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2016 REMODELING PROJECT OF THE YEAR

BEYOND TRENDY: TINY HOMES

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ON THE COVER:
The best of past and present architectural styles combine in this welcoming, farmhouse-inspired design by Visbeen Architect in Bluffton, S.C.

PHOTOGRAPHY BY WAYNE C. MOORE

MEDIA KIT

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Kitchen & Baths

Trends that are sizzling and those that are fizzling

By Todd Hallett, AIA, CAPS

Understanding why kitchen and baths evolve is key to creating new trends.

Kitchen and bath trends are in a constant state of flux. What was in last year may not be a hot ticket this year. Designers must be vigilant, not only to stay on top of current trends, but also to seek to introduce their own style into these key spaces.

Let's look at kitchens first. There are four major elements to a kitchen design: storage, color, lighting, appliances. The traditional approach to laying out a kitchen is based on a 'U' shape. The cabinets form a U with a window on an outside wall and a small island in the center. If the kitchen was too small for an island, a peninsula would accommodate seating at the end of the cabinet run. This layout was typically accompanied by a skimpy wall pantry. The reason this approach was so strong is that it provided plenty of storage, even in a small kitchen.

"L"-shaped kitchens with a large island allow cooks to be involved with entertaining while protecting them from guest interference.

PHOTO COURTESY OF TK DESIGN & ASSOCIATES, INC.

The color trend we can't get enough of lately: White and gray together in various combinations.

PHOTO COURTESY OF TK DESIGN & ASSOCIATES, INC.

Sadly, this layout is as much a part of history as parachute pants, spandex, and the mullet. Why? The general complaint is that the kitchen gets too crowded when entertaining. During a party, everyone likes to gather in the kitchen, providing endless chitchat (and often unwanted cooking advice). The party goers circle around the island, crowd the space, and drive the cook absolutely crazy. Does this mean we should close off the kitchen to avoid unwanted traffic? No. The cook still needs to be involved with the entertaining. So how can the cook stay in the action, yet keep the guests from crowding the space? This led to today's prevalent trend of having a much simpler kitchen layout.

The idea is an 'L' shaped kitchen with a large rectangular island. The main sink is placed in the island, with the seating opposite the sink. The island is large, and one level (no step up for a bar). The countertop overhangs on the entertainment side for comfortable guest seating. I call this approach "protecting the quarterback." The cook remains in the action without being interrupted by guests milling in and out of the cooking zone.

Clean, white cabinetry and simple appliances allow this kitchen's stunning barrel ceiling to take center stage.

PHOTO COURTESY OF TK DESIGN & ASSOCIATES, INC.

The downside is reduced storage. With the 'L' shaped plan, the cabinets are reduced, in particular the upper cabinets. The island helps, but it does not make up for losing a run of cabinets. This, in combination with the popularity of bulk items, created a problem. The solution: the Power Pantry—a pantry large enough to handle all of the extra storage and accommodate the Costco jumbo items.

TRENDS IN COLOR

In terms of color, dark-stained wood has given way to solid colors. White, in particular, is very popular as well as gray. White and gray work well together in various combinations to create interest. Also, cool colors are making their way into the kitchen palette; light blue is very popular as an accent. Stained woods like oak or maple, on the other hand, are on the back burner.

Natural lighting is also a key factor in kitchen design. With the 'L' kitchen plan, the sink window is removed. At first glance, this may seem to diminish natural lighting; however, the space is usually adjacent to a dining or family area with large areas of glazing. This provides much more natural light than the traditional 'U' layout.

Appliances are trending towards simplification. User-friendly appliances are being offered in a variety of colors including (you guessed it) gray and white. Believe it or not, white appliances are making a comeback. They are doing so with better finishes and more finesse than our mother's white fridge. Also, the stainless trend is slowing down but being replaced by slate-colored appliances. Other fun appliance items include French-door ovens, which look great and save space, and high-tech touch activated devices.

The one constant regarding kitchens is that they are always changing. Consumer living has become more and more casual, and plans continue to become more informal. The overriding trends for kitchens are user friendly, open, and simple.

WHAT'S BUBBLING UP IN BATHS

Current bathroom trends can be summarized in a tale of two buyers—tub or no tub. For the longest time the tub group reigned supreme. The owner's bath had to have a soaking jetted tub, surrounded by a sea of tile decking, in order to speak luxury. The lowly shower was often overlooked and pushed into a corner, more utilitarian than luxurious. Then the tub group evolved. They grew weary of the grand space required for the tub and tile deck. Instead they choose to allocate more space to the shower. The tub would now be sleek and freestanding and share the stage with the shower.

Eliminating 1990s-style tub deck allows space to enlarge the shower.

PHOTO COURTESY OF TK DESIGN & ASSOCIATES, INC.

The no-tub group is radical and decided the tub was not necessary. They no longer wanted to clean (or pay for) a tub that they never used. Despite heavy resistance from Realtors ("It will never sell in this market"), the no-tub group carried on and eliminated the tub altogether. The shower now takes center stage and becomes much larger, with multiple heads, sprays, and steam. The shower may even be door-less, eliminating the need to clean the glass.

A winning design needs to start with a long, hard look at the kitchen and the owner's bath. For the kitchen, consider the 'L' shaped concept as a possible solution. When designing baths, pick a side, then make the bath simple, clean, and powerful. By keeping these principles firmly in mind, you will be well on your way to a great design. Cutting-edge design is not only about staying on top of the current trends, it is also about having the foresight (and the courage) to break free from the pack to create trends all your own.

Folks in the "no tub" camp are happy to trade the seldom-used bath jets for a huge shower space with multiple heads, sprays, and steam. **Below:** An "L"-shaped kitchen may eliminate windows, but opens the kitchen to living areas with large windows instead.

Todd Hallett, AIA, CAPS is President and Founder of TK Homes Design in South Lyon, Michigan.

PHOTOGRAPHY BY SPACECRAFTING

Why Outdoor KITCHENS Are So Popular

Homeowners repeated several words and phrases that describe their feelings toward indoor and outdoor kitchens.

By David Brown

Understanding why buyers love outdoor kitchens is key to great design

Outdoor kitchens have quickly moved from being reserved for higher-end custom homes to becoming mainstream. And while much has been published on the growth of the outdoor segment, much less has been written on the *reasons* for the growth, and how consumers view, use, and purchase outdoor versus indoor kitchens.

This question prompted us at Hoffman York to conduct proprietary research to discover the "why behind the what." We surveyed several hundred homeowners across the U.S. who either had purchased or intended to purchase an outdoor kitchen.

Here' s a snapshot of seven key insights that came out of the research, and why they are important to builders and remodelers.

Survey respondents feel an outdoor kitchen is more about fun than functionality.

1 An outdoor kitchen is viewed as an experience, while the indoor kitchen is viewed more as a room.

Our research indicated that consumers view indoor and outdoor kitchens very differently. The outdoor kitchen is all about fun, whereas the indoor kitchen has a higher focus on functionality. When planning and selling an outdoor kitchen, get the homeowner to express their ultimate outdoor experience, and design the space around their dreams.

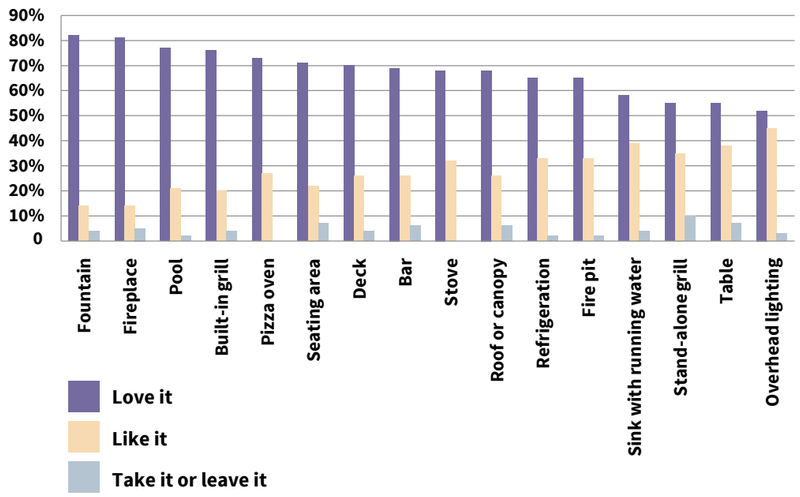
Where homeowners find cooking, eating and entertaining enjoyable

PHOTOGRAPHY BY DAMIAN TSUTSUMIDA

Nearly 80 percent of outdoor kitchen owners wished they had put in a built-in pizza oven.

2 There are aspects of an outdoor kitchen that make homeowners fall in love with the space.

Our research revealed that an outdoor kitchen needs to be much more than a place to cook. Homeowners want an emotional connection by including features that make their outdoor space unique, fun, and memorable—like fountains, fireplaces, and pizza ovens.



3 Homeowners want their outdoor space to feel like a room.

The research clearly demonstrated that people want their outdoor space to have design continuity with the rest of the home. It needs to be a defined living space with comfortable seating, a built-in grill, overhead lighting, a canopy/roof plus unique and fun extras.

Homeowners in the study viewed a variety of outdoor rooms. Out of 12 choices, the photo below was their favorite. It includes most of the attributes homeowners deemed important and desirable.

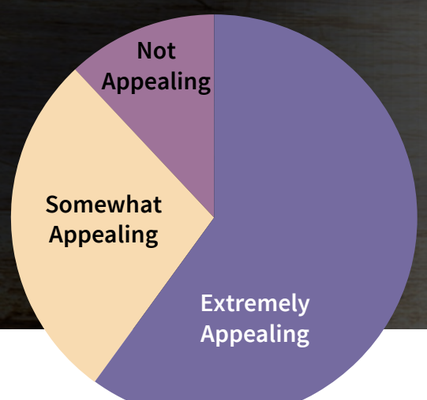
4 Owners who already had outdoor kitchens wished their kitchen included additional features.

Among outdoor kitchen owners who had already built their space, many regretted not including some features. At the top of the list was a built-in pizza oven. A stove, a built-in grill, and a stand-alone grill were not far behind on the list.

Pizza oven	79%
Stove	61%
Built-in grill	58%
Stand-alone grill (not built in)	51%
Sink with running water	45%
Deck	44%
Bar	37%
Roof or canopy	30%
Pool	28%
Other	27%
Fireplace	23%
Overhead lighting	21%
Fire pit	19%
Refrigeration	17%
Fountain	16%

5 Buyers want a space that is expandable in the future.
More than 90 percent of owners stated it was extremely appealing to provide a plan that includes future expandability.

The appeal of starting with the basics in year 1 and then adding to an outdoor kitchen in years 2 and 3



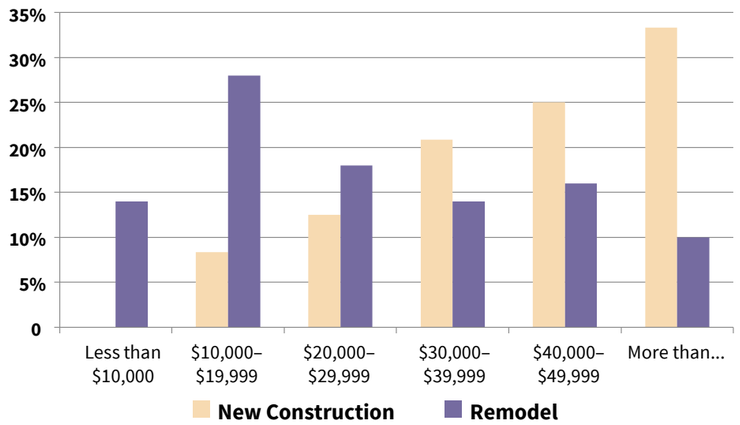
Homeowners want an emotional connection to their outdoor kitchen from features that make the space unique, fun, and memorable.

PHOTOGRAPHY BY WERNER SEGARRA PHOTOGRAPHY

6 Outdoor expertise is considered critical to consumers when choosing a contractor.
Homeowners overwhelmingly felt that expertise in outdoor living design or construction was critical. Respondants indicated that indoor kitchen expertise was less of a concern.

Contractor expertise with outdoor living is key for consumers.

7 Consumers are willing to spend big money.
When an outdoor kitchen is included in the cost of new home construction, the median investment is over $40,000. Consolidating the outdoor space into a mortgage makes it affordable, and consumers spend considerably than they do when undertaking s a stand-alone remodeling project.



As the research indicates, purchase motivators for outdoor spaces differ significantly from the rest of the home. Understanding what homeowners desire emotionally will greatly assist in enabling builders, remodelers, and contractors in taking advantage of this growing market segment.

While some research should remain proprietary, good insights that help promote or sell services more effectively should be shared and readers are invited to request the complete study via the contact information below.

David Brown is a partner with Hoffman York, a full-service marketing firm in Milwaukee, Wisconsin.

Blending PAST with PRESENT

Within the heavenly Texas Hill Country lies an exceptional, newly remodeled home called “Pine Creek Place” located on the edge of the historic district in Fredericksburg, Texas. The home sits on less than six-tenths of an acre, the result of highly sought-after original town lots being split and sold off throughout many years. The surrounding neighborhood displays a kaleidoscope-style fusion of Pioneer, Victorian, Mid-Century bungalows and saltbox style homes.

With thoughtful design and an inspired use of salvaged materials, this 1970’s Saltbox takes BALA’s Remodeling Project of the Year.

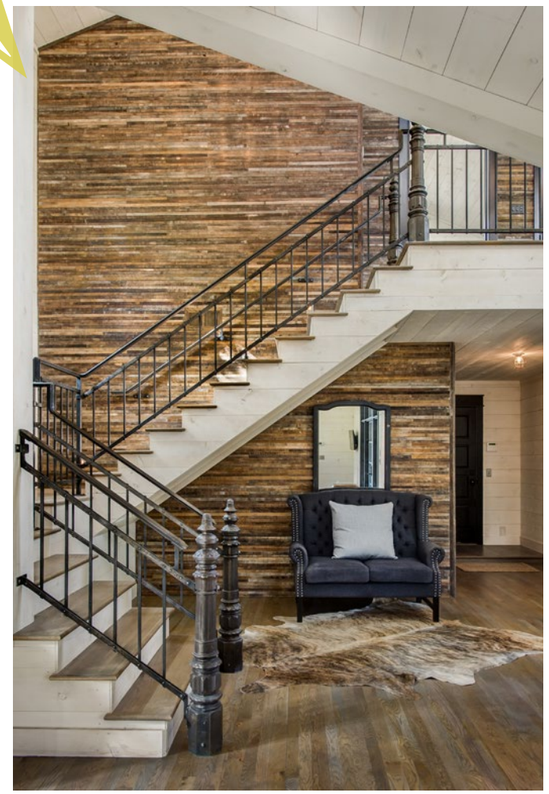
By Richard Laughlin

A traditional low pioneer-style wall was added to the exterior of the front yard, baffling traffic noise and solving a flooding issue, while providing a layering effect to add depth and interest.

PHOTOGRAPHY BY BLAKE MISTICH

PHOTOGRAPHY BY BLAKE MISTICH

The gourmet kitchen was designed around a locally acquired historic apothecary case, giving the kitchen an open, farmhouse feel.



One-by-one-inch weathered oak slats that had been previously used to acclimate the interior pine wall siding were recycled into cladding for the accent wall behind the stairway. The wood required no staining to achieving this stunning look.

PHOTOGRAPHY BY BLAKE MISTICH

The builder wanted to create an open, serene space. Reclaimed materials were used throughout, not only for character, but to save natural resources and reduce environmental impact.

PHOTOGRAPHY BY BLAKE MISTICH

Originally built in 1972 with no significant updates since, Pine Creek Place began with a total of 2,776 square feet including the carport. Ultimately, 1,551 square feet were added to the home making it a total of 4,327 square feet. Not only did the family need more space added to the original saltbox style home, but necessary updates required gutting to the studs, new wiring and re-plumbing. The challenge was to convert the cramped 1970s saltbox into an inviting place, suitable for entertaining, while respecting the original building form.

Additions were designed to blend with rather than over-power the surrounding historic neighborhood. Because the home faces a busy street, the new plan had to drown out the noise while retaining an open feel. In addition to the noise, the street also falls victim to flooding during the unpredictable Texas rains. Pine Creek Place felt the negative effects, so it was necessary to solve the issue before more damage was done. A traditional low pioneer-style wall accompanied by a contemporary dry-stacked wall and a steel and cypress custom-built gate was added to the exterior of the front yard, baffling traffic noise and solving the flooding issue while providing a layering effect from the streetscape, giving the home depth and interest.

Xeriscaping was then added surrounding the front of the property to conserve water usage. The 1970s porch was

The master suite has functioning interior casement windows, complete with turn-of-the-century hardware, and a custom-built door that allows the suite to open up onto the interior balcony, for an open, airy feel when desired.

PHOTOGRAPHY BY BLAKE MISTICH

PINE CREEK PLACE *and builder* LAUGHLIN HOMES AND RESTORATION, INC. *have claimed an array of awards including:*

- 2016 Chrysalis Awards—Whole House Remodel
- 2016 Texas Association of Builders, Star Awards—Remodeler of the Year
- 2015 Best in American Living Awards—Remodeling Project of the Year
- 2015 Best in American Living Awards—Best in Region, South Central
- 2015 Best in American Living Awards—Platinum Remodeling Home over $250,001
- 2015 Best in American Living Awards—Platinum Specialty Remodel
- 2015 Professional Remodeler and Design Awards—Gold Award—Whole House over $750,000
- 2015 Texas Association of Builders, Remodeler Star Awards—Best Addition Over $500K
- 2015 Texas Association of Builders, Remodeler Star Awards—Best Kitchen Renovation Over $500K

removed and replaced with one with a softer, more appealing aesthetic. Smooth plaster was added to the exterior of the house, and shingles were incorporated to the front porch awning to help soften the look.

RECLAIMED MATERIALS CREATE CHARACTER

The initial, somewhat "public" entry to the home was transformed by the builder and is now accessed through a private courtyard into an atrium of glass and brick. The original workshop was replaced with a stunning veranda, simple in design, with solid details that have the feel of an exterior space. Hand-made wrought steel, forged by a local blacksmith, stands strong against the backdrop of weathered oak, creating a timeless and practical railing. The One-by-one weathered oak slats that had been previously used to acclimate the interior pine wall siding were recycled into cladding for the accent wall of the stairway. Because the slats were naturally a variety of colors, no staining was necessary to create the accent wall's exquisite design. Oak air registers, which disappear into the salvaged wall, were then incorporated. Although the veranda is flooded with natural light, solid bronze light fixtures imported from Egypt were strategically placed along the stairwell, casting light that warms the entry in the evenings. The fixtures were hand-picked by the builder and purchased from a Dutch importer. A locally salvaged cast-iron grate was inlaid into the wooden stair landing and lit from the underside, resulting in a unique pattern that is cast onto the wall at night.

The builder wanted to create spaces fulfilling the family's need for a larger home, with emphasis on an open serene space. Reclaimed materials were used throughout the house not only for character, but in an effort to save natural resources and reduce environmental impact. The original carport was transformed into what is now a gourmet kitchen. It was designed around a locally acquired historic apothecary case, giving the kitchen an open, farmhouse feel. The light fixtures over the dining room table are repurposed tornado sirens and were assembled on site. White oak flooring was laid throughout the home, giving it a cleaner, more polished look.

Although the entry is flooded with natural light, solid bronze light fixtures imported from Egypt were strategically placed along the stairwell, casting light to warm the entry in the evenings.

PHOTOGRAPHY BY BLAKE MISTICH

PHOTOGRAPHY BY BLAKE MISTICH

An outdoor fireplace along with deep porches expand the living space into the backyard and pool area, which features a raised stone-clad pool that provides seating for entertaining.

MODERNIZED SPACE WITH HISTORICAL TOUCHES

The builder created three distinctly different and individual bedroom suites with a modern vernacular. The owner's two teenagers have their own suites within the reconfigured shell of the existing home. The master suite has functioning interior casement windows, complete with turn-of-the-century hardware, and a custom-built door that allows the suite to open up onto the interior balcony, for an open, airy feel when desired. The master suite features a large walk-in closet, an elegant bath and sleeping area with a salvaged iron balcony that overlooks the pool and spa.

The backyard is surrounded by historically styled native limestone walls that provide privacy and noise restraint. An outdoor fireplace along with deep porches expand the living space into the backyard and poolscape. The pool is a raised stone-clad that also allows for additional seating for entertaining.

The builder succeeded in creating a timeless, highly-functional home within an eclectic neighborhood with seemingly high expectations. It is truly a work of art and a testament to the craftsmanship of the artist that constructed it with a unique modern farmhouse design.

Richard Laughlin is President of Laughlin Homes & Restoration, Inc. in Fredericksburg, Texas.

Creating a Successful Mixed-Use Project

By Andrew Griffin

As the need for urban infill housing increases, so will the need for mixed use. Here's what to consider when planning these complex developments.

Mixed-use developments are becoming more popular, not only with developers and city planners trying to increase density, but with residents and businesses. The idea of having multiple functions within a singular project or building can be both exciting and overwhelming. Simply putting housing or office over retail isn't as easy as building a single-use tower or even garden-style apartments. What's even more interesting is that the concept of shared space or mixed use is nothing new, just another example of what's old being new again.

Done correctly, mixed-use plans create the best value for the developer, the city, and the community.

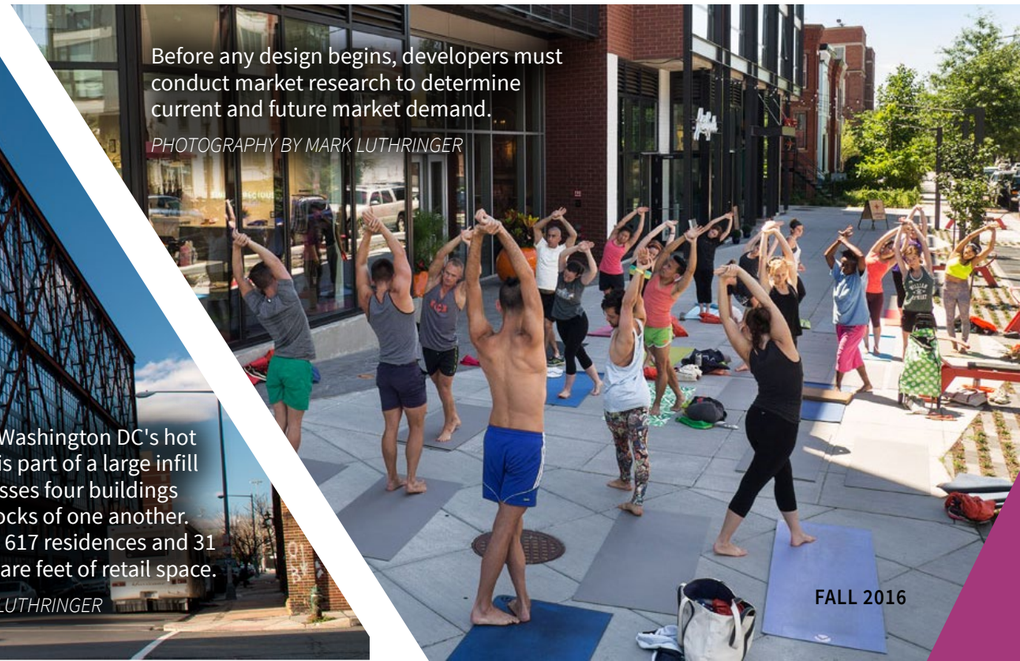
PHOTOGRAPHY BY MARK LUTHRINGER

HARDER THAN IT LOOKS

Because it is far more complex than building single-purpose housing or commercial space, mixed-use development is challenging. Beyond the usual considerations that go into a project, mixed use requires planners to strategically consider local retail markets,

Atlantic Plumbing, in Washington DC's hot Shaw neighborhood, is part of a large infill project that encompasses four buildings located within two blocks of one another. The complex includes 617 residences and 31 retailers in 52,000 square feet of retail space.

PHOTOGRAPHY BY MARK LUTHRINGER



Before any design begins, developers must conduct market research to determine current and future market demand.

PHOTOGRAPHY BY MARK LUTHRINGER

retail operations, density, separation of residential and retail, unique construction requirements, and much more. In short, it's harder than it looks. That said, when the opportunity presents itself for an urban, infill project, close to existing (or planned) mass transit, with existing density and a critical mass of customers, the highest and best use is almost always mixed use. Done correctly, mixed-use plans create the best value for the developer, the city, and the community.

OPPORTUNITY

Before any design begins, it is important for the development team to strategically identify how this retail will be integrated. Will the retail space be used for a neighborhood anchor (grocery, gym, movie theatre), a destination (entertainment, fashion), or will it simply serve the occupants above and close neighbors (coffee, casual dining, services)? Simply building a retail space will not equate to great retail. Market research is needed to examine what exists in the neighborhood, current and future market demand, and the development team's goals.

Is the target customer base Millennials with disposable income, young families, mixed families, empty nesters, or a combination? Are national, credit-worthy tenants desired, or will local start-ups be favored to create a unique quality and add to the project's authenticity? Would tenants agree to a deal above market rates in order to help rent or sell the project above? Buying in, for the retail tenant, could mean building out a turnkey retail space (restaurant or soft goods or even grocer) or reimbursing the retailer for some, most, or all of their construction/startup costs.

Atlantic Plumbing's sister property (left), "2030 8th Street," features 62 for-sale condominium homes.

PHOTOGRAPHY BY MARK LUTHRINGER

Consider the storefront as an extension of the tenant's brand—it should not necessarily be a continuation of the building above.

PHOTOGRAPHY BY MARK LUTHRINGER

DESIGN

Once the decision has been made to proceed with a mixed-use project, selecting the correct design and construction team is critical to fulfilling the vision. The designers—including mechanical, electrical, and plumbing, as well as acoustical and structural—need to be experienced in this project type so that they understand the needs of all residential and retail users. Obviously the requirements to land an incredible restaurant are far different than a grocer or movie theatre, which would without doubt conflict with the building above. The retail spaces must be carefully designed, serviced, and protected from base building influences. That is why the development team must convey a clear vision to the designers. An inexperienced designer or one without clear direction may design elements that are not perceived to be impactful to the retail but in fact would be devastating—low ceiling heights, column layout, plumbing penetrations, kitchen exhaust shafts, accessibility and available utility capacities, to name a few.

Additionally, it's important to consider the storefront as an extension of the tenant's brand, and it should not necessarily be a continuation of the building above. The space may display a similar language to the housing above, but the scale and

PHOTOGRAPHY BY MARK LUTHRINGER

proportions should be at a retail scale. The retailer's street presence and signage (including canopies or awnings) are also important for defining the difference in use and the sense of place. This will always be unique, and contingent on the project type, location, budget, designer, and developer. Retail space that won't allow for flexibility or simple modification, may never lease or lease for its potential, no matter how ideal the location.

CONSTRUCTION

When building a mixed-use project, the construction team, including their subcontractors, are equally important if not more so than the design team. They will be delivering the vision and the lease requirements for the retail spaces. Without an understanding and appreciation of who will be operating in the retail space, they may inadvertently take over a shaft needed for a kitchen exhaust with base building piping or ductwork, or install pipes lower than acceptable or away from columns. These types of careless changes can jeopardize lease and delivery, which will cause delays, or even default if egregious. Such mistakes may even prevent a space from ever being leased. In addition to the general contractor's superintendent and the developer's construction manager, if the retail is much larger than 10,000 square feet, strong consideration should be given to adding a retail tenant coordinator to supervise and inspect not only the base building delivery, but to ensure that the tenant builds out per their documents and lease as well as maintains their schedule. What good is a retailer that can't open?

The tone and direction from the development down to the subcontractors is also important. Future retail tenants must be considered the client, not a negative, as there is often close and sometimes complex coordination needed between designers, contractors and operators. A team mentality is the best way to ensure challenges are solved together, not simply by pointing fingers.

A retailer's street presence and signage (including canopies or awnings) are important for defining the difference in use and the sense of place.

PHOTOGRAPHY BY MARK LUTHRINGER

Deciding when to deliver to a retail tenant should also be considered carefully. If the retail is to open in conjunction with the residential, you will have multiple tenant contractors onsite while you are completing the last few months of the building which could boost your rental or sales. And if your base building is delayed, how will that impact the retail opening date? Waiting to open retail until after the residential opens will mean months of construction below your brand new building, which can often fracture the relationship of resident and retail.

CASE STUDIES

Located in the rapidly-growing Shaw neighborhood of Washington, D.C. are two urban infill projects, consisting of four buildings located within two blocks of one another. There are 617 residential units, of which 62 are condos, over 52,000 square feet of retail, which encompasses 31 retailers. The retail merchandising was done on a neighborhood scale so that each building complements each other. The retail tenant mix ranges from up-and-coming local brands, along with national and even international names that have not had an East Coast presence. The tenants serve both the new residents and the existing neighborhood, and in some instances are local destinations. The leasing team was supported by the ownership to add value through creative brands that support the vision and architectural styles of the buildings in which they are located. Tenants include locals like organic grocer Glen's Garden Market, Compass Coffee and Lettie Gooch, alongside Landmark Theatre's neighborhood concept (30 seat theatres). There are also artist studios and galleries, local restaurants and national tenants like Warby Parker, Kit + Ace, Chrome, and Steven Alan.

PHOTOGRAPHY BY MARK LUTHRINGER

The four-building infill project in DC's Shaw neighborhood includes tenants tenants serve both the new residents and the existing neighborhood, and in some instances are local destinations.

There is no definitive formula for mixed-use success—no secret number of tenants, no defined tenant type, and no ideal target housing buyer. Any mix can be successful. The key is careful consideration of each and every aspect of this complex planning, along with a highly collaborative team of planners, designers, and construction professionals. Planning for the project should begin upon carfeul research of the existing neighborhood as well as what the new residents will need or want. If retail is added that only provides the highest rent, it may not be the best use for the residents, both existing and new, so the mix should be thoughtful and strategic. Be prepared for some retail to fail, and be flexible to change the mix over the life of the building, as markets demands will change and the most successful projects will continue to evolve.

Andrew Griffin is Vice President of Construction and Design for The JBG Companies in Chevy Chase, Maryland

Build it on SUNday

Passive solar design works hard to make the sun work for you.

By Alexandra Isham

With the summer sun receding, the memories of abundant light and (too much) heat are also fading. Sooner than we would like, we will be faced with winter's gusts and fewer hours of daylight. But what if instead of seeing the sun's energy as fleeting, there was a way to harness it? What if you could design your home in a way that would actively capture the benefits of winds and heat and light? You can—with passive solar design.

PHOTOGRAPHY BY WAYNE C. MOORE

THE BASICS

Despite its name, designing for *passive* solar means that you are *actively* harnessing the sun's energy—in the form of heat and light—to the home's advantage. Let us illustrate this with an example:

A home designed with*out* passive solar techniques will:

- be oriented for views or to "fit" with the streetscape;
- place windows for views or aesthetics;
- be landscaped for aesthetic purposes.

A home designed *with* passive solar techniques will:

- be designed to take advantage of the sun's path—e.g., a garage will not be placed on the southern side of the house, so as to not take away solar energy and light gain from living spaces;
- include windows and shading devices that are designed to best capture light and heat in the winter and avoid solar heat gain in the summer;
- use larger trees and shrubs to shade the house in the summer, while allowing more heat and light to enter the home in the winter after leaves fall.

But can't a home use the sun's energy without including passive solar techniques? Absolutely. Notice that all of the passive solar components above are void of electrical and mechanical assistance; this is what is meant by the term "passive." A home can still include active solar techniques, such as solar panels, that use the sun's natural energy to the home's advantage with the assistance of mechanical devices. What's best, however, is a home that employs both passive and active solar techniques to maximize the benefits to homeowners and occupants.

BENEFITS

Just like with active solar strategies, passive solar can lower electric bills. With the sun's heat blocked by clever landscaping, orientation, and window design, a homeowner can save on summer air conditioning costs. In winter, if designed properly, the sun's rays will enter the home and warm it, reducing heating costs. Homeowners are also generally more comfortable in a passive solar home, as natural light becomes the dominant lighting source over harsh, man-made bulbs. If siting is considered already for solar gains, a great designer will also take into consideration natural winds that can help keep a home cool and reduce the need for forced air systems.

Orient the home to maximize natural light while taking advantage, of the sun's path and surrounding shade to minimize heat gain.

PHOTOGRAPHY BY WAYNE C. MOORE

WORK WITH THE SUN

Many passive solar strategies are simply thoughtful design. Here are some considerations to get you started.

ORIENTATION

- Which side of the home will receive the most sun? This is a two-part consideration, as heat and light are both important factors when orienting the home. Typically, passive solar design won't include a two-car garage on the sunniest part of the property. Instead, this space would be saved for living spaces that would benefit from natural light and the sun's heat in the winter.
- Go one step further and map out the plots of wind patterns. Does it make sense to rotate the home to capture some cooler summer breezes?

In cooler climates, maximize heat gain by placing more windows on the southern side. This north elevation has few openings, minimizing heat loss on the shaded side of the home.

PHOTOGRAPHY BY TUCKER ENGLISH

WINDOWS

- Window placement is key in passive solar homes. Think about "a day in the life" of the sun—where is natural light needed the most, and where will it create glare? Will excessive windows on the southern side (without additional protection) overload the home with heat and light in the summer?
- Should shading devices on windows be installed to prevent the sun's energy from entering the home? When angled in response to the sun's path, shading devices will still allow ample light and heat into the home in colder months, and block out unwanted rays at the peak of summer. These shading devices can blend in with the home's design while providing maximum benefit to homeowners.

LANDSCAPING

- How can landscaping be used strategically to help shade parts of the home in the summer and yet allow the most sun in the winter? For example, planting large trees to shade expansive living room windows will provide aesthetic benefits to the occupants in the summer, and leafless trees in the winter will allow the most sun to enter the home at the dead of winter.
- Can landscaping help curb devastatingly cold winds? Trees and shrubs can serve as great buffers against the harsher features of Mother Nature.

Once designed and built, passive solar strategies will continue to provide benefits with no recurring costs to homeowners, save the occasional landscaping bill. To get the maximum benefits from passive solar strategies, it is important to design with passive solar in mind from day one. Re-orienting a finished house or redesigning a facade is next to impossible for most, and good design from the beginning will keep long-term costs down and benefits up.

Landscaping and large overhangs prevent the heat of the high summer sun from entering this home's expansive glass windows and doors.

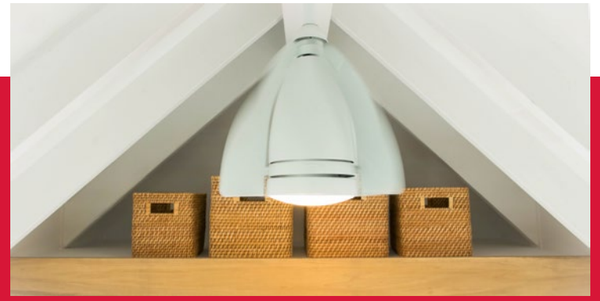
PHOTOGRAPHY BY DROR BALDINGER

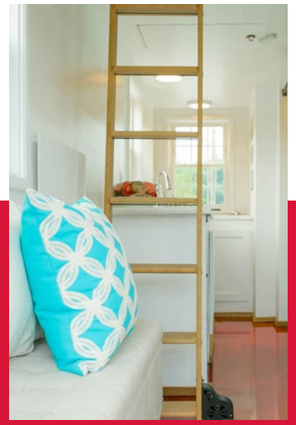
Incorporate active solar strategies, like solar panels, as well—but remember, these will work best on a rooftop that is already designed in line with the sun.

Alexandra Isham is Program Manager for Design at NAHB.

Tiny Homes, Tiny Footprints

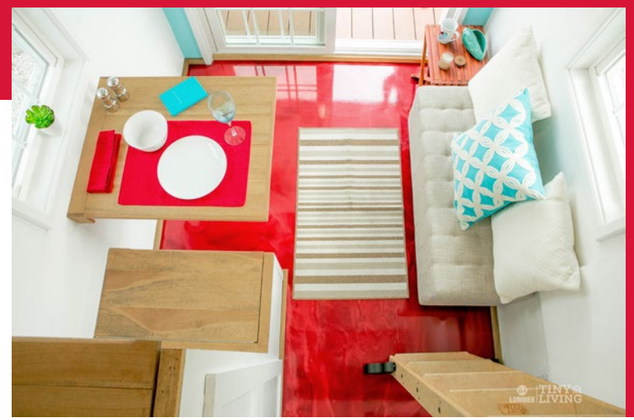
By Becky Mancuso





ALL PHOTOS COURTESY OF 84 LUMBER

Living small reduces consumption but demands a big increase in thoughtful design.

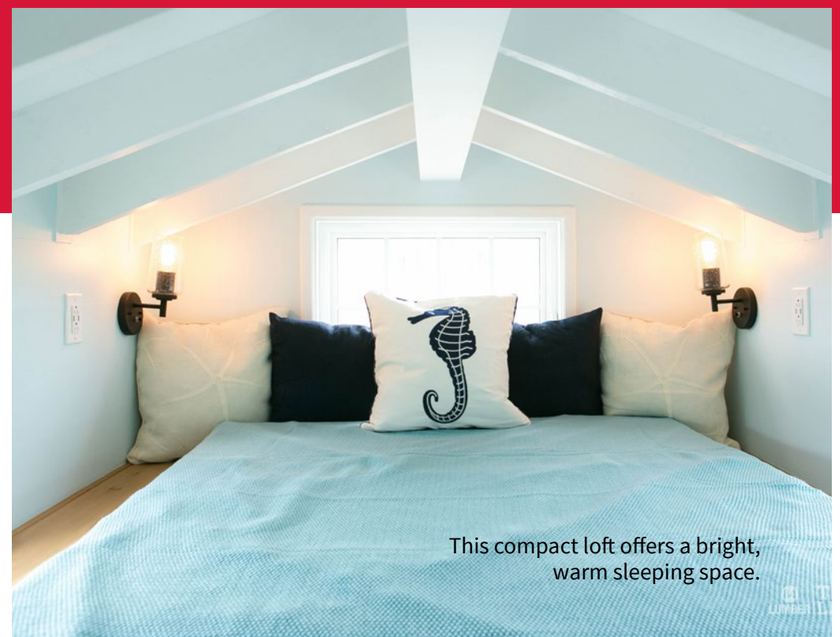


Careful window placement is essential in tiny home design. They must provide both adequate natural light and critical ventilation.

Nearly 20 years (and countless television series) into the tiny house movement, it's fair to say that tiny houses can no longer be considered a passing fad, but rather are a permanent and viable alternative to current standards in American living. National building materials retailer 84 Lumber recently entered the tiny house construction market, and is bringing the dream of building or owning a tiny house one step closer to reality for many tiny house enthusiasts.

Loosely defined as any residential structure under 400 square feet, on a trailer or permanent foundation, tiny homes lend themselves to a more cost-efficient, energy-efficient, and ultimately, sustainable lifestyle. Their smaller footprint means fewer building materials and reduced energy consumption. And the lifestyle that a tiny house encourages—reduced overall consumption of products and goods, increased financial freedom, and taking stock of the things that really matter—helps to perpetuate sustainability.

When deciding to go tiny, and designing with a nod



This compact loft offers a bright, warm sleeping space.

toward sustainability, one should consider several design and operational elements. 84 Lumber's GreenEdge Supply sustainability expert, Robert J. Kobet, has shared the following:

WALLS AND WINDOWS

How windows and walls are used in good tiny house design is a question of balance. While structural integrity, rigidity, and road-worthiness must be maintained, natural light and effective ventilation are also critical to the psychology of space and the health and well-being of the occupants. This is particularly true of bathrooms, which are usually very compact, increasing the need for views that psychologically expand the space.

Good ventilation is necessary to remove high humidity and odors, something operable windows can assist in.

High quality windows and well-insulated walls are important for energy conservation, comfortable interior surface radiant temperatures, and condensation control. Whenever possible, the orientation of the home on its site should maximize beneficial passive solar gain, breezes, and natural light.

In all cases, windowsill heights should not compromise the placement of wall- mounted drop-down tables, murphy beds, or storage systems. Sliding glass doors can serve as surrogate windows while providing access, maximum daylight, and ventilation.

FURNISHINGS AND UTILITIES

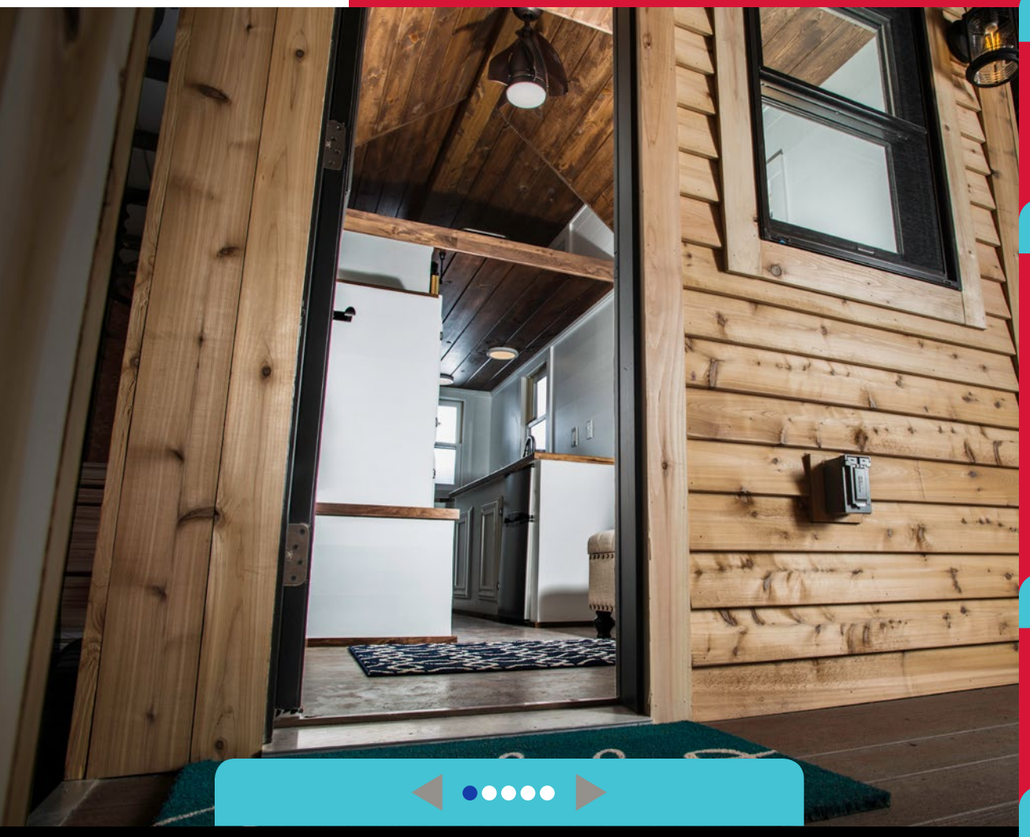
Selecting proper furnishings is one of the most challenging aspects of tiny house living. Furniture should be flexible and multi-functional, small and light but sturdy, portable, and compatible with other design aspects. The best tiny house

The ladder to the loft of this tiny home slides into position when needed.

A small table drops down when not in use.
All seating offers storage as well.

ALL PHOTOS COURTESY OF 84 LUMBER

The Roving's Green Attributes



84 Lumber's "Roving" tiny home gets its rugged charm from reused barn siding.

ALL PHOTOS COURTESY OF 84 LUMBER

Wood Wall & Door

- Lumber rescued from an old barn and given new use

LED Lighting

- Energy-efficient and long-lasting
- Can cut energy consumption up to 80 percent and can last up to 20 years

Cork Flooring

- Harvested from the bark of cork trees
- Durable—The flooring is designed to resist cracking and is impermeable to liquids
- Comfortable on your feet! Its naturally thermal and can make your living space warmer

Low VOC Paints & Stains

- Using low VOC leads to improved air quality and reduces allergic reactions, headaches, asthma, etc.

Composting Toilet

- Use natural processes of decomposition to recycle human waste

Refrigerator

- Energy Star certified

designs integrate furnishings that allow for vertical circulation to sleeping lofts, are easily stored, and are able to transition to and from outdoor living. Ideally they also accommodate guests, pets, and a variety of indoor activities.

Morten Staargard of GoDownsize.com offers an example of a great piece that serves three functions—a folding combination of table, chair, and bed. The piece is lightweight, portable, and can be moved by one person. Depending on the frequency of use and the other sleeping arrangements, it can be used as a day bed and for guest accommodations. It can be fabricated with materials that are stain resistant, waterproof, and UV resistant. And it can be made with nontoxic wood finishes and fabrics in colors that complement the interior décor. Because it is compact and lightweight it can be carried easily through an exterior door, making it ideal for outdoor use as well. Placing two or three side-by-side results in a sofa that converts to a queen size bed.

Finally, there is the issue of electricity and water supply, and whether to be on or off the grid. For those potential tiny home owners seeking to go completely off the grid, solar packages, water filters, and composting toilets result in low to no energy bills and serious eco-friendliness. Hybrid on/off the grid options include those like the Roving model from *Tiny Living by 84 Lumber,* which utilizes electricity to power the house's LED lights and ENERGY STAR appliances, but has a composting toilet in its single bathroom.

Going tiny is a big decision, but for those homeowners interested in the economic and environmentally beneficial aspects of tiny living, there is no shortage of options to create a unique home.

To learn more about Tiny Living by 84 Lumber, visit 84tinyliving.com. To learn more about 84's Green Edge Supply division, visit greenedgesupply.com.

Becky Mancuso is Vice President of Marketing & Public Relations for 84 Lumber.

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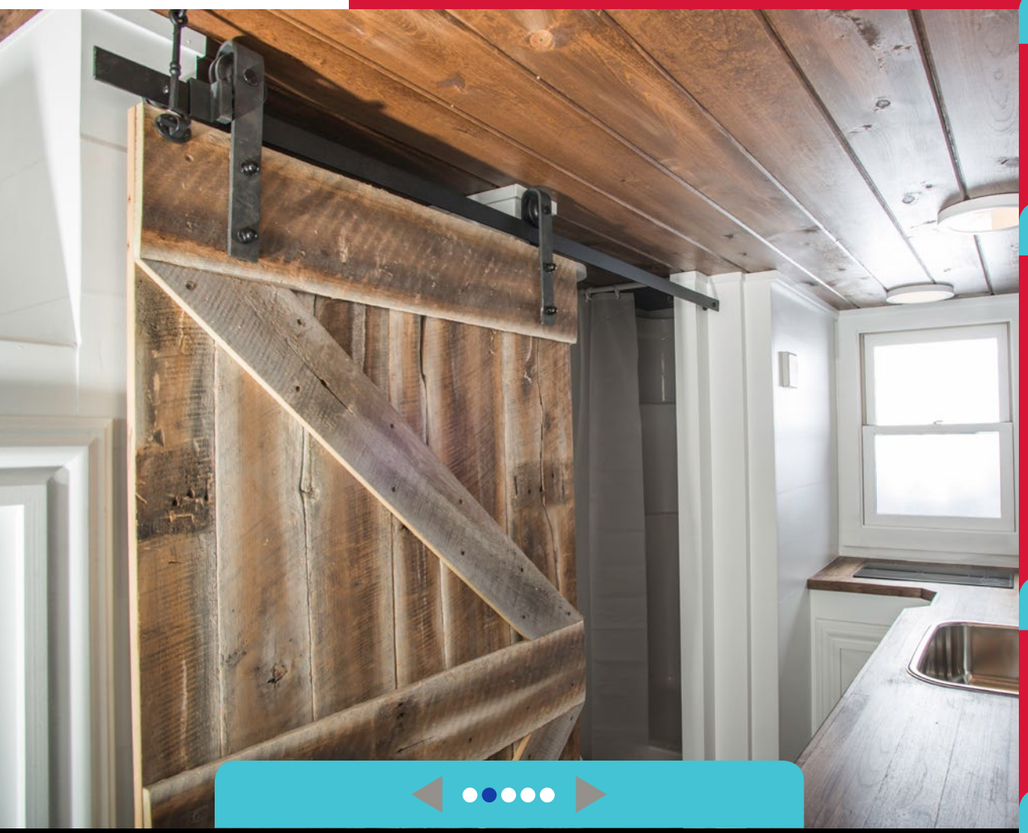

A sliding barn door provides a wide opening to nature and takes up no swing space.

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The Roving's Green Attributes

Cork flooring is cushiony and warm.

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The Roving's Green Attributes

No sewers required, since the Roving includes a composting toilet designed to break waste down onsite.

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In a great fixture like this, LED lighting is warm, even quaint.

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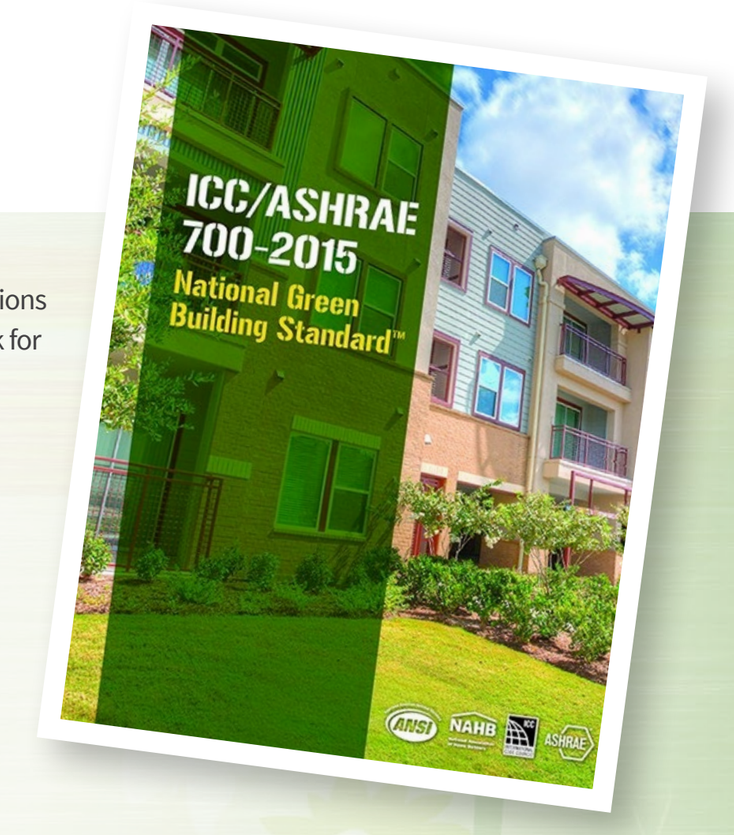
Updates to the ICC/ASHRAE 700-2015 National Green Building Standard



A NEW GENERATION OF GREENER HOMES

As the residential construction industry moves further into the 21st century, green building and sustainable practices continue to increase among home builders. According to the Dodge Data & Analytics 2015 SmartMarket Report "Green and Healthier Homes: Engaging Consumers of all Ages in Sustainable Living," nearly a third of the home builders surveyed reported that more than 60 percent of their projects involved green building practices. These same builders project this trend to continue, and by 2020, over one half of home builders will have a majority of their projects include varying aspects of green building.

Given this both measured and predicted growth in sustainable, high-performance home building, it is critical that residential green building rating systems that builders and remodelers use across the country remain up to date with the latest technology, practices, and codes. The National Green Building Standard (NGBS, or the "Standard") continues to be updated regularly to maintain its lead in the residential industry. The Standard's latest iteration, approved by the American National Standards Institute (ANSI) in March, includes exciting new developments, as well improvements in existing practices.

With this newest edition of the NGBS, the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) has joined the Standard's development process, with the new formal citation of ICC/ASHRAE 700-2015. This broad collaboration of the leading code and standard development organizations further solidifies the Standard as the national benchmark for green residential construction in the United States.

This overview includes the major changes from the 2012 to 2015 editions of the Standard for the development of neighborhoods and subdivisions ("*Site Design and Development")*, as well as each of these six green practice categories within residential construction.

- *Lot Design, Preparation, and Development*
- *Resource Efficiency*
- *Energy Efficiency*
- *Water Efficiency*
- *Indoor Environmental Quality*
- *Operation, Maintenance, and Building Owner Education*

The *Remodeling* and *Remodeling of Functional Areas* categories within the Standard have also been updated to include the changes implemented for new construction but are not covered here.

ANSI Approval Sustained

It All Starts with the Land

Green in Your Backyard

Building an Eco-Friendly, Long-Lasting Home

Grade 1 Insulation Takes First Place

Less Water Waste, More Water $avings

Healthier Homes from Floor to Ceiling

Educating Homeowners to Make Sustainability Stick

Your guide to healthy and eco-friendly homes and communities

Updates to the ICC/ASHRAE 700-2015 National Green Building Standard

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ANSI has once again approved the NGBS as an American National Standard, maintaining a consensus-based standards development process and ensuring a balanced and well-rounded residential green building rating system. In fact, the Standard continues to be the *only* residential green building rating system to receive ANSI approval.

Also unchanged is the requirement that a building must achieve a minimum number of points in *all* six green practice categories for each rating level, in addition to all mandatory practices. If a project seeks to earn gold certification, it requires gold-level points in all six categories. Even earning silver in a single category and gold in all the rest will result in a silver certification. This requirement continues to make the NGBS stand out in the increasingly long list of green rating systems, where entire categories can go untouched, while still allowing a project to earn green certification.

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It All Starts with the Land

The newly updated National Green Building Standard allows a developer to continue to be able to seek a stand-alone certification of a subdivision or development site under the *Site Design and Development* category. This ability to separate a site from a building acknowledges that the builder and developer are often separate entities and allows them strive for green certification individually.

Communities can still achieve certification levels from one to four stars, but the 2015 iteration of the *Site Design and Development* category provides builders and developers with more ways to earn points for green practices, allowing a greater variety of projects to seek certification.

At the same time, some of the higher point values are now more difficult to achieve, increasing the overall stringency of a four-star rating and recognizing those who go above and beyond in communities where certain practices are mandated or incentivized.

There is increased awareness of the difficulty of achieving a four-star rating on a very large site as compare to a small site, and the point system has been altered to reflect this, allowing a more diverse array of opportunities within the menu of options.

Specific updates within this category include:

- Stormwater management practices increasingly focus on Low-Impact Development (LID) and permeable surfaces to prevent off-lot discharge of runoff.
- Additional points are available for the preparation and implementation of a stormwater management plan that identifies existing soils, waterways, and drainage features to be preserved.
- Additional points are available for use of non-potable water usage in irrigation in common areas, as well as providing non-potable irrigation to individual lots.
- An increased focus on the use of non-invasive vegetation and plant species that improve pollinator habitats.
- Projects are now allowed to use an equivalent water budget tool, in lieu of EPA's WaterSense. Regardless of the tool selected, projects are required to demonstrate that the plan was executed.
- There is now a quantitative measure for the proximity of parks and common areas to residential units in order to earn points: A minimum of one-sixth acre within a quarter mile walking distance from 80 percent of residential units.
- There is increased emphasis on multi-modal transportation options, including sidewalk and bike path networks, as well as dedicated bicycle parking at each common area.

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Green in Your Backyard

The *Lot Design, Preparation, and Development* category is the first of the six required residential construction green practice categories contained within the Standard. It offers a subset of options from the previous yet separate section, *Site Design and Development,* which may be applied to the smaller scale of a lot. The category provides a diverse menu of practices for the builder that can be tailored to varying lot conditions and opportunities.

Many of the changes to this category are similar or the same as the *Site Design and Development* category, including more multi-model transportation options and increased focus on LID stormwater management practices.

Specific updates within this category include:

- Updates to this section place a greater emphasis on multimodal transportation options and encourages increased bicycle storage availability for multifamily buildings based on the number of units.
- Stormwater management practices increasingly focus on LID, with tiers of points available for preventing off-lot discharge for the 80th, 90th, and 95th percentile storm events.
- Points previously awarded for the creation of a landscape plan now require evidence that the plan was indeed executed.
- Projects can now earn additional points for having landscaping which emphasizes biodiversity, water conservation, non-invasive vegetation, and the creation of pollinator habitats. A series of helpful guides on pollinator habitat installations for regions across the US can be found here.
- The new Standard increasingly promotes the use of water permeable surfaces, such as vegetated paving systems, to reduce impervious surfaces on driveways, streets, and parking areas.
- Roofs with high Solar Reflective Index (SRI) values no longer earn points in this category for heat island mitigation, but can now earn points in the next category, *Resource Efficiency*. Only roofs having at least 75 percent of their area vegetated using technology capable of withstanding climate and microclimate conditions can earn points in this category.
- Points achieved for the average density of residential units have been adjusted to encourage increased density on lots.
- Points are now available for including Level 2 plug-in electric vehicle charging capability for multi-unit buildings. At a minimum, one percent of stalls require charging capability.

Building an Eco-Friendly, Long-Lasting Home

The *Resource Efficiency* category is focused on minimizing the environmental impact of building materials, incorporating environmentally efficient building systems and materials, and reducing waste generated during construction. This includes products and systems with enhanced durability and reduced maintenance, as well as reused, recycled, regional, or salvaged materials.

With the new edition, the Standard expanded its focus on whole building Life Cycle Assessments with additional pathways, as well as added sections for Environmental Product Declarations. Also notable is the expansion of the Universal Design section, which allows continued use of a home by an aging or disabled population.

Updates within this category include:

- The area of conditioned floor area for achieving maximum points for limiting the size of dwelling units has been reduced to 700 square feet, rewarding smaller dwelling units.
- For projects in geographic areas that have a high potential of termite infestation, projects must now also implement a termite treatment plan, in addition to the previously required continuous physical foundation termite barrier.
- Homes with storm doors installed can earn a project additional points.
- Roofs with 90 percent of the surface area having high SRI values can now earn points in this category. This is an increase from the previous requirement of 75 percent of the roof area.
- For remodeling projects, the waste management plan now includes the recycling of 95 percent of electronic waste components by a third-party certified e-waste recycling facility.
- The National Wood Flooring Association's Responsible Procurement Program has been added for wood-based products that can earn points.
- The revised Standard requires a minimum of 75 percent of all products in the component category must be sourced regionally to earn points.
- Whole-building life cycle assessments (LCA) have been updated to provide increased pathways. One or more of the following can now be completed:
  - Execute LCA as set forth under Standard Practice, ASTM E2921, including:
    - Primary Energy Use
    - Global Warming Potential
    - Acidification Potential
    - Eutrophication Potential
    - Ozone Depletion Potential
    - Smog Potential
  - Execute LCA on regulated loads throughout building operations life cycle stage via simulated energy performance analyses.
  - Execute full LCA, including use-phase, through calculation of operating energy impacts stated above using local/regional emission factors from energy supplier, utility, or EPA.
- Smog potential has been added to both Product and Building Assembly LCA assessment requirements.
- Universal Design practices have been expanded to provide better access to individuals with disabilities and eliminate the need for major renovations in the future should an occupant become in need of these types of accommodations.
- Providing both product-specific and industry-wide Environmental Product Declarations (EPDs) for building materials can now earn points. Product-specific EPD's are weighted higher than industry-wide EPD's.
- Points are now awarded for building envelope assemblies designed for moisture control based on documented hygrothermal simulation or field study analysis.

Grade 1 Insulation Takes First Place

The new edition of the Standard includes substantial revisions to the *Energy Efficiency* category. All installation of insulation is now *required* to meet Grade 1 requirements. Other grades are no longer acceptable, and Grade 1 insulation is required to be verified onsite by a third-party inspector before drywall goes up.

Rating levels have also become more stringent, with the 2015 International Energy Conservation Code (ICC IECC 2015) becoming the new baseline for the prescriptive path, as well as for calculating whole-building energy savings within the performance path. The updated Standard also now offers more pathways for proving compliance with energy efficiency requirements, as shown below.

TABLE 1: NGBS ENERGY EFFICIENCY COMPLIANCE PATHS

Compliance Path	Summary	Rating Levels Achievable
Performance Path	Meet or surpass ICC IECC 2015 baseline performance, and include at least two additional energy efficiency practices, such as occupancy sensors & lighting controls.	Bronze Silver Gold Emerald
Prescriptive Path	Obtain at least 30 points through prescriptive practices detailed in the ICC/ASHRAE-700 2015, and include at least two additional energy efficiency practices, such as occupancy sensors & lighting controls.	Bronze Silver Gold
HERS Index	Complete EPA HERS Index Target Procedure with final value equal to or less than EPA HERS Index Target, and include at least two additional energy efficiency practices, such as occupancy sensors & lighting controls.	Bronze Silver Gold
ENERGY STAR Version 3.0	Qualify as an ENERGY STAR Version 3.0 Certified Home or ENERGY STAR Multifamily High Rise Version 1.0 Rev 03	Bronze Only
ENERGY STAR Version 3.1	Qualify as an ENERGY STAR Version 3.1 Certified Home or ENERGY STAR Multifamily High Rise Version 1.0 Rev 03 (with a baseline at ASHRAE 90.1-2010)	Silver Only

Other updates in this category include:

- Multifamily buildings have additional notations and sections for complying with energy efficiency conformance requirements. This allows the NGBS to be applied more accurately to both single-family and multifamily buildings.
- The prescriptive path now has a number of new, additional mandatory requirements, such as setting a maximum total building UA, prescriptive R-value and fenestration requirements, and duct testing in accordance with 2015 IECC.
- Use of dynamic glazing can now be used to satisfy the Solar Heat Gain Coefficient (SGHC) requirements.
- The "HVAC Equipment Efficiency" section now better addresses homes with multiple heating and cooling systems.
- Sections pertaining to lighting controls have been updated to separate indoor, outdoor, and common areas, as well as increase the required minimum percentage of dimmable controls or occupancy sensors from 25 percent to 50 percent of lighting fixtures for any points to be awarded.
- Points are now available for installation of potable hot water demand recirculation systems.
- New innovative practices are now available for additional points, including:
  - Providing grid-interactive electric thermal storage systems
  - Providing utility or energy provider automatic demand response systems
  - Providing electrical vehicle charging stations

Updates to the ICC/ASHRAE 700-2015 National G

A NEW GENERATION OF GREENE

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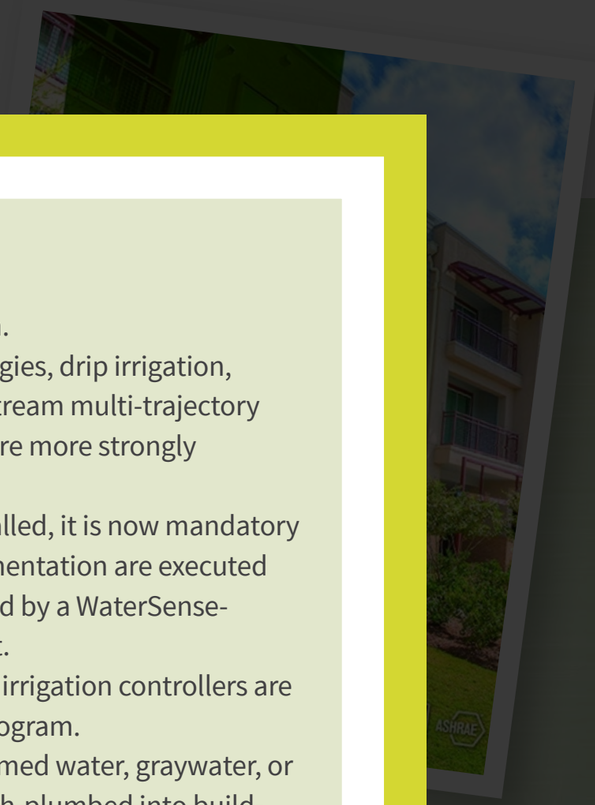
Less Water Waste, More Water $avings

WATER EFFICIENCY

The updated Standard's *Water Efficiency* category continues to provide a variety of water efficiency measures that reduce both indoor and outdoor water usage. Water-saving features not only conserve one of the world's most precious resources, but are also attributes important to buyers. Nearly 20 percent of home buyers view water saving features as the first- or second-most important attribute in the home purchase or remodeling decision, as detailed in the 2015 NAHB study "What Green Means to Home Buyers: Perceptions and Preferences."

Updates within this category include:

- Points earned for showerhead flow rates have become more stringent, with the flow rate required to earn maximum points decreasing from less than 2.0 gallons per minute (gpm) to less than 1.6 gpm.
- Water-efficient irrigation technologies, drip irrigation, subsurface drip irrigation, multi-stream multi-trajectory rotating nozzles, and controllers are more strongly emphasized.
- Where an irrigation system is installed, it is now mandatory that an irrigation plan and implementation are executed by a qualified professional certified by a WaterSense-labeled program or the equivalent.
- Additional points can be earned if irrigation controllers are labeled by the EPA WaterSense program.
- Points can now be earned if reclaimed water, graywater, or rainwater piping systems are rough-plumbed into buildings for future use. Piping must be permanently marked, tagged, or labeled.



ANSI Approval Sustained | It All Starts with the Land | Green in Your Backyard | Building an Eco-Friendly, Long-Lasting Home | Grade 1 Insulation Takes First Place | Less Water Waste, More Water $avings | Healthier Homes from Floor to Ceiling | Educating Homeowners to Make Sustainability Stick | Your guide to healthy and eco-friendly homes and communities

Healthier Homes from Floor to Ceiling

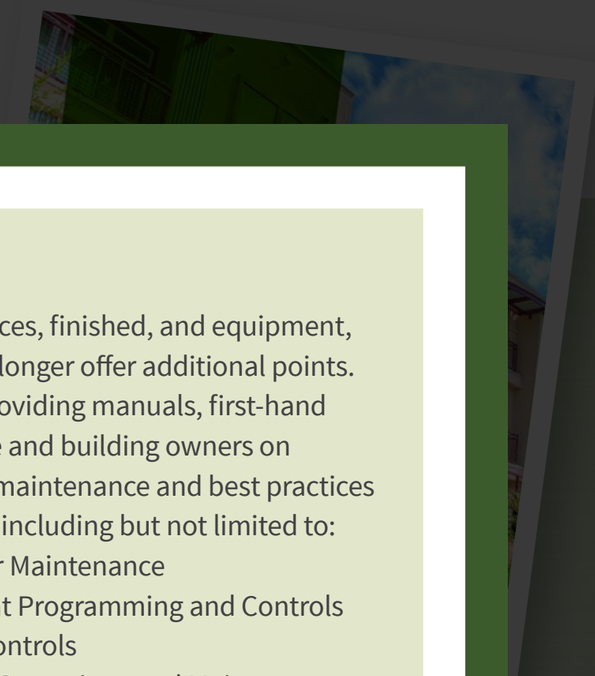
The *Indoor Environmental Quality* (IEQ) category focuses on a variety of indoor building practices, including the reduction of pollutants from space heating and water heating systems, garages, cabinets, carpets, architectural coatings, sealants, and other sources. This category resonates with home buyers, as found in "What Green Means to Home Buyers: Perceptions and Preferences," with one of every four individuals surveyed ranking "healthy indoor living environment" as being the single most important attribute considered when making the decision to purchase or remodel a home.

As focus nationwide increases on healthy homes and wellness, the Standard continues to add high IEQ standards and practices, including a new focus on fenestration designed for stack effect or cross-ventilation, as well as Indoor Air Quality verification both during and after construction.

Updates within this category include:

- The installation of carbon monoxide alarms are now *mandatory* for all buildings in accordance with IRC Section R315, regardless of level of certification or local code requirements.
- Previously separate "Carpet" and "Hard-Surface Flooring" sections have been combined into a new "Floor Materials" section, reducing the maximum number of points achievable for having green flooring materials. This pushes projects to find additional points in other sections and develop a broader IAQ strategy.
- Points can be achieved now for fenestration in spaces other than kitchen, bathroom, and laundry rooms that are designed to allow for stack effect or cross-ventilation. These fenestrations must:
  - Be operable with a total area of at least 15 percent of the conditioned floor area
  - Have insect screens
  - At least two operable windows or sliding glass doors placed in adjacent or opposite walls
- The installation of MERV filter 14 garners an additional point, but requires verification that the HVAC equipment can accommodate the greater pressure drop.
- Points can now be earned if Indoor Air Quality control measures (listed in the Standard) are implemented during construction. Additional points can be earned if post-construction verification of indoor air quality is completed.
- Listed and labeled condensing ductless dryers are not required to be vented to the outdoors.

Updates to the ICC/ASHRAE 700-2015 Nat



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Educating Homeowners to Make Sustainability Stick

The operation and maintenance of a home is equally as important as its design and construction when it comes to long-term sustainability. Home builders can provide the tools, but without the knowledge of best practices, these tools can provide inefficient results and their positive environmental qualities can be lost. The updated *Operation, Maintenance, and Building Owner Education* category encourages builders to offer technical and educational resources so that homeowners can make environmentally responsible choices when operating and maintaining their residences.

Specific updates within this category include:

- A new section on Public Education has been added. The intent is to increase public awareness of projects constructed in accordance with the NGBS and help increase demand for high-performance homes.
- A new section on Post Occupancy Performance Assessment has been added. This section is designed to help determine if energy and/or water usage has deviated from the expected levels so that inspections and corrections can be taken.
- Any points awarded for providing extended Homeowner's Manuals, Operations Manuals, Maintenance Manuals, and Building Construction Manuals can now be earned only by including non-mandatory items. Mandatory items (such as maintenance instructions for all fixtures, appliances, finished, and equipment, for example) no longer offer additional points.
- In addition to providing manuals, first-hand training of home and building owners on operations and maintenance and best practices is now required, including but not limited to:
  - HVAC Filter Maintenance
  - Thermostat Programming and Controls
  - Lighting Controls
  - Appliance Operations and Maintenance
  - Water Heater Settings and Hot Water Use
  - Fan Controls
  - Recycling and Composting Practices

Updates to the ICC/ASHRAE 700-2015 National Green

A NEW GENERATION OF GREENER HOMES

As the residential construction industry moves further
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Given this both measured and predicted growth in s
home building, it is critical that residential green build
builders and remodelers use across the country rema
technology, practices, and codes. The National Green
or the "Standard") continues to be updated regularly
residential industry. The Standard's latest iteration, a
National Standards Institute (ANSI) in March, includes
as well improvements in existing practices.

With this newest edition of the NGBS, the American So
and Air-Conditioning Engineers (ASHRAE) has joined the
process, with the new formal citation of ICC/ASHRAE 70

Your guide to healthy and eco-friendly homes and communities

To date, there are over 83,000 NGBS Green Certified Homes across the United States, all reducing their impact on the environment from the ground up. With the updated Standard, NGBS certification allows new and remodeled homes an even greater advantage compared to competitors.

Through certification and third-party inspections at both pre-drywall and post-construction, home buyers are assured that green building practices have not only been planned, but properly completed. Buyers can be certain that insulation was correctly installed to the highest Grade 1 standard, and that building thermal envelopes were durably sealed. What's more, they will know how to operate and maintain the appliances and systems in their home in order to maximize its environmental performance.

Whether for remodeling an existing home, or designing a new home, the Standard provides an excellent guide to creating a healthy, efficient, and eco-friendly living space. Builders, developers, remodelers, contractors, architects, engineers, municipalities, homeowners, and the general public can download the Standard for free or purchase a hard copy. For municipalities, incentives such as expedited permitting can be developed around NGBS certification, thus promoting high-performance building and development in the residential sector, and leading the way to greener and healthier communities.

To learn more about certifying a single-family home, multifamily building, remodeling project, or land development project, visit the Home Innovation Research Lab.

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Research Confirms Lot Shortages and Affordability Challenges

By Paul Emrath

Rising regulatory costs and low lot supplies are stifling housing's recovery.

Recent NAHB research verifies what builders around the country have observed: Government regulation and a shortage of lots have retarded the recovery of single-family production following the historic downturn that began in 2007. Most builders and developers are only too well aware of this, having experienced it firsthand, but still may find the research useful in helping explain what's going on to those less familiar with the industry.

Much of the NAHB research is based on special questions added to the monthly survey for the NAHB/Wells Fargo Housing Market Index (HMI). In May of 2016, 64 percent of builders responding to the HMI survey reported that the supply of lots in the markets where they build was low or very low—the highest the low-supply percentage has been since NAHB began asking the question in 1997. In addition, this record incidence of lot shortages was recorded at a time when new homes were being started at a rate of under 1.2 million a year. By comparison, 53 percent of builders were reporting lot shortages in 2005, when total housing starts were over 2.0 million (**Figure 1**).

The current high incidence of builder-reported lot shortages is consistent with NAHB's tabulation of data from the 2015 Survey of Construction (conducted by the U.S. Census Bureau with partial findings from HUD), showing that the median value of lots for new homes started is at a record high ($45,000), while the median size of the lots is at a record low (under one-fifth of an acre).

Some of the problems with land may be due to regulation, according to another recent NAHB study, "Government Regulation in the Price of a New Home." The study shows that, on average, regulations account for 24.3 percent of the final price of a new single-family home built for sale. Three-fifths of this—14.6 percent of the final house price—is due to a higher price for a finished lot resulting from regulations imposed during the lot's development. The other two-fifths—9.7 percent

of the house price—is the result of costs incurred by the builder after purchasing the finished lot (**Figure 2**).

The above estimates are based largely on questions on the March 2016 HMI survey combined with other data on construction lags, interest rates, and profit margins (see the full study for details).

Regulation can be imposed by all levels of government—federal, state, and local. Sometimes it can be difficult to tease out which one is responsible. The United States Constitution generally leaves land use decisions to states, and states usually delegate zoning and permitting authority to local jurisdictions. Local governments also adopt and enforce building codes. However, the federal government is becoming more involved.

For example, under the 1987 expansion of the Clean Water Act, most construction sites require a permit for stormwater runoff. Stormwater permits are issued by the Environmental Protection Agency (EPA), or (more often) by states under programs authorized and monitored by EPA. EPA, the Federal Emergency Management Agency and the Department of Energy (DOE) also propose and lobby for changes in the model International Residential Code that is adopted in one form or another by jurisdictions in most states. DOE even has a budget to help persuade states to adopt more recent and stringent codes.

In 2011, NAHB published similar estimates, showing that regulation on average accounted for exactly a quarter of a new home's price at that time. However, the average price of new homes sold increased substantially since then (from $260,800 to $348,900). Taking this into account, NAHB's studies imply that average regulatory costs in a new home built for sale went from $65,224 to $84,671—a 29.8 percent increase during the roughly five-year span between estimates (**Figure 3**).

In comparison, the Consumer Price Index increased by only 6.1 percent during that time; so regulatory costs embodied in the price of an average new home greatly outpaced general inflation. Also during that span, disposable income per capita increased by 14.4 percent; so the cost of regulation in the price of a new home is rising more than twice as fast as the average American's ability to pay for it.

This has made it difficult to impossible to build homes for a significant part of the U.S. housing market. NAHB's tabulation of the Survey of Construction data shows that roughly 78 percent of the new homes built for sale and started in 2015 were priced between $150,000 and $500,000. Fewer than 6 percent were priced under $150,000, and a vanishingly small share were under $100,000.

In contrast, NAHB's 2015 Home Buyer Preferences Survey showed that 31 percent of home buyers want to pay less than $150,000 for a home, and 15 percent even want to pay under $100,000 (**Figure 4**). Given the discussion above, a fairly obvious explanation for the supply-demand mismatch is that regulatory and other costs often make it impossible to produce a new home for substantially less than $150,000.

The purpose of NAHB's research is not to argue that all regulation is bad, but to show how much already exists, and to raise questions about whether regulators sufficiently consider costs when they propose new policies. Builders and developers may find it helpful to share these numbers with policymakers, or with media outlets, to help them explain the challenges and barriers to providing more affordable housing.

Figure 1 | Figure 2 | Figure 3 | Figure 4

Housing Starts (Area) and Low/Very Low Lot Supply (Bars)

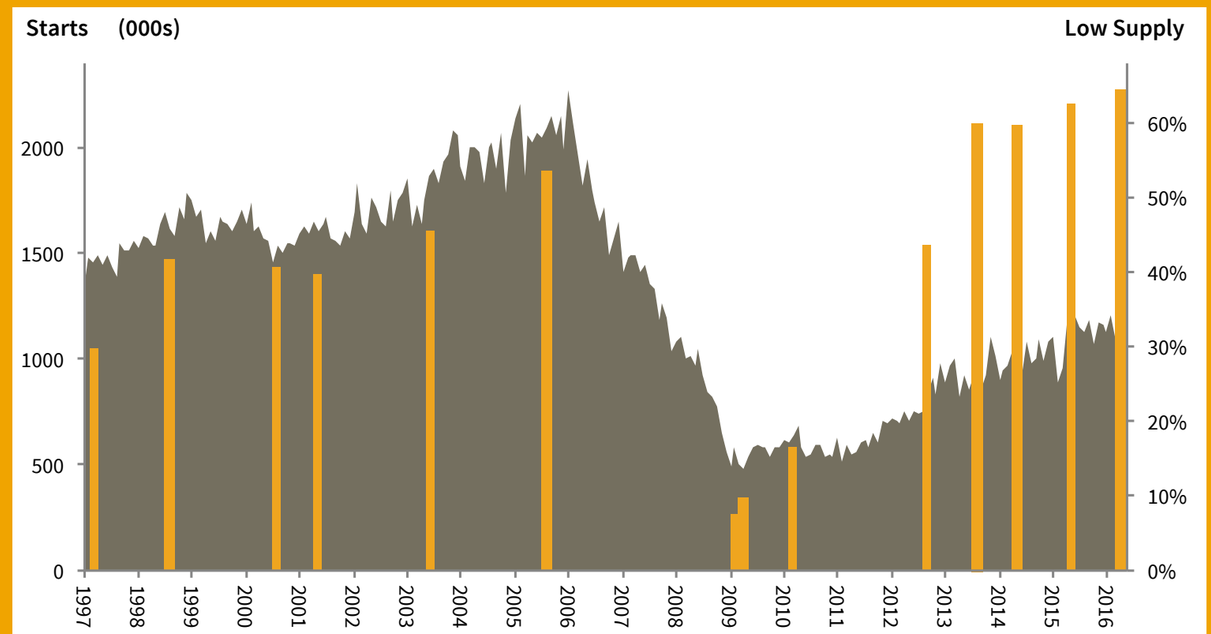

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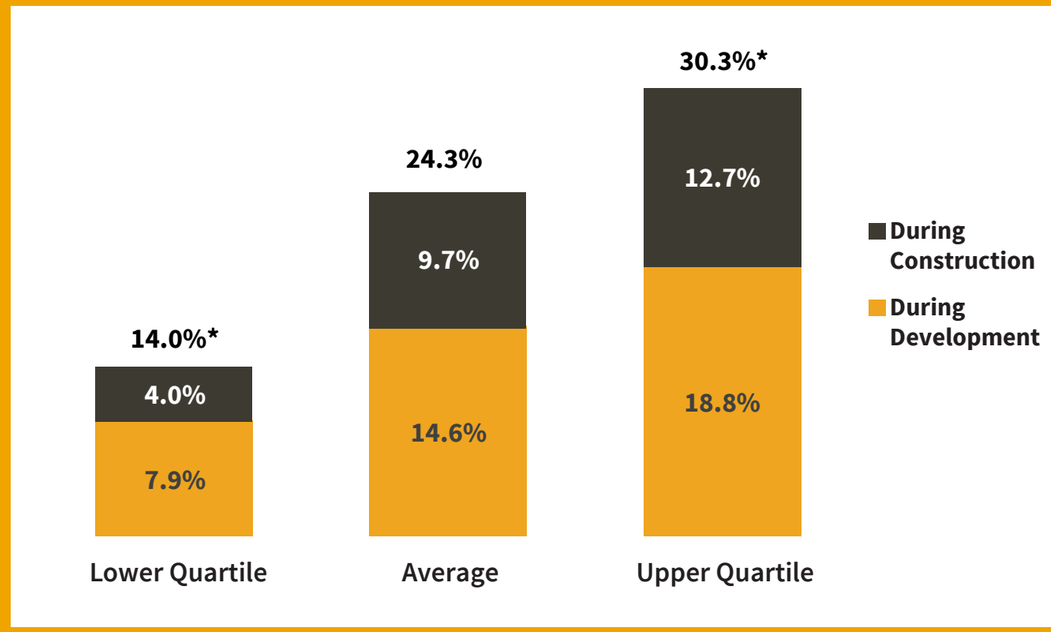
Figure 1 | **Figure 2** | Figure 3 | Figure 4

Regulatory Costs as a Share of Home Price



** FOR QUARTILES, CONSTRUCTION AND DEVELOPMENT COSTS DO NOT SUM TO THE TOTAL.*
SOURCE: NAHB/WELLS FARGO HMI SURVEY, ASSUMPTIONS DESCRIBED IN THE APPENDIX.

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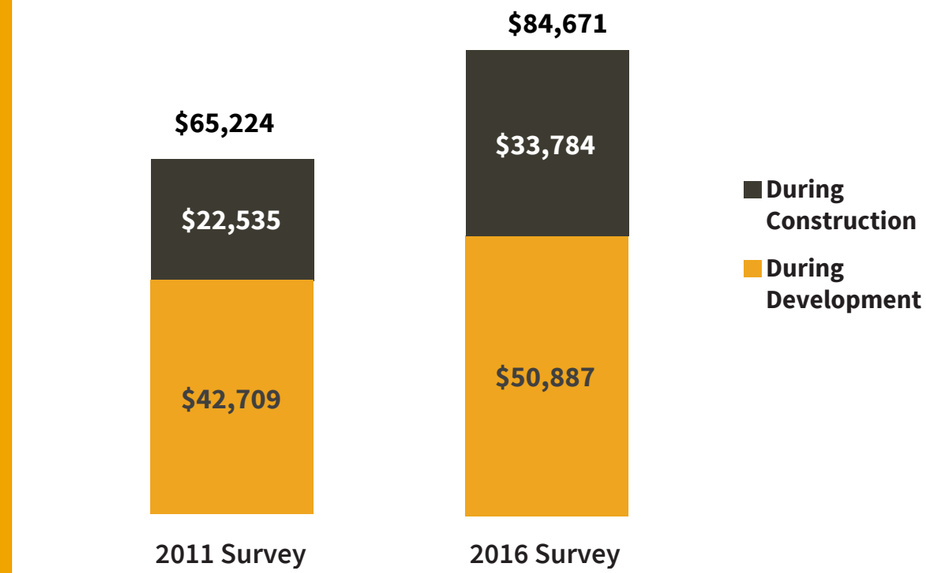
Average Cost of Regulation in the Price of a New Home



BASED ON AVERAGE NEW HOME PRICE ONE MONTH BEFORE THE NAHB/WELLS FARGO HMI SURVEYS

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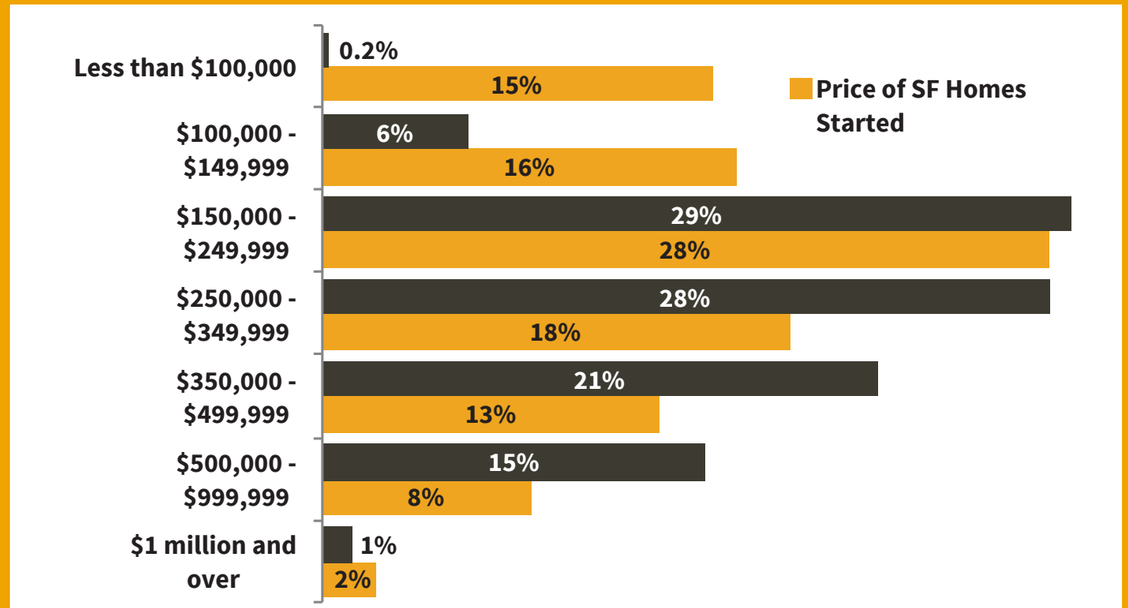
Figure 1 | Figure 2 | Figure 3 | **Figure 4**

Price of Single-family Homes Started in 2015 vs. Price Buyers Expect to Pay



SOURCES: NAHB TABULATION OF DATA FROM THE SURVEY OF CONSTRUCTION, U.S. CENSUS

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She Sheds

Backyard Havens for Creative Mavens

By Laura Boswell

The trend for these peaceful spaces continues to grow.

As girls, many women wanted a "Barbie Dream House," a fantasy space to decorate, host tea parties, or simply…dream.

Now as adults we have "she sheds." A sassy answer to the "man cave," she sheds are backyard retreats where women can go to escape, to write, to read, to knit, or do nothing at all.

And they are gaining in popularity as women realize the value of a little "me time." One woman even claims her she shed improved her marriage. Owners are converting them from existing storage structures, constructing them from kits or building them from the ground up.

The best part of the she shed is it can be anything you want—it's the woman's space to do with as she pleases. Here are just some of the successful approaches other "she's" have taken:

Laura Boswell is Content Marketing Manager at NAHB.

Writer's Refuge: Writer and animal advocate Barbara Techel's colorful Zen "Writing Cottage" is devoted to her loves—writing her Joyful Paws blog, her dachshunds, meditation, yoga, and the occasional glass of wine with friends. A fairy-style décor and pastel colors inspire a child-like imagination. Totem animal statues, a singing bowl, stones, and of course books, bring about a feeling of peace. Her husband, a carpenter and general contractor, built the 10-by-12-foot space from the ground up, with lots of windows for natural light.

PHOTOS COURTESY OF BARBARA TECHEL

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PHOTO COURTESY OF JML GARDEN ROOMS

She sheds have gone international! This fully insulated "garden room" from Scotland-based JML Garden Rooms was adapted with structurally insulated panels for year-round use as an art studio. The doors are triple-glazed aluminum, and windows are clad with reclaimed Scottish slates. Features include two skylights at the back of the building to maximize use of daylight.

> "When I'm in there, I completely lose myself, even though I'm just a few feet from the house."
>
> —Kim Somerville
> Auchterarder, Scotland

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Now as adults we have "she sheds." A sassy answer to the "man cave," she sheds are backyard retreats where women can go to escape, to write, to read, to knit, or do nothing at all.

And they are gaining in popularity as women realize the value of a little "me time." One woman even claims her she shed improved her marriage. Owners are converting them from existing storage structures, constructing them from kits or building them from the ground up.

The best part of the she shed is it can be anything you want—it's the woman's space to do with as she pleases. Here are just some of the successful approaches other "she's" have taken:

Laura Boswell is Content Marketing Manager at NAHB.

PHOTO COURTESY OF SANDRA FOSTER

Shabby Chic: Sandy Foster converted her Catskills hunting cabin into a 9-by-12-foot Victorian fairy tale where she gardens, practices yoga and plays with her Maltese, Zuzu. The ultimate in femininity, the style is lace, florals, pinks and whites, and thrift store goods. The curtains are clean white scrim, and the chandeliers are flea market finds she altered herself. A bed fills the loft and offers a quiet space to read or nap. But Sandy's favorite space is the front porch. "I can sit and look at my garden and see my creek."

PHOTO COURTESY OF SANDRA FOSTER

She Sheds

Backyard Havens for Creative Mavens

By Laura Boswell

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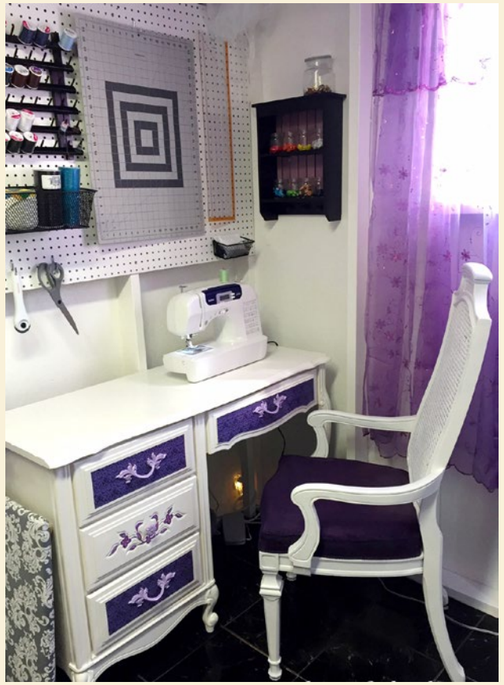
PHOTOS COURTESY OF KELLI STRADLING



Craft Cottage: Like to spin a good yarn? Turn that old backyard shed into a crafting command center like Kelli Stradling did with her Craft Shack. Shelving, counters and pegboard store and organize supplies. The 8-by-12-foot shed was renovated into its current form two years ago for just under $500. "I wouldn't change a thing!" Stradling says.

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Gardening Galore: Who says a garden shed has to be just for tool storage? With accents like bright paint, washtubs and watering cans, Judy Weiss' 11-by-22-foot Potting Shed is just as lovely and tranquil as the morning glories growing along its trellis. Originally it was an existing shed on which Judy and her husband put a new roof, painted the interior, and moved the walls to make a small porch.

Now, double porcelain laundry tubs serve as accents *and* store soil. Blue mason jars, scales and vintage add charm throughout the shed.

"It's my creative space," says Judy. "I use it primarily for gardening and projects. It's also a quiet space to read a book or listen to music."

PHOTO COURTESY OF JUDY WEISS