# Big Ideas in Small Packages

## Tiny Homes Study Committee

Town of Natick, MA ~ Fall 2016

Tiny House Study Committee

By action of Spring 2015 Town Meeting, the Town Moderator formed and appointed the Tiny House Study Committee. The committee was charged with exploring alternative options for affordable housing in Natick by examining zoning options, studying smaller homes as a viable building type, both individually and in small groupings, and collecting data regarding homelessness in Natick.

The Committee started with seven members. Currently the committee is comprised of four active members, including representatives from Planning Board, Veterans Services, Affordable Housing Trust Fund and one member at large.

Active Members
Glen Glater (co-chair)
Ganesh Ramachandran LEED AP (co-chair)
Jeanne Williamson Ostroff
Carolyn Love Scalise

Contents


| | |
|---|---|
| Introduction - From 'Tiny' to 'Small' | 3 |
| Significance and Context | 5 |
| Small Homes in Natick | 7 |
| Barriers for Small Homes | 8 |
| Building Codes | 8 |
| Homelessness in Natick | 9 |
| User-centered design approach | 11 |
| Missing Middle | 13 |
| Pocket Neighborhoods | 13 |
| Regulatory Strategies | 15 |
| Appendix | 17 |

800SF Backyard accessory dwelling built in 2012

Craftsman Bungalow (Wikipedia)

## Introduction
## From 'Tiny' to "Small"

The mention of 'Tiny Homes" in popular media is often accompanied by iconic photographs of rootless homes on wheels – a curious shelter with an identity crisis veering between a nomadic recreational vehicle and a bespoke garden shed. Often built on wheels to by-pass local zoning laws, the singular image of 150 s.f. boxes whose dimensions are limited by the length and width of the trailer severely hinders the limitless design possibilities, and social, economic and environmental benefits of integrating smaller dwellings within the context of larger single-family, suburban subdivisions.

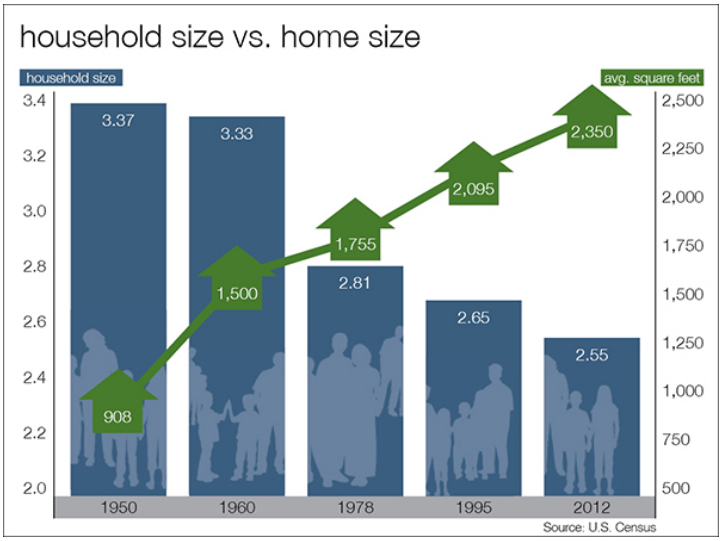
For the purposes of this study we included all detached dwellings and attached townhouses with a gross built area between 600 s.f. and 1200 s.f., a range that better describes "small homes" than "tiny homes." In addition to its limited size, we believe a small home should:

- Conform to safety and building code standards,
- Be affordable to build and to maintain
- Be compatible with the overall neighborhood character of the town
- Be buildable with conventional building materials and construction processes.
- Be adaptable to diverse user needs from accessibility to live-work uses

The report is organized as five brief sections

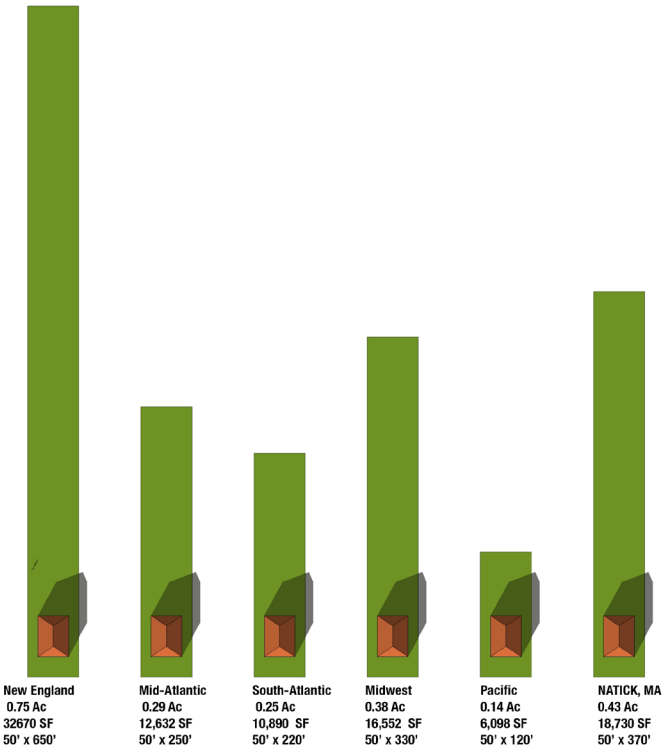
- **Significance & Context**: Overview of demographic and housing trends within the context of Natick and greater Boston
- **History**: A review of Natick housing stock in terms of total built area, lots sizes and building footprints on site
- **Definition & Design**: A user-centered approach to defining guidelines for the next generation of small homes
- **Regulation**: Understanding regulatory limits and exploring alternative strategies for realizing small homes
- **Best Practices**: An appendix of select precedents to give an illustrative idea of wide gamut of design approaches and architectural styles that are possible within a smaller residential envelope.

Levitown Homes (circa 1960)



2400-3200sf Single family home with 2-car garage, Natick MA
(Photo: Ganesh Ramachandran)

"Mc'Mansions" , Above 3600 sf
(Photo:Brendel, 2006)




Median parcel sizes across the US visualized as 50' wide parcels illustrating ratio of residential ground coverage in a median sized lot (urbanslate)

## Significance

Why are smaller homes important for Natick?
Smaller homes reduce the resources needed to build and maintain housing. But they are also about preserving and sustaining our rapidly changing communities. They are about leveraging the power of design and regulations to provide alternative choices for those who consume less and those that have less to spend. In facilitating smaller homes with smart regulations, we have an opportunity to set a new precedent for community development and housing across greater Boston. While smaller homes are not the only answer to the increasing demands of housing affordability, they constitute a critical component of our typological toolkit in the planning and preservation of our town's residential character.

## Context

House sizes are a function of a complex set of variables influenced by personal choice, income limits, demographic changes, market trends, and regulatory norms. In studying the relevance of Small Homes for the Natick Community, it is important that we take a critical look at our existing housing typologies and consider the changing needs of demographic makeup across the town in planning for our collective future.

72.6% of Natick's housing stock is comprised of single-family homes. Condos are the second-most prevalent housing type at 20.9%. Two and three family dwellings occupy 5.7% of units. Roughly 56% of existing housing units were built before 1960s making them more than 50 years old, which are highly unlikely to be fully accessible units. This is an significant issue in our town, where almost a quarter of the population is older than 55 (Natick Housing Production Plan 2012).

## The Disconnect: Shrinking Households & Expanding Home Sizes

Household sizes in the US have been steadily decreasing over the years, and Boston area towns are no exception to the national trend. According to the Town of Natick Housing Production Plan (Revised 2013), approximately 60% of Natick households have two or fewer residents, and 32% have three or four residents. The average household size in Natick is 2.44 (2010 census).

Despite decreasing household sizes, home sizes have been steadily increasing across the United States since the 50s. Levittown homes of the 1950s averaged around 750 s.f. By 2013, the average size of new houses built increased to 2,679 s.f., and the median size new home set a new record of 2,491 s.f. Suburban zoning laws and sub-division planning constraints have remained almost unchanged since the 1960s, and have not kept up with demographic shifts and changing housing needs. With steep increases in land values, and community opposition to increase density, the path of least resistance for developers to maximize profit is to keep building larger homes.

Small homes in Natick MA (circa 1900 - 1930s)
(Photo: Ganesh Ramachandran)

## Small Homes in Natick

Based on 2010 Census, the Town of Natick had 14,052 year-round housing units. Of those total units, approximately 1,220 homes (based on current GIS data) have a total built area of 1,200 s.f. or less. Appoximately 8.7% of existing housing stock in Natick comes under our definition of a "Small Home." 18% of these homes have total built areas lower than 900 s.f., and remaining range between 901-1,200 s.f. 86% of all Small Homes were built before the 1960s. Less than 0.5% of all detached and 2-4 family homes under 1,200 s.f. were built after the year 2000.

Parcel area is an equally important metric in taking stock of small home inventory in Natick. Based on 2015 data from the Assessor's office, there are a total of 9182 single, two-family, and three-family units in Natick (these numbers do not include condos which are classified separately). Per current zoning, we need a minimum site area of 12,000 s.f. for a detached 1 or 2-family dwelling unit. **However, we have a pre-existing, non-conforming housing stock of 2,848 units (about 31% ) that are on parcels smaller than 10,890 s.f .( 1/4th of acre)**

## Barriers for Small Homes

Small homes cost less to build and costs less to maintain. They consume less power and occupy a smaller ecological footprint. And yet, we rarely see new homes in our communities that are small. There are two interconnected factors that discourage smaller homes as a residential typology.

- Building Economics
- Zoning Limits

With very high land cost, and required minimum land areas for detached single family dwellings ranging between 12,000 s.f. and 80,000 s.f. (IV-B, Intensity Regulations by Zoning District, Town of Natick), there is no economic rationale for a landowner or developer to build a small home, when they can legally a build a larger dwelling well within the maximum allowable site coverage. Larger homes can be built with lower cost per square foot of built space, and are likely to offer a higher return on investment.

As in other U.S. suburbs, zoning regulations for single and two-family subdivisions in Boston area suburbs have remained stable since the 1970s. Diversifying our housing stock with smaller homes would mean revisiting site development regulations by taking a critical look at limits on density, site area, frontage and setbacks in neighborhoods, transit corridors, and parcels that are more appropriate for smaller homes.

## Building Codes

As long as the home conforms to International Residential Code (IRC) and local building codes, there are no significant barriers to building small homes from a building code perspective. As per 2012 and the previous International Residential Code, “Every dwelling unit shall have at least one habitable room that shall have not less than 120 s.f. of gross floor area.” The 2015 code is even more encouraging of smaller spaces. The code states, “Habitable rooms shall have a floor area of not less than 70 s.f.” (R304.1 Minimum Area). Current building codes make it totally feasible to build a tiny home of less than 200 s.f.. However, fully accessible smaller homes with a private bedroom and separate living space would require a minimum of 500 s.f. for a good design.

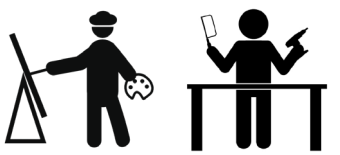
## Homelessness in Natick

Contrary to popular perception, Natick does have a small but growing homeless population. Department of Human Services and the Council of Aging, in cooperation with local churches and community groups, have been serving the needs of the homeless.

Official data on the homeless population of Natick is hard to come by. Based on anecdotal narratives from social workers at the Natick Service Council, however, we estimate there are more 20-30 people who are homeless in Natick. This range does not include those who have found temporary shelter with relatives or friends ("couch surfing"). Our homeless population includes families evicted from their homes, single mothers who are victims of domestic violence, single men living in the woods, in cars and in parking lots, young adults with drug and mental health issues, disabled veterans, and older couples who are unable to afford their homes.

Natick Service Council has provided rent assistance to over 100 families with rent during the first quarter of 2016, and is serving over 140 new families this year, bringing the total served to over 700 people. There is a long waitlist for Section-8 housing, where tenants pay 30% of their income with the assistance of Natick Housing Authority.

- Small Home Residents
  - Active Adults/ Baby Boomers
    - Downsizing seniors, seniors choosing to age-in-place amongs their existing communities
    - Intergenerational households with newly constructed, accessible accessory dwellings behind the existing single-family home
  - Starter Homes / First-time Home Buyers
    - Recent graduates
    - Young couples without children
  - Home-buyers and renters under median income limits
    - Veterans / Disabled residents
    - Subsidized transitionary housing for homeless
    - Single-parent households
  - Entrepreneurs/ Artists looking for affordable live-work spaces
    - Artist clusters and communal housing
    - Units with provisions for light-industrial manufacturing



## Who is going to live in small homes? - A user-centered approach

Before regulating small homes it is important we understand the needs of potential residents. Over 60% of households in Greater Boston area are 1- and 2-person households populated by single individuals, young couples without children, active empty nesters, or aging retirees. These groups have varied expectations in terms of size, design, and neighborhood services, especially when compared to families with children.

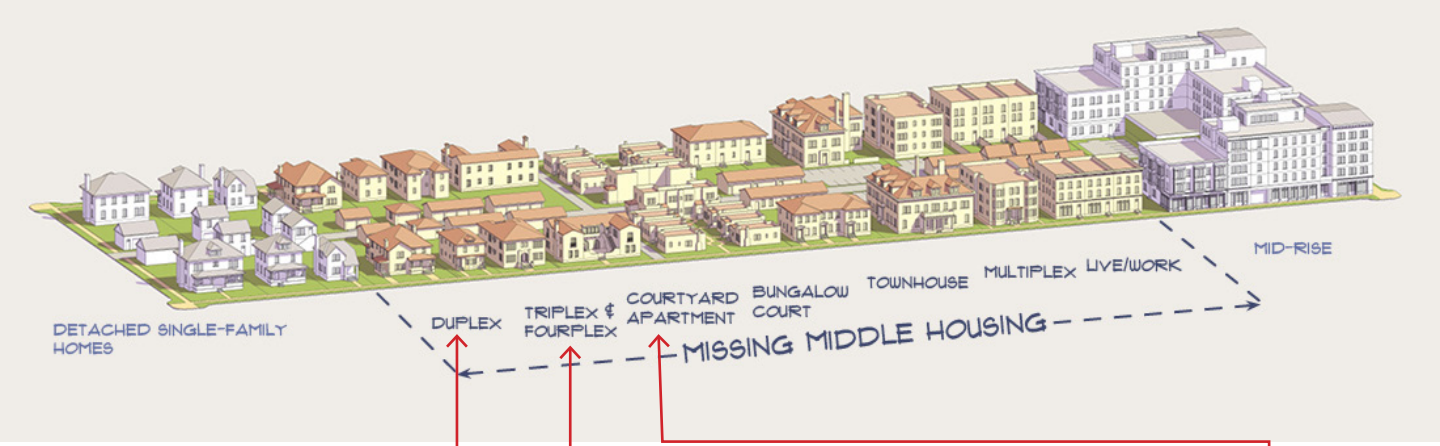
Small homes can cater to a wide range of demographic groups distributed across the income spectrum. We have identified four broad user groups that stand to benefit from the introduction of a new breed of smaller homes within the town's housing inventory.

- Active adults and empty nesters looking to downsize from their larger single family homes but choosing to retire within their own community. This group also includes seniors gravitating towards inter-generational households with their children and grandchildren by expanding the mains structure to include an accessory unit
- Recent graduates and couples without children who are looking for a starter homes with low mortgage in neighborhoods walkable to shops and transit
- Residents with income well below the median income limits looking for subsidized housing ( veterans, disabled seniors, homeless, single-parent households)
- Artists, crafsmen and entrepreurs looking for communal housing with shared amenities and co-working spaces.

Across the US, from 2007 to 2011, the number of cars purchased by millennials aged 18-34 fell almost 30% (Edmunds.com). Surveys indicate the preference of millennials to be able to walk to transit, and to be able to access local services by foot. Lowering off-street parking ratios, or eliminating minimum parking requirement altogether as in the case of senior housing will open up creative possibilities for converting currently undevelopable parcels into potential sites for affordable small homes.

While smaller homes have long been a part of Natick's town fabric, most of these homes require expensive retrofits to render them fully accessible. In the next generation of smaller homes, we have the opportunity to realize fully accessible dwellings, in line with the expectation and needs of aging population.

## Big Ideas in Small Packages




Opticos Design

Sitephocus

Ross Chapin Architects

## “Missing Middle” and Small Homes

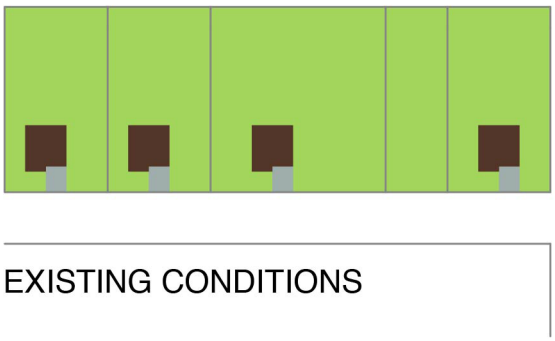
An expression coined and categorized by the Berkeley, CA based planning firm Opticos Design, “Missing Middle” defines a range of multi-unit or clustered housing types compatible in scale with single-family homes that help meet the growing demand for walkable urban living. Single-family homes located in conventional suburbs such as Natick, make up 90% of the current housing housing stock available in the United States, and yet increasing number of consumers are seeking alternative housing options compatible with a walkable lifestyle.

While the “Missing Middle” includes a wide gamut of house types from duplexes, to bungalow courts and fourplexes, it provides a useful point of reference in identifying and integrating specific small house typologies with the town fabric.

## Pocket Neighborhoods

Planned Unit Developments (PUDs) can be entirely conceived of smaller homes in the form of Pocket Neighborhoods. “Pocket neighborhoods are clustered groups of neighboring houses or apartments gathered around a shared open space -- a garden courtyard, a pedestrian street, a series of joined backyards, or a reclaimed alley -- all of which have a clear sense of territory and shared stewardship. They can be in urban, suburban or rural areas” (pocket-neighborhoods.net; Ross Chapin Architects). These are highly flexible residential clusters that lend themselves to accommodate a variety of house types and styles.

Ross Chapin Architects



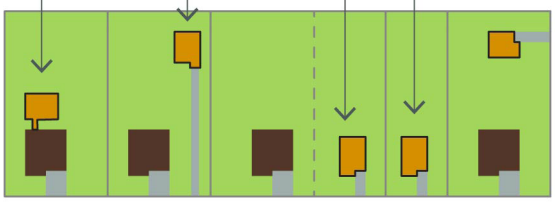
EXISTING CONDITIONS

Attached Accessory Dwelling/
Inter-generational Household

Detached Accessory Dwelling

Subdivision of larger parcels

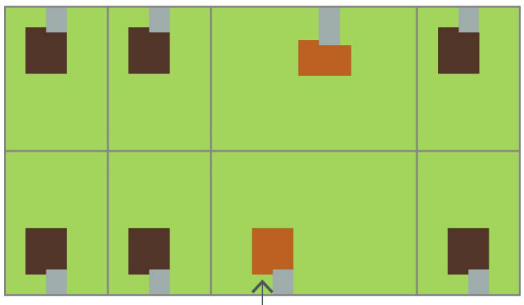
Allowing smaller,
non-conforming lots
for Small Homes



POTENTIAL INFILL STRATEGIES

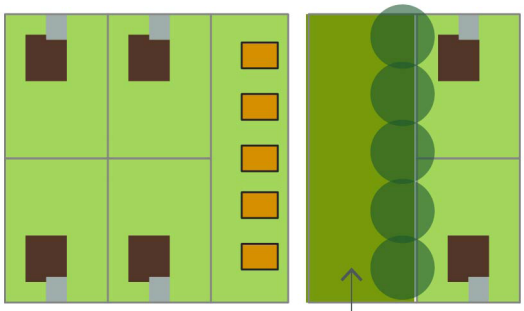
Existing Detached Unit

Proposed Small Home / Accessory dwelling



Homes requiring major retrofits /
Foreclosure properties in disrepair

Small Home Cluster Development



Public Amenity
(Park/ Tot-lot/ Community Garden)

## Development & Regulatory Strategies

To introduce and integrate new smaller footprint home within our town fabric, we need to explore alternative development strategies and regulatory tools that are relevant to the new housing type, and yet compatible with the existing neighborhood character. We recommend that the town should explore a whole range of context-specific strategies that can further affordability, accessibility and environmental sustainability with smaller footprint dwellings. Some suggestions include:

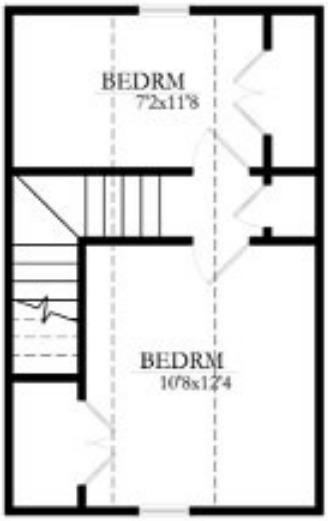
- The Master Planning Process should include investigation and review of the small home concepts.
- Establish an overlay zone within walkable distance from transit station to encourage smaller homes in non-conforming parcels, or as an accessory dwelling in larger parcels.
- Establish a new category for pocket neighborhoods comprised of Small Homes with a cap of number of units and unit sizes.
- In contrast with multi-story senior living projects, encourage alternative design approaches with single-level, small homes with shared open space as a community amenity
- Create an accessory unit program per recommendation of Housing Production Plan with an affordability restriction on new units.

## Recommended features for approving Small Homes as a specific category

- Require smaller footprint - Less than 900 s.f. in ground coverage, and no more than 1,200 s.f. in total gross area.
- Allow for reduced off-street parking requirements.
- Give preference to unit locations near neighborhood centers and transit amenities.
- Call for higher energy efficiency and water consumption standards.
- Explore public amenity component for tiny house cluster development in case of special permit applications.

# Appendix

FIRST FLOOR



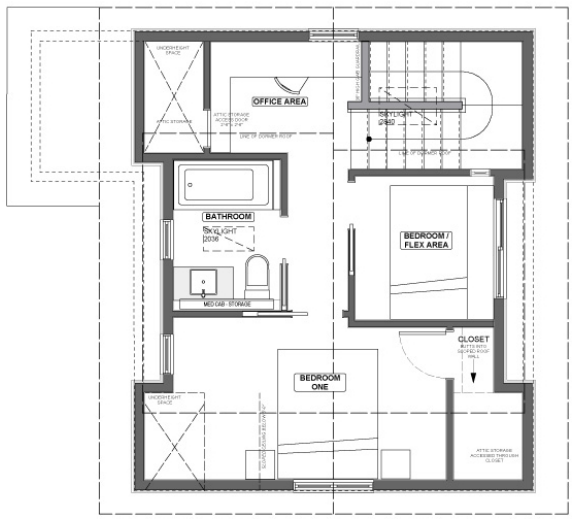

SECOND FLOOR

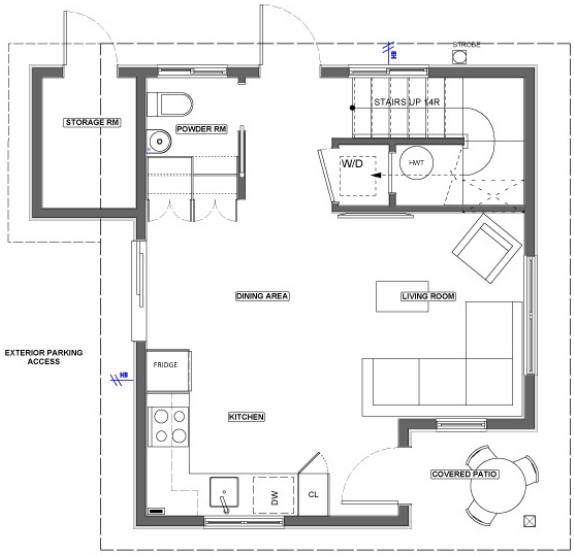
## KATRINA COTTAGE COLLECTION

The Katrina Cottage collection includes attractive small house and Cottage style plans developed in response to the need for alternatives to the temporary FEMA trailer after the devastation of Hurricane Katrina in New Orleans and the Gulf Coast. Designer and author Marianne Cusato, residential designers Eric Moser and W.A. Lawrence, architect Bruce Tolar, and others designed this range of contextually appropriate detached dwelling units.
www.mariannecusato.com

## Big Ideas in Small Packages

Laneway houses designed and built by the Canadian firm Smallworks ( Photo: smallworks.ca)



## LANEWAY HOUSE

A laneway house is a smaller, detached home located where the garage would normally go on a single family lot.

Laneway houses contribute to the overall sustainability of the city. They give people more opportunities to live close to where they work, shop, and play, and they make the city's urban lanes more green, liveable, and safe.

**Property owners can build a laneway house on any lot 32 feet or wider in any RS single family zone**

Laneway housing also contributes to the amount of affordable rental housing available in the city.

City of Vancouver
http://vancouver.ca/home-property-development/building-your-laneway-house.aspx

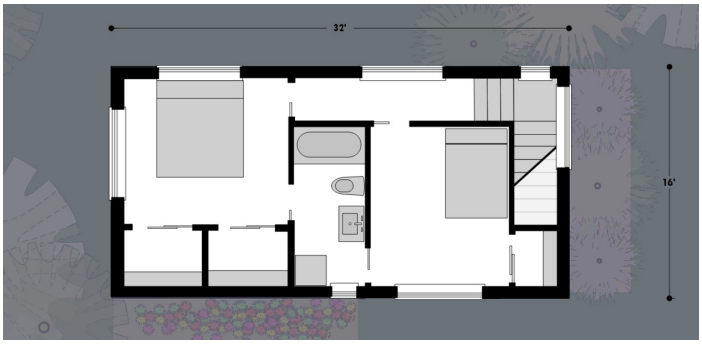
Photo: Mother Nature Network

Photos: Ruralstudio.org

## RURAL STUDIO

Rural Studio is an off-campus design-build program of Auburn University established in 1993 by D.K. Ruth and Samuel Mockbee. "The 20K Home" was launched in 2005 after years of experimenting and prototyping a new locally-built, rural home. The "20K" represents a materials cost of less than $20,000. While the current prototypes are more relevant to the needs of western Alabama and the Southeast, the studio is working on developing contextually relevant affordable prototypes for rest of the country.

www.ruralstudio.org



2 Story Cabin

KIT PRICE: $18,400 for shell, up to $73,400 for everything beyond the foundation
Exterior Dimensions: 25’ x 15’ x 25’ (height)
Conditioned Square Footage: 1,025 square feet
Full Kitchen, 2 Full Baths (one tub, one shower)

The Escape

Kit prices: $7,600 for full structure, up to $38,200 for everything beyond the foundation
Exterior Dimensions: 27’ x 20’ x 15’ (height)
Conditioned Square Footage: 450 square feet
Full Kitchen, Full Bath (shower), 3 Closets, Exterior Storage Nook

Full kits include framing & sheathing, windows and doors, roofing and waterproofing, siding and trim, insulation and drywall, heat, AC, hot water, Bathroom fixtures and plumbing, lighting fixtures and wiring, cabinetry, range, refrigerator, microwave, dishwasher.

Photos & Renderings: Homebuilt

## HOMEBUILT

Based in Massachusetts, Homebuilt is a collaborative team of designers, engineers, robotics experts, and construction professionals providing robotically-cut kits for Homes, Tiny Homes, and other buildings. These kits are designed to be easily built by two people without any prior building experience/ knowledge, and only using a couple small hand-tools. The kits can also be very quickly built by local professionals.

www.homebuiltcompany.com

Concord Rivewalk, Concord, MA (Photo: Ganesh Ramachandran)

Conover Commons, Redmond WA (Photo: Ross Chapin Architects)

## POCKET NEIGHBORHOODS

“ Pocket neighborhoods are clustered groups of neighboring houses or apartments gathered around a shared open space — a garden courtyard, a pedestrian street, a series of joined backyards, or a reclaimed alley — all of which have a clear sense of territory and shared stewardship. They can be in urban, suburban or rural areas.

These are settings where nearby neighbors can easily know one another, where empty nesters and single householders with far-flung families can find friendship or a helping hand nearby, and where children can have shirttail aunties and uncles just beyond their front gate” - www.pocket-neighborhoods.net / Ross Chapin Architects

Photo: AlmostParallel.com