focused. So yes, associations are stage managers. But at the end of the show, even they get to take a bow.

# APA – The Engineered Wood Association

There’s more to this trade group than mere handling of wood.



“APA takes a hands-on approach to product and assembly testing. Evaluating conditions that replicate real-world construction scenarios often involves recreating similar conditions, and then using technology to induce stress, define weakness and identify critical design considerations. By repeatedly performing these tests, we are able to provide credible, definitive guidance and instruction to builders, designers, and regulatory officials on our wood product assemblies and their application in construction scenarios.”

Ed Elias, President,  
APA - The Engineered  
Wood Association

FOR MORE THAN 80 YEARS, APA – THE ENGINEERED WOOD ASSOCIATION – has focused on helping the industry create structural wood products of exceptional strength, versatility and reliability. Combining the research efforts of scientists at APA’s 42,000-square-foot research center with the knowledge gained from decades of field work and cooperation with its member manufacturers, APA promotes new solutions and improved processes that benefit the entire industry. APA is a nonprofit trade association that has grown and evolved with the engineered wood industry. APA was founded in 1933 as the Douglas Fir Plywood Association, and was later recognized as the American Plywood Association. In 1994, APA changed its name to APA – The Engineered Wood Association to better reflect the range of products manufactured by APA members and the international scope of the Association.

Its members are well-known manufacturers whose mills produce the majority of the structural wood panel products made in North America, plus a host of engineered wood products, including glued laminated timber (glulam), wood structural panels, wood I-joists and structural composite lumber.

APA has a long and extensive history in building codes and standards development activities. It serves as the secretariat for the standing committees of U.S. Product Standard PS 1 for Structural Plywood, the consensus softwood plywood standard, and Voluntary Product Standard PS 2, the U.S. harmonized performance standard recognized under the U.S.-Canada Free Trade Agreement. APA has developed many performance standards over the years, including plywood siding, wood structural panel and sheathing, glulam, wood I-joists, rim board, and cross-laminated timber (CLT). APA issues *APA Product Reports* designed to help manufacturers expedite market entry of their products.

APA provides builders, designers and specifiers with a wealth of information, from basic construction instructions to highly technical data, for a variety of residential and commercial building applications. APA’s Help Desk, Resource Library, and field representatives provide a diverse range of support—from the basics of building structurally sound floors, walls, and roofs to recommendations for complying with stringent energy and code requirements to special design considerations for areas prone to extreme conditions, such as high wind, seismic activity and moisture intrusion.

APA and APA EWS trademarks are the manufacturer’s assurance that the engineered wood product conforms to manufacturing and product performance standards shown on the trademark. The mark appears only on products manufactured by APA members committed to APA’s rigorous program of quality inspection and testing.



## FACTS

NUMBER OF MEMBERS: 172

MEMBER BREAKDOWN: Engineered wood product mills in 23 states and seven provinces

HEADQUARTERS: Tacoma, WA

WEBSITE: [www.apawood.org](http://www.apawood.org)

NUMBER OF ACTIVE SITES: N/A

KEY SERVICES OFFERED: Development of performance standards for building products and tools; creation of product reports to help engineered wood product manufacturers expedite market entry of their goods; provide highly technical educational resources to residential and commercial building professionals; free on-site consultancy services on the latest construction techniques and code requirements pertaining to engineered wood.

MISSION: APA has focused on helping the industry create structural wood products of exceptional strength, versatility and reliability. Combining research efforts of APA scientists with knowledge gained from decades of field work and cooperation with member manufacturers, APA promotes new solutions and improved processes that benefit the entire industry.



Picture perfect. Numerous informational tools have helped Sukonik Building Company complete projects such as this ultra-modern, two-story residential home.

## ROLE MODELS

### The Sukonik Building Company, Limerick, PA

BROTHERS JON AND NEIL SUKONIK were already enthusiastic about energy savings for their homebuyers. The goal of the co-owners of Sukonik Building Company ([www.sukonikhomes.com](http://www.sukonikhomes.com)) in Limerick, Pa., was to economically build a structurally sound home with the meticulous detail they were known for, while simultaneously minimizing energy costs.

The Sukoniks knew efficient equipment and lighting, as well as proper air sealing and mechanical design, would play a role in meeting their goal. They also knew they needed to put more insulation into their homes without adding costs or jeopardizing structural integrity. But they needed extra advice on framing.

Advanced framing techniques would enable them to improve the energy performance in their homes by increasing the volume of insulation. The increased insulation would also help the Sukoniks meet more-stringent energy codes and gain an advantage over their competition.

APA engineered wood specialist Mary Uher met with the Sukoniks and their architect/build teams, as well as the local code officials, to walk them through advanced framing techniques and provide consultation as needed. The additional training in green building became an important part of the Sukoniks’ construction philosophy and crucial to improving energy efficiency.

The APA offered other benefits. There was a wealth of information, from basic construction instructions to highly technical data, for a variety of residential and commercial building applications. And, APA’s Help Desk,



Building brothers. Neil Sukonik (left) and Jon Sukonik (right) used free advice from APA – The Engineered Wood Association to improve home framing techniques and gain a stronger foothold in their local market.

Resource Library and field representatives provide a diverse range of support—from the basics of building structurally sound floors, walls and roofs to special design considerations for areas prone to extreme conditions, such as high wind, seismic activity and moisture intrusion.

“APA’s members benefit from our work in the field as we strengthen the engineered wood market through training and education,” APA Marketing Communications Manager Heather Rasmussen says. “When our member mills’ products are properly specified and installed, customers are happy with the results.”

# AWC (American Wood Council)

What’s possible with wood? AWC helps people find out.



“As population increases and resources are constrained, we must find safe, carbon-neutral and sustainable alternatives to existing structural materials. Wood—one of the most energy efficient and environmentally friendly of all building materials—is that alternative. Wood products store carbon, keeping it out of the atmosphere indefinitely, thereby reducing a building’s environmental footprint.”

Robert Glowinski,  
AWC President and CEO

THE AMERICAN WOOD COUNCIL (AWC) is the voice of the North American wood products industry and works to ensure a resilient and sustainably built environment. AWC’s experts make certain that the buildings in which everyone lives and work are safe, and demonstrate that wood products can safely and efficiently meet or exceed the minimum requirements for use. AWC is committed to not only what is permissible using wood, but also to what is possible using wood. The philosophy is simple: With the global marketplace for sustainability materials estimated to reach \$529 billion by 2020, securing a strong place for wood is essential to the wood products industry’s future growth. That means telling the positive story of wood’s renewable, energy efficient advantages, as well as defending against anti-wood bias in rating systems. Strong, unified industry support is essential as the sustainability battlefield continues to spread from the state to the federal level.

AWC notes that more attention is being paid than ever before to how buildings impact the environment, including the choices of materials used in construction and how those materials help conserve energy during operation. Wood is the perfect sustainability material because it is renewable, stores carbon that reduces greenhouse gases, and is energy efficient. Winning acceptance for wood is a challenge, however, as competing materials and certain environmental groups seek to control the U.S. sustainability market.

AWC is at the same time one of the youngest and one of the oldest major trade groups in the nation. While its lineage dates back to 1902, AWC was re-chartered in June 2010 as an independent trade association, evolving from a number of predecessor groups.

The council contributes to the development of sound public policies, codes and regulations which allow for the appropriate and responsible manufacture and use of wood products. It supports the utilization of wood products by developing and disseminating consensus standards, comprehensive technical guidelines, and tools for wood design and construction, as well as providing education regarding their application.



## FACTS

**NUMBER OF MEMBERS:** 50 member companies, or 86 percent of the structural wood products industry

**MEMBER BREAKDOWN:** Design Professional Members are 90 percent engineers, 2 percent architects and 8 percent other (builders/manufacturers/professors). There are also 3,500 code officials in AWC’s Code Connections program.

**HEADQUARTERS:** Leesburg, Va.

**WEBSITE:** www.awc.org

**NUMBER OF ACTIVE SITES:** Washington, D.C., California, Colorado, Idaho, Pennsylvania, South Carolina, southern Virginia and Wisconsin

**KEY SERVICES OFFERED:** Development of public policies, codes and regulations; provide online and live contact training to educate users and support implementation of building codes and standards for wood design.

**MISSION STATEMENT:** AWC is committed to ensuring a resilient, safe and sustainable built environment. AWC supports the utilization of wood products by developing and disseminating consensus standards, comprehensive technical guidelines, and tools for wood design and construction, as well as providing education regarding their application.

**Timber is the new green.** With more attention than ever being focused on materials used in buildings and how they impact the environment, wood is again becoming a major player in the marketplace.



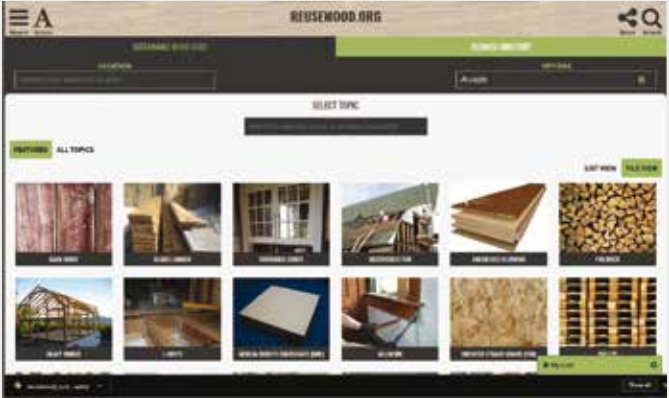
## ROLE MODELS

### A tool of the trade: EPDs

THE WOOD PRODUCTS industry was the first major construction group to develop industry-wide Environmental Product Declarations (EPDs), verified by a third party. EPDs are standardized tools that provide information about the environmental footprint of the products they cover. Third-party verification is provided by Underwriters Laboratories Environment (ULE), an independent certifier of products and their sustainability. Thus far, nine wood industry EPDs have been renewed by ULE for another year.

Based on international standards (ISO 14025), EPDs have worldwide applicability and include information about product environmental impacts such as resources, energy use and efficiency, global warming potential, emissions to air, soil and water, and waste generation. Business purchasing decisions will likely require the kind of environmental information provided by EPDs in the future to account for factors such as carbon footprint. According to the Intergovernmental Panel on Climate Change, “Wood products can displace more fossil fuel intensive construction materials such as concrete, steel, aluminum and plastics, which can result in significant emission reductions.”

AWC also worked with industry partners to develop a North American recycling and reuse directory for wood and wood products, the Reuse Wood Directory (www.reusewood.org), which provides options for use at end of first life. Recognizing the importance of sustainability, AWC pioneered



**Second life.** The Reuse Wood Directory provides design and construction communities with options on what to do with wood products after they hit end of first life.

its online directory as a way of supporting design and construction communities in their reuse and recycling efforts when using wood products.

The online resource allows searching for companies within a searchable geographic area that provide reuse and recycling services that include wood and wood-based products, for those looking to provide such products as well as those looking to obtain such products for reuse. Both strategies help divert materials from the construction waste stream and reduce the need for landfill space, while providing second-life opportunities for wood products.

# EEBA (Energy & Environmental Building Alliance)

Green training is top priority for this efficiency-minded organization.



“Our company has won the Grand Award for Housing Innovation from the U.S. Department of Energy for five years in a row. How did we do it? The answer is that we benefited from EEBA regional training events, the EEBA Summit and the ability to network with like-minded builders and manufacturers, as well as with experts from the DOE and EPA. No other organization offers these benefits.”

**Gene Myers, CEO of Thrive Home Builders in Denver; Current EEBA Board President**

**T**HE ENERGY & ENVIRONMENTAL BUILDING ALLIANCE (EEBA) was born in 1982 when a small contingent of forward-thinking building professionals representing the United States, Canada and Sweden gathered in Pine Island, Minn., to develop criteria for the construction of buildings that were more energy efficient.

Over the years, the organization grew as the impact the building industry had on the environment was recognized. EEBA has now been helping building professionals raise the performance of their homes and customer satisfaction for 36 years.

The Alliance offers some of the most comprehensive and practical programs in the industry. They include an annual three-day High Performance Home Summit and basic and advanced seminars offered year-round throughout the country. The latter includes a full-day basic building science course, *Houses That Work*, more-advanced courses on High Performance Mechanical, and a new HERS Associate certification course.

Builder participants also gain direct access to researchers and product manufacturers who can help them on their high-performance home journey, as well as business training on how to use high-performance building to raise their profits and enhance their reputation.

EEBA will also begin offering a High Performance Builder Certification Program, which will debut at the 2018 High Performance Home Summit in San Diego, Oct. 16-18.

The variety of training offered makes the Alliance’s efforts valuable to anyone in sustainable building, EEBA notes—from those who build code minimum homes and want to step up to Energy Star, or who already build to Energy Star and want to start building net-zero homes. “We have a curriculum that will help you get there,” EEBA says. “And the professionals that can offer guidance to help you along the way.”



## FACTS

**NUMBER OF MEMBERS:** N/A

**MEMBER BREAKDOWN:** Builders and contractors (39 percent); architects (15 percent); sales professionals (12 percent); energy raters (9 percent); trade professionals (9 percent); utilities (4 percent); engineers (3 percent); consultants (2 percent); allied organizations (2 percent); students (2 percent); real estate agents (2 percent).

**HEADQUARTERS:** Minneapolis

**WEBSITE:** [www.eeba.org](http://www.eeba.org)

**NUMBER OF ACTIVE SITES:** 1

**KEY SERVICES OFFERED:** EEBA’s High Performance Home Summit; 35 regional training events held nationwide each year; certification programs such as HERS Associate and High Performance Builder Certification.

**MISSION STATEMENT:** To advance and disseminate building science knowledge in the residential new construction community via education and collaboration. To advance and disseminate building science knowledge in the residential new construction community via education and collaboration.



**A working knowledge.** EEBA’s annual High Performance Home Summit draws hundreds of builders, manufacturers, designers and other specialists who seek information on business training and new construction techniques.

## ROLE MODELS

### Tim O’Brien Homes, Milwaukee, WI

**T**IM O’BRIEN HOMES ([www.timobrienhomes.com](http://www.timobrienhomes.com)) has had a successful run, building numerous highly regarded and energy-efficient homes in the Milwaukee area. Those projects typically carry a HERS score of 35 to 60. The company also recently won the Gold National Housing Quality (NHQ) Award—the latest in a string of honors going back to 2009—and it was named one of Inc.’s 5,000-fastest-growing private businesses from 2012 to 2015.

But any business can always use more ways to make it stand out from other builders. That’s where EEBA came in. Craig North, the company’s vice president of construction, says attending the Alliance’s summit over the past five years has proven to be a valuable source of growth and knowledge for Tim O’Brien Homes. “The lessons learned from the top industry professionals have been instrumental in differentiating ourselves from the competition,” North says. “Further, the connections made through networking have allowed us to pilot some of the industry’s cutting products and technologies.”

Tim O’Brien Homes learned how to build better homes that will have a slightly larger monthly mortgage payment for the end user while significantly reducing their energy consumption. This has provided a lower total cost of ownership to hundreds of happy homeowners.

Recently, the company has committed to develop and build Wisconsin’s first net-zero-energy community. This 34-home subdivision in the city of New Berlin will carry the Department of Energy’s Zero Energy Ready Homes (ZERH) certification. “We were first introduced to the ZERH program at the EEBA summit in St. Louis (in 2014),” North notes. “This program, along with many other lessons learned at the summit, are moving the industry forward.”



**Power house.** Tim O’Brien Homes specializes in building energy-efficient, cost-effective housing using methods it acquired working with EEBA.

Company President Tim O’Brien backs that up, noting that education is a definite key to the firm’s success. “As we continue to improve the homebuilding process, we also ensure our team continues to receive high level training in new home technologies,” he says. “[These include] the principle of building science—building a home as a system, rather than individual pieces and parts—renewable energy features like solar photovoltaic (electricity) and solar thermal (hot water) and geothermal, the latest technologies in insulation and air-sealing techniques, as well as improving indoor air quality for all our clients.”

# HFSC (Home Fire Sprinkler Coalition)

Where’s the fire? With this group, not anywhere near you or your customers.



“When sprinklers activate, they control the heat, flames and smoke released by a fire, effectively mitigating the products of combustion. Our research with FM Global found that home fire sprinklers protect the environment because they reduce greenhouse gas emissions by 98 percent, reduce fire damage by up to 97 percent, reduce water usage to fight fires by as much as 91 percent, and reduce water pollution.”

Lorraine Carli,  
HFSC President

THE HOME FIRE SPRINKLER COALITION (HFSC) was formed in 1996 in response to the tremendous need to inform the public about the life-saving value of home fire sprinkler protection. HFSC is a 501(c)(3) charitable organization and the leading resource for independent, noncommercial information about home fire sprinklers. HFSC offers educational material with details about installed home fire sprinkler systems, how they work and why they provide affordable protection.

The Coalition also provides answers to common myths and misconceptions about fire sprinkler operation such as:

- Smoke alarms prevent the need for fire sprinklers. (Nope. Smoke alarms can only detect smoke, not heat.)
- If one goes off, they all go off. (Don’t believe what you see in the movies. They all act independently, with only the one closest to the fire going off initially.)
- Sprinklers will leak. (Wrong again. Home plumbing systems are more likely to act up.)
- Water damage is worse than fire damage. (No. Property loss from a sprinklered home is a fraction of that from a fire.)
- Sprinklers will freeze in winter. (Wrong. The national fire installation standard ensures proper installation in cold areas.)

HFSC also provides free resources to support the installation of home fire sprinklers in single-family home new construction. Home fire sprinklers protect occupants, firefighters, the community and the environment.

The Coalition’s Board of Directors includes members of elite fire protection groups nationwide, such as the American Fire Sprinkler Association (AFSA), Canadian Automatic Sprinkler Association (CASA), FM Global, International Association of Fire Chiefs (IAFC), National Association of State Fire Marshals (NASFM), National Fallen Firefighters Foundation (NFFF), National Fire Protection Association (NFPA), National Fire Sprinkler Association (NFSA), National Volunteer Fire Council (NVFC), Phoenix Society for Burn Survivors, State Farm Insurance, Underwriters Laboratories (UL) and the U.S. Fire Administration/FEMA.



## FACTS

NUMBER OF MEMBERS: N/A

MEMBER BREAKDOWN: N/A

HEADQUARTERS: Quincy, Mass.

WEBSITE: <https://homefiresprinkler.org>

NUMBER OF ACTIVE SITES: 1

**KEY SERVICES OFFERED:** Educational material about installed home fire sprinkler systems, how they work and why they provide affordable protection; free resources to support the installation of home fire sprinklers in single-family home new construction.

**MISSION STATEMENT:** To inform the public about the life-saving value of home fire sprinkler protection.



## ROLE MODELS

### Trade-ups: better building, safety and sales

DEVELOPERS AND BUILDERS in Marietta, Ga., are benefiting from trade-ups by installing automatic fire sprinklers in entire developments. During the planning process, city managers and the fire marshal agreed that because all the homes in the developments would be protected with fire sprinklers, they could be built closer together and closer to the property lines, increasing the number of homes in each development.

Alden Spencer of Georgia-based Affordable Fire Protection says he has worked on these types of projects over the last few years with Torey Homes and Williamscraft Builders, and is preparing to start a new development working with McKenzie-Perry Homes. “It really has been a good experience for builders and homebuyers, because they get the benefits of the trade-up and can build safer homes for their customers,” Spencer says.

Homebuyers seem to like the option, according to Janie Head, director of operations at Williamscraft Builders, which builds between 300 and 350 homes a year in the Atlanta area. Although the company has had a lot of success, sales professionals at her firm had some qualms at first, she admits. “We thought what would be detrimental would be the cost, but actual marketing experience proved otherwise,” Head says. “People feel real secure and it helps their insurance.”

Some builders are impressed by the safety factor as well, says Dennis Cressman of Home-Safe Fire Protection of Windsor, Ontario. One of Home-Safe’s earliest customers was a builder who decided on his own to install sprinklers in 168 homes “because he wanted to protect his customers.”



**Sprinkler test.** Sprinklers make a huge difference in what can happen during a fire—as shown in these shots of what a home looks like before (left), after when sprinklers are used (center) and after when one is not (right).

Protection can be a selling point, according to Brian Drake of Victaulic, a Canadian manufacturer. “It protects what they build,” he says. “It’s a unique life-safety feature not unlike upgrading with a security system.”

According to Gary Keith, former HFSC Chair, the logic of fire sprinkler trade-ups is simple. Each fire sprinkler is activated by heat, and each one can be very effective. Ninety percent of all home fires are contained by one sprinkler. Often, sprinklers extinguish the fire before the fire department arrives on the scene. As a result, there is less likelihood of a major fire requiring heavy firefighting equipment, which can affect the rules for street design.

“Fire sprinkler protection in all new construction is a win-win decision,” Keith says. “The community has additional fire protection without higher taxes or increased insurance rates. The developer can reduce land development costs. The builder can reduce construction costs. Most important, communities with fully sprinklered developments should see a decrease in fire death rates and property loss.”

Reprinted courtesy of HFSC

# The IAPMO Group (International Association of Plumbing and Mechanical Officials)

Public health and safety are this association’s biggest priorities.



“The IAPMO Group places a high priority on improving water and energy efficiency in the critically important residential sector. Through staff and member participation at numerous standards development committees, the IAPMO Group—which includes IAPMO, IAPMO R&T Labs, ASSE, RPA and BPI—works hard to support the improvement of standards by helping to develop new requirements that support new technologies and work to reduce the water and energy footprint of new and remodeled homes.”

**Pete DeMarco, IAPMO Executive Vice President of Advocacy and Research**

**T**HE INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS (IAPMO) has been protecting the public’s health and safety for 90 years by working with government and industry to implement comprehensive plumbing and mechanical systems around the world. As a membership-based association, The IAPMO Group utilizes an open consensus process in the development of its flagship Uniform Plumbing Code® and Uniform Mechanical Code®. These codes are established through scientific research, debate and analysis. They strengthen IAPMO’s position at the forefront of the plumbing and mechanical industries.

The IAPMO Group is a complete service organization, providing code development assistance, industry-leading education, plumbing and mechanical product testing and certification, building product evaluation and a manufacturer-preferred quality assurance program. The nonprofit is the only Plumbing and Mechanical Code-writing organization that is recognized worldwide for codes that are developed by the industry for the industry.

The Group stresses that its No. 1 goal is to protect the health and safety of the nation. This is achieved by drawing from the knowledge of members whose expertise stems directly from the Plumbing and Mechanical industry.

IAPMO works independently and with industry partners to encourage sustainability. Through articles in its *Official* magazine and e-publications, IAPMO provides members with essential information on the latest code-compliant technologies and water-efficient products to help make sure they are met with acceptance upon inspection. These articles also illustrate the need to be increasingly efficient with water and are aspirational, detailing how their work not only helps to advance efficiency but also works to help keep water systems safe.

The Group also practices what it preaches. In 2016, more than 800 solar panels were installed on top of IAPMO’s World Headquarters East and West buildings in Ontario, Calif., saving the organization a combined total of at least \$72,000 per year in energy costs.

Also in 2016, landscapers removed about 30,000 square feet of turf from the World Headquarters West campus and replaced it with drought-tolerant plants, rocks and a decomposed granite walkway. Drip irrigation, which directs water and nutrients straight to plants’ roots, replaced the traditional sprinkler system. With these changes, IAPMO is saving 40 percent on irrigation costs and 20 percent on landscaping fees.



## FACTS

**NUMBER OF MEMBERS:** 6,000-plus

**MEMBER BREAKDOWN:** Plumbing, mechanical and building officials (38 percent); manufacturers (28 percent); contractors (19 percent); residential and commercial builders (7 percent); engineers (7 percent); life members (1 percent).

**HEADQUARTERS:** Ontario, Calif.

**WEBSITE:** [www.iapmo.org](http://www.iapmo.org)

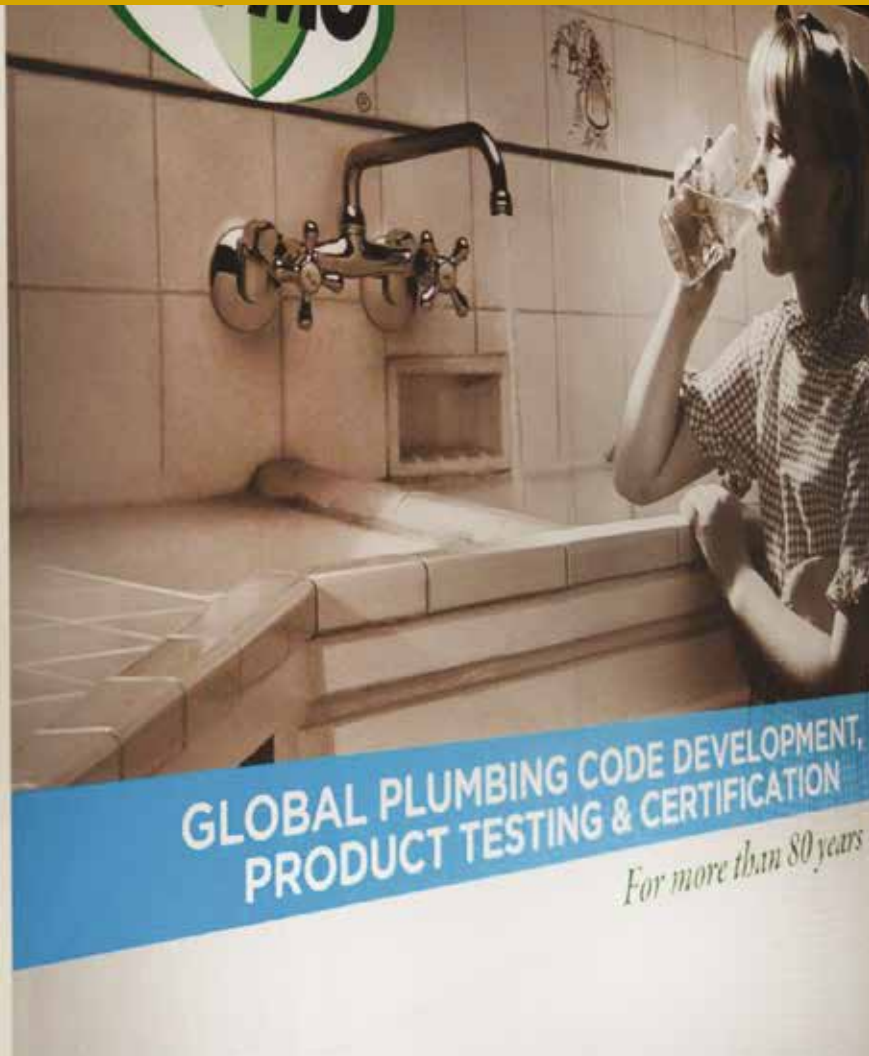
**NUMBER OF ACTIVE SITES:** 10 offices globally; 70 member chapters

**KEY SERVICES OFFERED:** ANSI Accredited Model Code Agency; ANSI Accredited Standards Development Organization (this includes the writing of the WE-Standard); ISO/IEC 17025 product testing laboratory; ISO/IEC Guide 17065, ANSI, SCC, ema, and CONAGUA accredited; able to provide WaterMark, Energy Star, NSF/ANSI 61 plus many more codes and standards product certifications.

**MISSION STATEMENT:** The International Association of Plumbing and Mechanical Officials shall be recognized by the building industry and the general public, at home and abroad, as the worldwide leader in the plumbing and mechanical industry for protecting health and safety, supporting sustainability and emerging technology, and delivering code education, working in concert with government and industry for safe, sanitary plumbing and mechanical systems.



**Code experts.** Uniform plumbing and mechanical codes are IAPMO’s thing, and the group makes sure people worldwide know where they can go to learn more.



## ROLE MODELS

### Gary Klein and Associates Inc., Rancho Cordova, CA

**G**ARY KLEIN, PRESIDENT of Gary Klein and Associates, Inc. ([www.garykleinassociates.com](http://www.garykleinassociates.com)), an industry leader in hot water delivery and efficiency, views his IAPMO membership as mutually beneficial. As a frequent participant in IAPMO’s code development process, Klein believes he receives more than he gives.

“I bring new ideas, concepts that are integrated yet rarely thought about as a combined whole,” he says. “And I get to work with people who have been in the business, some as long as 50 years. There’s an enormous wealth of experience in the organization. It’s essential to my work to be able to bounce ideas off these people.”

“The interaction with plumbers and code officials informs my work because they bring their depth of experience in implementing codes to the conversation.”

Klein appreciates IAPMO’s consensus code-development process that he says brings together all the necessary voices in order to arrive at one conclusion that helps everyone while not hurting anybody.

“Most codes are not discussed in terms of the unintended consequences,” he says.



**Looking to the future.** A diverse series of educational seminars and conferences helps keep plumbing and code officials up to date, and also attracts a new generation of mechanical specialists.

# ICC (International Code Council)

If it’s a building code, there’s a good chance this council is behind it.



“Modern, regularly updated building codes are essential for sustainability efforts. The International Codes incorporate the latest technologies to reduce costs, improve energy and water efficiency, and reduce the effects of buildings on the environment and human health. A focus on sustainability helps us build a brighter tomorrow.”

**Dave Walls, ICC Executive Director of Sustainability Programs**

**T**HE INTERNATIONAL CODE COUNCIL (ICC) is a member-focused association with more than 64,000 members. It is dedicated to developing model codes and standards used in the design, build and compliance process to construct safe, sustainable, affordable and resilient structures. ICC was established in 1994 as a nonprofit organization dedicated to developing a single set of comprehensive and coordinated national model building codes. The founders of ICC are the Building Officials and Code Administrators International, Inc. (BOCA), the International Conference of Building Officials (ICBO) and the Southern Building Code Congress International, Inc. (SBCCI). Prior to the Code Council, these nonprofit organizations developed three separate sets of model codes used throughout the U.S. The three model code groups came together to create the International Code Council to develop codes without regional limitations—the International Codes (I-Codes), now the most widely used and adopted set of building safety codes in the world.

The Code Council created the Sustainability Membership Council to advocate for concerns and issues related to sustainability. Builders, design professionals, industry, policymakers, regulators and other professionals assist ICC in increasing participation in the code development process and to advise on programs and policies, legislative matters, code adoption issues and other related issues.

ICC also has a Sustainability, Energy, and High Performance Code Action Committee (SEHPCAC), which is a forum to deal with complex technical issues ahead of the code development process, to identify emerging issues, and to draft proposed code changes of importance to the ICC membership.

This summer, ICC will release an updated International Green Construction Code (IgCC) along with a plethora of support products and services to help with the code adoption and implementation. The updated version of the IgCC has been developed in partnership with ASHRAE, the U.S. Green Building Council, the American Institute of Architects and the Illuminating Engineering Society.

ICC is collaborating with the Residential Energy Services Network (RESNET) to focus on standards that support sustainability—specifically, the HERS H2O Water Efficiency Rating Standard.

The Code Council also promotes sustainability efforts through a partnership with the Canadian Standards Association (CSA) to publish the CSA/ICC 805 Rainwater Harvesting System Standard.



## FACTS

**NUMBER OF MEMBERS:** 64,000-plus

**MEMBER BREAKDOWN:** ICC’s membership consists of code officials, plan reviewers, fire officials, inspectors, architects, engineers, contractors, other building industry professionals and students.

**HEADQUARTERS:** Washington, D.C.

**WEBSITE:** [www.iccsafe.org](http://www.iccsafe.org)

**NUMBER OF ACTIVE SITES:** 6 locations (Birmingham, Ala.; Brea, Calif.; Country Club Hills, Ill.; Lenexa, Kan.; Rochester, N.Y.; Washington, D.C.)

**KEY SERVICES OFFERED:** Technical, educational and informational products and services, including evaluation services, accreditation services, codification and content management services, code application assistance, education programs, certification programs, technical handbooks and workbooks, plan review services, digital products, online magazines and newsletters, and building safety career assistance.

**MISSION STATEMENT:** To provide the highest-quality codes, standards, products and services for all concerned with the safety and performance of the built environment.



**Disaster deterrent.** The ICC’s goal is to develop model codes and standards for the design and construction of more-resilient homes—ones that can fare better than this victim of the annual Atlantic hurricane season.

## ROLE MODELS

### Codes become a calling for this enforcement officer

**R**EBECA BROWN REMEMBERS THIS ADVICE while growing up: “It’s important to find a job that makes you happy.” She knows she’s found it as a code official, and that’s why she’s spreading the news about her job to children attending Alston Bailey Elementary School in Summerville, S.C.

Brown, a plans reviewer for Dorchester County, S.C., made the presentation on residential code safety last year as her contribution to the International Code Council’s Building Safety Month. She hopes to make the presentation again to students at 13 elementary schools in her school district and another three elementary schools in a neighboring district.

“Enforcing codes is the invisible profession,” she says. “When we do our jobs right, nothing happens. I really like that saying, because it’s very true.”

As a handout to the Austin Bailey students, Brown renovated an old ICC coloring book. Instead of “Codie the Cougar,” it features “Safety Sam,” “Safety Sara” and “Safety Scott,” who invite their readers to go on “A Safe Home Scavenger Hunt!”

As part of the “hunt,” youngsters are encouraged to check the egress window in their bedrooms, as well as the number and placement of smoke and carbon monoxide alarms, fireplace safety, handrail safety, electrical outlets and family fire escape plans. The back of the coloring book includes a checklist of 16 safety actions and a “Certificate of Safety.”

“I hope they take these books home to go on the scavenger hunts with their parents and learn something,” she says.

When the economy took a tailspin in 2010, Brown became a code enforcement officer in Edisto Beach, S.C. For three years, she soaked up everything she could, from codes to planning and zoning, but the hour-plus commute took a toll.

She took a code enforcement job in Summerville and later served as town building official and fire marshal for the town of Moncks Corner. She then worked as a third-party inspector for the office of state engineers and office of school facilities for southeastern South Carolina, and later



**Going back to school.** As a code official, Rebecca Brown found a job that makes her happy. Now she wants grammar school students to know about career opportunities in the field.

took on the same role for the entire state.

Brown left the statewide position to return to work for Dorchester County government and to invest more time in raising her children. “I’m proud of the work I do, and I’m proud [my children] understand that the importance of my job is to keep them safe,” she says.

When the International Code Council created the new Emerging Leaders Membership Council, (ELMC), county building official Melissa Hopkins recommended Brown to serve on the ELMC Advisory Committee.

Her focus now is on raising her children, becoming more involved in her state ICC chapter and someday serving on a code action committee.

She said the advice about finding a job “that makes you happy” has served her well.

“The best way I can explain it is comparing it to going to the department store to buy a pair of pants. I tell them you don’t buy the first pair of pants you see, right?” she said. “No, you try on a few and pick the best one. I’ve tried on several careers and I picked the one that fits me best.”

*Reprinted courtesy of ICC. Story has been edited for length.*

# IWFA (International Window Film Association)

A one-for-all focus brings a lot to the table for the window film industry.



“By making an existing window more energy efficient and thereby extending its potential useful life in use, window film can delay materials from prematurely going into landfills, while simultaneously decreasing energy use and reducing peak demand load. How much greener can a solution be?”

**Darrell Smith, IWFA**  
Executive Director

THE INTERNATIONAL WINDOW FILM ASSOCIATION (IWFA) is a unified industry body of window film dealers, distributors and manufacturers that facilitates growth of the window film industry through education, research, advocacy and consumer awareness. The organization builds alliances with trade associations, utilities and government agencies to advance dealers’ and distributors’ businesses, and provide value to their customers.

IWFA began in 1988 in response to a need for grassroots industry input into regulatory and legislative issues on the use of window film in automobiles. The manufacturer members of the industry already belonged to another professional trade association through which they handled issues needing only their involvement, which at that time dealt more with architectural uses of window films and generally were technical in nature.

However, that organization only allowed manufacturers to be members, so in 1991 the IWFA was formed as an organization that included all levels of the industry: manufacturer, distributor and installing dealer. In 2010, the window film efforts handled by the other organization were merged into the IWFA.

The IWFA Board consists of leader representatives from its Manufacturer, Distributor and Professional Dealer memberships. Each is committed to fulfilling the mission of the IWFA, and members serve on various committees, including Legislative, Member Services and Education. The IWFA also has access to professional consultants on legislative issues.

According to IWFA President Darrell Smith, the association constantly teaches its members about what sustainability means. The IWFA includes this type of sustainability information in press releases, the IWFA blog and e-newsletter, which all members can access. “Whenever you can upgrade or enhance an existing building component—such as a window with window film—rather than replacing the entire item, that is making a difference in sustainability,” Smith says. “[In this case], it prevents more waste in the landfill. Upgrading a building component can also mean making it more energy efficient, which can make the component last longer.”

For several decades, the IWFA has been the third-party industry source for accurate technical information on window film products and its uses. The IWFA educates industry influencers and consumers on the energy savings, protection against broken glass and UV properties of window film and delivers standardized training and educational materials and seminars to industry members, building and energy organizations and the public. And, IWFA supports the growth of the window film industry by educating policymakers involved in creation and enforcement of building codes, auto tint laws, legislation and financial incentives at the national and local level.



## FACTS

NUMBER OF MEMBERS: 500

MEMBER BREAKDOWN: Manufacturers (8); suppliers of various services and supplies (7); remainder consists of professional installing dealers (90 percent) and distributors (10 percent).

HEADQUARTERS: Martinsville, Va.; Brussels, Belgium (European chapter)

WEBSITE: [www.iwfa.com](http://www.iwfa.com)

NUMBER OF ACTIVE SITES: N/A

KEY SERVICES OFFERED: A members-only section of the IWFA website with current updates of industry news; business listings and a dealer locator for consumers; specialized accreditation programs; access to IWFA state legislative consultant; use of the IWFA published test reports; discounted prices on educational and training manuals; representation in associated organizations such as the National Glass Association, Glass Association of North America, PGC International and others.

MISSION STATEMENT: The mission of the IWFA is to provide value-added services to its membership, to help sustain and grow members’ businesses, and to partner with manufacturers and other members to increase consumer awareness and demand for all types of professionally installed window film products.



**Clearing things up.** IWFA’s message is as clear as its finished product: Professional installation of window film is one of the most cost-effective and immediate energy-saving measures available for a home or business.

## ROLE MODELS

# The sun shines brighter—and more efficiently—in this plaza

THE HOLIDAY INN Chicago Mart Plaza is located atop the landmark, 24-story mixed use Apparel Center. The hotel sits near the confluence of the east, north and south branches of the Chicago River. The complex was designed by Skidmore, Owing and Merrill, known for designing the tallest buildings in the world. The 2.5 million-square-foot riverfront complex opened in January 1977.

Direct ultraviolet exposure from the hotel’s 42,000-square-foot sky-lit atrium caused the hotel’s Front Desk employees to experience glare in the morning until the sun arched across the horizon. This direct exposure made it difficult for them to perform their tasks. Additionally, solar loading created excessive heat build-up on the atrium’s upper floors, creating uncomfortable temperatures year-round. During winter, air conditioning had to be run mid-morning to late afternoon to mitigate the raised space temperature.

The hotel installed window treatment on the lobby level, but it blocked the magnificent views of the river and skyline.

Guest rooms that faced south and west had solar loading and glare issues. Window treatment was left in varying positions, causing a checkerboard effect as viewed from the street, reducing its curb appeal.

Director of Facilities Bruno LaMountain looked into ways to improve the comfort and climate of the hotel. At the time, the building was working toward LEED certification and was undergoing a \$20 million redesign with extensive ecological programs including installing window film to reduce solar loading and energy costs.

John Parker, president of the International Window Film Association and owner of National Security & Window Filming in Oak Forest, Ill., evaluated what application of window film would be best for the hotel.

Parker and his team came up with a solution: Install an exterior window film designed to protect the atrium skylights from exposure to the



**UV ready.** Harsh sunlight is no longer a problem at Holiday Inn Chicago Mart Plaza, thanks to specially implemented window films for the interior and exterior.

elements, and another window film for the guestrooms that would provide the protection from solar load and sun damage without darkening views from the guestrooms.

“Overall we have reduced the temperature in the lobby area significantly,” says LaMountain. “Now on hot summer days, the HVAC system can easily handle the cooling load while maintaining electrical consumption. We now have extra cooling capacity.”

The guest rooms were the next phase of installation. Older existing window film was removed and new, more advanced window film installed. Reducing solar load and glare were achieved.

With the window film project and other renovations completed, the Holiday Inn Chicago Mart Plaza was awarded a LEED Gold Certification by the U.S. Green Building Council.

# MRA (Metal Roofing Alliance)

A sustainable message rolls into the start of a third decade.



“The Metal Roofing Alliance is a leading advocate for helping North American homeowners learn about and discover what other parts of the world have long known: Choosing extremely durable, recyclable and long-lasting material to protect homes while lessening the impact on the earth really does come down to making the right construction and renovation decisions.”

Renee Ramey,  
MRA Executive Director

SINCE 1998, THE MRA HAS SERVED as a leading voice in driving residential market adoption of metal roofing and raising awareness for its exceptional durability, sustainability benefits and all-season protection in any climate among homeowners. As a nonprofit organization, MRA members—contractors/installers, manufacturers and distributors, and ancillary members—benefit from increased marketing support, online lead generation and increased awareness through consumer and contractor information and educational initiatives.

The MRA makes a major effort to educate residential homeowners about the fact that choosing metal roofing is a sustainable choice, according to the association.

While preparing for climate change is a reality for today’s homeowners, lessening the impact on the Earth’s resources also continues to be a key concern. Among 600 U.S. homeowners recently surveyed, durability ranked as the No. 1 priority for re-roofing decisions, with concerns about severe weather and climate-related factors being top of mind for many.

With the ability to withstand hurricane-force winds and damaging hail storms, and to resist wildfire sparks and hold up under unexpected heavy snow loads, the all-season, long-lasting durability of metal roofs has become a major selling point for homeowners wanting to guard against climate unpredictability.

Additionally, the facts that metal roofing lasts 50-plus years—nearly two to three times longer than other materials—and can be recycled at the end of its long life rather than dumped into the landfill and is energy efficient, are significant benefits. Quality metal roof coatings can also mean less long-term maintenance by naturally resisting moss and fungus. All of that reduces the need for strong chemical treatments that can harm the environment.

The MRA works to highlight these benefits via consumer education, marketing efforts and ongoing awareness building in ways that benefit all of its members and homeowners alike, the association notes.



## FACTS

NUMBER OF MEMBERS: 410

MEMBER BREAKDOWN: Contractors (311); non-contractors (30); distributors (69). Of the non-contractors: manufacturers (17); trade groups (2); ancillary (3); accessory (2); suppliers (6).

HEADQUARTERS: Longview, Wash.

WEBSITE: [www.metalroofing.com](http://www.metalroofing.com)

NUMBER OF ACTIVE SITES: N/A

KEY SERVICES OFFERED: Lead generation; education support; marketing support; market research; industry advocacy and representation; coalition building.

MISSION STATEMENT: Grow the market share of high-performance, quality metal roofing in the residential market through education and promotion to homeowners, coupled with recruitment, training and support of metal roofing contractors and distributors.



Seeing is believing. Today’s metal roofs are stronger, longer lasting, more natural looking and greener than ever — facts that MRA members constantly share with their customers.

## ROLE MODELS

### Metal masters help the industry get its message out

AFTER 55 YEARS in the metal roofing business, McElroy Metal ([www.mcelroymetal.com](http://www.mcelroymetal.com)) has developed quite a name for itself. The third-generation, family-owned manufacturer of metal roofing and siding components has 12 manufacturing facilities, 22 Service Center and 44 Metal Mart locations nationwide, and is known for its adherence to a longtime golden rule: Treat customers the same way McElroy likes to be treated by its suppliers.

While the company was successful in transferring that customer service mantra to the marketplace, it noticed that the same could not be said of metal roofing overall. “Residential metal roofing offers so many benefits to homeowners,” says Ken Gieseke, McElroy Metal’s vice president of marketing. “But that message was not being received in the marketplace via the marketing efforts of individual companies.”

A similar story is told by Piqua, Ohio-based metal roofing manufacturer Isaiah Industries ([www.isaiahindustries.com](http://www.isaiahindustries.com)). “Isaiah has always felt that the benefits and story of residential metal roofing are larger than any individual manufacturer,” says Isaiah Industries President Todd Miller. “Therefore, to really help consumers understand the transition from traditional roofing to metal roofing, we needed to band together as an industry and go to the public with a common voice and common effort.”

Both companies helped found the Metal Roofing Alliance—now known as the MRA—as a way for those in the industry to exchange ideas, discuss technology and examine code-related matters. “The MRA represented an



Work in progress. Isaiah Industries President Todd Miller shows National Resource Defense Council staffers how his company’s efficient metal roofing is manufactured.

opportunity to pool resources to educate the marketplace about the benefits of metal roofing with a unified voice and message,” Gieseke says.

Miller says the effort has worked. Metal roofing’s market share has risen steadily over the past half century. Miller doesn’t see that changing anytime soon. “There is something that changes when you work cooperatively with others to focus on increasing market share,” he says. “As the old saying goes, a rising tide raises all ships. By working with other members of the MRA, we can create that rising tide.”

# NFPA (National Fire Protection Association)

By saving lives and lifestyles through expert member training, NFPA lives up to its name.



“How we responsibly build, design and maintain homes, structures and our communities can make them less vulnerable to a fire NFPA is committed to integrating fire safety with sustainable design. Our involvement in advocating for home fire sprinklers, wildfire preparedness programs, solar panel safety and energy storage systems are examples of our commitment to this cause.”

Jim Pauley, NFPA President and CEO



WHEN ONE HEARS OF THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA), the idea that it exists to help save lives seems obvious—if you’re talking about fires. The concept that it also wants to save the public from active shooters might be more of an eyebrow raiser.

Founded in 1896, NFPA is a global, nonprofit organization devoted to eliminating death, injury, property and economic loss due to fire, electrical and related hazards. The association delivers information and knowledge through more than 300 consensus codes and standards, research, training, education, outreach and advocacy; and by partnering with others who share an interest in furthering the NFPA mission.

But with the new *NFPA 3000 (PS), Standard for an Active Shooter/Hostile Event Response (ASHER) Program* (<https://bit.ly/2ISzbZU>), NFPA enters uncharted territory. But it’s an increasingly vital route: Nationwide and around the globe, communities are facing a growing number of tragedies involving active shooter and other hostile events.

*NFPA 3000* addresses all aspects of the response process, from identifying hazards and assessing vulnerability, to planning, resource management, incident management at a command level, competencies for first responders, and recovery.

According to NFPA President Jim Pauley, setting a standard against shooters is not as far-fetched as it might sound. “The answer is simple,” he noted in a report from *NFPA Journal*. “We go where first responders go, and we do a great job of bringing together diverse interests to arrive at consensus on topics that are often difficult and controversial.”

Many groups and individuals will work with cities, counties, states and corporations to develop plans in accordance with *NFPA 3000*. To assist, NFPA is providing a level of qualification by offering online training. A badging recognition program is available, with badges related to the three major elements of the standard—plan, respond and recover—as well as a badge for the completion of the overall *NFPA 3000* training series.

“The technical committee, as well as NFPA staff, are to be commended for the time and dedication necessary to complete this standard,” Pauley says. “*NFPA 3000* is an outstanding example of how we use our expertise as a codes and standards developer to take a broad look at a complex problem, and create solutions that can help move our safety-oriented vision and mission forward.”

Those other solutions are abundant. NFPA’s Government Affairs office in Washington, D.C., influences, advocates and connects policymakers with new and existing standards, regulatory and legislative language, data and expertise in key subject areas. Its Wildfire Division field office in Denver is dedicated to protecting people and property in communities at risk from wildfire by being a visible, trusted and recognized advocate, consensus builder and authoritative leader. And the association’s regional field staff promotes adoption of NFPA codes and standards by state and local authorities, assure representation at code hearings and legislative sessions, and identify ways NFPA services can improve fire, building and life safety in their regions.

## FACTS

NUMBER OF MEMBERS: 50,000

MEMBER BREAKDOWN: Architectural, engineering, consulting, design, contracting (30 percent); utilities (28 percent); government agencies (15 percent); institutional, including health care, educational, correctional, religious, transportation services (air, rail, marine, motor) (14 percent); commercial (including office, retail, restaurant, data processing, financial, telecommunications) (7 percent); other (6 percent)

HEADQUARTERS: Quincy, Mass.

WEBSITE: [www.nfpa.org](http://www.nfpa.org)

NUMBER OF ACTIVE SITES: Government Affairs (Washington, D.C.); Wildfire Division (Denver); regional field staff offices (nationwide)

KEY SERVICES OFFERED: 1-on-1 technical standards help; customer support; online training; customized onsite programs; certification programs; classroom and hands-on classroom training; seminars; codes and standards, and related resources; data and research webinars

MISSION STATEMENT: NFPA is the leading global advocate for the elimination of death, injury, property and economic loss due to fire, electrical and related hazards. Its mission is to help save lives and reduce loss with information, knowledge and passion.



CREDIT: PETER HILF/ICR

House of horrors. Protecting people and properties from disasters like this are a top priority for NFPA and its 50,000-plus members.

## ROLE MODELS

### What do I get out of NFPA? Career enhancement

BY BOB CAPUTO, VICE PRESIDENT OF TRAINING AND TECHNICAL SERVICES, FIRE & LIFE SAFETY AMERICA

I’VE BEEN A MEMBER of National Fire Protection Association (NFPA) since 1982, and I’ve always been amazed by the value I receive for the minimal cost associated with membership and second, how many companies or individuals do not belong to NFPA or even one of their other industry trade associations.

NFPA is the heart and soul of fire and life safety, electrical safety, training, and codes and standards development in North America—and more recently, throughout the world. These codes and standards drive the industry in which we make our living and grow our businesses. Incredibly, NFPA codes and standards are consensus based, allowing all stakeholders a say in the process and requirements, which is unique in the codes and standards world.

I had always hoped to serve on the NFPA 13 committee as a young man and have had the privilege of doing so for more than 20 years. I am also on the NFPA 25, and have been a contributor to handbooks by both committees. This experience has been invaluable to me and to my company, because we’re “in on it” from the ground level. When we have challenges, we’re able to contact staff and fellow committee members to resolve problems while educating ourselves and the fire officials who may see the application of requirements in a different light.

From a career development perspective, my membership and affiliation with the NFPA has done as much to enhance my career as any other single thing. There is no college or university in the world where one can learn as much as the practical application and experience one receives with NFPA membership through seminars, webinars and other educational opportunities.

Fire & Life Safety America, Inc. (<https://flsamerica.com>) employs



CREDIT: NFPA/KEVIN WILLIAMETTE

Beyond basics. NFPA’s training sessions are a vital way for FLSA’s 1,500 fire protection professionals to stay up to date on technology, codes and standards, and achieve new certifications.

more than 1,500 fire protection professionals, including system designers for fire sprinkler systems, fire alarm systems, and special hazard systems along with estimators, installers, inspection and testing technicians and administrative support staff. Every member of our team has electronic access to NFPA codes and standards, and they couldn’t do their jobs without them. We truly enjoy our partnership with the NFPA because every step of our projects and customer services rely on correct application of these codes and standards, as well as the approval of our work product by local authorities having jurisdiction who are applying these same documents. Our membership in NFPA and our active participation in the code-making process are a driving force in our success collectively and individually.

# NWFA (National Wood Flooring Association)

This group helps showcase wood flooring’s green nature—from virtual university classrooms to the world’s rainforests.



“Wood floors are the most environmentally friendly flooring option available. We work with our members to support the sustainability of wood, both today and for future generations, and to promote the numerous environmental and health benefits of wood as a flooring material. When properly maintained, they truly can last for the life of the home.”

Michael Martin, NWFA President and CEO

FOUNDED IN 1985, the National Wood Flooring Association (NWFA) is a not-for-profit trade association representing all segments of the hardwood flooring industry, including manufacturers, distributors, retailers, installers, importers/exporters, inspectors and consultants. NWFA is also dedicated to educating consumers, architects, designers, specifiers and builders in the uses and benefits of wood flooring. Membership now includes companies from 52 countries around the world.

In the past few years, NWFA has helped the industry and its members advance by rebuilding its annual wood flooring expo, enhancing hands-on training, and launching NWFA University, an online learning platform.

A major NWFA enhancement to the industry is the Responsible Procurement Program (RPP), a joint initiative between leading environmental groups and wood flooring manufacturers. Both groups are committed to producing products from environmentally and socially responsible sources, improving forest sustainability for future generations. Participating manufacturers commit to continuous progress increasing and improving environmental responsibility within the RPP framework.

That framework includes introducing the “U.S. Renewing Forests” label into the marketplace. The label acknowledges the producer’s awareness that hardwood growth exceeds loss and removal from hardwood forests at the state level, based upon U.S. Forest Service data. It also verifies that timber, logs and wood used in the product were not harvested from controversial sources, such as illegally logged or highly valued conservation areas.

RPP has wide support within the green industry. Participants include the Rainforest Alliance, which works to conserve biodiversity and ensure sustainable livelihoods by transforming land-use practices, business practices and consumer behavior; SCS Global Services, a global leader in independent certification and verification of environmental, sustainability, stewardship, food quality, food safety and food purity claims; and the Forest Stewardship Council (FSC), is an independent, non-governmental, not-for-profit organization established to promote the responsible management of the world’s forests.



## FACTS

NUMBER OF MEMBERS: 3,400-plus

MEMBER BREAKDOWN:  
Contractors (39 percent); manufacturers (19 percent); dealers/retailers (15 percent); distributors (13 percent); inspectors (4 percent); importer/exporters (2 percent); miscellaneous (8 percent)

HEADQUARTERS: St. Louis

WEBSITE: [www.nwfa.org](http://www.nwfa.org)

NUMBER OF ACTIVE SITES: N/A

KEY SERVICES OFFERED: NWFA certified professionals; NWFA Education & Research Foundation; NWFA Wood Flooring Expo; technical education, including hands-on training and online via NWFA University; technical resources and guidelines; member services; *Hardwood Floors Magazine* and *NWFA Industry Guide*

MISSION STATEMENT: To promote the use of wood flooring in residential, educational and commercial environments, and to provide members with the education and training necessary for personal and business success.



A natural touch. NWFA’s efforts to prevent use of illegally sourced wood may go a long way toward saving the world’s rainforests and unique, tucked-away dwellings like this one.

## ROLE MODELS

# Under NWFA, working with wood has proven good as gold

BY JEREMY WALDORF, OWNER/INSTALLER, LEGACY FLOORS, HOWELL, MICH.

BEING A MEMBER of the National Wood Flooring Association (NWFA) means that I am not only independently certified as a craftsman in my trade, but also that I have unlimited resources whenever I need them.

The most powerful resource for me is the community. There are so many professionals involved with the NWFA who are always willing to share their passion for the trade and teach others how to be better at what they do.

I’ve seen so many members in the NWFA go above and beyond the call of duty to help students achieve their goals and take their trade to the next level. It’s so inspiring to see the industry’s finest be so generous with their knowledge. You can’t put a price tag on that.

The NWFA has greatly impacted my business, especially through my education. Whether it’s through other craftsmen in the trade, hands-on schools, or online courses through NWFA University, I’m always growing my skillset and learning new things. Recently, a client called me from Northern Ohio (I live in Michigan) and asked me about my NWFA badges. She recognized the value and significance of my continued education and readily hired me for the job.

I’ve had many accomplishments in my career since joining NWFA, but I recently completed my Inspector Certification in the same year that I received my Installation Certification, and completed all levels of hands-on training.



Badges of quality. Training received by Legacy Floors owner and installer Jeremy Waldorf has led to his gaining jobs based simply on the NWFA badges that he’s earned.

This was a huge accomplishment, personally and professionally. Having these qualifications will allow me to do so much more with my business.

Working in the hardwood industry has given me a great sense of accomplishment. It has been an honest and respectable way to make a good living for myself and my family. It’s unique to be able to earn a living using my craft as an art; it is very satisfying.

# PCA (Portland Cement Association)

Cement plays a more important role in construction than realized—and PCA wants everyone to know about it.



“America’s cement producers have a strong culture of innovation. That has led to gains in energy efficiency and new sustainable manufacturing practices that continually reduce environmental impacts.”  
**Mike Ireland,**  
**PCA President**

THE PORTLAND CEMENT ASSOCIATION (PCA), founded in 1916, is the nation’s largest policy, research, education and market intelligence organization serving America’s cement manufacturers. PCA members have facilities in all 50 states and represent 93 percent of U.S. cement production. If someone works with cement, more than likely they’re aligned with the PCA. PCA promotes safety, sustainability and innovation in all aspects of construction, fosters continuous improvement in cement manufacturing and distribution, and generally promotes economic growth and sound infrastructure investment. There’s a lot to promote: The cement and concrete industry collectively employs 600,000 people and contributes \$100 billion each year to the nation’s economy.

By offering a variety of educational and technical resources, such as the MIT Concrete Sustainability Hub (<https://cshub.mit.edu>)—which focuses on structure durability, energy efficiency, resiliency and cost-effectiveness—the PCA helps concrete manufacturers remind the public how sustainable and reliable a building material concrete is. It offers energy efficiency, has a long life cycle, carries lower life-cycle costs and provides resilience following natural and man-made disasters.

America’s cement producers’ strong culture of innovation that has led to new sustainable manufacturing practices that continually lessen environmental impacts. Over the last 40 years, U.S. cement manufacturers have reduced the energy used to produce a metric ton of cement by roughly 40 percent. More-efficient equipment has led to faster, safer projects. Company-driven improvements have led to increased use of alternative fuels, which now represent more than 15 percent of total cement plant energy consumption in the U.S. This keeps industrial byproducts out of landfills.

The PCA encourages further green efforts with its annual Energy and Environment Awards, which recognize outstanding environmental and community relations efforts that go beyond meeting minimal requirements.

Such stand-out efforts by cement producers in these areas have been consistently recognized by the U.S. Environmental Protection Agency’s (EPA) Energy Star program. They also help contractors meet requirements for Leadership in Energy and Environmental Design (LEED) certification from the United States Green Building Council (USGBC).



## FACTS

NUMBER OF MEMBERS: N/A

**MEMBER BREAKDOWN:** Regular Member Companies (firms engaged in the manufacture or sale of Portland cement in the United States); Affiliate Member Companies (any local, area, state or regional organization with cement and concrete interests); Associate Member Companies (firms and consultants that provide equipment, products and services to the cement industry); Individual Members (any person employed in a management, leadership or professional role by a regular member company, an affiliate or an associate member)

HEADQUARTERS: Skokie, Ill.

WEBSITE: [www.cement.org](http://www.cement.org)

NUMBER OF ACTIVE SITES: 2 (Skokie, Ill., headquarters and Washington, D.C., office)

**KEY SERVICES OFFERED:** Advocacy for cement use; Market Intelligence; cement and concrete technical expertise and education; cement and concrete applications

**MISSION STATEMENT:** To improve and extend the uses of Portland cement and concrete.

**In the bag.** The cement industry’s 600,000 employees are working toward letting people know how enviro-friendly the often-overlooked product is, by stressing its lower cost, energy efficiencies and durability in the construction of homes and other buildings.

CREDIT: U.S. ARMY



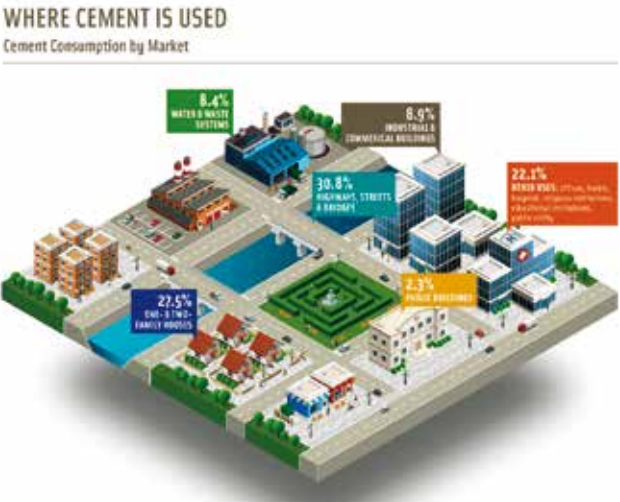
## ROLE MODELS

# PCA Market Intelligence: showing its smarts on the U.S. economy

THE CEMENT INDUSTRY is a bellwether for the U.S. economy: It is tied to construction, infrastructure, energy and many other sectors. The Portland Cement Association (PCA)’s Market Intelligence team regularly transforms data involving the use of cement across those sectors into reports, graphs and thought leadership used by the industry to forecast future growth.

Market Intelligence regularly updates its products to reflect the latest economic data and analysis. As it spreads the word that cement is the “new green,” the association releases special reports focusing on topics that apply to within the industry, as well as the general public. Recent offerings include public attitudes on soil cement, the impacts of tariffs on cement production, and long-term opportunities for cement construction.

The team’s economists have been recognized for their accuracy as forecasters, including by the Federal Reserve Bank of Chicago and the construction industry trade press. Market Intelligence economists have testified before Congress on behalf of the industry. And, the forecasts are widely used in corporate planning, government policy development and by the news media.



**Cement at every turn.** Almost every construction project uses some type of cement, but most of it ends up in highways, streets and one- and two-family homes.

CREDIT: PCA

# PDCA (Painting and Decorating Contractors of America)

Thanks to the internet, this venerable group has kept up with the times.



“PDCA provides ongoing information to business owners on best practices within the industry. This includes including information on paint recycle programs, greener methods of equipment clean up, and programs that allow for use of surplus product in charitable works in the community.”  
Steve Skodak, PDCA Executive Director

**F**OUNDED IN 1884, the Painting and Decorating Contractors of America (PDCA) is the only trade association dedicated to the success of painting and decorating contractors through ethics, education and excellence. Nearly 2,000 contractors in America and Canada are proud members of this organization.

The PDCA offers contractor members many opportunities to develop and grow through participation in education programs, attendance at local networking meetings, use of PDCA Industry Standards and more. The association’s premier event is the annual Painting Contractors Expo, which offers attendees a chance to obtain the latest industry information, receive innovative business and technical training, and participate in round-table discussions and informal gatherings.

As sustainability practices are introduced, PDCA presents programs that contain information on how sustainable practices can increase profitability for companies by showing a commitment to the world their prospective customer’s value. Examples include recapturing pressure washer water, use of low-water cleaning methods for brushes and rollers, and utilizing paint donation and recycling programs.

But PDCA is not entirely a “members only” organization. Utilizing ongoing best practice education, the PDCA provides, through industry leaders, education that presents the ever-changing practices of professional painting. A key resource here is the PDCA’s *PaintED Podcast*, a weekly series on how to build stronger businesses, as told by industry experts. The organization also offers Ask-a-Painter, a weekly Facebook-based Q&A session for professionals and homeowners.

During a *PaintED Podcast* episode, PDCA Executive Director Steve Skodak stressed that everyone can benefit from the knowledge the association offers. “PDCA has always represented the painter or paint contractor,” he said. “[But] we’re really working on behalf of everybody in the industry, not just our member base.”



## FACTS

- NUMBER OF MEMBERS:** 1,287
- MEMBER BREAKDOWN:** Residential and commercial painting contractors
- HEADQUARTERS:** St. Louis
- WEBSITE:** <http://pdca.org>
- NUMBER OF ACTIVE SITES:** Local chapters: 44; councils 21; forums: 3
- KEY SERVICES OFFERED:** Access to education programs; webinars; training videos; the Ask-a-Peer Network; Contractor’s Roundtable; Safety Chat; PaintED Podcast; accreditation offerings; local networking meetings; and use of PDCA Industry Standards.
- MISSION STATEMENT:** The Painting and Decorating Contractors of America is dedicated to the success of painting and decorating contractors through ethics, education and excellence.



**Questions, anyone?** PDCA puts social media to work by offering Ask-a-Painter ([www.facebook.com/askapainter](http://www.facebook.com/askapainter)), craftsman Nick Slavik’s weekly live-streamed Q&A show.

## ROLE MODELS

### Paris Painting, Minneapolis, MN

**W**HEN JASON PARIS launched his business in Minneapolis six years ago, he didn’t expect it to be a huge success. Sure, the company that back then was only meant for staining a few decks could be profitable. It could certainly be well-regarded. But it was not going to be an off-the-charts moneymaker.

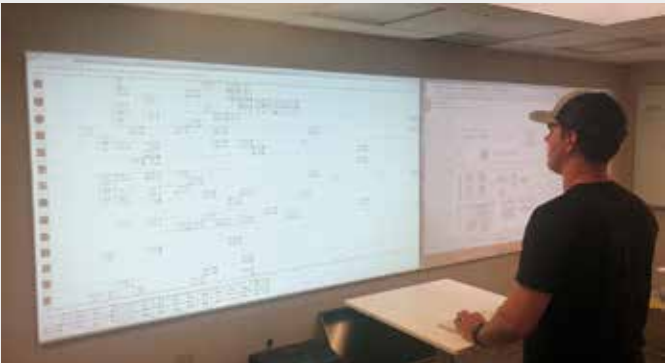
And truthfully, no one else would have expected it. After all, Paris and all of his colleagues are members of what he’s heard deemed as “the worst generation ever”—millennials.

So, how does he explain Paris Painting’s (<https://paris-painting.com>) rapid growth, to where it cleared \$2 million in produced work in 2017?

“Unfiltered access to industry knowledge,” Paris replies. “I’ve been able to look up pretty much anything I would want to know online via the PDCA’s Contractor College. The podcasts and webinars always seem to be timely for what I’m trying to problem-solve in my business.”

PDCA’s Contractor College offers online business advice, training, managerial resources and accreditation. Some resources, such as courses on social media and risk management, are absolute must-haves. Others, such as classes on Spanish language or how to fire an employee, fall into the “nice to know” category.

But Paris says all of the available resources have been crucial in making his company stand out from competition. “It’s been nice to have access to painting application ‘secrets’ and techniques,” he admits. “But it’s also been more helpful to be able to talk to other paint entrepreneurs about how



**Heads up.** Attending PDCA’s virtual Contractor College has shown Paris Painting owner Jason Paris the technical side of efficiently running a business.

they treat what they do as a professional business. Having this elite group of people who desire to grow their businesses and at the same time share openly seems extremely rare.”

There’s more to come. Paris believes there will be an even greater need for entrepreneurial-minded painters, contractors and designers to form relationships and exchange ideas. “Painting seems like it’s going to undergo some pretty dramatic changes in the upcoming decades,” he says. “It’s nice to feel like I’ll be at or near the cutting edge by being involved in the PDCA.”

# RESNET (Residential Energy Services Network)

This standards maker has created the standard in energy efficiency ratings systems.



“Half of all new homebuyers want an energy-efficient home. The HERS Index makes what was invisible—energy efficiency—into a visible factor by which to compare homes. As builders help homeowners and buyers compare total home cost and value, the HERS Index Score provides a third-party verification of a home’s energy efficiency.”

Steve Baden, RESNET Executive Director

IN APRIL 1995, the National Association of State Energy Officials and Energy Rated Homes of America founded the Residential Energy Services Network (RESNET) to develop a national market for home energy rating systems.

Today, RESNET is a national standards-making body for building energy efficiency rating and certification systems in the United States. RESNET is recognized by federal government agencies for verification of building energy performance for such programs as federal tax incentives. And it is recognized by the U.S. mortgage industry for capitalizing a building’s energy performance in the mortgage loan, and by homeowners for improving home energy efficiency, resulting in substantial savings on their utility bills.

The key to that success is the Home Energy Rating System (HERS) Index, developed by RESNET, in which a numerical value is assigned to homes based on energy performance. The HERS Index is an easy-to-understand energy efficiency measuring tool by which a home’s energy efficiency is rated; where a lower score means a more efficient home. It can be described as a sort of miles-per-gallon sticker for houses, giving prospective buyers and homeowners an insight as to how the home ranks in terms of energy efficiency.

More than 15 states and over 300 local jurisdictions have adopted the HERS Index option in their energy codes, while the mortgage industry has seen a 32 percent lower default rate for lower HERS-scored homes. Real estate appraisers can now view a home’s HERS Index score and its estimated energy cost and savings.

As of 2017, more than 2 million homes have been rated by certified RESNET HERS Raters, using the HERS Index, helping homeowners understand the energy performance of the home and the expected reduction of energy bills. As a result, it is estimated that carbon dioxide emissions were reduced by over 4 million tons annually (the equivalent of taking more than 766,000 cars off the road each year), and consumers have seen annual energy bill savings of over \$1 billion.

“For RESNET, it took 20 years to achieve our first million HERS-scored homes, but barely five years to see the second million homes milestone, showing how demand in the marketplace has grown,” RESNET Executive Director Steve Baden says. “Every year, nearly one in four new homes sold receive HERS Index scores, because buyers want to compare and save the most on their homes’ utility bills.”

Meanwhile, the average scores of HERS-rated homes have dropped from 100 in 2006, to 61 in 2017. That makes for an increase of 39 percent in the energy efficiency of HERS-rated homes throughout the marketplace—a sign of how RESNET is encouraging sustainability among its members, its builder partners and the U.S. housing market, Baden adds.



## FACTS

NUMBER OF MEMBERS: 1,900 certified RESNET HERS Raters

MEMBER BREAKDOWN: N/A

HEADQUARTERS: Oceanside, Calif.

WEBSITE: [www.resnet.us](http://www.resnet.us); [www.hersindex.com](http://www.hersindex.com)

NUMBER OF ACTIVE SITES: Nationwide

KEY SERVICES OFFERED: A Home Energy Rating System (HERS) Index rating assessment, conducted by a certified RESNET HERS rater; a detailed report of all of a home’s energy problems supplied to the homeowner.

MISSION STATEMENT: To make the energy use of all homes transparent, thereby driving residential sector energy use toward net zero.



**Aim low.** Insulation in a home helps determine its HERS score. High scores are nothing to brag about, but low ones can be displayed prominently on a property.

## ROLE MODELS

### PEG LLC, Fairfax, VA

PEG HAS been a member of RESNET for more than 10 years. In 2017, it was the highest-volume HERS Rating Provider in the U.S. The relationship with RESNET as a Rating Provider, Sampling Provider and Training Provider has been a critical element of PEG’s (www.pegenv.com) success.

In its 20th year in business as a woman-owned small business, PEG’s collaboration with RESNET has enabled the company to grow to more than 100 team members serving 13 of the 15 largest homebuilders nationwide. PEG officials note that its RESNET membership has also been a significant factor in its selection by the EPA’s Energy Star program as a Partner of the Year for the last several years, and as a Sustained Excellence recipient for the past two years.

Many state agencies, utility companies and municipalities across the U.S. recognize RESNET and its members as credentialed experts in the field of residential energy efficiency. The application of training standards, technical standards and industry advocacy are key aspects of this acknowledged expertise. PEG’s team of RESNET Raters undergoes extensive classroom and field training, constant field and file quality assurance, and routine continuing education.

Company officials note that the PEG-RESNET partnership is a two-way street. PEG’s involvement includes committee participation, board meeting attendance, public comment on standards, and participation and



**Builders choice.** Thanks to its association with RESNET, PEG has become the premier energy and environmental sustainability program evaluator for nearly all of the nation’s largest homebuilders.

sponsorship of annual events such as the RESNET conference.

Because many PEG builder clients are participants in the RESNET Energy Smart Builder program, PEG offers support in the form of consumer-facing information. There is also support for sales and marketing, construction, and operational use of these advanced homes by homeowners who benefit from these independently certified homes and the RESNET standards applied to their design and construction.

# SIPA (Structural Insulated Panel Association)

The challenge is on for carbon-neutral buildings by 2030. SIPA members are off and running.



“As an association, we are consistently working with educational and construction code bodies to advance the minimum building codes to approach and surpass net-zero-ready construction. SIPA feels the approach with engineered wood solves the labor shortage issues and on-site construction waste and inefficiencies.”  
**Jack Armstrong,**  
**Executive Director, SIPA**

**T**HE STRUCTURAL INSULATED PANEL ASSOCIATION (SIPA) is a non-profit trade association representing manufacturers, suppliers, dealer/distributors, design professionals and builders committed to providing quality structural insulated panels (SIPs) for all segments of the construction industry.

Since its arrival in 1990, SIPA has increased the use and acceptance of SIPs in sustainable building by providing an industry forum for promotion, communication, education, quality assurance and technical and marketing research. The association also spreads the word publicly about SIPs’ high-performance, panelized building system that offers superior thermal performance, air tightness and durability for energy-efficient homes and commercial buildings.

Builders and design professionals seeking to reduce energy use and minimize the carbon footprint of their buildings utilize SIPs as a cost-effective solution for exterior wall and roof systems. The panels also reduce framing time, significantly reduce construction waste and ensure greater jobsite quality control through prefabrication. SIPs are an enabling technology designed to meet the Architecture 2030 Challenge—which calls for all new buildings and those with major renovations to be carbon neutral within 12 years—and do so now.

For more than 28 years, SIPA industry leaders supplying the construction market have nurtured a community of ethical, quality-minded, passionate champions striving to make high-performance envelopes a reality. Today’s network of almost 200 SIPA member companies provide over 80 percent of all the SIPs in North America.

Helping with all aspects of support, SIPA members include professional engineers, architects, builders—including SIPA Registered Master Builders with proven SIP expertise—dealer/distributors, SIP manufacturers and suppliers.



**Structural Insulated  
Panel Association**

## FACTS

**NUMBER OF MEMBERS:** 233

**MEMBER BREAKDOWN:** SIP manufacturing companies (18); builders (76); dealer/distributors (47); design professionals (32); suppliers (24); associate members (29); other (7).

**HEADQUARTERS:** Fort Lauderdale, Fla.

**WEBSITE:** [www.sips.org](http://www.sips.org)

**NUMBER OF ACTIVE SITES:** N/A

**KEY SERVICES OFFERED:** Online and face-to-face AIA CEU courses with GBCI credit on Residential and Commercial SIPs; free one-hour video classes for Builder Education with SIPs Training (BEST) online and YouTube, which offer both a Registered and Master Builder credential; SIP Code Report for industry-wide acceptance for SIPs; annual Industry SIP Production Survey Report/Census of market size; annual SIP Building Excellence Awards Program; extensive technical research, structural and test reports, and design guides and publications; online “find a supplier, builder or designer” tool with maps and project description/lead generation services.

**MISSION STATEMENT:** SIPA will provide an industry forum to increase the acceptance and use of SIPs, which will be the preferred building system.

**Straight and square.** Structural Insulated Panels (SIPs) have been growing in popularity due to their ability reduce energy use and minimize the carbon footprint of buildings—and easily blend in once the job is done.



## ROLE MODELS

### Green from the outside in

**A** LONGTIME BUILDER and construction educator, Ted Clifton has been building and remodeling homes for more than 45 years. Energy-efficient homes are his specialty; he received the Energy Value Housing Award from the Department of Energy in 2009 and 2010 for custom homes he built in Coupeville, Wash.

In 2009, Clifton was approached by a friend who had recently purchased a home in Oak Harbor, Wash., with an excellent view of Skagit Bay. “They loved the location, but they really didn’t like the floor plan, and the house had some plumbing issues that would require a serious remodel,” Clifton says. “They asked if we could make the house energy efficient during the process.”

The homeowners actually considered a complete tear-down of the 2,900-square-foot rambler, but Clifton calculated that he could remodel the home for a fraction of the cost using retrofit insulated panels on the exterior of the home to provide air sealing and additional insulation.

“What is great about retrofit panels is that you get air sealing as well as insulation,” says Clifton. “We were able to cover the rim joist, which is typically a major source of air leakage in older homes.”

Retrofit insulated panels serve as an effective air barrier due to the low permeability of the OSB sheathing. Clifton’s crew used spray foam sealant between each panel and around window openings to create a complete air barrier. Combined with other improvements, including new windows, attic insulation, HVAC system and other air sealing measures, Clifton was able to reduce the home’s annual heating cost by 83.5 percent.

Although Clifton gutted the house to modify the interior floor plan and



**Dual impacts.** Knowing that adding insulation and controlling air leakage are two of the most effective ways to boost energy efficiency, Washington-based builder Ted Clifton installed retrofit insulated panels and improved both inefficiencies without even stepping inside the home.

address the plumbing issues, he points out that retrofit insulated panels allow insulation to be added to the walls of the home without requiring work on the interior. “I want to emphasize that we can do this type of installation entirely from the outside without going inside the home,” he said. “It is a major advantage for people who want to weatherize their house, but don’t want a crew inside their home.”

For builders unfamiliar with retrofit panels, Clifton says that with minimal training anyone can undertake a deep energy retrofit. “I would recommend that builders get some experience or find someone experienced with retrofit insulated panels and go for it,” he says. “You’ll find that you can be very cost effective doing deep energy retrofits with this product.”

*Reprinted from sips.org courtesy of SIPA. Edited for length.*



**Look to the future.** Changing lifestyles and economic realities are affecting the way we live. They will one day make developments like The Align Project a viable choice for homeowners.

# The Align Project: A Rendezvous With Reality

This one-year demonstration project will challenge entrenched ideas about how we live in the United States.

BY JULIET GRABLE

**G**REEN BUILDER MEDIA and Austin-based builder Kasita are partnering on a one-year demonstration project, the centerpiece of which is Kasita's smart, modular, net-zero accessory dwelling unit (ADU).

The precision-engineered design takes advantage of every one of the home's 374 square feet, and it comes ready to roll with Kasita's integrated smart home technology platform, which seamlessly integrates the home's devices, appliances, lighting and mechanical systems.

Like anything that comes off looking inevitable, there's a lot of sweat in the backstory. Motivated by what he saw as an impending urban housing crisis, Kasita's founder Jeff Wilson explored the question of how to live better with less by living in a 33-square-foot dumpster for a full year. Working under such severe constraints instructed him on the best way to optimize every cubic inch of space. After the "Dumpster Experiment," Wilson and his team developed a series of prototypes, incorporating feedback from real people who spent time in them into each iteration.

"One of the first things people say is that Kasita feels bigger and better than they expected," says Benji Miller, Kasita's chief of operations.

With its clean, modern aesthetic, convertible spaces, abundant natural light and friendly smart home platform, Kasita promises an inspiring user experience for people who will visit the home at one of the three upcoming conferences (see page 50). But The Align Project seeks to expand the agenda beyond the demonstration home, questioning deeply-held assumptions about what we want and offering suggestions for how we can align our lifestyles with our changing socio-economic and environmental realities.

"Whether we like it or not, the changing climate is demanding a sweeping overhaul of the way we live," says Sara Gutterman, Green Builder® Media CEO. "The Align Project will confront some of today's biggest challenges, including how we live in our homes, and how we can revamp our cities, energy infrastructure, mobility solutions and finances to align with our moral compass and ensure a flourishing future."



Plan B...and C and D. ADUs give homeowners financial flexibility, including the option of downsizing and renting out their larger home.

CREDIT: KASITA

## REALITY CHECK

So what are those changing socio-economic and realities? Let's take a good, hard look at where we are in 2018.

The economy is strong...right? It's true, if we accept what commonly accepted indicators such as GDP tell us. Housing starts are up, for example. But that's only part of the story. Starter homes are scarce, and the median price of these is up nearly 10 percent since the beginning of 2017. Meanwhile, the gap between the very rich and the rest of us keeps widening. There's even evidence that climate change is making these divisions more pronounced. After all, when disaster strikes, a wealthy family can afford to move. A poor family is stuck with what they've got.

Some Americans are choosing to "live small" because they are motivated to reduce their environmental footprint and simplify their lives—and they don't want to fall into the trap of a mortgage they can't qualify for or afford (see "The millennials are coming," page 49). But the rise of the ADU and tiny home revolution don't just signal a backlash against the McMansion; these trends also reflect the economic reality of the many Americans who can't afford a larger home or who are investing in small homes as income-producing property or a much needed Plan B.



CREDIT: OLUISFOCUS/ISTOCKPHOTO

CREDIT: ISTOCK/ISTOCKPHOTO

**Family plans.** Today, the nuclear family idealized by countless advertisers is just one of many family arrangements.

### The New American Family

The structure of families is changing. The nuclear family isn't exactly dead, but it's not the norm anymore, either. Consider these statistics, courtesy of the Pew Research Center:

- An increasing share of Americans—20 percent—are living in multi-generational households
- One-third of children live in single-parent households
- Single-person households make up 28 percent of U.S. households

What's more, family structure is more fluid than ever. Adult children may move home for a while, or an aging parent may move in for good. A single parent may find a new partner who brings step-siblings into the mix. More people are working from home at least part of the time—all of which points to a need for housing that can adapt to changing circumstances, especially as we age.

### Mountains of stuff; mounting debt

If America has a common religion, it's consumerism. *At Home in the Twenty-First Century*, an ethnographic study conducted by researchers at UCLA, offers a fascinating peek into the daily lives of 32 Los Angeles families. While the sample size was limited to middle-class families with children, the pictures would likely make most Americans groan in recognition: piles of books, toys, papers, office supplies and sporting equipment covering every surface in every room. Most of the surveyed families admitted they had little time to enjoy the hot tubs and barbeque pits in their neglected backyards.

Another recent national study called *Buried: The State of Stress and Stuff*, found that nearly half of those polled believe their homes are cluttered with possessions they no longer need or use. At the same time, 84 percent expressed financial concerns and nearly half found it difficult to make end meet every month.

Though many families are awash in stuff, many are also drowning in debt. According to the Federal Reserve Bank of New York, we broke a new record for total household debt in 2017. The \$13.15 trillion we collectively owe includes mortgages, student loans, auto loans and credit card debt; on average, households with credit card debt owe close to \$16,000. At the same time, more than half of Americans have less than \$1,000 in their savings accounts, and few have saved enough for retirement.

Numbers like these beg the question: Do we own our stuff, or does our stuff own us?

### The New (Ab)Normal

There's no denying the upward trend in temperatures and the increasing frequency and severity of disasters. In 2017, the country was battered by no less than \$16 billion in disaster events, including Hurricanes Harvey, Irma and Maria, and the fires that devastated Northern California last October. According to the National Oceanic and Atmospheric Administration (NOAA), the cumulative price tag for these events exceeded \$309 billion—the costliest year in U.S. history. The last three years were also the hottest on record, according to NOAA. This translates into more energy for cooling buildings, aggravated respiratory conditions, vectors for disease and beetle-killed forests.

Increasingly, designers and city planners are tasked with adaptation

According to a new report from Northwestern Mutual, more than three-quarters of Americans are worried they won't be able to afford a comfortable retirement.

### Security Check

21%	Percentage of Americans who have nothing saved for retirement
10%	Percentage of Americans who have less than \$5,000 saved for retirement
\$84,821	Average retirement savings
\$1 million	Amount recommended for retirement

SOURCE: NORTHWESTERN MUTUAL



CREDIT: CALIFORNIA NATIONAL GUARD

**Fire works.** The wildfires that swept through Northern California in October 2017 destroyed 5 percent of Santa Rosa's housing stock.



**Versatile solution.** The stand-alone Kasita unit can serve as an ADU, office, or infill project for under-utilized urban spaces—even rooftops.

and mitigation—creating buildings that are not only better able to withstand disasters and shield occupants from extremes, but which actively reduce their contributions to climate change. Homes that use as little energy and water as possible and that can retain vital functions even when the grid goes down will play a key role in a more resilient community. And if the worst happens, there is a need for quality homes that can be rebuilt as soon as possible.

THE MOTHER OF INVENTION

All of these trends point to a need for housing that’s flexible, resilient, efficient, durable and adaptable. Jeff Wilson and team developed Kasita for what they saw as growing crisis, as more people move into cities that are increasingly out of reach financially. His vision was to create housing that can be built quickly and affordably, and which can take advantage of underutilized spaces in tight urban markets.

“Adding housing stock can help stabilize the market and drive down housing costs while utilizing forgotten spaces,” says Nelson Rudolph, head of marketing for Kasita.

Recognizing that housing needs are highly variable and change over time, Kasita currently offers two distinct products: *Independent* and *Community*.

*Independent* is a stand-alone unit that can be used as an ADU, home office or studio; two units can also be paired to create a larger but still modest home. *Community* is a stackable modular unit intended for multi-family developments. Kasita comes with three tiers of options, which include finish choices, appliances and Kasita’s home automation system.

Partnering with Green Builder Media allows Kasita to realize the sustainability potential of its small, efficient buildings.

The demonstration home Green Builder® Media and Kasita are developing for The Align Project will include contributions from sponsors that help make the home durable, resilient, efficient and smart. Some of these include:

- Super-efficient photovoltaic solar panels from Jinko Solar
- Fully integrated smart home automation system from Loxone
- Protective membrane (*Housewrap*) from DuPont
- High-performance stone wool insulation from Rockwool
- Clean mobility solutions from Toyota

The Align Project will go a step further, exploring all aspects of an “aligned life”—including what we drive, what we buy, and even how we plan for the future—and inviting readers (and ourselves) to engage in some honest reflection. Are you trading time for stuff, or life for work? How satisfying is your commute? Do you have a viable plan for retirement?

One thing is for certain: The current path is not sustainable. Not for the environment, nor for our collective physical, financial or mental health. But we believe that there’s a way out—a new American Dream. That’s why we’re calling this series *A Rendezvous With Reality* rather than *A Flirtation With Utopia*.

This ambitious agenda represents *Green Builder’s* latest effort to effect positive change within and beyond the building industry, says Gutterman. “The Align Project reflects our mission and manifests our unwavering commitment to make the world better, cleaner, greener and healthier,” she says. **GB**

The millennials are coming...sort of.

A FEW YEARS AGO, many writers (including this one) were remarking on the surge into the cities. It seemed as if life in the suburbs was out; micro-apartments, bicycling and dense urban lifestyles were in—especially for millennials, who seemed utterly uninterested in a house in the ‘burbs. And while that trend was and remains real, there are other factors at play.

It turns out that, when surveyed, millennials are just as eager to nest as previous generations. They just don’t have the same opportunities their parents and grandparents enjoyed. For one, many millennials had to wait out the recession before revving up their careers. Now they face other barriers. Home prices are up (and interest rates starting to rise, as well), yet incomes aren’t keeping pace.

According to Freddie Mac, median home prices increased by 29 percent from 2000 to 2016. In that same period, per capita real incomes for young adults increased by just 1 percent. The market is uneven, with tech centers soaring ever further out of reach. The West Coast is especially tough for millennials—try buying a home in the San Francisco Bay Area or Seattle and you’ll see why. In these tough markets, where supply is low and demand high, millennials make up a higher share of the population and have higher incomes.

This cohort, which should be driving the housing market, is being held back by economic realities that aren’t likely to change anytime soon. No wonder alternatives like tiny homes are attractive to millennials. It gives them an opportunity to shave off a piece of the American Dream.

Barriers to Entry:  
Toughest Markets to Buy Homes

City	Zillow Home Value Index*
San Jose, CA	\$1,171,800
San Francisco, CA	\$910,600
Los Angeles /Long Beach/ Anaheim, CA	\$632,200
San Diego, CA	\$565,000
Seattle, WA	\$468,000
Sacramento, CA	\$381,400
Denver, CO	\$379,500
Las Vegas, NV	\$246,700
Columbus, OH	\$170,000
Indianapolis, IN	\$142,300

\*The median estimate valuation for a geographic area on a given day.

**Unfolding crisis.** In these markets, the number of available homes for sale has fallen from 10 to 40 percent over the last year.

## Experience The Align Project

### SOLAR POWER INTERNATIONAL:

September 24-27, 2018  
 Anaheim Convention Center,  
 Anaheim, CA

### CONSUMER ELECTRONICS SHOW:

January 8-11, 2019  
 Las Vegas, NV

### INTERNATIONAL BUILDERS SHOW:

February 19-21, 2019  
 Las Vegas, NV



**Small but mighty.** The Align Project offers a clean, modern aesthetic in a mere 374 square feet, complete with abundant natural light and a friendly smart home platform.

## Can we chart a new course? The Align Project says YES.

*Here's a peek at the facets of an aligned life we'll explore over the next year:*

### ALIGN Your Space: The 100 Percent House

Most of us use only 5 percent of the large homes we were told we needed. What if instead, we optimized our living spaces to create a home that's 100 percent useful? The Kasita house, with its precision-engineered design and modular construction, uses good design to optimize space and reflects how people actually use their homes.

### ALIGN Your Finances: Investing in Resilience and Efficiency

Many of the choices we make about our homes sacrifice durability, resilience and efficiency for short-lived cost savings. When we put in a carpet that lasts five years instead of hardwood floor that lasts a century, we sabotage our future. To align our finances, we most focus on reducing predictable costs, not creating future sinkholes for our money.

### ALIGN Your Technology: Mastering Our Machines

At what point do high-tech gadgets stop serving you and start sucking

away your valuable time and life energy? How can we be seamlessly "connected" all the time without feeling watched and violated? We'll dig into research about where and how people are using technology, and explore which innovations are truly helping people improve the quality of their lives and which are merely trendy gizmos destined to be mothballed.

### ALIGN Your Mobility: Destination Deconstruction

What if, when thinking about getting from point A to point B, we focused on the journey instead of the destination? This shift in focus could affect everything from the type of vehicle we drive to the type of neighborhood we choose to live in. Join us as we explore the topic of mobility from a human-centric perspective, considering the implications for everyone from city planners and car makers, to the users themselves.

### ALIGN Your Future: Aging With Dignity

Devices and products are now available that monitor vital signs, improve access or mobility around the homes, and ensure safe and healthy spaces. Combine these with a compact, portable, flexible housing option like Kasita and you have the ultimate strategy for a home that changes with you.

## Learn how to make homes resilient to wildfire!

**Get the only national standardized learning that offers science-based solutions to home wildfire risk.** The two-day Assessing Structure Ignition Potential from Wildfire class is based on research including post-fire investigations. Learn how to identify techniques to reduce ignition potential and make homes and communities more resilient to this growing threat.

NFPA's expert-led classroom training gives you the science behind wildfire disasters and home survival. Learn to better protect homes from wildfire!

### Upcoming 2018 open registration trainings:

- » San Francisco: July 19-20
- » Charlotte: September 13-14
- » Denver: October 4-5
- » Anaheim: December 13-14

To register, visit [www.nfpa.org/hiz](http://www.nfpa.org/hiz).

For more information, including how to bring this training to your organization, contact us at 1.877.336.3280 or [wildfiretraining@nfpa.org](mailto:wildfiretraining@nfpa.org).



**NATIONAL FIRE  
PROTECTION ASSOCIATION**  
 The leading information and knowledge resource  
 on fire, electrical and related hazards



# PRODUCT FOCUS



**Nothing wasted.** Jeld-Wen's EpicVue glass doors and window panes extend to the edge of the frame, allowing maximum views and abundant natural lighting.

CREDIT: JELD-WEN

## Grand Entrance

Today's doors and windows are greener, longer lasting and ever-so-classy.

BY ALAN NADITZ

**D**OORS AND WINDOWS are two of the easiest and least expensive ways to emphasize environmental friendliness. But they're two of the less obvious. Roofs or solar arrays, which seem to broadcast their green status, get a general "wow!" from homebuyers. But not every homebuyer cracks a mile-wide smile when they hear about the type of vinyl their living room

windows are made of.

That's the challenge window and door manufacturers face, and it's one they're taking head on by offering builders cutting-edge products ranging from auto-tinting glass to accessories like germ-controlling door knobs.

Here's a look at the latest type of unique and extra-green windows and doors on the market that should be at the top of every builder's product list.

## Windows: In the Clear

**W**INDOWS HAVE ONE obvious purpose: They provide a view of what's going on outside the home. To that end, Zola Windows offers its *PanoramicView Lift & Slide* product with less of one thing, which cuts down on the visuals: the window frame. The fixed glass portion is completely frameless, offering a sleek profile to enhance a minimalist look. The operable sliding sash is only 3.5 inches wide, but it can support a pane of glass of 8 feet by 10 feet.

A quadruple compression seal gives the product an airtightness that's at Passive House status. R-11 triple glazing is standard, but it's also available in R-5 dual and R-15 quad versions. *PanoramicView Lift & Slide* also lets the sunshine in, but not too much: Visible light transmittance is at 71 percent, placing it in the top one-third of all treated windows.

Speaking of light: A survey by Ipsos Public Affairs reveals that 94 percent of participants prefer a home to have abundant natural light. That's where Saint-Gobain excels. The company's *SageGlass* electrochromic glass can be adjusted with a smartphone to control the amount of sunlight entering a home or building. A download of the *SageGlass Dynamic World* app allows a smartphone user to tint a window to up to 60 percent. Settings can also be controlled by wall switches or a built-in automation system. The latter can place *SageGlass* on autopilot for the day.

Electrochromic glass consists of five micro-thin layers of ceramic material that, with the application of electricity, absorb light ions. The greater the amount of voltage, the darker with glass becomes. Electricity use is minimal: Saint-Gobain notes that *SageGlass* requires less energy to light 1,000 square feet than a 60-watt bulb, and can cut overall power usage by about 20 percent annually. This also helps a home meet LEED specifications.

That's a big point for glass manufacturers. The International Window Film Association estimates that up to one-third of energy costs stem from heat and cool air lost due to inefficient windows. That's where products such as Andersen's *High-Performance Low-E4 SmartSun* glass come in. The manufacturer states the product is 49 percent more energy efficient in winter and up to 70 percent more energy efficient in summer than conventional dual-pane glass, and prevents up to 95 percent of ultraviolet rays from entering a home. This places it in the same category as tinted glass in terms of light management, but maintains the aesthetics of clear windows.

Even vinyl window makers are getting into the act. Alside's *New Construction Vinyl Window Collections* combine low-E glass with a u-channel warm-edge spacer system to create a thermal barrier that helps them meet Energy Star requirements in Northern, North Central, South Central and Southern climate zones. Both series carry heat loss U-factor ratings of 0.23 to 0.5, and solar heat gain coefficient (SHGC) ratings of 0.2 to 0.64.



**Bright ideas.** Zola Windows' upgraded *PanoramicView Lift & Slide* is sleeker, stronger, more airtight and free of frames within each segment of glass.

CREDIT: ZOLA WINDOWS



**A tinted view.** *SageGlass* electrochromic glass can be adjusted with a smartphone to control the amount of sunlight entering a home or building.

CREDIT: SAINT-GOBAIN

Doors: Added Resilience

LIKE WINDOWS, doors can be an overlooked green product. Their contribution to sustainability may seem a bit more obvious, however, due to the fact most exterior and nearly all interior doors are made of Mother Nature-originated wood. Take Jeld-Wen’s line of *EpicVue* windows and doors, which offer a double dose of green. The products combine Energy Star-rated glass with customized, parasite-resistant wood to create an enviro-friendly product that will remain in use for years. The door and window frames are made of natural pine *AuraLast*, Jeld-Wen’s “Worry-Free Wood.” During manufacturing, *AuraLast* generates 96 percent fewer volatile organic compounds (VOCs) than other wood. The manufacturing process also uses a solvent-free, water-based solution to help preserve the wood’s beauty, and protect it from termites, wood rot and water saturation. *EpicVue* also keeps thing simple when it comes to design. The glass door and window panes are ultra-flat and extend as far as possible to the edge of the frame, allowing maximum views and abundant

natural lighting. Their composition includes insulating argon gas to help lower energy costs and control interior temperatures, and an ultraviolet blocker to reduce UV radiation in the home. It’s not only wood that’s well into the green game. Western Windows’ *Series 7000* line of aluminum multi-slide, sliding glass and bi-fold doors have earned Energy Star status, thanks to a series of energy and structural design improvements. These include across-the-board low U-value ratings as low as 0.19 when using triple-pane glass, design pressure (DP) ratings above 50, and low-E coated glass from Cardinal Glass Industries, and hurricane impact certification. A signature aluminum extrusion design utilizing proprietary Insulbar technology handles strength and performance needs. And, knowing that not all doors are the ones near the doorbell or the bedroom, Overhead Door specializes in something larger: the one for the garage. The *Thermacore 490 Series* is Overhead’s standard in insulated residential garage doors. It features an R-value of 17.5—making it the most thermally efficient door in the collection. The door is also built to last, with two layers of corrosion-resistant steel, and it meets IECC requirements for U-factor and air infiltration.



**Secure and stable.** The *Thermacore 490 Series* of insulated aluminum garage doors from Overhead Door keeps environmental control stable and homes IECC compliant.

CREDIT: OVERHEAD DOOR



**Remote controller.** Air quality inside the home can improve with products like Velux’s *Integra* system, which controls how windows operate.

Accessories: Sustainable Sidekicks

DOORS AND WINDOWS have a lot of accessory items that make everything look and perform better. These “sidekicks” can make up for shortcomings in the original product, or emphasize a point other people may have overlooked. Take the previously mentioned garage door. Thermal efficiency isn’t all that efficient if the door can’t be easily opened or closed. LiftMaster’s *Elite Series* of openers use Wi-Fi-based MyQ technology, which enables the opening, closure or status check of a garage door via a smartphone or tablet. Door closure may also be set on a timer, preventing the chance of leaving it up after the owner leaves the house or goes to bed. Not to be left out, the conventional door also has an opening and closing aide. Delaney Hardware’s upcoming *Smart Lock* and its app give users the ability to lock or unlock a door from anywhere using a smartphone or tablet. The lock can also take photos or video, enable a two-way conversation, control lights, act as a heat, smoke and water leak detector, function as a thermostat, and integrate with Amazon *Alexa*. The product is scheduled to hit the market this summer. For those times when there’s a need to go old school and actually open a door by hand, Kwikset offers piece of mind. The company’s



**All the options.** Delaney Hardware’s new smart lock app can remotely open or close a door, and do much, much more.

line of *Microban*-coated door hardware inhibits bacterial growth on some of the dirtiest places in the house: the knobs, handles and locks. Kwikset reports that *Microban* products are 99.9 percent cleaner than untreated surfaces, and the coating does not contain health hazards such as triclosan or triclocarban. And because the silver-based antimicrobial coating is incorporated into the finish during the manufacturing process and lasts for the lifetime of the hardware finish, the need for environmentally unfriendly items such as disinfectants or antibacterial soaps is theoretically zero.

Homeowners can get healthier enjoyment out of their windows with the Velux *Integra* control system. The Wi-Fi enabled home automation unit can be set to open windows for up to 15 minutes to ventilate stale air, monitor CO<sub>2</sub> and humidity levels, control home temperature, and close windows in response to weather reports. Blinds, awnings and shutters can also activate in response to cold or heat. *Integra* integrates with Apple *HomeKit*, and also be controlled via smart speaker technology. **GB**

CREDIT: DELANEY HARDWARE

# COGNITION

## Smart Data

# Selling Points

When it comes to energy efficiency products, it's not just about the price tag anymore.

BY SARA GUTTERMAN

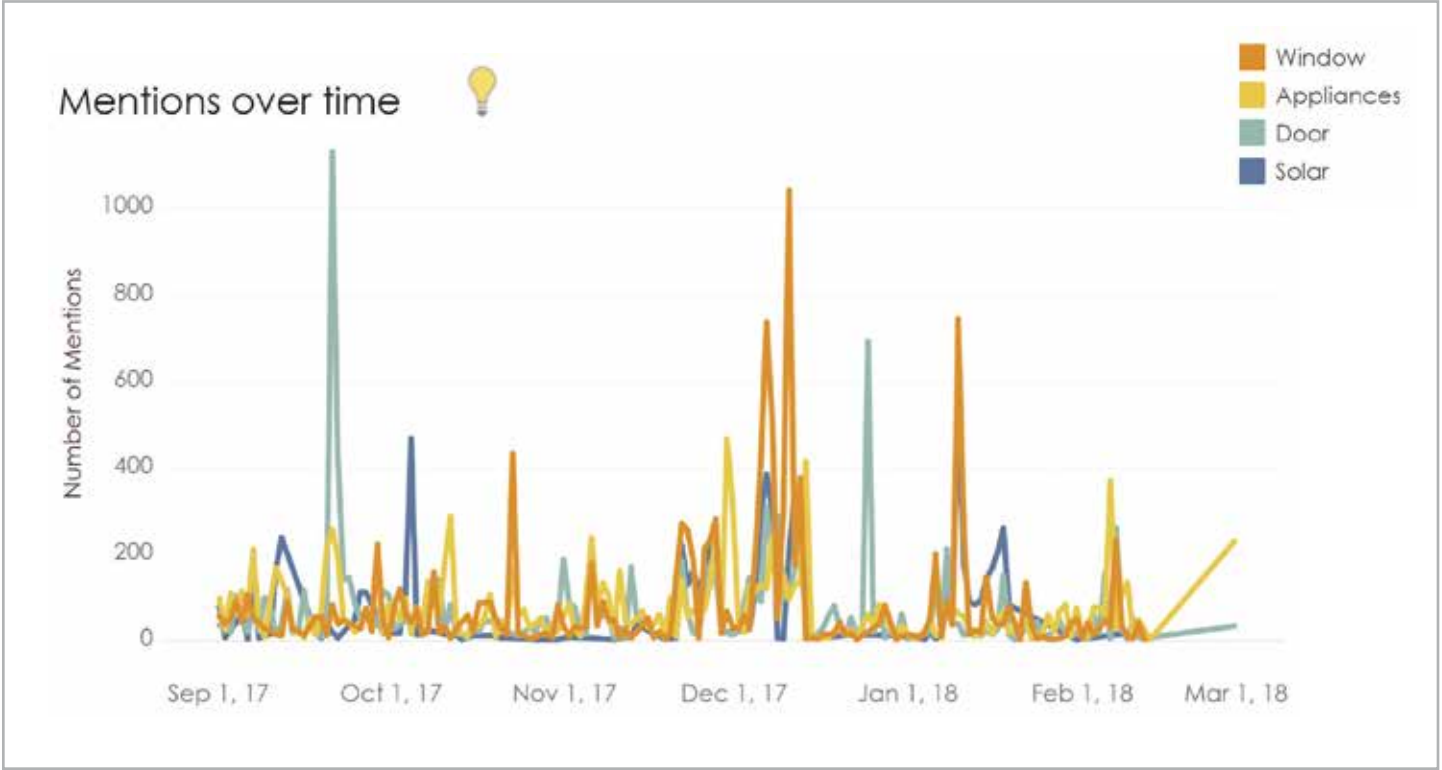
Cognition Smart Data, Green Builder® Media's suite of market intelligence and data services, leverages Artificial-Intelligence (AI)-based technology to uncover insights into purchasing patterns and buyer preferences. This issue: energy efficiency needs.

WHEN WE FOUNDED Green Builder® Media in 2005, energy efficiency was just emerging on the scene as a curiosity for progressive builders who wanted to differentiate themselves. While the topic was an elephant in the room for some builders who didn't want to be forced into constructing higher-performance structures, innovative professionals understood that energy efficiency could provide enhanced value to customers in the form of comfort and cost savings.

And then the recession hit, and massive changes to the 2009 energy code—including enhanced performance requirements—reflected a changing socio-economic zeitgeist. There were a number of issues that brought the urgent need for efficiency to the forefront, including economic conditions, volatile energy prices, advances in high-performance products and technologies, and increased consumer demand.

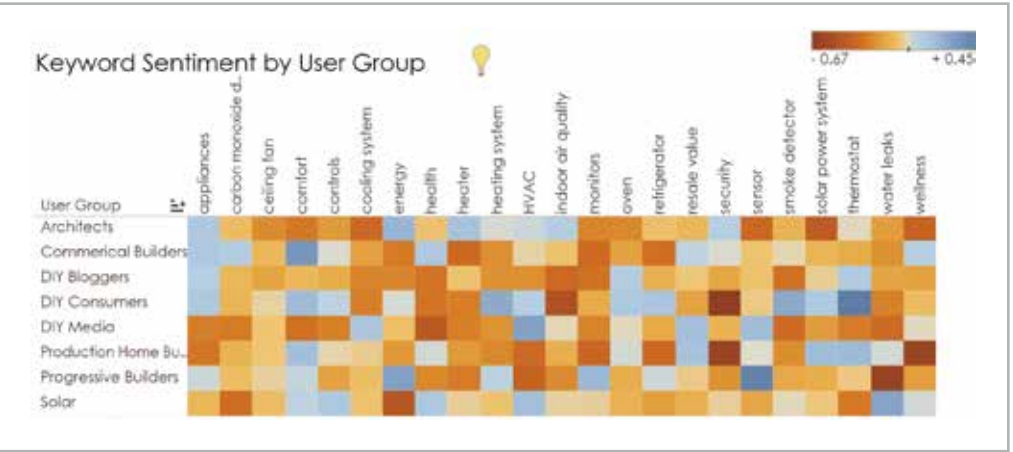
Despite much foot-dragging and resistance to higher-efficiency standards, energy efficiency has become a baseline, woven into the very fabric of the built environment.

Today, energy efficiency is a major driving force in the marketplace. Cognition Smart Data, Green Builder® Media's AI-based suite of data services, offers key insights into the underlying dynamics of the energy efficiency sector and important trends that can help professionals and consumers alike understand how to best leverage the growing market momentum.



**Hot topics.** The types of energy efficiency products consumers are asking about has shifted over time, but they all remain topics of conversation, according to Cognition data.

**At ease.** Different users of energy-efficient products react differently to common terms and product types, with consumers being the most receptive overall.



Cognition data reveals that across the country, consumer expectations, as well as codes, will continue to ratchet until we cross the threshold of net-zero energy and shift to net-positive energy (where homes and buildings produce more energy than they use). Not surprisingly, California is leading the charge in this area with its recently approved code change [https://bit.ly/2x7Qgou] that, beginning in January 2020, will require all new homes to achieve net-zero electricity. This will be accomplished through a blend of solar and high-performance insulation, roofing, windows, doors, building envelope systems, appliances, lighting and mechanical systems.

as important a purchase consideration as location.

While insulation, windows, HVAC, lighting, appliances and thermostats are the top efficiency categories that consumers look for, the definition of energy efficiency is expanding, and consumers now correlate efficiency with other key market drivers. For example, solar is a growing factor in the energy efficiency conversation, as early-adopter and first-mover consumers connect energy usage and production. Consumers are also now linking resiliency with efficiency.

Cognition research shows that quality and performance are the top purchase drivers for energy-efficient products, followed by

yield monthly dividends (in the form of cost savings) on an ongoing basis. In this respect, consumers comprehend that first cost is not full cost. This is an important transformation in the building industry that has been held hostage for too long by a flawed price-per-square-foot metric that does not include performance considerations or long-term operating costs in the valuation equation.

Cognition data reveals that, like with most things, effective messaging about energy efficiency depends on the audience profile. Early-adopter and first-mover consumers have a positive sentiment towards energy efficiency and want straight talk about the spectrum of benefits that are delivered by efficient products (environmental impact, cost benefits, durability and so forth).

Mainstream consumers need a little more storytelling—they resonate better with terms like comfort, saving money and enhanced resale value.

Energy efficiency-related brands that rank the highest in Cognition's positioning analysis include Bosch, Trane, Rheem, Andersen, Nest, Philips and Owens Corning.

It's a good thing that these major brands and many others continue to strengthen their energy efficiency offerings and messages, because there is no way that we can tackle climate change and carbon emissions without a robust spectrum of solutions that address efficiency in the built environment. **GB**

For more information, visit [www.greenbuildermedia.com/cognition](http://www.greenbuildermedia.com/cognition). To learn more about how our market intelligence services can help your business, email Sara Gutterman at [sara.gutterman@greenbuildermedia.com](mailto:sara.gutterman@greenbuildermedia.com).

# A Handful of Highs and Lows

The latest legislation for builders tackles air quality, energy efficiency, timber availability and more.

BY MIKE COLLIGNON

Here is a roundup of recent construction-related legislative actions around the country:

## AUSTIN, TEXAS

The Austin City Council adopted an ordinance aimed at protecting residents from the dangers of an invisible killer: carbon monoxide. As of April 1, all existing homes in Austin must contain a CO detector if they meet one of the following two requirements:

- There is a gas or fuel-burning appliance in the home.
- The home is directly connected to a garage.

The ordinance gets the existing residential (and commercial) buildings up to the level of newer development. A CO detector has been required on new construction since 2012. The carbon monoxide detectors “must be installed outside of each separate sleeping area and in the immediate vicinity of each sleeping area. A carbon monoxide alarm must be installed within a sleeping area if a fuel-burning or solid fuel appliance is located within a sleeping area, a bathroom attached to the sleeping area, or a garage attached to the sleeping area.”<sup>1</sup> Combined smoke and CO detectors are deemed to comply with the new ordinance, and detectors do not have to be hard-wired into the building.



CREDIT: CORCHOMEFLAN

**Puts the ‘CO’ in Code.** Carbon monoxide detectors are now mandatory for nearly all existing homes in Austin, Texas. The new ordinance matches one for new residential development implemented in 2012.

## PENNSYLVANIA

The Uniform Construction Code Residential Advisory Committee (RAC) has adopted the 2015 I-codes, with some individual codes receiving amendments. In regards to the energy code, there were sections that reverted back to 2009 language, while other sections advanced to 2018 language. The air leakage rate was established as five air changes/hour for all Pennsylvania climate zones. Also, the ERI table (R406.4) from the 2018 IECC was incorporated. The new codes take effect on Oct. 1.

This was a very positive development for the state. Prior to this update, the state had been known for anchoring their energy code to the 2009 IECC. The RAC had typically been stacked against energy efficiency, and some of the procedures were even modified to prevent updates. The Governor’s Office is reported to be “very happy” with the outcome of the process, as this gets Pennsylvania out of the bottom half of the state energy code rankings.

## ILLINOIS

The residential subcommittee of the Energy Codes Advisory Council (ECAC) met near the end of April to finish its review of all proposed amendments to the state’s energy code, which is legislatively mandated to be based on the most-recent model energy code. A handful of entities put forth proposals to lower the ACH50 level from 5 to 2. In a compromise decision, the subcommittee unanimously voted to lower the minimum ACH50 level to 4, and the Chair of the subcommittee voiced his intent to lower it to 3 in the next update cycle in 2021.

## UNITED STATES

The EPA WaterSense program received renewed funding for fiscal year 2018 via the omnibus spending bill passed in late March. Interestingly, the budget didn’t provide actual funds, but instead instructed EPA Administrator Scott Pruitt to continue the WaterSense program at its 2017 funding levels of \$2 million. According to the Alliance for Water Efficiency, such instructions from Congressional committees have traditionally carried the force of law.

The Green Builder Coalition joined 168 other organizations in signing a letter of support (<https://bit.ly/2IMprU0>) for the continuation of the WaterSense program.

The International Code Council (ICC) wanted to make sure people were aware of a significant change to section N1102.2.2 of

CREDIT: SAM BEEBE/FICKR



the 2018 IRC. The change summary reads: “When applying the exception for insulation in ceilings without attics, the insulation must extend to the outside of the top plate.”<sup>2</sup> The excerpt from the book “Significant Changes to the IRC 2018 Edition” can be read here (<https://bit.ly/2k0JW1r>).



CREDIT: GAGE SKIDMORE/FICKR

**Water sense?** Organizations, manufacturers and water utilities nationwide are asking EPA Administrator Scott Pruitt to maintain funding for the highly successful WaterSense program, which has saved consumers more than \$46 billion over the past decade.

## WASHINGTON

HB 1622 has been signed into law by Governor Jay Inslee. The bill helps cement the state’s code adoption cycle at three-year intervals. It also raises the state’s portion of the residential permit fee for the first time in nearly 30 years, from \$4.50 to \$6.50 each.

SB 5450 paves the way for mass timber construction into the state’s residential and commercial construction codes. The bill, recently signed into law, went into effect June 7. It states that “the building code council shall adopt rules for the use of mass timber products for residential and commercial building construction.”<sup>3</sup> Those rules must consider (but don’t require reference to) national and international standards.

**Wood worthy.** The path is cleared for mass use of timber products in the state of Washington. A new law allows the State’s building code council to establish new rules for residential and commercial building.

This bill will certainly be a boost to the state’s timber industry, “which employs more than 105,000 workers and generates \$28 billion in sales each year.”<sup>4</sup> It might also be a boost to insurance companies. A study commissioned by the concrete industry found that “builder’s risk insurance quotes for concrete buildings were about 22-72% less than quotes for wood frame buildings...and quotes for commercial property coverage on concrete buildings were 14-65% less than quotes for wooden frame structures.”<sup>5</sup>

SB 5379 proposed a requirement for “all public buildings in the state rising 12 stories or less be built using Cross-Laminated Timber.”<sup>6</sup> Waivers could be granted to this requirement for such reasons as “unavailability of building materials or structural infeasibility”, among others. However, the bill was first introduced in January 2017 and didn’t go anywhere. It was resurrected in January 2018 and once again never left Committee. With the state Senate in recess, it appears very unlikely this will become reality anytime soon. **GB**

### Links:

- <sup>1</sup> <https://bit.ly/2GpcfQ1>
- <sup>2</sup> <https://bit.ly/2k0JW1r>
- <sup>3</sup> <https://legiscan.com/WA/text/SB5450/2017>
- <sup>4</sup> *Washington state to include mass timber in building codes* by Kim Slowey. <https://bit.ly/2pWPFYO>
- <sup>5</sup> *Underwriters aware of the risks of wood-frame construction: Survey* by Lyle Adriano. <https://bit.ly/2GsevFY>
- <sup>6</sup> <https://legiscan.com/WA/text/SB5379/2017>

Mike Collignon is the executive director and co-founder of the Green Builder® Coalition.

### COURTESY OF The Green Builder® Coalition

The Green Builder® Coalition is a not-for-profit association dedicated to amplifying the voice of green builders and professionals, driving advocacy and education for more sustainable homebuilding practices. For more information, visit **GreenBuilderCoalition.org**

## In With the New

It's not easy to introduce updated concepts to the building industry, but some are making it happen.

This is the fourth in a series of articles about the increasing interest in—and necessity for—smart homes, villages, cities and communities globally, and how they relate to green building in the U.S.

BY TERRY BEAUBOIS

IN JANUARY, I spoke at the *Green Builder* symposium and then attended the International IBS/NAHB/NKB show. What struck me is how wonderful and diverse the building industry is—and yet how separated into silos we still are. With a few exceptions, such as the larger product manufacturers exhibiting at IBS, we do not share information among architects, designers, engineers and general contractors, let alone home and building owners. A home show I attended in San Jose in February confirmed that thought: Few manufacturers, builders and remodeling companies were there to share information with homeowners.

The reason for mentioning this siloing is because it is key in addressing how to create increasing efficiency and effectiveness in the building industry. In studies of all the major industries covering the past 50 years, the building industry has experienced the least increase in efficiency and effectiveness in the past 20 to 50 years compared to most other industries.

We are not going to improve the industry without improving the ease with which we can share information, and refining our methods of construction. The path to “better-faster-cheaper” in the building industry will include improvements to our processes—not by “digging holes faster” or working faster, but by working smarter and increasing collaboration across the industry.

This isn't a factor in the building industry alone. In academia, some college students have also seen “more division than unity between the different academic disciplines on campus,” and some are beginning to build communities for interdisciplinary education between the arts, sciences and engineering, and to change the campus culture. More programs of interdisciplinary studies and programs are in existence than in the past, and we are likely to see this trend continue.

### IF AT FIRST YOU DON'T SUCCEED...

There are efforts going on now to change the old ways of creating buildings across all building types. In February of this year, CIFE at Stanford University had an Industrialized Construction Forum, “The Future of Housing Innovation,” a superb presentation of a variety of building approaches. The companies presenting included Acre Designs, RAD, Urban Sidewalk Labs, Social Construct, Kattera, Clark Pacific, PassiveDom, Project Frog and BONE Structure.

At the end of the forum, Ray Levitt, a Stanford engineering professor with significant industry experience, expressed concerns. Levitt noted that there have been a number of attempts in the U.S. over the years to introduce forms of industrialized construction of houses, housing and building, such as the Department of Housing and Urban Development (HUD)'s Operation Breakthrough in the 1970s. Levitt wondered if the lessons from those efforts were being adequately considered and addressed.

In addition to Operation Breakthrough, my own familiarity with “Industrialized Construction” goes back to my days in architecture school when we studied Konrad Wachsmann.

But there are now mounting economic and environmental pressures on the building industry to perform more efficiently and effectively, to find time and cost savings, and to embrace a new model of construction that includes forms of pre-built structures as a way to more efficiently develop, design and construct buildings.

### THE CASE FOR KATERRA

One company leading the way is the construction technology company Kattera, which in January received \$865 million in research and development financing.

I've seen a few different descriptions of Kattera, one being a “technology-driven off-site construction company.” But I found it to be much more than that. The company was founded by Michael Marks, former CEO of Flextronics and former Tesla interim CEO, and Fritz Wolff, executive chairman of The Wolff Co. The latter is a “fully integrated real estate private equity firm that is focused on the multifamily sector.”



**Learning curve.** Employees at Kattera do more than simply construct or supervise new projects. They also stay up to date on the company's ever-evolving green strategies.



**Solidly built.** Tech construction firm Kattera specializes in factory-style construction of individual walls, floors and roofs for new homes. These can be assembled after arrival at a worksite, allowing for better quality control.

Kattera's Menlo Park, Calif., headquarters is a compilation of open offices, glass walls, lots of big screens and a buzz of activity. The company's construction factory is in the Phoenix area, with more factories in various locations being planned. This includes plans for a cross-laminated timber (CLT) plant under construction in Spokane, due to come online in 2019. There is also have a Seattle office where Design Director Craig Curtis, FAIA, is based.

One of the first things to understand is that Kattera is not a startup. It was formed in 2015 and already has a considerable backlog—almost \$1 billion of booked work. With the infusion of funding, Kattera is bustling with hiring and its planned expansion.

One aspect of what Kattera is doing does include “factory construction” of building elements—walls, floors and roofs. The walls, for example, are built in a factory setting, with windows, wiring, some plumbing, interior and exterior wall finishes. They are then “flat packed” and shipped to the building site. This differs from modular housing, where buildings are shipped and assembled. Kattera is not “shipping air.”

In concept, the factory construction allows Kattera to control the materials, labor and quality of construction to a higher degree than “stick building” on the site, according to Curtis.

In many of its projects, the company will serve as the architect, off-site manufacturer and on-site contractor. Kattera will generally contract directly with owners for their projects. It also collaborates with other appropriate teams on some projects, and may control planning, design, manufacture, delivery to the site and coordination of installation upon arrival.

At the construction site, the idea is that nothing will touch the ground. No more lumber or other building materials laying around on site, getting wet or muddy. Building panels are put in place directly from the truck. This is another aspect of Kattera's approach to creating an end-to-end, “better-faster-cheaper” method of design-build for its projects.

When doing things “better, faster, cheaper,” Kattera's primary goal is to emphasize the “better” part, Curtis notes. That doesn't mean “faster and cheaper” is out of the mix. “When [we] explain what Kattera is doing—and that they can do it much faster, people pay attention,” Curtis says.

Also, empowering architects, engineers and developers to be in control of the project up front, and having a model tied to a supply chain, enables the design and build elements to function in a more integrated fashion.

Curtis also commented that doing environmentally responsible design is in Kattera's DNA. The company will naturally “do the right thing,” from smart harvesting of forest products to through project completion. Sustainability and energy efficiency are also core to Kattera's work.

Kattera is conducting research on worldwide sources of materials and products. In some cases, the company will design and manufacture

its own line of products for use in its buildings. Kitchen faucets and LED light fixtures are examples of such products. It is also looking at innovative ways of connecting buildings using various renewable sources of energy and battery storage.

The company takes a lot of lessons from the Silicon Valley's computer and chip industry, and applies them to the building industry. It has also learned lessons from studying the 10 to 20 years of European experience with CLT. The major investments that Kattera is making in their plants reflect its research comparing CLT systems with glu-lam systems. Kattera is even studying the possibility of the 3D printing of wood fiber in the future, and is involved with university research programs to study such issues.

Curtis acknowledges that overall, there is very little research conducted by the building industry on improving its methods. It's also very difficult to introduce new ideas, technologies, processes and products into the industry. This is a challenge, but an important aspect of Kattera's work, he notes. “For the Silicon Valley guys, this is a no-brainer,” he says. “That is an industry that has always been about technology and change. Kattera has that perspective in its management and executives.”

Most of the firm's current work focuses on multi-family structures, with some student housing and office buildings. But Kattera may grow to include other types such as government buildings.

The company's other goals include considering working with other companies on designing projects “the Kattera way.” Kattera includes the team-building required in construction, but expands the process to integrate planning and design, with a focus on hiring, training, providing experience and mentoring. This includes educating employees on how to collaborate as the business expands further. **GB**

*Terry Beaubois is an architect in Palo Alto, Calif. He is CEO of the internet startup BKS (Building Knowledge Systems) LLC, and an adjunct lecturer at Stanford University.*

# AD INDEX

## The Align Project

Everything you need and nothing you don't.

[www.greenbuildermedia.com/vision-house-the-align-project](http://www.greenbuildermedia.com/vision-house-the-align-project)

PAGE 4

## ASES

47<sup>th</sup> Annual National Solar Conference & Summit

[www.ases.org/conference](http://www.ases.org/conference)

PAGE 63

## DuPont Tyvek HomeWrap

Built for Efficiency

[weatherization.tyvek.com](http://weatherization.tyvek.com)

PAGE 5

## EEBA

High Performance Home Summit 2018

[www.summit.eeba.org](http://www.summit.eeba.org)

PAGE 13

## HFSC

Home Fire Sprinklers: A Win-Win for Your Entire Community

[www.homefiresprinkler.org/crr](http://www.homefiresprinkler.org/crr)

PAGE 1

## Intersolar

North America's Premier Exhibition and Conference for the Solar Industry

[www.intersolar.us](http://www.intersolar.us)

PAGE 8

## National Fire Protection Association

Learn how to make homes resilient to wildfire!

[www.nfpa.org/hiz](http://www.nfpa.org/hiz)

PAGE 51

## Panasonic

Healthy indoor air all the time.

[www.whisperfreshselect.com](http://www.whisperfreshselect.com)

PAGE 11

## RAM

There is no such thing as a small job.

[www.ramtrucks.com/commercial](http://www.ramtrucks.com/commercial)

COVER 4

## Rheem

Now a Water Heater Intelligent

Enough to Prevent Emergencies

[www.rheem.com/triton](http://www.rheem.com/triton)

COVER 2

## SIPA

Saving the environment

one panel at a time.

[www.sips.org](http://www.sips.org)

PAGE 9

## Solar Power International

### Trade Shows

Community Solar Power Summit

and Smart Energy Week

[www.events.solar/community-solar](http://www.events.solar/community-solar)

[www.solarpowerinternational.com](http://www.solarpowerinternational.com)

PAGE 14

## Typar Weather Protection System

Make Mother Nature Say Uncle

[www.typar.com](http://www.typar.com)

COVER 3

## Uponor

Progress means moving water

flawlessly and efficiently.

[www.uponor-usa.com](http://www.uponor-usa.com)

PAGE 3

# ASES SOLAR 2018

Pathways to the Renewable Energy Transformation

#SOLAR2018Boulder



47th Annual National Solar Conference & Summit



AMERICAN  
**SOLAR**  
ENERGY SOCIETY

**BOULDER, CO**

August 5-8

University of Colorado, Boulder



COMING NEXT  
ISSUE

## GREEN BUILDER<sup>®</sup>

### Eco-Leaders

Green Builder's annual special edition featuring major players that demonstrate a dedication to all things green.



CREDIT: GUYTHZ/ISTOCK

# FROM THE TAILGATE

New Offerings for the Sustainable Minded

By Ron Jones

## Hysteria and Hypocrisy

IF THERE IS A SINGLE, CONSISTENT THEME that epitomizes the mantra of the homebuilding industry and that its advocates relentlessly roll out, it is the absolute opposition to regulations. In the observation of this 29-year member, the bread and butter of the National Association of Home Builders advocacy efforts is totally dependent on successfully harnessing this resentment of existing regulatory oversight and the fear of additional new rules. Seems it's always good to encourage a little hysteria amid the flock.

Enter the Trump Administration. The unbridled celebrations at all levels of the organization following the 2016 elections seemed like they could go on forever. Whenever the new President merely uttered the word “builder,” regardless of context, the moment was hailed and memorialized as if it had been mandated from above. After all, no one has ever been better at singing to the choir than the man now in the Oval Office.

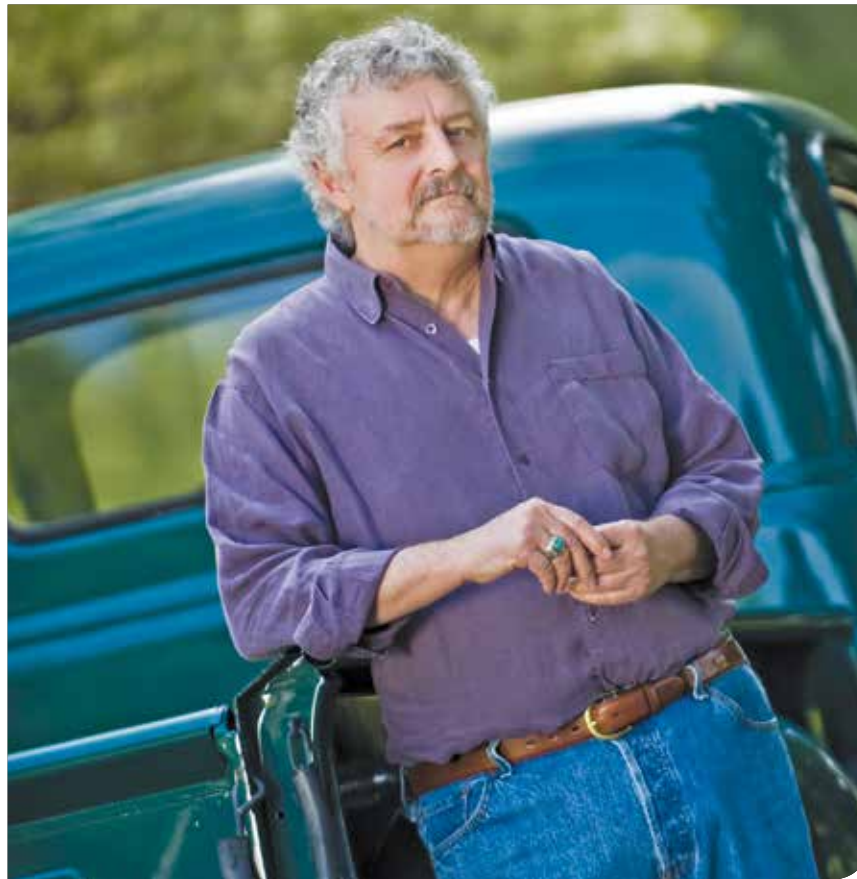
But since this Administration's official takeover of the executive branch more than a year ago, the bullet train to deregulation has felt a little more like a roller coaster at times. Suddenly, certain verses of the hymns have included some sour notes.

Sure, industries and associations in many sectors were convinced their prayers had been answered when war was openly declared on environmental safeguards, consumer protections and a host of other existing regulations. But things started to feel less cozy when sacred cows like the mortgage interest deduction, long believed to be untouchable, came under the ravenous gaze of those bent on helping the Administration deliver on its campaign promises of tax cuts.

That's where the hypocrisy kicks in. The Association claims it is willing to do whatever it takes to reduce, replace or remove regulations and to pursue a balanced policy landscape. Unless, of course, the rule in question happens to help tilt the playing field its favor. An even more ticklish dilemma is manifested when this “dream” Administration implements devices of its own that negatively affect the Association's positions and policies, and its members' profits.

Take the lumber tariffs that Trump put in place. Sorry boys, but a tariff by any other name is still a regulation. And according to NAHB, “Since the beginning of last year, rising lumber prices—primarily as a result of tariffs on Canadian softwood lumber—have increased the price of an average single-family home by more than \$7,000.”

Now NAHB is imploring its members to call on the President, as



well as Congress, to negotiate a new deal that will bring economic relief to all those impacted by his actions. They even have form letters prepared that builders can sign and forward to Washington without having to think for themselves. This is not to trivialize the issue, or to suggest that these price increases don't have serious negative impacts on potential home buyers. They most certainly do. But it does seem worth pointing out that, ironically, it appears that the process has come full circle.

Curiously though, carefully wordsmithed pleas are far less belicose than the war cries hurled at administrations past. Perhaps it is hoped that the President will again refer to himself as a “builder” sometime soon, an event that would undoubtedly result in spontaneous eruptions of joy in some homebuilding circles.

However, it seems just as likely that all that kissing up to the President will leave one with nothing more than a familiar nasty aftertaste. **GB**

# MAKE MOTHER NATURE SAY UNCLE.

BRING ON THE  
ELEMENTS.

Superior air and water holdout. Optimal breathability. Surfactant-resistant. Plus industry-leading tear strength. With the TYPAR® Weather Protection System and its lifetime limited warranty defending your homes, you've got the upper hand.

THERE IS  
NO SUCH  
THING AS  
A SMALL JOB.

## RAM PROMASTER CITY®

MOST CAPABLE WORK VAN IN AMERICA  
BEST-IN-CLASS PAYLOAD  
BEST-IN-CLASS CARGO CAPACITY  
BEST-IN-CLASS HWY FUEL EFFICIENCY



**RAM**  
COMMERCIAL



## COMMERCIAL VAN SEASON

GOING ON NOW THROUGH JULY 2

[RAMTRUCKS.COM/COMMERCIAL](http://RAMTRUCKS.COM/COMMERCIAL)

**\$2,000** Consumer Cash<sup>1</sup>

**\$750** Conquest Bonus Cash<sup>2</sup>

**\$500** Commercial Van Season Bonus Cash<sup>3</sup>

**\$3,250** TOTAL SAVINGS

Based on BIC Cargo Capacity, BIC Payload, BIC Horsepower, BIC Torque, and Unsurpassed Towing. Class is small Commercial van segment with standard engine. EPA est. 28 HWY MPG. 2.4L automatic 9-speed transmission. Actual results may vary. <sup>1</sup>Residency restrictions apply. See dealer for details. Must take retail delivery by 7/2/18. <sup>2</sup>Conquest bonus cash offer available to owners or lessees of competitive brand vans. No turn-in or trade-in of van required. Residency restrictions apply. See dealer for details. Must take retail delivery by 7/2/18. <sup>3</sup>Must show proof of eligible Commercial business. Residency restrictions apply. See dealer for details. Must take retail delivery by 7/2/18. Ram is a registered trademark of FCA US LLC.