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ON THE COVER:
The architectural style of the modern farmhouse focuses on simplicity and balance.

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Visit www.bestinamericanliving.com/blog for even more news and resources on home and community, including cutting-edge designs, visually rich details from award-winning projects, hottest trends, and more.

Don and Mae Marshall had rented a space in an RV park for 14 years before qualifying for this 1,100-sf, energy-efficient home in Veterans VIllage.

PHOTOS BY FUREY

Welcome Home

By Danielle Stroud

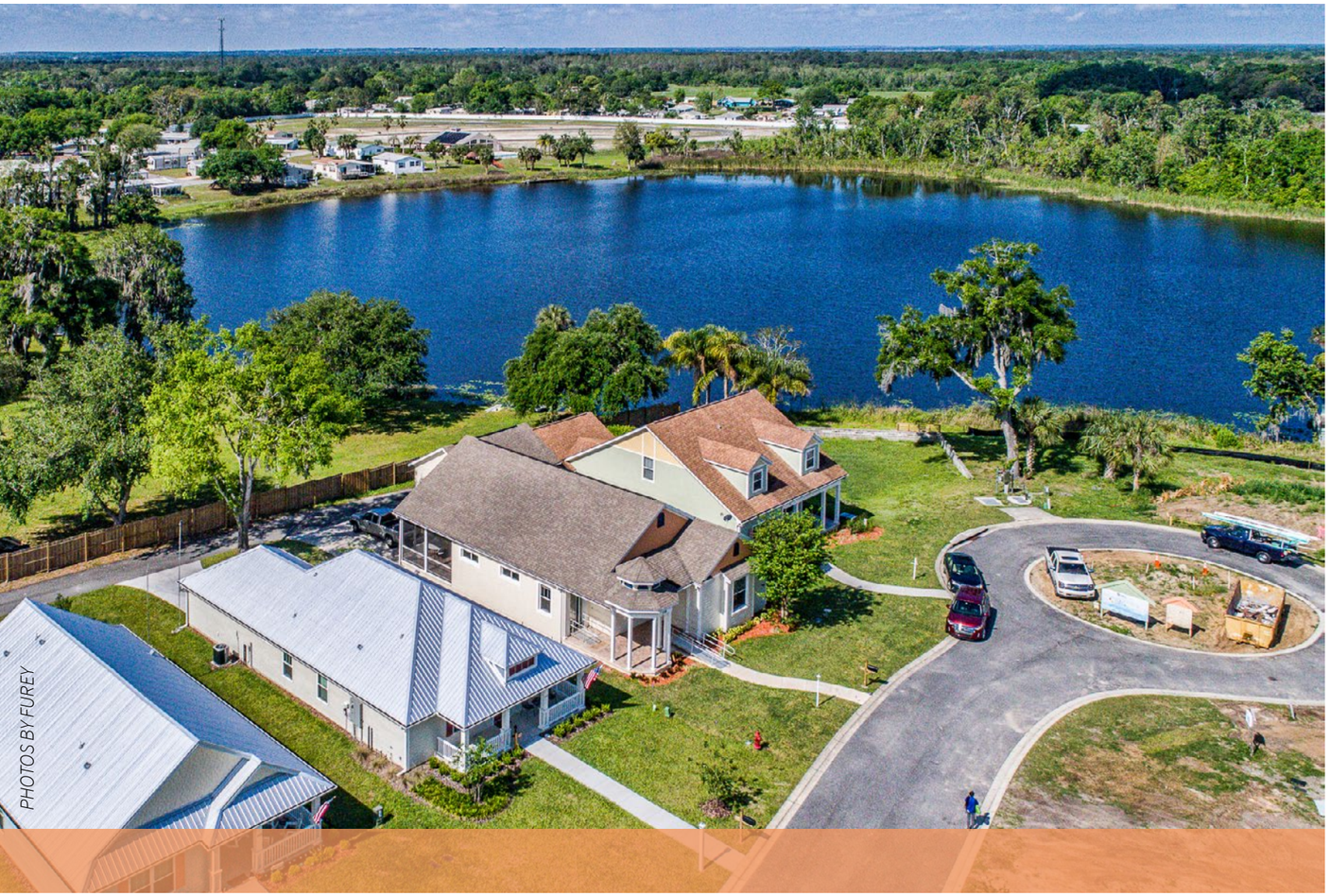
Habitat for Humanity builds an affordable Veterans Village in central Florida

In the heart of Florida, in the small town of Umatilla, sits the newly built Veterans Village, a quality, affordable community built with a purpose by Habitat for Humanity of Lake-Sumter, Florida. With more than 50,000 veterans in the region, Habitat of Lake-Sumter created a housing initiative in 2012, emphasizing the importance of creating repair and homeownership opportunities for the veteran population.

Veterans Village consists of 13 homes for low- to moderate-income veterans, military members, and spouses of those who have served. The project is not simply a neighborhood, but a collaboration. Through the network of partners that Habitat of Lake-Sumter established, Veterans Village families have access to holistic, wraparound services, including

PHOTOS BY FUREY

Pitched metal roofs, typical of Florida Cracker style architecture, help reflect heat in the state's subtropical climate. Spray foam insulation under the decking and extra-thick walls help reduce energy costs.



PHOTOS BY FUREY

PHOTOS BY FUREY

(Above) Narrow lots and front porches, a key elements of the Veterans Village neighborhood design, make it easier for residents to get to know each other.

(Left) To help promote a sense of community, Habitat chose to leave the waterfront lots open as a gathering spot; typically, those lots would be sold at a premium. Mailboxes at a centrally located gazebo are another way to bring residents together.

PHOTOS BY FUREY

Reed and Michele Vonhold had lived in a one-room apartment for more than a decade before moving into their home at Veterans Village. Like all Habitat home owners, they were required to invest 200 hours of "sweat equity" into the construction of their house or other Habitat homes.

Deep porches, designed to provide ample shade from the blistering Florida sun, are perhaps the defining element of the Cracker style.

PHOTOS BY FUREY

assistance with their careers, mental and physical health, transportation, finances, education, legal issues, and navigating the Department of Veterans Affairs.

A HIGHLY SKILLED DESIGN TEAM

Habitat of Lake-Sumter CEO Kent Adcock wanted a design team that would create a unique, high-quality neighborhood within the envelope of affordability.

Adcock envisioned a coastal Florida Cracker architecture, with pastel color palettes and metal roofs.

"I wanted this community to include some of the best homes we've designed," Adcock said. "Our veterans deserve it, and just because something is affordable doesn't mean it has to be inferior."

The designers of The Villages, an internationally known active adult community in Central Florida, were invited to join the team. Michael Pape and Associates started the project by creating the master plan, The Villages design architect Bill Jones crafted the architectural design and color palettes, and AgeWave Solutions executed the construction drawings and home specifications.

"I was excited when Kent asked me to join the team," Michael Pape said. "It was a unique idea, and I was happy to bring life to the vision they had been planning for so long."

As the team designed the community, the goal was to offer an old-time neighborhood feeling, encouraging the residents to connect through their military experiences. The homes feature front-porch living, with rear-loading driveways and staggered front-yard setbacks to allow every resident an unobstructed view of Lake Enola. Instead of building homes on the two lake-front lots, the design team chose to incorporate shared spaces, once again encouraging the residents to interact. The plan for the common areas featured a circular memorial garden and flagpole, as well as a community gazebo.

AFFORDABLE ENERGY

In addition to Habitat of Lake-Sumter's emphasis on aesthetics, they also wanted to ensure the homes were built with integrity and sustainability. Each home is roughly 1,200 – 1,300 sf and features energy-efficient appliances, windows, and doors. The homes also include a higher level of insulation than Habitat's other models, with increased wall thickness and spray foam under the decking of the metal roofs.

The layouts of the homes also incorporated universal design features, including flush thresholds, wider doorways and turnarounds, and a roll-in shower in one of the bathrooms.

"We wanted to ensure that we could accommodate any veteran, no matter their age or physical limitations," Adcock said.

PHOTOS BY FUREY

Energy-efficient windows, appliances, and lighting increase the affordability of the homes.

PROUD HOME OWNERS

All 13 homes in Veterans Village have been completed, with the common areas slated to be finished by this fall. The total project cost was $2.5 million, funded through not only philanthropic channels, but also creative lending opportunities and the zero-equivalent mortgages that each home owner received.

The Vonholds were the first family to move into the community. Reed Vonhold served in the United States Coast Guard and moved his family to Florida after finishing his service. As first-time home buyers, Reed and Michele Vonhold were excited to be part of a community of fellow veterans with such an emphasis on relationships.

"It's a dream come true," Michele Vonhold said. "We got to work side by side with the volunteers who helped build our house. Their generosity amazes me; we couldn't be more appreciative."

As Habitat of Lake-Sumter looks to the future, they continue to create innovative, affordable housing solutions. With the Veterans Village coming to an end, the Habitat affiliate has begun work on a new development for 600-sf, cottage-sized homes.

Danielle Stroud is the director of development for Habitat for Humanity Lake-Sumter, Florida.

PHOTOS BY TIM RIDLEY

Inside the FIRST NGBS 2015-CERTIFIED HOME

By Michelle Foster

The Key to success is integrating green practices from the start.

In July 2017, the newly constructed home of NGBS Green Master Verifier Carl Seville in Decatur, Georgia, became the first to earn NGBS Green certification to the 2015 National Green Building Standard ICC/ASHRAE 700 (NGBS). Seville's home was not only the first home to earn the 2015 NGBS Green mark, it also earned Emerald-level certification, achieving the highest level of performance and sustainability.

Landscaping for the site has no turf grass; all plants are native and drought-tolerant species.

PHOTOS BY TIM RIDLEY

> "Green isn't a color that you brush over finished construction plans. At the earliest stages of design, consider the building site, envelope, and mechanical systems."

A great deal can always be gleaned from the design and construction of a home that achieves Emerald-level certification, especially using the 2015 version of the NGBS. Even more intriguing in this case is to consider the design and construction of the home, given the depth of building science knowledge and real-world construction expertise that Seville brings to the process.

In keeping with the advice that he gives his own clients, Seville followed three key principles of sustainable design for his own home:

1. Integrate sustainable, high-performance practices and concepts from the start.
2. Keep it simple. Avoid overly complex building volumes that make it more difficult and expensive to insulate and air seal and create problems locating ductwork.
3. Think carefully about how you will live in the house and build only what you need. Less space means fewer resources and lower construction costs, so don't add rooms that won't get used. Even more significant, a smaller house footprint means lower ongoing energy, water, and maintenance costs. For anyone who plans to live in the home long-term, these costs can be significant.

"Green isn't a color that you brush over finished construction plans," he said. "At the earliest stages of design, consider the building site, envelope, and mechanical systems."

GREEN FROM THE GET-GO

When Seville hears builders say that building a high-performance green home costs too much, he knows that they probably are not integrating green practices from the beginning.

"Builders tend to use similar plans over and over again, and until they take the time to design homes with sustainability designed in from the start, they will be fighting themselves and incurring additional, unnecessary costs and complexity by trying to force high performance into homes that were not designed for it," he said.

PHOTOS BY TIM RIDLEY

Both advanced framing and continuous insulation were used to help eliminate thermal bridging on the building envelope of the home. No spray foam insulation was used.

In addition to meeting green building standards, the project also had to comply with a highly restrictive tree canopy preservation ordinance. Historic preservation rules required leaving the property's original cottage, seen at the left of the foundation.

"If builders took the time to work with architects, HVAC and plumbing designers, and green building consultants to create sustainable plans, they would be able to build high-performance homes at little—if any—additional cost, and in some cases even reduce costs while significantly improving performance, indoor air quality, and comfort in their homes."

Kitchen cabinets were custom made, with low-VOC finishes. Countertops are soapstone; the island countertop is a walnut butcher block.

PHOTOS BY TIM RIDLEY

USE A SIMPLE BOX

Seville's design vision for the home was to work with the architect to create a simple building volume and a high-performing, sustainable home. A simple box shape was well-suited to the traditional detailing necessary for new homes in the historic district within which it is located. The box form allowed Seville and the architect to create an extremely well-insulated and air-sealed building envelope without the expense or environmental challenges of using spray foam insulation. The simple building envelope was easy to insulate with blown fiberglass insulation and air sealed with Zip System sheathing.

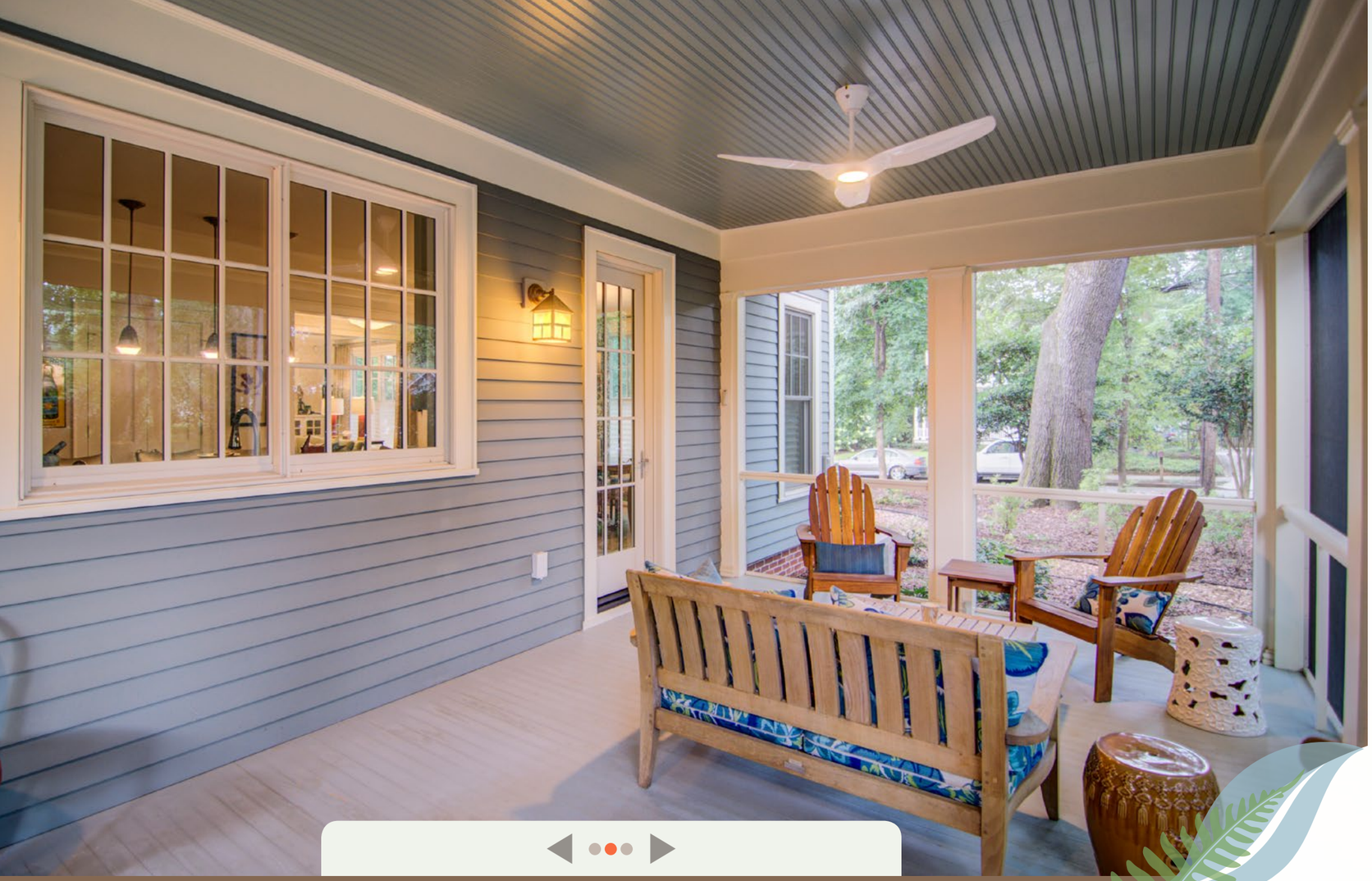
MAXIMIZE HOT WATER EFFICIENCY

One often-overlooked opportunity to be more sustainable is the hot water system. Seville worked hard to design a hot water distribution system that was simple and efficient. The water heater is in a central mechanical closet, which allows for a short home run to each hot water fixture. Plumbers site-built a PEX manifold with ½-inch insulated hot water lines that run as directly as possible to each fixture to minimize waiting and water waste. Simplicity works: Every fixture gets hot water within about 15-20 seconds, wasting no more than a half-gallon of water.

Careful location of bath, kitchen, and water heater locations, along with a smart design for delivery system that provides fast hot water to all plumbing fixtures, will save energy and water and perhaps more importantly, make a home buyer happy. As homes become more energy-efficient, water heating becomes an increasingly larger portion of the energy bill, so reducing heat lost through poor plumbing systems has a bigger effect.

MANAGE MOISTURE WITH VENTED RAINSCREEN

One splurge that Seville highly recommends is a ventilated rain-screen, which is a way to clad an exterior wall by providing a gap behind the siding for any rainwater to drain out. This relatively low-cost extra will extend the life of the siding and paint and reduce the possibility of moisture migrating into the wall structure. The rainscreen is installed over the sheathing after windows, doors, and all pipes and wires are flashed, before the siding and trim is installed.



A screened porch provides a welcome—and frequent—spot for the family to enjoy mornings and evenings.
PHOTOS BY TIM RIDLEY

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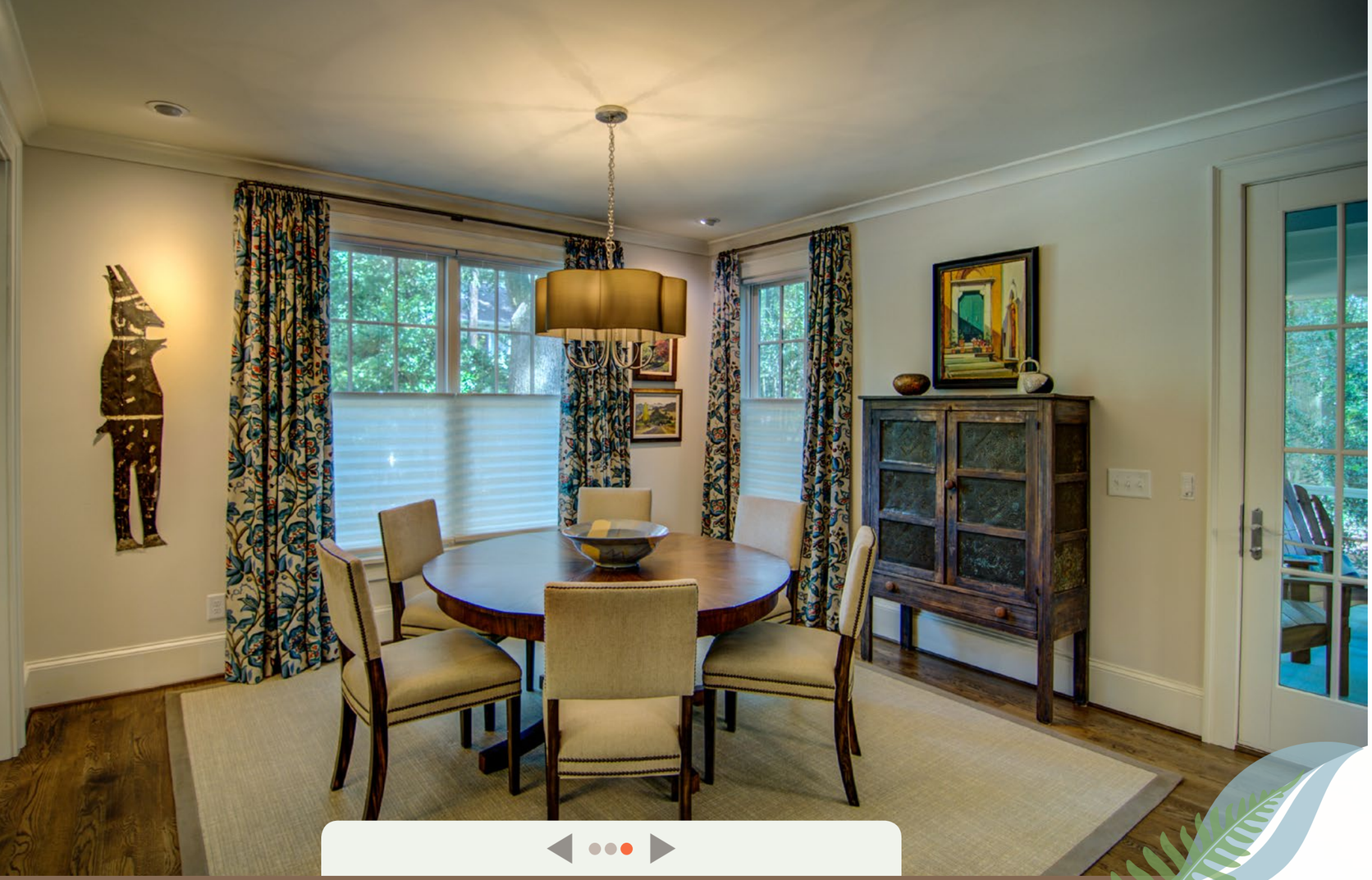

Walls and trim were painted with Sherwin Williams Harmony zero-VOC paints; floors were finished with water-based Bona Kemi Traffic. The builder was unable to find low-VOC stains in an appropriate color, so the stain was a higher VOC content than he would have preferred. Once all the interior finishes were installed, the house was thoroughly flushed to eliminate any remaining VOCs.

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SPEC THE PRODUCTS YOU WANT, AND CHECK THE DOCUMENTATION

With a tight home, you want to minimize the pollutants emitting from the building materials used inside. Seville neglected to specify a low-VOC drywall adhesive, and when he walked in the house during installation, he was hit hard with the fumes from the glue. Fortunately, it dissipated quickly and is unlikely to have any long-lasting effects, but it would have been better to use a less-toxic product.

Builders should develop standard specs for typically used products to ensure this doesn't happen. Achieving all low-VOC sealants and adhesives can be one of the most difficult tasks in a project, considering how many different trades bring their own products. Without a guard at the door to inspect everything that arrives on site, it is challenging to keep high-VOC products off the job.

It also was challenging to find low-VOC wood stains with a wide range of colors. Seville evaluated cabinets and other materials based on urea formaldehyde content from CARB compliance documents, which certify that the cabinets meet the strict California Air Resources Board standards.

Having had a bad experience previously with high urea formaldehyde content in closet storage systems, he insisted on material documentation. Once all the interior finishes were installed, he did a thorough flush of the house over a weekend with windows open and fans on, which did a good job clearing out any remaining VOCs indoors.

PHOTOS BY TIM RIDLEY

DUCTLESS HVAC

Seville departed from traditional construction practice with his decision to install a ductless HVAC system consisting of three mini-split ductless wall-mounted heads, one in the main bedroom, one in the second-floor hallway linked to a Panasonic exhaust fan that circulates conditioned air to the two front bedrooms, and one mini-split on the main floor, which gets assistance from an energy recovery ventilator for air circulation.

Given the home's tight building envelope, Seville was confident the house could be conditioned comfortably without a traditional duct system, and since moving into the home a year ago, his expectations have been validated. The temperature differential between rooms is minimal, and in fact, better than what could be attained with many ducted systems.

LESSONS LEARNED

Now that Seville and his wife have lived in the home for almost a year, he has a few lessons to share, and at least one post-construction adjustment to improve performance and livability. In mixed/humid climates, a very high-performance house needs dehumidification. Seville's first change was to add a stand-alone dehumidifier. While Seville did install an energy recovery ventilator (ERV), which does a good job providing whole house ventilation, it does not provide enough relief from high humidity when the temperature is moderate. Until a manufacturer develops a combination ERV/dehumidifier, his recommendation to clients in mixed/humid climates is consider using a venting dehumidifier for whole-house ventilation.

All in all, the home's performance has been remarkable. Even with an all-electric home, the energy use has been very low and has a Site Energy Use Intensity (EUI –kbtu/sf/yr) of about 15, which is approximately one-third of a typical home. Energy bills average $115 per month for the 2,646-sf, 3-bedroom, 3-bath home. That includes all HVAC, water heating, cooking, running two home offices, and charging two electric cars.

Michelle Foster is vice president of innovation services for Home Innovation Research Labs.

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ENERGY RECOVERY VENTILATION (ERV)

An ERV provides outside air and assists in circulating air around the first floor. Setting up the controller was challenging because of the unclear instructions. Seville decided to run it full time in circulation mode with 20 minutes of outside air every hour. Humidity has been a bit of an issue, particularly on the days when the temperature is moderate and humidity is high. A dehumidifier was recently installed to manage humidity on days when it is too cool to need air conditioning.

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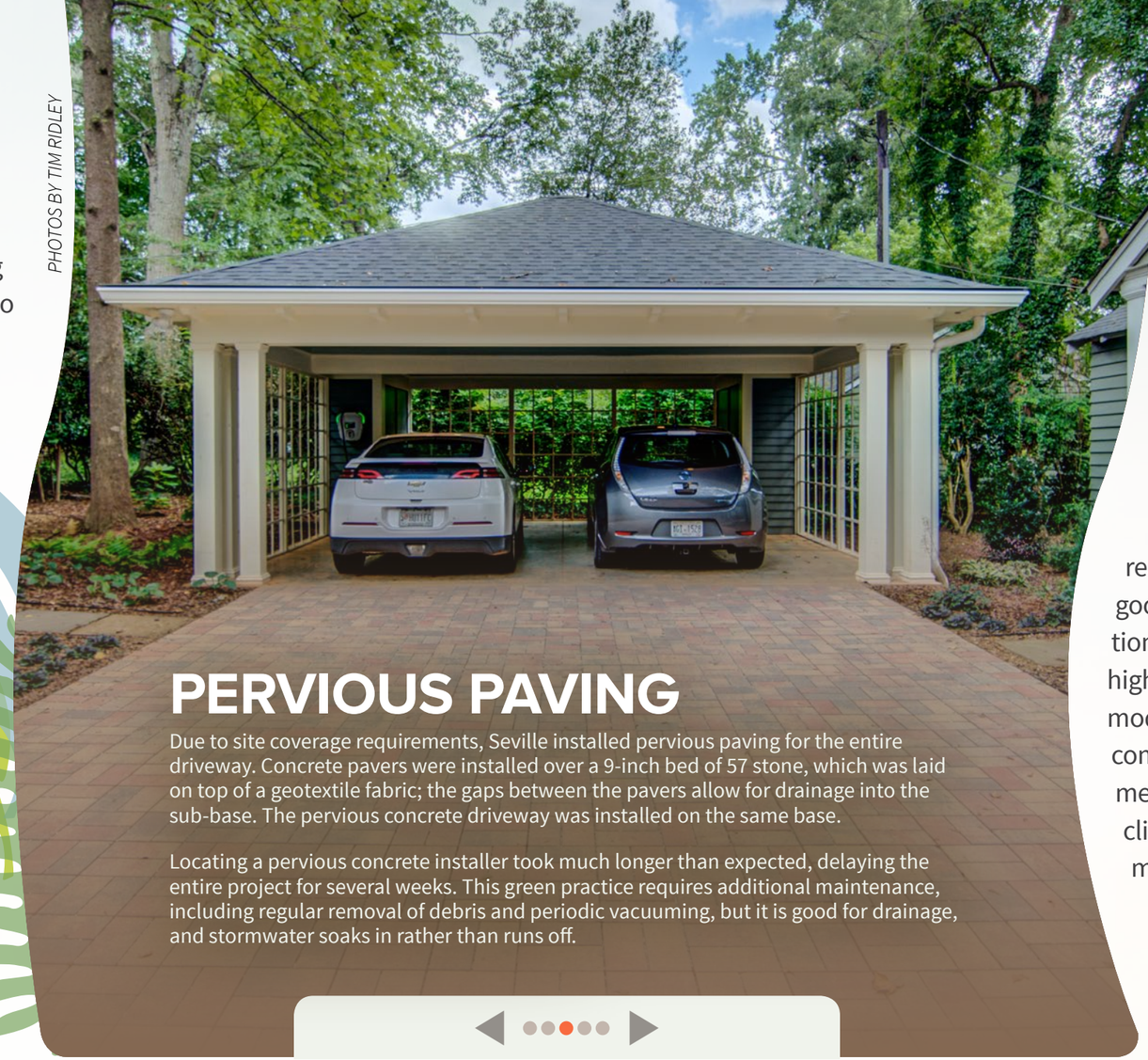

PERVIOUS PAVING

Due to site coverage requirements, Seville installed pervious paving for the entire driveway. Concrete pavers were installed over a 9-inch bed of 57 stone, which was laid on top of a geotextile fabric; the gaps between the pavers allow for drainage into the sub-base. The pervious concrete driveway was installed on the same base.

Locating a pervious concrete installer took much longer than expected, delaying the entire project for several weeks. This green practice requires additional maintenance, including regular removal of debris and periodic vacuuming, but it is good for drainage, and stormwater soaks in rather than runs off.

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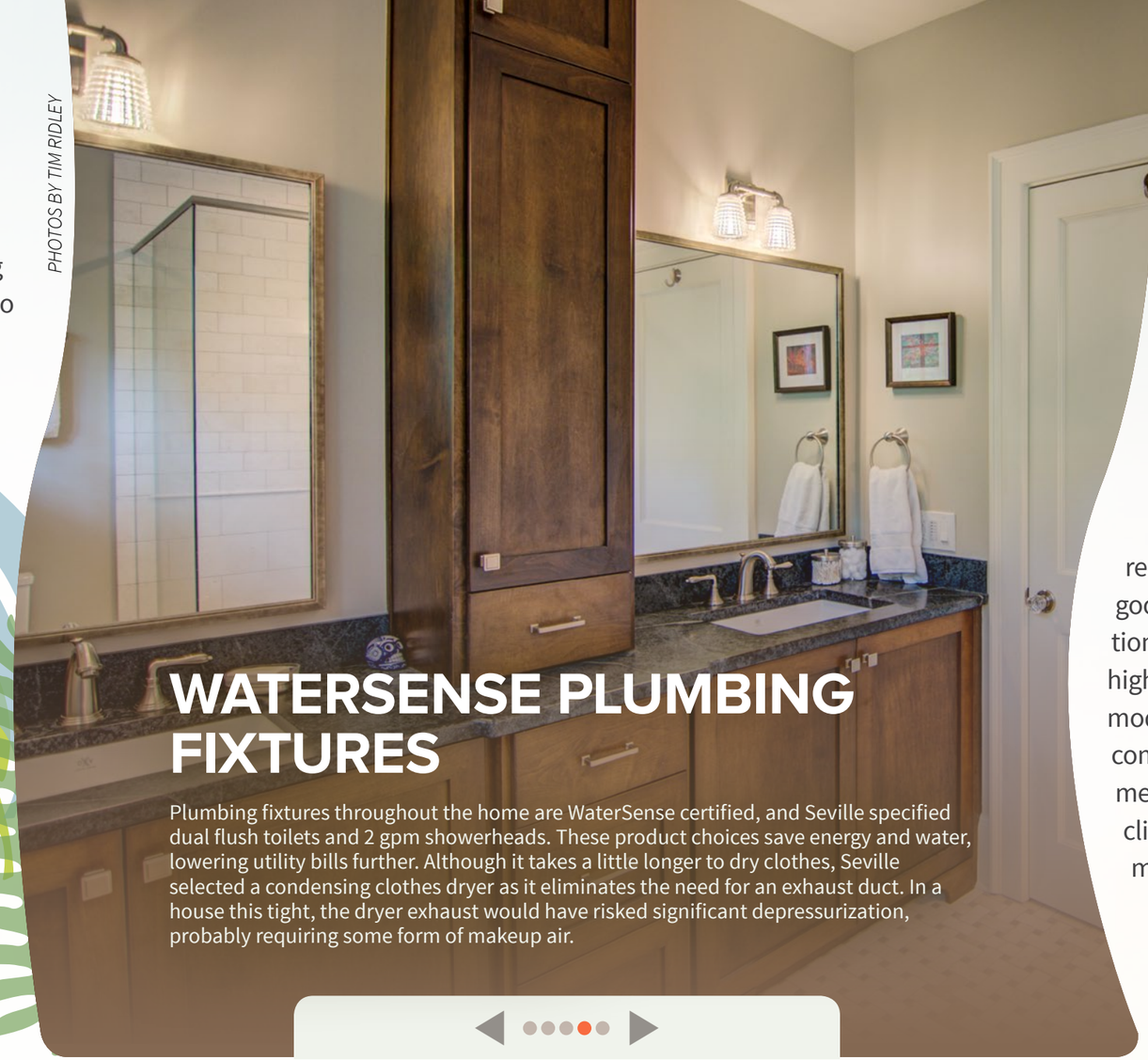

WATERSENSE PLUMBING FIXTURES

Plumbing fixtures throughout the home are WaterSense certified, and Seville specified dual flush toilets and 2 gpm showerheads. These product choices save energy and water, lowering utility bills further. Although it takes a little longer to dry clothes, Seville selected a condensing clothes dryer as it eliminates the need for an exhaust duct. In a house this tight, the dryer exhaust would have risked significant depressurization, probably requiring some form of makeup air.

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PHOTOS BY TIM RIDLEY

KICKOUT FLASHING

For the roof, Seville opted for a standard architectural shingle with a lifetime warranty and incorporated manufactured kickout flashing at the roof/wall intersections to keep water out of the walls. "Kickout flashing is a very important detail that far too many builders overlook," he said. "Plan for it and make sure it gets done."

LESSONS LEARNED

Now that Seville and his wife have lived in the home for almost a year, he has a few lessons to share, and at least one post-construction adjustment to improve performance and livability. In mixed/humid climates, a very high-performance house needs dehumidification. Seville's first change was to add a stand-alone dehumidifier. While Seville did install an energy recovery ventilator (ERV), which does a good job providing whole house ventilation, it does not provide enough relief from high humidity when the temperature is moderate. Until a manufacturer develops a combination ERV/dehumidifier, his recommendation to clients in mixed/humid climates is consider using a venting dehumidifier for whole-house ventilation.

All in all, the home's performance has been remarkable. Even with an all-electric home, the energy use has been very low and has a Site Energy Use Intensity (EUI –kbtu/sf/yr) of about 15, which is approximately one-third of a typical home. Energy bills average $115 per month for the 2,646-sf, 3-bedroom, 3-bath home. That includes all HVAC, water heating, cooking, running two home offices, and charging two electric cars.

Michelle Foster is vice president of innovation services for Home Innovation Research Labs.

2018 BEST OF IBS AWARD WINNERS

By Laura Boswell

Small Solutions, Big Impacts

Each year, thousands of builders and remodelers attend the National Association of Home Builders (NAHB) International Builders' Show (IBS) to see the latest in product innovation. Topping their list of must-see exhibits is a visit to the finalists of the Best of IBS Awards. In its fifth year, the competition's products shape opinions and buying decisions for months to come and receive wide press coverage and ongoing enthusiasm from visitors to NAHB social media.

The 2018 winners are some truly breakthrough products. Take a look.

2018 BEST OF IBS AWARD WINNERS

BEST IN SHOW

Top honors went to **AeroBarrier**, also named **Most Innovative Building Product.** This breakthrough aerosol envelope-sealing technology simultaneously measures and seals building envelope air leaks. It replaces the traditional multi-stage, multi-product sealing process with a highly effective, single-step process, with guaranteed results.

2018 BEST OF IBS AWARD WINNERS

BEST ENERGY-EFFICIENT PRODUCT

Most thermostats only read temperature in the hallway, making other rooms uncomfortable. But along with built-in Amazon Alexa voice service, the new **Voice-Enabled Ecobee4** uses room sensors to help manage hot or cold spots. Place them in your favorite rooms, and Ecobee4 can read the temperature and detect occupancy, ensuring comfort and keeping energy bills down.

2018 BEST OF IBS AWARD WINNERS

BEST OUTDOOR LIVING PRODUCT

This year's Best of IBS Awards had a tie in the Best Outdoor Living Product category. Sharing top honors are the **Aquor House Hydrant V2** and **AeroTherm Coatings**.

Tired of the hassle with your traditional hose? Enjoy instant access to water with the **Aquor House Hydrant V2**. With its patented twist-lock design, the hydrant turns the water on as soon as the connector is inserted. Connect garden hoses instantly, then unplug and go; the hydrant self-drains automatically. No more dripping faucets or wasteful leaks.

AeroTherm Coatings allow you to insulate a property with just a 1mm coating to your internal walls and ceilings. Unlike conventional insulation materials, AeroTherm does not change the appearance of your property or result in loss of internal space. One simple application can mean up to 35 percent energy savings!

2018 BEST OF IBS AWARD WINNERS

BEST GREEN BUILDING PRODUCT

Efficient and environmentally friendly, the **Lennox DLS Series SL280NV Ultra-Low NOx Gas Furnace** produces 65 percent lower NOx (nitrogen oxide) emissions than standard low-NOx furnaces. It features a variable-speed motor to maintain consistent temperatures throughout the home, using as little fuel as possible. Its smart thermostat is compatible with Amazon Alexa devices, allowing consumers to adjust heating with their voice.

2018 BEST OF IBS AWARD WINNERS

BEST BATH PRODUCT

Give bathroom mirrors that have begun to blacken at the edges a fast, beautiful update. The **Precision Frameworks Easy Frame®** is a flat-backed molding that does not have a rabbet and can instantly turn mirrors into seemingly high-quality, framed pieces. The Easy Frame® is installed with an industrial-strength, double-sided tape and adheres directly to the face of the mirror.

2018 BEST OF IBS AWARD WINNERS

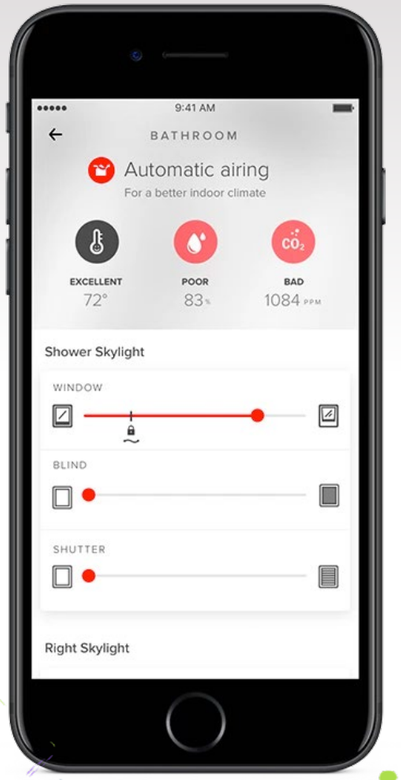
BEST KITCHEN PRODUCT

Affordably transform the entire look of kitchen walls (or any room!) in just minutes, and help the environment in the process. **Artis Wall** planks come from reclaimed wood from old barns and other structures and can be effortlessly installed, removed, and reused in any room with patented, no-damage, double-stick strips.

2018 BEST OF IBS AWARD WINNERS

BEST WINDOW & DOOR PRODUCT

Enjoy the first smart, automated control of roof windows, blinds, and shutters with **VELUX Active**. People spend 90 percent of their time indoors, so the quality of the indoor climate (temperature, humidity, air quality, daylight levels) has a huge impact on health. VELUX Active's smart sensors automatically operate VELUX windows, blinds, and shutters, infusing the home with natural light and fresh air. You can also use the app, your voice, or a remote for custom control any time.



2018 BEST OF IBS AWARD WINNERS

BEST INDOOR LIVING PRODUCT

Manage Nest thermostats, Amazon Echo, Kwikset locks, and security systems from anywhere. With a single app, the **Eaton Home Automation Hub** puts devices and energy management a touch away. The Hub also allows home owners to access their smart home even when the internet connection to the cloud is down. With automatic firmware updates, Eaton ensures the Hub is always current.

2018 BEST OF IBS AWARD WINNERS

BEST HOME TECHNOLOGY PRODUCT

Another amazing use of wireless technology, the **Onelink Safe and Sound Smoke/Carbon Monoxide Alarm** by BRK Brands Inc. alerts you to home emergencies through mobile alerts, high-end speakers, and omni-directional audio. With built-in Amazon Alexa voice services, the system can also play music and news, and hands-free voice commands control smart home devices, lights, locks, and more.

So, be on the lookout for smart technology controlling home comfort and safety—and ordering pizza at the same time! Simple design solutions are providing immediate wow factor, while energy efficiency is more attractive and accessible than ever. What surprises will the 2019 IBS hold? Let us hear from you. The Best of IBS Awards open in early September. If you want to enter or be considered as a judge, send us an email.

Laura Boswell is a manager of marketing communications at the National Association of Home Builders.

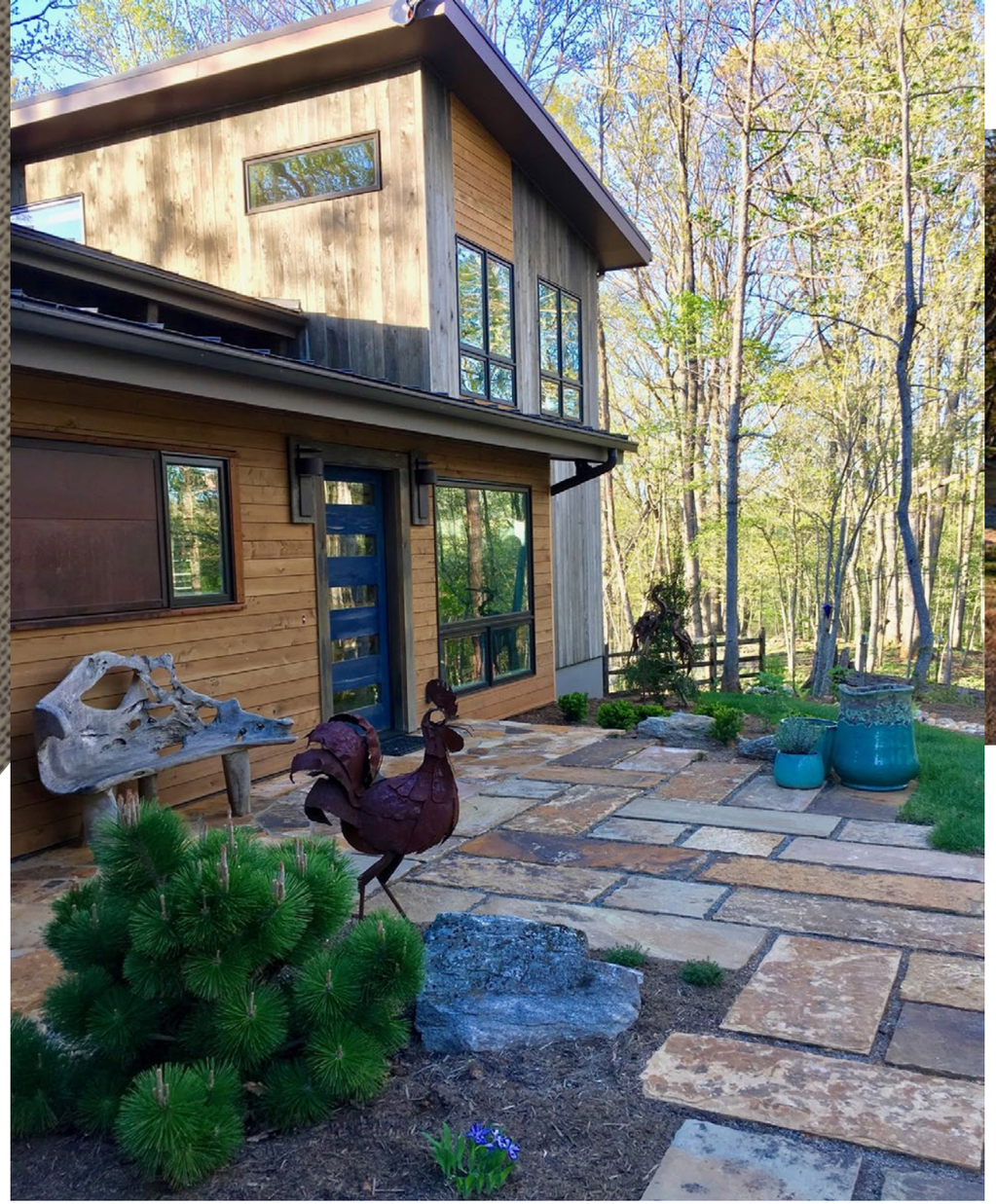
A Growing Desire

By Ava Milton

ALL PHOTOS BY SCOTT AUSTIN

A North Carolina "agrihood" features a farm as its anchor amenity

The term "agrihood" may be new, but the concept itself is ancient. For millennia, communities built around farms were the rule, not the exception. Then came the Industrial Revolution, and ever since those first farmers moved to the city to make their fortunes, people have felt a visceral pull to a lifestyle lost to the past.



ALL PHOTOS BY SCOTT AUSTIN

The Olivette development group has selected a group of established green firms to build the homes in the community.

While many planned communities feature a clubhouse with a pool, Olivette focuses on a connection with nature, including the adjacent French Broad River.

This urge shows itself in cycles, with the religious communes of the early 20th century and the hippie movement of the 1960s. These days, increased environmental consciousness and a feeling of isolation due to technology have created the perfect storm to bring about a renaissance of the rural lifestyle.

But denizens of the 21st century are not interested in returning to nature in the way of earlier rural movements. They expect amenities, a harmony with nature, and technology.

Olivette, an agrihood just outside Asheville, North Carolina, that opened for sale in summer 2016, is one of the earlier developments to sense and address that expectation. The 346-acre planned community sits along the French Broad River and represents an intersection of nature, technology, and community that has struck a chord with many.

The first phase, which has 52 home sites, has about 11 acres of community space and seven miles of hiking trails that extend into future phases. At buildout, the community is expected to have approximately 300 homes.

The natural aspect is obvious and breathtaking. Olivette boasts a seven-acre riverfront beach, a large private river island, and miles of walking trails. This is enhanced with environmentally friendly technology, such as geothermal heating and cooling, not to mention fiber-to-home internet. The community aspect is created around the organic farm at Olivette's center.

A DESIRE FOR CONNECTION

Founded by Scott Austin, William Dickerson, and Allison Smith, the development is sweeping and ambitious—and has not been without its challenges. For example, the long-term concept was to have residents subscribe to the farm and receive weekly batches of fresh, local produce. But the community needed to be built to support the farm, so in the interim, a market was needed for the

produce. The solution was to sell the harvest to local farm-to-table restaurants and through local farmer's markets.

"With any project, especially one of this size, there are a tremendous number of moving parts," said Austin, who is a developer.

Smith agrees and readily admits that at the beginning of the endeavor, she didn't quite know what she was getting into.

"We believed that people desire a connection with each other and with the land, and the concept grew beyond our expectations," she said. She gives credit to Austin and Dickerson, also a developer, for guiding the project in a way that works from a business perspective but also aligns with Olivette's values of environmentalism and education.

"The farm-to-table lifestyle has been very well-received," Smith said. "Sales have been brisk."

One of the biggest risks and expenses of the project also constitutes its heart: the 46-acre organic farm they envisioned to anchor their community.

"The plan was to have this farm that residents can either be involved with or simply take advantage of as an amenity the way other developments might have swimming pools or golf courses," Austin said. "But the farm itself was up and running long before the rest of the development."

A Fire Pit Amphitheater is available to use for performances and storytelling.

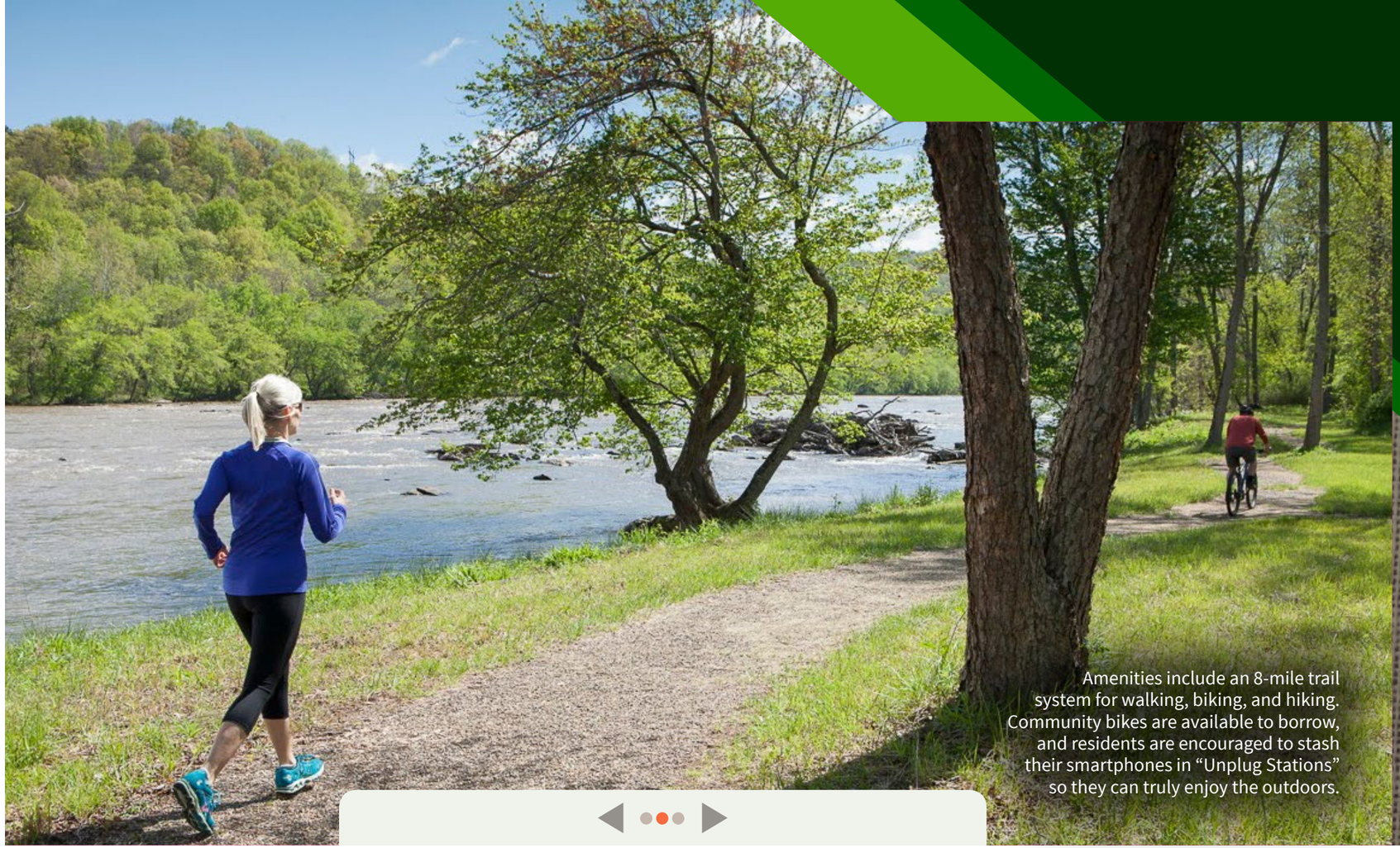
ALL PHOTOS BY SCOTT AUSTIN

BUYERS KEEN ON FARM-FRONT LOTS

Local reaction clearly shows that Austin, Dickerson, and Smith were correct in their belief that the farm itself would be a draw and help create their community. While most developments see their waterfront property snapped up immediately, Olivette's buyers have been equally interested in home sites near the farm. This was something no one predicted, but it certainly functions as a proof-of-concept; Phase 1 is about 70 percent sold out.

With a development of this size, the founders know there will be more challenges ahead. "You can prepare and project, make sure that you have done what you can from your end to ensure there have been no mistakes, and pay attention to every last detail, but ultimately, there will be surprises along the way," Austin said. "Having the patience to realize this upfront is crucial—and having a plan ahead of time to deal with the unknowns is imperative."

Ava Milton is a freelance writer based in Los Angeles, California.



Amenities include an 8-mile trail system for walking, biking, and hiking. Community bikes are available to borrow, and residents are encouraged to stash their smartphones in "Unplug Stations" so they can truly enjoy the outdoors.

ALL PHOTOS BY SCOTT AUSTIN

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Site planning and design at Olivette are carefully balanced with environmental stewardship and the preservation of the land and waterways.

ALL PHOTOS BY SCOTT AUSTIN

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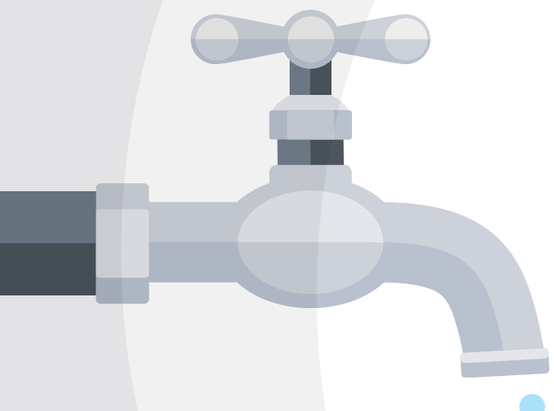


Residential WATER USE

By Paul Emrath

Housing accounts for only a fraction of the nation's total consumption

The residential sector accounts for less than 8 percent of water used in the United States, according to the latest U.S. Geological Survey (USGS). The USGS compiles data on water use every five years and in 2014 published its latest numbers (on water use in 2010).

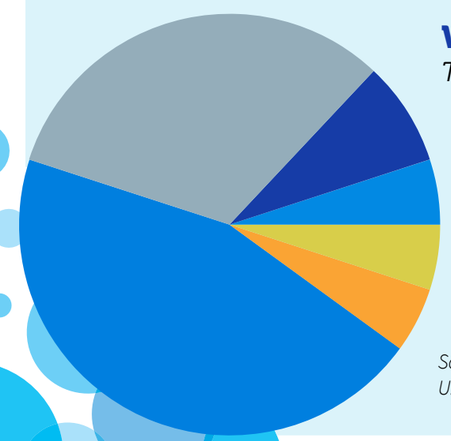
The USGS report shows that, in 2010, residential water use in the United States totaled 27,400 million gallons per day (Mgal/d). The lion's share—23,800 Mgal/d—was delivered to homes by a public supplier such as a water utility (as opposed to being drawn from a well by individual households).

The significance of this number depends on your point of view. For a water utility, it can be very significant. Public suppliers in total withdrew 42,200 Mgal/d of water from its source in 2010. The 23,800 Mgal/d delivered to residential customers accounted for more than 56 percent of this total.

But from a broader perspective that considers water used for all purposes, residential constitutes a relatively small share of the nation's thirst. Total water withdrawals in the United States were 355,000 Mgal/d. The 27,400 Mgal/d used by residences accounts for just 7.7 of this (**Figure 1**). (The USGS calls water used by residences "domestic," but this article uses terminology more familiar to most readers and refers to water used by homes as "residential.")

According to the decennial Census, the United States had a little under 132 million housing units in 2010. This implies an average use of about 260 gallons per day (gpd) per housing unit. But the average varies

FIGURE 1



Water Use in the U.S.

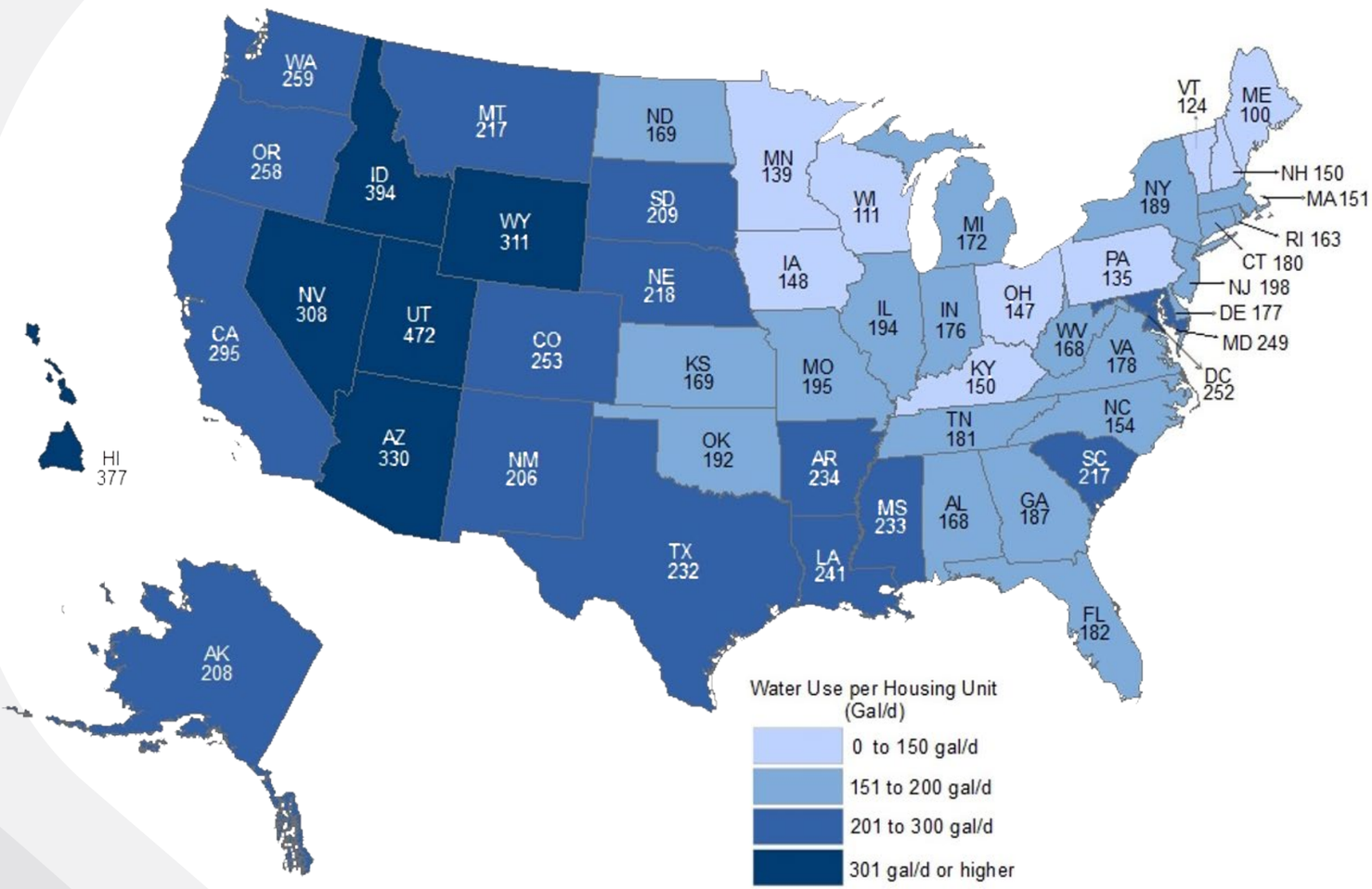
Total: 355,000 million gallons per day

Thermoelectric power	45.4%
Irrigation	32.4%
Residential	7.7%
Non-res public supply	5.2%
Other	4.9%
Industrial self-supplied	4.5%

Source: Estimated Use of Water in the United States in 2010: U.S. Geological Survey Circular 1405

FIGURE 2 Water Use per Housing Unit

Deliveries plus Withdrawals in Gallons per Day



Source: Decennial Census 2010 and U.S. Dept. of the Interior

considerably from state to state, from a low of 100 gpd in Maine to a high of 472 in Nevada. When placed on a map, the state averages show a distinct geographic pattern, with relatively low use per home in some upper Midwest and New England states, and higher use per home in the central South and West, especially in mountain and desert states (**Figure 2**).

NAHB used a statistical model to investigate the state-to-state differences. It turns out that water use per housing unit is positively correlated with average temperature and average household size, and negatively correlated with annual rainfall and age of the housing stock. Age of the housing stock, however, is correlated with household size and, to some extent, temperature, and its effect becomes insignificant when combined with other variables in a statistical model. In short, residences use more water if they are in states that are hot, dry, and have larger households.

To complement the aggregate USGS data, the Residential End Uses of Water (REUW) study released by the Water Research Foundation (WRF) in 2016, provides information about water used by individual households. In the study, WRF collected billing data on single-family customers from more than 20 water utilities, survey responses from a sample of these customers, and specific end-use data from a subsample of these. The end-use data were collected by devices that record flows through water meters in a way that, according to the experts, makes it easy to distinguish water used for different purposes.

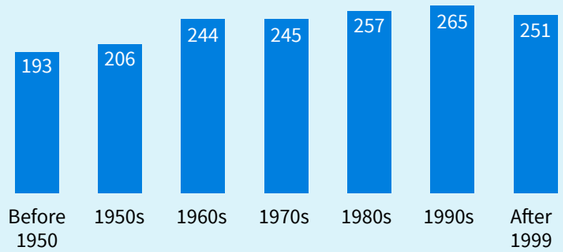
These data show that water use in single-family homes averaged 276 gpd, almost exactly half of which is water used outside the home (e.g., for watering lawns). It is well known that lawns and gardens need more water in climates that are hot and dry, helping to explain the geographic pattern in **Figure 2**.

Indoors, the REUW data show toilets accounting for the greatest share of water use, followed by showers, faucets, washing machines, and leaks. This includes both hot and cold water. Water used by the water heater itself is not counted as an end use. The end use is where the water goes after leaving the heater. If storing water in a tank to heat it increases water use, this would not be identified as a specific end use, but would show up in a miscellaneous "other" category. Using an additional device to monitor hot water separately in a

FIGURE 3

Average Water Use per Single-family Home

By Year Built (gallons per day)



Source: NAHB tabulation of data from Residential End Uses of Water, Version 2, Water Research Foundation.

subsample of 94 homes, the REUW study found that hot water accounted for one-third of total indoor use.

The average of 138 gpd of water used indoors is down from 177 gpd in the first version of the REUW study, which was released in 1999. The decline is not surprising, given the way the government began to implement efficiency standards for water-using fixtures in the 1990s.

This raises a question about whether newer homes might in some sense be more efficient than older ones in their use of water. The REUW study did not monitor enough homes to investigate specific end uses, but NAHB was able to analyze total water use by age of structure, using the larger sample of homes in the WRF survey. The results show less water used by homes built before 1960, but relatively small differences among homes built after that. For example, less than a 3 percent difference exists between the 244 gpd used by homes built in the 1960s and the 251 used by homes built after 1999 (**Figure 3**).

The presence of swimming pools probably explains much of this trend. In the WRF survey, only 3 percent of the homes built before 1950 had swimming pools, rising to 8 percent for homes built in the 1950s. After that, the share of homes with swimming pools varied only between 12 and 15 percent in the post-1959 vintage categories.

Paul Emrath is vice president for survey and housing policy research for the National Association of Home Builders.

Who's Driving This?

And Where Are We Going?

By Deborah L. Myerson, AICP

Considering a future with self-driving cars

A future with automated vehicles has been in sharp focus in every trend-watcher's crystal ball for the past few years. Plenty of discussion has been held about federal, state, and local transportation policy, safety protocols, and whether self-driving cars can truly operate successfully in defensive driving mode to pass the Zombie Kangaroo Costume Challenge.

Earlier this year, an autonomous Uber vehicle failed the safety challenge when it fatally struck a pedestrian in Tempe, Arizona. According to the National Council of State Legislatures, 22 states and Washington, D.C., have enacted legislation related to autonomous vehicles.

A recent NAHB poll found that 59 percent of adults in the U.S.—especially millennials and Gen X—would consider buying an automated vehicle sometime in the future if it were safe and affordable.

As automated vehicles become more prevalent, a recent report from University of California, Davis, and the Institute for Transportation and Development Policy envisions three potential scenarios for the future:

1 Business as Usual

The status quo use of human-driven cars through 2050.

2 Two Revolutions

A technology-oriented outcome with a proliferation of electric and automated cars and increased vehicle-miles—but that maintain the pattern of single-occupancy vehicles.

3 Three Revolutions

Technology that not only embraces autonomous, electric vehicles, but also increases transportation efficiency with widespread private car sharing, increased transit performance, strengthened infrastructure for walking and cycling, and reduced vehicle-generated pollution.

Of course, automated vehicles will not only impact travel. How will they affect where people live? Take a look at some prognostications:

Longer commutes

The stress of driving goes way down when it's not you behind the wheel, so why not move out to that house in the country? MarketWatch predicts bedroom communities that stretch as far as 80 miles away from urban centers.

An uptick in garage remodeling

In one futurist's vision, garage space becomes the next tiny home or accessory dwelling unit and a source of extra rental income as single-family homes reduce car ownership under the automated vehicle trend.

Transit-oriented development becomes an oxymoron

If growth in driverless cars, shuttles, and buses makes fleet transportation available on demand, it is possible that neighborhoods built around transportation hubs could become quaint relics of the past.

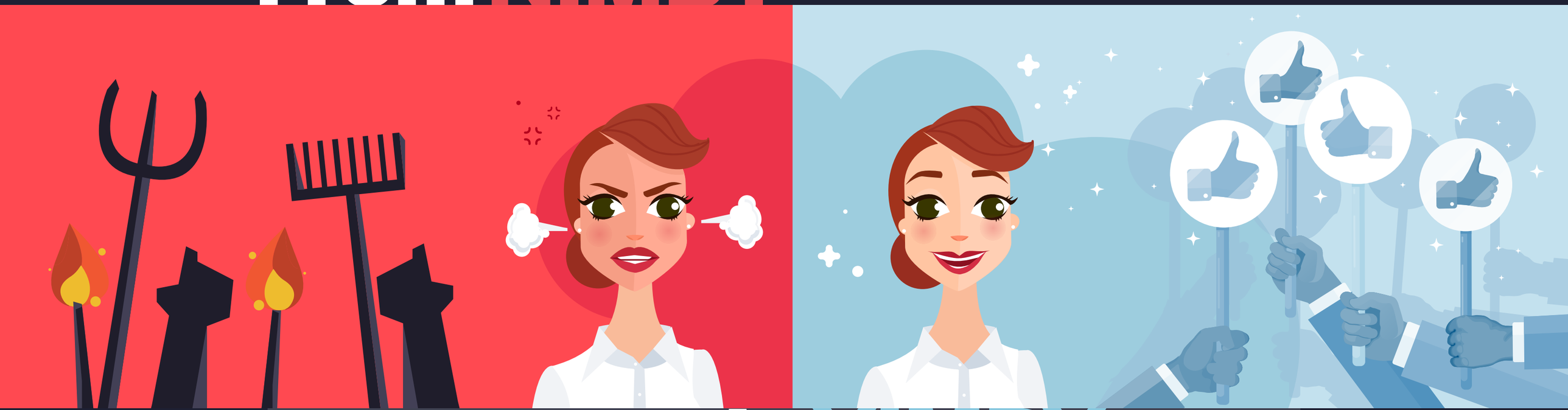
Higher densities in cities

Autonomous fleet vehicles in urban areas are expected to reduce the demand for parking spaces, creating room for more residential units instead of car storage. NAHB Chief Economist Robert Dietz notes that this prospective growth in multi-family development could also help drive down rents.

Finally, as we hurtle toward the future of transportation transformed by automated vehicles, one may wonder: If a self-driving car violates the law, can it get a ticket? At least in San Francisco, the answer is yes. A city police officer recently issued a ticket to an autonomous GM Cruise vehicle for failure to yield to a pedestrian in a crosswalk. The Cruise is reportedly contesting the ticket.

Deborah L. Myerson, AICP, is executive director at South Central Indiana Housing Opportunities in Bloomington, Indiana.

From NIMBY to YIMBY



By Chris Grady

Navigating Challenging Development Approvals

Most people do not like change, especially when it comes to their neighborhood. Achieving positive entitlement outcomes through community meetings, municipal staff and media interactions, and public hearings is becoming more challenging in this era of elevated activism and social media access.

Working in numerous markets across the country for more than 40 years, we have learned how to confidently tackle some of these difficult challenges.

Turning NIMBY (not in my backyard) to YIMBY (yes!) and winning development approvals requires significant preparation before the team ever puts pencil to paper. It is important to invest time before design, doing deep research and gaining a better understanding of what to expect during the process.

Having a strong team is essential. Whether it is a civil engineer, landscape architect, land planner, land use attorney, lobbyist, etc., it is important to select consultants who have experience and a positive working relationship with the municipality. Include team members who know "who's who," understand the political landscape, and can communicate with key players to ensure a successful process.

To create a balanced project, in scale with the surrounding community, one portion of this property was rezoned to allow the residential use to be dispersed across the entire site.

COURTESY OF NORRIS DESIGN

Be sure to do deep research, which is the most valuable time spent. Most municipalities have a means for initial review through the pre-application process, concept review, and study sessions with municipal staff and other decision makers. It is imperative to take advantage of these sessions to gauge the temperature of the municipality toward development in general and your project specifically.

Successful completion of the following items during the review/approval process can increase the odds of a positive outcome:

- Understanding the political temperature surrounding your project/proposal
- Interfacing with local leaders
- Meeting with the neighbors
- Navigating public hearings

TAKE THE POLITICAL TEMPERATURE

It is important to understand the existing and proposed zoning, local politics, growth strategies, etc., but it is also critical to know how local citizens view development. Some of the most common concerns we come across are:

- **Growth—**big picture/anti-growth sentiment
- **Intensity of the proposal—**unknown product types, density, lack of understanding of the necessary balance between rental and ownership
- **Safety—**separation of vehicular and pedestrian networks and connectivity
- **Environment—**wildlife endangerment and the preservation of key features and open space
- **Overcrowding—**burden on services, including police, fire, and schools
- **Traffic—**anticipated improvements/impacts to various levels of service
- **Property values—**adverse impacts
- **Pollution—**noise, light, and visual

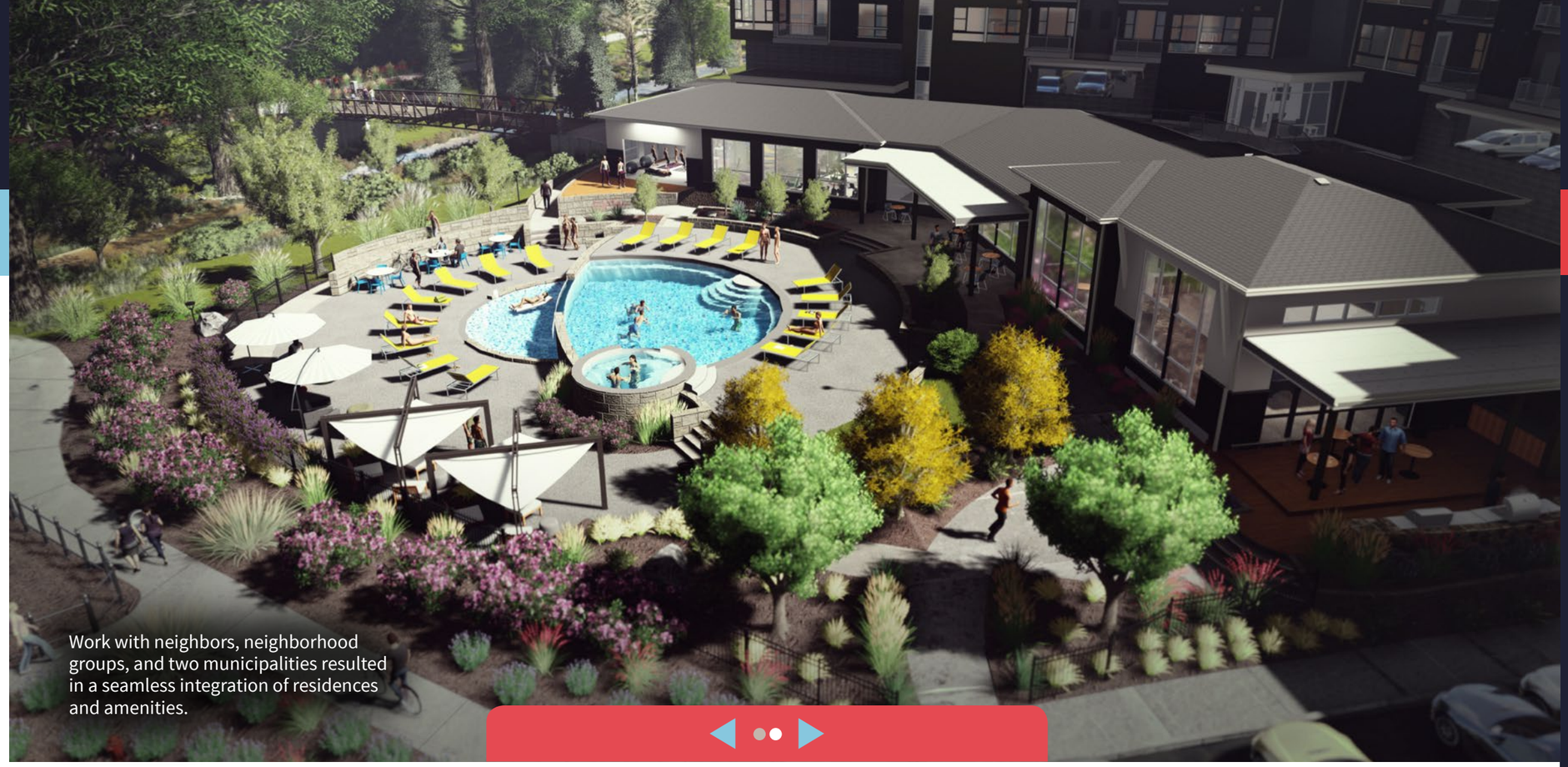
For development success, you must understand the perspective of neighbors and community groups when it comes to the details of your project. It is also essential to map the process to comprehend the timeline and all the steps, so risk can be properly assessed if a longer approval process is anticipated.

Know your tactics. Plan, plan, plan. Disclose and educate!

INTERFACE WITH LOCAL LEADERS

As you embark on your journey toward approval, build strong relationships and interface with local leaders. This is where the finger is on the pulse of politics, important issues, growth, and change.

Introduce yourself to the staff you will be working with and build a solid foundation with them early in the process. This is where it is valuable to have team members with existing relationships. In many instances, the municipality might be glad that certain consultants are on



Work with neighbors, neighborhood groups, and two municipalities resulted in a seamless integration of residences and amenities.

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- **Traffic—**anticipated improvements/impacts to various levels of service
- **Property values—**adverse impacts
- **Pollution—**noise, light, and visual

For development success, you must understand the perspective of neighbors and community groups when it comes to the details of your project. It is also essential to map the process to comprehend the timeline and all the steps, so risk can be properly assessed if a longer approval process is anticipated.

Know your tactics. Plan, plan, plan. Disclose and educate!

INTERFACE WITH LOCAL LEADERS

As you embark on your journey toward approval, build strong relationships and interface with local leaders. This is where the finger is on the pulse of politics, important issues, growth, and change.

Introduce yourself to the staff you will be working with and build a solid foundation with them early in the process. This is where it is valuable to have team members with existing relationships. In many instances, the municipality might be glad that certain consultants are on

the team to bring a higher level of credibility. Perhaps the applicant (builder/developer) has had previous success locally. The solid reputation will more likely lead to future successful outcomes.

Communication and full disclosure are key. Be sure to ask questions and listen. Also, know your facts and be ready to answer questions. In addition, you may also consider hiring a consultant who knows how to navigate the local political waters.

Get to know the elected officials who will be reviewing the proposal, making recommendations, and voting on your application. This can be tricky because access to elected officials may be limited depending on the timing of a formal submittal. Talk to them early, ask questions, and be ready to answer theirs.

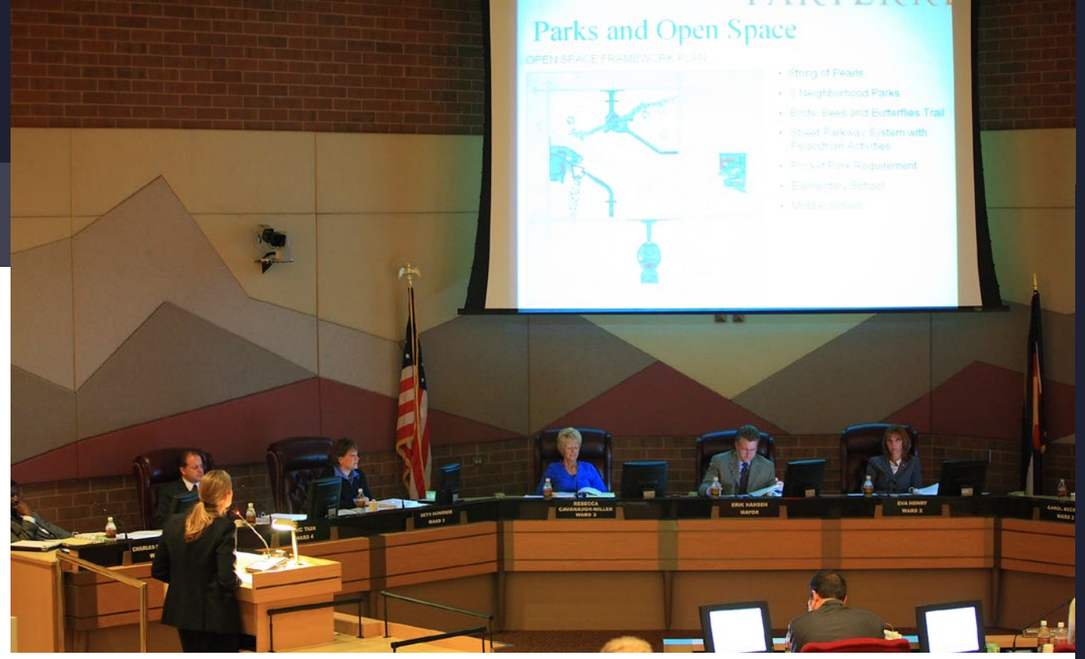
Know the districts and election schedule. Approving bodies are subject to election cycles, which may or may not be favorable for your proposal. Having this understanding may help in deciding to speed up or delay your process for the best possible outcome.

The open house format for neighborhood meetings allows for smaller group interactions.

MEET WITH THE NEIGHBORS

"You just want to make money." "This is a horrible idea." "There is no logical reason for this., "Don't ruin peoples' lives." "I'm being scammed." These are some of the common things overheard at neighborhood meetings. Change is scary!

Even when the rules are being followed in a use-by-right situation, it is still important to meet with neighbors. That simple act helps to dispel common accusations made against a builder or developer. Know the personalities and associations that will influence the project and be impacted by it. Thorough communication, honesty, and follow-through are vital. Always rely on facts and never underestimate the power of social media as a tool for positive or negative messaging.



At public hearings, it's important to keep the message simple and focused, with uncomplicated visuals.

The primary task is not to win people over, but rather to maintain contact and open a dialogue. More than anything else, effective, honest communication works best.

Sharing information can lead to vulnerability, but remember, the project plans will be made public at some point. It is better to place all ideas on the table early. Waiting too long can cause concerned citizens to react and raise suspicions.

The key is to document plans early in the process and highlight the YIMBY aspects of your proposal. This could entail:

- Introducing an innovative housing type
- Providing affordable housing (rent or own)
- Making traffic improvements
- Preserving unique land
- Improving pedestrian networks

By documenting the plans early on, reactions from opponents will be easier to manage. Doing so also allows time to recalibrate strategies if necessary, and avoids costly changes later in the process.

Whether it is a site plan, planned unit development, rezoning, or a simple variance request, the more the neighbors know, the better. A NIMBY response can be strengthened by a lack of communication. YIMBY support or even a neutral position by neighbors can be the result of solid dialogue and participation. Plan to leave room in your proposal for concessions. You may need to use them!

Not only is it important to meet early with neighbors, but it is also beneficial

to meet often. The first meetings should be information gathering. Subsequent meetings will introduce design progress, and if possible, incorporate feedback. For one development, we facilitated almost 20 meetings with neighborhood groups and individuals.

Planning successful and effective meetings starts with size and venue. Selecting a neutral location, such as a community center, meeting hall, or church, is much better than a municipal venue where neighbors might suspect that the proposal is already being supported.

An open house-style format versus a front-and-center presentation is typically a better option. At an open house, individual stations depicting various components of the proposal are on display. It is easier for people to digest the information in smaller segments at their own pace and allows for smaller group interactions.

The neighborhood meeting is not the only avenue for communication. On a recent controversial rezone project in Littleton, Colorado, we sent out two separate mailings with more than 5,000 informational postcards, created a website, and conducted door-to-door outreach with adjacent property owners. The outcome was a greater amount of support letters versus objection letters, and several neighbors attended the hearings and spoke favorably about the project.

Another tool is social media. Do not underestimate the incredible power of this expanding platform. Facebook pages and NextDoor communication may appear almost immediately as you begin to disclose your plans. That is why full disclosure, with open, factual communication is critical at the beginning of the review and approval process. Use these tools to support positive messaging and investment in the community.

PREPARE FOR PUBLIC HEARINGS

Understand typical meeting formats in your municipality prior to any hearings. Meeting protocol can vary greatly, from casual to very formal depending on the jurisdiction. Consider the following tips to make applications clear and convincing:

- **Keep it simple.** Provide a visual summary that is uncomplicated and understandable. Any graphics and data in a visual presentation or handout should be uncluttered. Sometimes less is more. Too much information can be overwhelming and raise further questions or concerns that were not anticipated.
- **Bring supporting documentation.** Provide facts, important imagery, and statistics supporting the proposal. This material can be placed into the record during the presentation, and can be provided to each commission or council member for review.

A proactive approach to presenting at public hearings is a recipe for success. For example, prior to a neighborhood group or individuals speaking against your project at a hearing, address their concerns in your presentation. This shows that communication has been occurring with the neighborhood and shows concern for their issues.

Remember to *focus on the facts.*

- **Data will always work.** Facts may not convert opponents but they can neutralize emotional NIMBY arguments.
- Facts will allow decision makers to rely on solid well-researched information.

Throughout the approval process, whether working with neighborhoods, municipal staff, or decision makers, keep communication open and rely on facts as a foundation. Following these steps will help produce positive results to turn a NIMBY into a YIMBY.

Key Takeaways

- Tell the story and create the vision
- Meet with planning and agencies early
- Understand local politics of new development
- Meet with the community early and often
- Document plans early
- Prevent misinformation and eliminate misperceptions with excellent, honest communication throughout the process
- Embrace spirit of compromise
- Provide sound fact-based support documentation
- Always present an accurate depiction of your proposal

Chris Grady is a principal and the director of land planning with Kephart, a Denver-based residential architecture and land planning design firm.

It's all in the details

Modern Farmhouse

By Kieran Liebl

A traditional favorite gets an upgrade

In the early 1600s, the functional farmhouse made its appearance on the East Coast. Practical and inexpensive, the design rapidly spread to the West Coast during the 1700s. It began as a residence in an agricultural setting, typically, but during the past 300 years, it has evolved into an architecture that complements almost any place, from existing neighborhood to new subdivision.

Early farmhouses were simple—even simplistic—affairs. They were often built by the home owners, using locally sourced materials. Never pretentious, they were practical first, with little ornamentation. They included functional porches where muddy work boots could be left, and were laid out with formal areas at the front and bedrooms at the back.

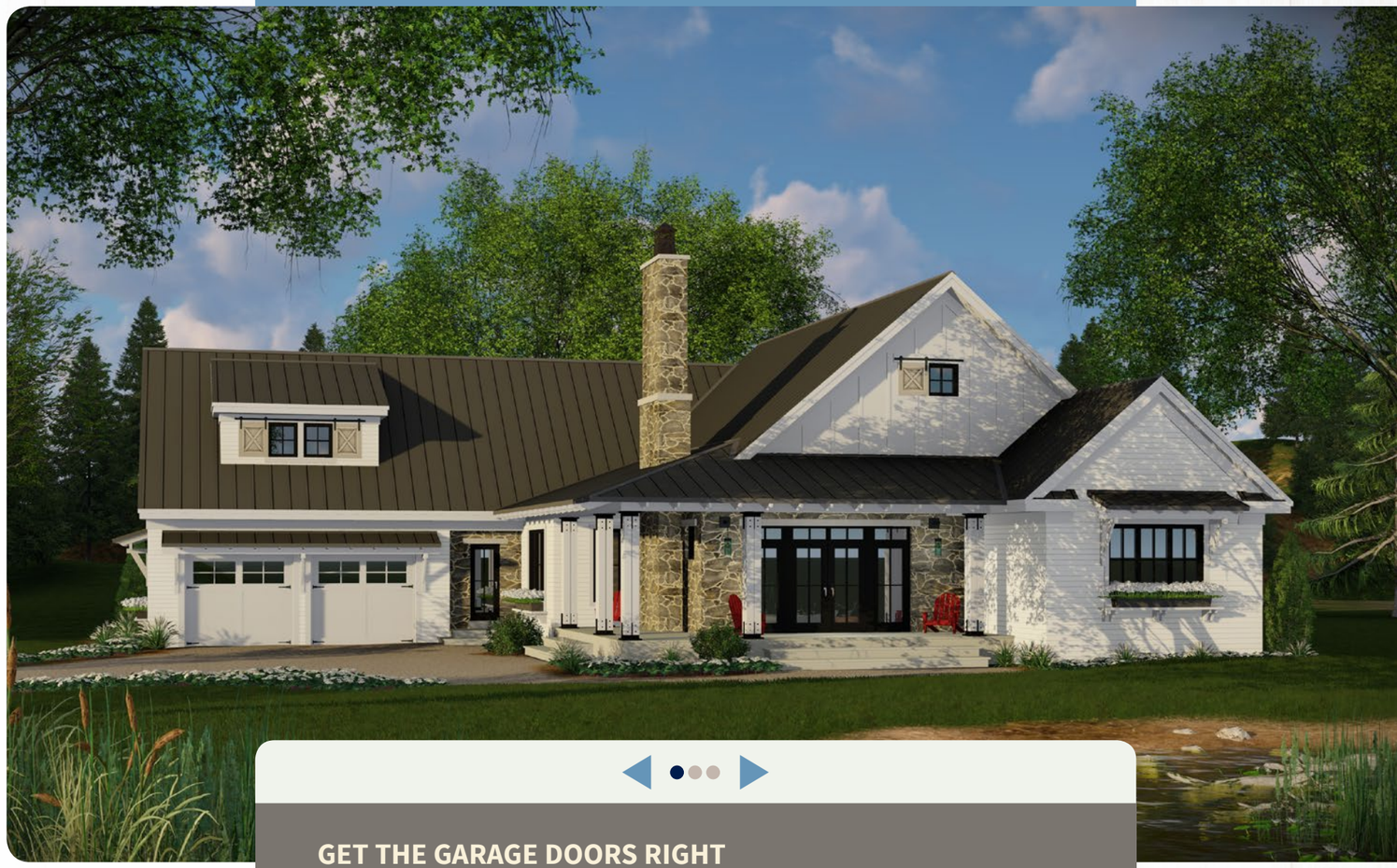
Modern farmhouses combine the warm exterior architectural features of the past with interiors that live for today. They are less compartmentalized, with open floor plans and common rooms that flow into each other, while retaining the privacy of the bedrooms and informal spaces.

To create a modern farmhouse design, respect the tradition and get the details right. Keep the overall design simple. Include a deep (8 feet minimum) front porch; wraparound porches are common.

Put a gable roof on it and extend the eaves. Paint it white and color the front door. It's OK to borrow from other architectural traditions, but don't let other styles overpower what makes the farmhouse so popular: its immediately recognizable and beloved simplicity.

Kieran Liebl is senior principal at Royal Oaks Design in Lake Elmo, Minnesota.

Follow these visual examples of modern farmhouses:



GET THE GARAGE DOORS RIGHT

Front-loaded garage doors can kill a home's aesthetic. Downplay their mass by using two single doors instead of one large one. Avoid pressed-in panels and large, out-of-scale styles. Match the door style to the farmhouse architecture. These strategies will help to make the house, not the garage, a focal point.

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GET THE MASSING RIGHT

The overall form and size of the farmhouse style matters. Make design decisions that don't overpower the rest of the house. Choose a gable roof, with a shallower pitch over the porch. Downplay larger elements, such as the garage for this home, by turning it to load from the side. No single element should throw off the balance of the home.

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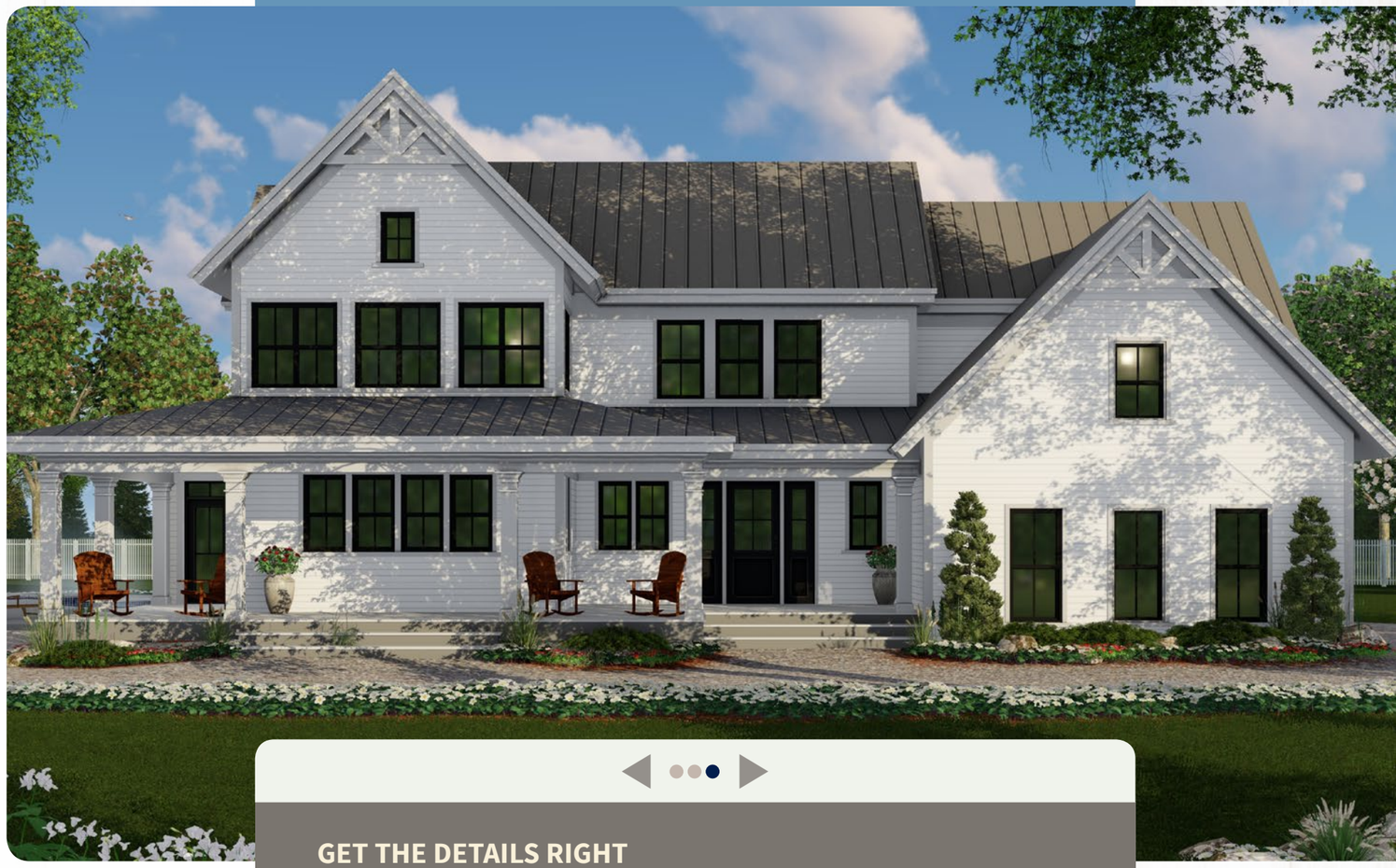

GET THE DETAILS RIGHT

Try front gables and a metal roof. Use double-hung windows with a vertical grid pattern. If you include shutters, their width should match the window width. Place accent windows in gables. Main-floor windows are typically taller than second-floor windows. Keep the window trim simple.

At the porch, use a pilaster or engaged column at the wall to connect the porch to the house. Get your columns right: Align the inside face of the architrave with the neck of the column, and express the beam to the inside of the porch.