

MICRO SHOWCASE

Tour Guide

Welcome. Currently the Micro Showcase is many (micro) things:



Dwell

- a growing display of 3 high quality **micro structures**, all under 350 ft²: on *wheels*, the award winning **Minim House**; on *foundation*, the **Studio Shed**; and the *shipping container* studio **BoomBoxDC**.



Tech

- a showcase of **sustainable technologies** (off grid solar, rainwater capture/treatment, etc) and **micro-furnishings**



Furnish

- a growing online resource for micro-building and micro-living **blog**, and home of the DC Chapter of the American Tiny House Association



Grow

- an organic demonstration **garden, micro-orchard, apiary, habitat** and outdoor event/art space

Everything here is commerce-free, tours are gratis. The mission? To explore how to live well, sustainably. To bring together architects + designers + planners + developers + contractors + doers who design/build/live micro. To spread the micro message.

Why? In the US we lived 3x as small 60 years ago and weren't any unhappier. Today we're depleted financially, mentally and physically paying for and maintaining big homes. We have an affordable housing crisis. Our oversized U.S. housing is an environmental disaster, contributing 20% to U.S. CO2 emissions. There is joy to be found in embracing limits. And small is just cooler— it's an iPhone world, time for us to stop living in a Blackberry.

Attached is our tour guide. *If you're picking this up at the open house, please leave it behind for others to read.* All info (and more!) is available at **MicroShowcase.com**

Micro Showcase: Minim House Tour



Welcome to Minim House. The philosophy behind the house is pretty simple:

- ◆ a contented life is largely independent from the size of one's dwelling
- ◆ we humans can and must live more sustainably, but not without style
- ◆ living in a small structure should never feel compromised- it should feel amazing
- ◆ excellent design has a role to play in spreading the acceptance of simple, affordable, green living

There have been many tiny houses built since the start of the movement. Many of those under 200 ft² just feel small. Visually, any features at eye height diminish the sense of space- walls, cabinets, lofts. So Minim House does away with these. Many small houses also rely on classical architectural proportions- attractive externally, but when scaled down result in small windows, narrow doors, less light. Using modern design allows for wide views and a spacious feeling. Minim House was designed to completely reimagine what a mobile micro home can be, adding livability, streamlining construction, modernizing aesthetics, increasing off-grid versatility, all while keeping costs in check.

Minim House is 11'x22', with 210 ft² of interior space. Of course at 11' wide, Minim House is a wide load. Since most houses spend less than 1% of the time moving, and 99% being lived in, we thought it made sense to go a little wider for extra comfort. Since it is built on a trailer, and can be moved by any truck with 14,000 lb towing capacity. It can also unbolt from the trailer for foundation installation.

Let's take a tour.

Kitchen: Here is a 10' galley kitchen, big enough for 2 cooks. A 7 cu foot NovaKool refrigerator/freezer that can run off of a/c or the 12v solar system. A 2 burner Dickinson range hides under the cutting board. For baking, the microwave also doubles as a convection oven. 3 standard stainless IKEA cabinets are used to minimize custom cabinet building. There are two shelves that hold a total of 60 mason jars of food. Under the counter, more storage, and a rack to keep drying dishes out of sight. The foot pedal controls the kitchen sink water- this is both convenient, more sanitary and greatly aids water conservation.

Moveable table: Off the shelf marine hardware was used to create a table that can rotate, pull up/down on a gas spring, and move around to 4 different metal sockets in the floor. In front of the couch it is placed to make a dining table for 6. In front of that socket, the coffee table. Over by the kitchen, extra kitchen space and dining for 2— or rotate 45 degrees for a bar. And by the window, a desk overlooking a graveyard, for contemplating mortality.

Stool: This Cubista stool unpacks to 5 stools. Even when fully compacted there is room inside for two pillows. With the sofa, there is comfortable seating for 10 in the house. \$950 from Resource Furniture in NYC.

Sofa: Seating for 5. To minimize off gassing common with synthetic materials, the sofa is custom made with organic cotton fabric and all natural latex foam. It also can double as an 8' guest bed. Underneath, the seat opens up to reveal a 40 gal water tank on the left, and water filtration system and lots of storage on the right side.

A/V: The large window array next to the door is conveniently sized in 9:16 proportion, and the shade hanging above it doubles as a projection screen. A small LED projector sits on the sofa and is wired to the computer at the desk. Stereo speakers on either side of the window complete the home theater.

Bed: Most micro houses have climb-up lofts near the roof. This is ok if you are young, don't drink much, can handle rain noise, and don't get too creative during sexy time. Minim House has a roll out full or queen size bed. It rolls out, locks in place, rolls back. Two pillows store in the cube. It's easy to make/unmake. And with a 6" natural latex foam mattress, super comfortable, without any toxic off gassing. Two all wool blankets from Faribault Woolen Mills provide high degree of warmth with a low profile. The bed can also be pulled out partway and locked, creating additional padded seating for 3.

Office: The 5'x7' office/storage area sits atop the bed platform. It seemed important to have desk space that doesn't double as the kitchen table. So in the office we have a 5' long desk, with additional wraparound countertop. A full sized piano keyboard hides underneath the desk (lift carefully!). A printer/scanner/copier in the closet connects wirelessly to the laptop.

Closet: Behind the office is a 5' long closet. We've tried it out- it can fit 15 dress shirts, 10 t-shirts, 12 pairs of socks, two coats, two suits, 21 ties, 6 sweaters, 7 pairs of shoes, a wetsuit, and guitar bag. And a suitcase, large backpack full of camping gear, a 10 tray food dehydrator, a toolbox, a printer, vacuum, 3 kites, 4 bike panniers, a BBQ grill, and the battery bank, inverter, and charger that allow the house to be off grid. There is still some room to spare.

Bathroom: The bathroom is a wet bath arrangement, with showerhead over the sink area, with a custom stainless steel enclosure. The incinerator toilet is tucked in and screened off with a shower curtain when the water is spraying — a compost or standard toilet may also be used. Next to the toilet is an electric Ariston 4 gal hot water tank. It can run off the solar system, since it is just turned on for 10 minutes before shower time. It easily gives a 10 minute hot shower. The bath uses a standard IKEA sink, and has a standard remote controlled RV fan for ventilation. The bath may be extended longer if desired by eliminating one of the bookcases. There is also a brass porthole, to keep a lookout for pirates.

Bookcase 1+2: Here is the library. Plenty of shelves on two bookcases for 150+ books. Here is the sewing room. Here is the bar. Here is the portrait gallery. Mom and Dad sure looked like hippies.

Finishes: Flooring, desk, table and counters are all made of solid walnut from a local planing mill, finished with a zero-VOC food grade oil finish. Walls are finished with a zero-VOC paint.

Let's talk utilities:

Electric: Minim House has a 960 watt solar array which feeds an Outback charge controller, 12 volt battery bank, and an Outback charger/inverter. With this system the LED lights, refrigerator/freezer, water pumps, keyboard, printer/copier, notebook computer, sewing machine, microwave, blender, bread machine, speakers, stereo, and LCD projector can run sustainably off the solar system. Note the solar array + battery bank are not large enough to power the incinerating toilet, the a/c at night, or the electric convection oven reliably. The house can easily hook up to the grid when needed with a standard 15 amp extension cord (no large 30 or 50 amp RV cord needed).

Heating: A marine Dickinson propane heater provides a lovely hearth with yellow flame. It uses a double chamber vent, which both brings in makeup air from outside and vents the exhaust. When connected to the grid, Minim House has a flat panel 'eco-heat' wall heater on the closet next to the bath that draws just 200 watts but keeps interior temperatures up well.

Cooling: many small homes have unsightly mini-split a/c units or window a/c units. Minim House uses a through-the-wall a/c unit, built into the office cabinets. There is nothing visible on the outside of the house except an architectural grade vent plate. When the sun is out, the a/c unit can run off the solar system without depleting the batteries.

Water: Most tiny houses require a pressurized water hookup, which limits where the house can live. Minim House has a self sustaining rainwater catchment and treatment system- no water hookups, no problem. When rain falls it is collected into an invisible roof gutter, and is gravity fed to a 250 gallon flexible cistern under the trailer bed. A small RV pump in the hitch is then used to fill the 40 gal on-board water tank under the sofa.

Water is pumped through a 3 stage Doulton filtration system (sediment, carbon, and ceramic), which makes it completely potable. With an average rainfall of 3"/month in DC, approximately 500 gallons of water can be collected from the rooftop. With the most efficient low flow shower and faucets on the market, water use for showers and sinks is about 30-40 gallons/week.

Lighting: Minim house uses all LED lighting. Inside, there is dimmable strip LED lighting above the back windows and under the counters. The 4 spotlights in the house are 10w dimmable waterproof exterior soft white LED fixtures. All components are easily sourced online.

Let's discuss construction:

Trailer: The house is built on a 14,000 GVWR standard 8'6" wide landscape trailer from Kaufman trailers in NC.

Framing: Minim House is built with SIPs (structural insulated panels). SIPs are pre-built construction blocks made like a sandwich- OSB plywood on the outside, insulation on the inside. Building with SIPs have many advantages. First, it's easier and quicker to construct an insulated shell, just connect the blocks together. Second, the walls have double the insulation value of traditional stick built homes, and leak much less air. Walls here are R-26, R-40 in the roof, R-30 in the floor.

Finishing: Minim house also simplifies construction by only having 3 windows and 1 door to install. Most exciting, once door/windows are installed there is *no* trim work on exterior or interior- siding just butts up against the window frame on both inside and out. The exterior is finished in cypress, which has a natural preservative (cypresseen), so there is never any future wood treatments. It naturally ages to a light grey.

If you'd like to build this house yourself, fully detailed Minim House plans+construction guide are available at the website below. Basic materials costs are around \$35K, and the required SIPs panels can be made/shipped anywhere. It can also be foundation built. More info at the link below. Thanks for visiting!

minimhomes.com

Micro Showcase: Studio Shed Tour

The Studio Shed is a 12'x24' (288 ft²) event and workshop space at the Micro Showcase. It replaced a 20' shipping container previously used for tool and materials storage. The shipping container had no windows, was quite narrow (8'), and as a beige box, wasn't much to look at. The design challenge for the replacement structure was to make a small space as multifunctional as possible: for wood and metal working, bike and tool storage, small event and dinner space, guest quarters, and lounge area.

Brian bought the pre-manufactured kit from Studio Shed, and Tony and Brian completed the shed in 2014. Once the concrete pad was poured, it took just a full week to complete the shell, a week for siding, and a few more days for the interior finish. The exterior blocks are Hardyboard fiber cement siding laid over black aluminum flashing. The interior is all natural American Clay plaster veneer over drywall. All lighting is dimmable LED.

The Studio Shed is an important part of the Micro Showcase. We think this company makes some of the most attractive storage and garage structures around, and they also have a 'lifestyle' line that are perfect for foundation-built micro homes, backyard accessory dwelling units, art studios, guest rooms, etc. The company also shares values about re-envisioning what our space needs are. So we're very excited to be able to have one of these unique pre-fabricated buildings as another type of small, affordable, green, and very quick-to-construct housing option. More information on Studio Sheds can be found at studio-shed.com

Here are a few of the Studio Shed elements:

Hydraulic Table: 1500lb hydraulic, moveable lift built at the Micro Showcase raises the 7' hickory tabletop from coffee table to dinner table to work table height.

Multi-function table: Hickory kitchen tabletop lifts off to reveal plate steel welding table. This unit includes a sink, ceramic water filter, electric water heater. The induction cooktop is electric, and portability allows the table to serve multiple functions.

Vertical pull-down bed (coming Jan 2016): Breda bed combination murphy bed + 6' sofa to be installed.

Ethanol Fireplace: Uses liquid ethanol to create decent flame. Fireplace is moveable, no venting required. Not for regular heating use.

Mini Split HVAC: Fujitsu Halcyon 9000 Btu unit is second most efficient mini-split unit on market (SEER 27.2). Heats and cools, 9000 or less BTU units are ideal for micro spaces.

Combination microwave + convection oven: both microwaves and bakes, saving the space of a traditional oven.

Combination washer + dryer: saves space compared to the traditional individual washer and dryer units. Highly energy efficient unit.

Hiding shower (coming Dec 2016): shower tray pulls out from under moveable storage unit, shower curtain wraps around from behind unit.

Off grid water collection and treatment: a 800 gallon cistern on the north side of the Studio collects rainwater from the roof. It is pumped through the structure to a 3 stage Doulton filtration system under the sink, which makes it potable for both sink and shower.

Off grid toilet: Separett toilet requires no water or sewer hookup, only a 5 watt electrical connection for venting/drying solids. Good choice for off grid micro house applications.

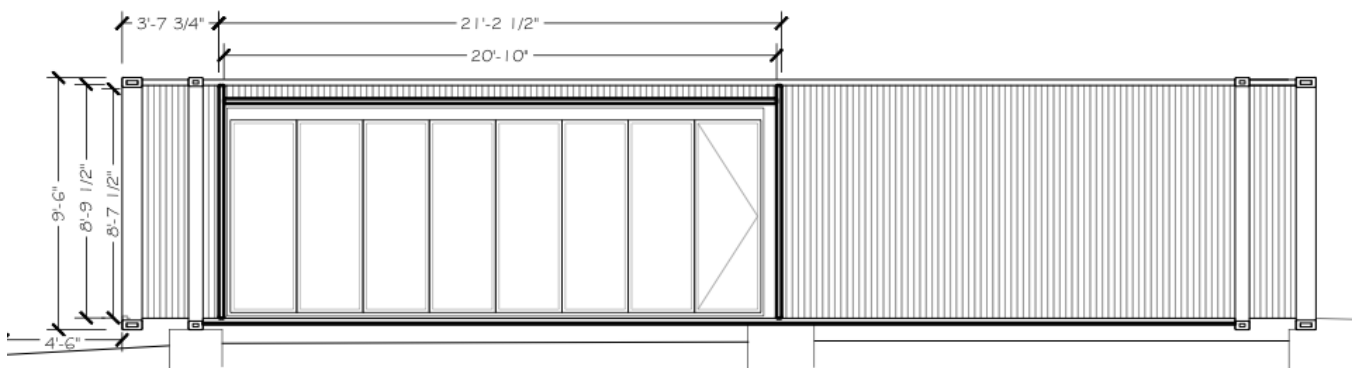
Lighting: all ceiling and floor lighting is high efficiency LED.

Wall plaster: American Clay 100% natural wall coating is applied over traditional drywall. Easily repairable, no offgassing, old world look. Fairly labor intensive to apply.

Micro transport: Eco-Reco M5 Scooter is powered by a high capacity lithium-ion battery, which can charge off of the Minim House solar array. It has a 22 mph top speed, 10 mile range, and is completely foldable (fits in Minim House closet). Can attach Burley trailer (on top of storage unit) to haul 70+lbs. Can add green power bank in trailer to increase range to 20 miles.

Micro Showcase: Boombox Shipping Container Studio

Head north up the alley along the graveyard (50 Franklin St NE) and you will find the red cargo containers that define the Boombox. This project showcases creative reuse of two, 45' shipping containers ('cargotecture') into a 25' artist/studio space and a 20' garage, and was completed in early 2016. More information can be found at BoomBoxDC.com



Micro Showcase: Garden Tour

Just like the micro houses at the showcase, the garden has been designed to showcase the most efficient use of limited space- in this case an 1/11 acre plot that with half the area occupied with buildings. We've marked almost all of the fruit trees, herbs and flowers on the lot, see if you can find them all! Everything was built and planted by Brian from 2012-2015.

Fruit: A wide variety of fruit is suitable for growing in DC (Zone 7a). Currently planted are 14 fruit trees including: 2 apples (Honeycrisp, Fuji), 3 cherries (Montmorency sour, 4/1 combo sweet), 2 pear (Seckel), 1 fig (Negronne), 1 apricot (Blenheim), 3 plum (Santa Rosa, Green Gage, Damson), 1 serviceberry, 1 medlar (Breda Giant). Many of the trees are dwarf or semi-dwarfs that will be judiciously pruned. There's also a blackberry bush, 5 raspberry (Fall Gold, and variety of reds), 3 rhubarb (Victoria), and 2 blueberries (Reka, and a 3/1 combo). Special thanks to Casey Trees in DC for subsidizing purchase of the fruit trees, and the great folks at Snell Nursery in MD.

Herbs: Garlic and traditional chives, Kentucky mint, bronze fennel, borage, red veined and French sorrel, French thyme, green lemon thyme, purple sage, pineapple sage, sweet marjoram, French tarragon, green fringed lavender, sweet lavender, Italian oregano, hot/spicy oregano, dill, Salem rosemary, Tuscan rosemary, and lemon verbena. Thanks to Debaggio's in Chantilly, VA for perhaps the best selection of culinary herbs on the East Coast (as well as tomatoes and peppers).

Flowers: Sunny areas include a wisteria vine and Carolina creeper vine, rose bushes (x4), zinnias, sunflowers, hollyhock, speedwell, salvia, coneflowers, bee balm, verbena, beard tongue, coreopsis, and 50 tulip bulbs in spring. The small shaded flower garden includes asters, bleeding heart, geraniums, and a lonely but lovely peony.

Veges: There are 10, 4x8 garden boxes for vegetable planting, where all sorts of things are growing. With more to come! Currently there are small demonstration plots for potatoes, storage onions, strawberries, asparagus, sunchokes and more! The boxes are filled with locally sourced LeafGro (made from composted leaves from DC/ MD yards), it's a bit pricey but amazingly productive medium to grow in. Garden boxes are made out of reused wood from Community Forklift in MD.

Butterfly garden: There are a variety of plants in front of the Minim house and Studio Shed designed to attract and nourish Monarchs and other pollinators. These flowers all have tags with a (B) on them.

Batbox: What's that black box hanging by the lamp pole? That's the new bat hotel. It's been up since spring 2013, and unfortunately we're still hoping to have some visitors soon. A single bat will eat 200 mosquitos a night! And bats really need some help right now.

Bees: In the northeast corner of the lot a beehive is active. Hoping for honey starting fall 2015.

Cistern: There's a 800 gallon cistern next to the Studio Shed from MetalWaterTanks.com. It is fed off the Studio Shed roof, and has a 'first flush' system that filters out dirty roof water during the first few minutes of a downpour.

Composter: That green barrel is a Tumbleweed composter (nope, not the tiny house company). It's just for discarded veges/fruit from the garden, and has been working well for years. Most importantly, it's quite easy to turn, and is sealed to keeps mice/rats at bay.