TINY HOMES, BIG IDEAS

Beyond the world of HGTV
OVERVIEW

TINY HOMES, BIG IDEAS

- What the heck is a tiny home?
- How do they fit into the broader housing context?
  - Construction
  - Regulation
  - Uses
  - Economics
- Where and how are they being used?
- So what? Tiny homes in the future
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Summit County
SO – WHAT THE HECK IS A TINY HOME?

GREAT QUESTION… BUT WITHOUT A GREAT ANSWER

A small (<500sq.ft.) permanent home
Image: BU Today

An outlet for design creativity
Image: boingboing.net

A trendy mobile home
Image: New Frontier Tiny Homes

The future of glamping
Image: Tinywood Homes

A new tool for social service provision
Image: Denver Westword

The next wave of sustainability
Image: inhabitat
SOME DEFINITIONS

- **Recreational Vehicle (RV)**
  - A vehicle which is:
    (a) Built on a single chassis;
    (b) 400 square feet or less when measured at the largest horizontal projection;
    (c) Designed to be self-propelled or permanently towable by a light duty truck; and
    (d) Designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel, or seasonal use.
DEFINITIONS

- **Mobile Home**
  - Factory–built home that is
    a) Built before June 15, 1976, and
    b) Not built to a uniform construction code.

- **Manufactured Home**
  - Formerly known as a mobile home
  - Built in a manufacturing plant to the Manufactured Home Construction and Safety Standards (HUD Code) (1976)
  - Transported in one or more sections on a permanent chassis
  - When on site:
    - At least 400 square feet
    - Built and remains on a permanent chassis
    - Designed to be used as a dwelling with a permanent foundation built to FHA criteria
DEFINITIONS

- **Modular Home**
  - Built in a manufacturing facility
  - Constructed to the same state, local or regional building codes as site-built homes

- **Tiny Home**
  - ???
LET’S FIGURE THIS OUT

1. Building a Tiny Home
   - From idea to reality, how a Tiny Home gets built
   - Building codes, materials, recent changes

2. Planning and the Tiny Home
   - Public sector perspectives, trends, and considerations
   - Example: Salida, CO

3. Tiny Homes as Community Services
   - Where do Tiny Homes fit into the spectrum of service provision?
   - Example: Denver, CO - using Tiny Homes to address homelessness

4. The Economics of Tiny Homes
   - Where do Tiny Homes fit into the overall housing environment?
   - How do economic and development considerations compare to other housing typologies?
BUILDING A TINY HOME

JENNIFER WATERS, TINY HOUSE BUILDER
August 2017: 2018 International Residential Code (IRC) is released.
- For the first time, it includes Appendix Q Tiny Houses.
- Note: Original draft version was Appendix V

Approved by ICC in unprecedented single code development cycle.

Jurisdictions may use Appendix Q as model code to adopt, reference, or amend.

Builders, even in jurisdictions that have not adopted the 2018 IRC or the appendix, can seek approval “on a project basis through the alternative materials and designs provision” in the IRC. —David Eisenberg, ecobuilding.org
BUILDING CODES

Only **2.5 pages (!)** of game-changing elements in Appendix Q:

- Applies to tiny houses as buildings on foundations
- Defines Tiny House as a dwelling that is 400 square feet or less, excluding lofts
- “Relaxes” requirements in IRC
  - Ceiling heights (lower than IRC but higher than RV)
  - Lofts (RV modified)
    - Stairways (RV) with landing platform as top step (new)
    - Ladders (RV), alternating tread devices (IRC), ships ladders (IRC)
    - Loft Guards (RV)
  - Emergency Escape and Rescue Openings (IRC)

*Note: RV refers to ANSI A119.5 Recreational Park Trailer Standard 2009 Edition*
BUILDING CODES (CONT’D)

- Appendix Q is just the tip of the iceberg . . .
  - “Tiny houses shall comply with [the IRC] except as otherwise stated in this appendix.”
    — Appendix Q

- Attached to that IRC iceberg . . .
  - Local code packages adopted by reference including
    - County requirements
    - Local requirements (e.g., Wind & Snow Load Requirements)

“Staff will provide a complimentary digital copy of all amendments to the International Codes upon request.” — Town of Estes Park
Appendix Q progress:
- tinyhousebuild.com/code
- americantinyhouseassociation.org

Summary of important Appendix Q basics:
1. Potential for project use as “alternative” in absence of local adoption
2. Tiny house is 400 sf or less
3. Tiny house on foundation (THOF)

Next code development cycle for IRC 2021, Appendix Q makers plan to address Tiny Houses on Wheels (THOW)

“For some people, homeownership is heavily impacted by the cost of land and even the construction of a fixed tiny house becomes unattainable. For those individuals, the presence of movable tiny houses in the building code may create their only path to home ownership.”

—Commenter’s Reason
HOW TINY HOUSES GET BUILT – FROM IDEA…

- June 2017: Attended tiny house seminar in Denver. Joined NOAH.
  - National Organization of Alternative Housing (NOAH) – Tiny house inspection & certification service for THOW
- NOAH Standard for THOW makes reference to:
  - NFPA 1192 Standard on Recreational Vehicles
  - ANSI A119.5 Recreational Park Trailer Standard
  - NFPA 70 (National Electric Code)
  - IRC (including Appendix Q)
- Five inspection stages:
  1. Trailer
  2. Framing (including all rough openings for windows)
  3. Rough Trades (Mechanical/Electrical/Plumbing) + house wrap + roof underlayment
  4. Insulation
  5. Final MEP/appliances + roof + egress (red label & latch) + detectors
## HOW TINY HOUSES GET BUILT — ... TO REALITY

### EMERGENCY ESCAPE AND RESCUE OPENINGS

<table>
<thead>
<tr>
<th></th>
<th>RV (ANSI 119.5)</th>
<th>Tiny House (Appendix Q – IRC R310)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1 – Egress Size</strong></td>
<td>2.2 sf ellipse (24 in x 17 in ellipse)</td>
<td>5.7 sf (or 5.0 sf on first floor)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(20 in wide min. x 24 in high min.)*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>*20 in x 24 in = 3.33 sf (too small)</td>
</tr>
</tbody>
</table>

*Note: 5.7 square feet is the amount of space required for a firefighter with breathing apparatus!*

*Under Appendix Q, required egress opening size is more than twice clear opening required by RV standard.*

<table>
<thead>
<tr>
<th></th>
<th>Town of Estes Park deleted exception allowing 5.0 sf opening at ground floor.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2 – Local Amendment</strong></td>
<td></td>
</tr>
</tbody>
</table>
HOW TINY HOUSES GET BUILT – THE BUILDERS

- Cost of tiny house **DIY build, not including land, “averages under $25,000, while having a builder do the job roughly doubles the cost.”** *(AARP, 3/29/18)*

- Local Builders
  - *Einstyne Tiny Homes* (Brighton)—NOAH, shells, wood/steel frame
  - *MitchCraft Tiny Homes* (Fort Collins)—NOAH, shells, wood/steel/SIP frame
  - *Rocky Mountain Tiny Houses* (Durango)—NOAH, shells, plan sets, DIY kits
  - *Simblissity* (Lyons)—THOW, shells, solar, DIY assist
  - *Sprout Tiny Homes* (Pueblo)—THOW or THOF, all SIP, commercial scale production, financing
  - *Tumbleweed Tiny House Company* (Colorado Springs)—Tiny House RVs, payment plans, RVIA certified manufacturer, design online

- Another cost: truck (with enough power to tow a THOW) + fuel + maintenance.
HOW TINY HOUSES GET BUILT – MATERIALS

- Roof underlayment – ice and water shield
- Composting toilet – no sewer hookup
- Windows – 170 mph

What are tiny houses to Planners?

“Tiny houses can play an important role in minimizing the environmental impacts of housing while providing safe and healthy homes at affordable prices. Pride of ownership improves neighborhoods and community morale. Tiny houses enable more people to become homeowners and contribute to their communities.”

—Commenter’s Reason, tinyhousebuild.com
PLANNING AND THE TINY HOME

DAN OSBORN, SENIOR PLANNER, SUMMIT COUNTY
Planning and the Tiny House

Dan Osborn
• Planning and Zoning Commissioner, Leadville, CO
• Planner, Summit County, CO
The Tiny House Lifestyle

Keywords:
- Save
- Efficient
- Savings
- Self-Sufficiency
- Minimalist
- Simple
- Passion
- Nature
- Flexible
- Simplification
- Environmental Consciousness
- Fiscal Security
- Debt Reduction
- Less Stuff
- Green
- Meaningful
- No Mortgage
What is a Tiny House?
Policy Considerations

• **Determine the underlying goals.**
  - Increasing density
  - More housing choices
  - Diversifying housing or a solution to affordability
  - Support social impact projects
  - Other?

• **Supported by the Comp Plan.**

• **Zoning districts and permitting process.**
Zoning Considerations

• Create a Purpose Statement and Definition!
• Determine appropriate zone districts
• Lot size and platting requirements
• Utilities – hard connections Vs. “Off-Grid”
• Development Standards
  o Setbacks, parking, size limits, density, occupancy limits, foundation or wheels, Building Code or HUD/ANSI, storage, design and materials, etc…
River View at Cleora, Salida, CO

• 200 units on 19 Acres
• ~10du's/acre
• Zoned PUD
• Foundation/Water/Sewer required
• Includes community center with kitchen, gym, mgmt. offices, storage units, parks, river trail, and restaurant
• Annexation Agreement limits STR to 1/3 of units and 12% of units required at reduced rent for local workers (80-100% AMI)
• Market rents $700-$1,400/month
River View: Lessons Learned

- **Know the Market – It’s a Life Style and Niche**
- **Location, Location, Location**
- **Highest and Best Use of the Land**
- **Likely Not a Solution to Affordable Housing**
- **Tiny House development has not boomed the way our social trend setters (Instagram/Reality TV) would suggest.**
TINY HOMES AS COMMUNITY SERVICE

JONAS DICAPRIO, OWNER, DESIGN PLATFORM
BELOVED COMMUNITY VILLAGE
A Tiny Home Village for People Experiencing Homelessness

RADIANT  PLACEMATTERS  DESIGN PLATFORM – Architecture + Construction
THE ECONOMICS OF TINY HOMES

ANDREW KNUDTSEN, MANAGING PRINCIPAL, ECONOMIC & PLANNING SYSTEMS
## MARKET DRIVERS

### WHY ARE WE TALKING ABOUT THIS?

<table>
<thead>
<tr>
<th></th>
<th>United States (new homes)</th>
<th>Denver (all single family homes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median Price</td>
<td>$320,200</td>
<td>$430,100</td>
</tr>
<tr>
<td>Average Price</td>
<td>$388,400</td>
<td>$508,550</td>
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</tbody>
</table>

*August 2018*
FOR–SALE MARKET TRENDS


Source: FHFA; Bureau of Labor Statistics; U.S. Census; Economic & Planning Systems

[Note 1]: Historical household median income data collected from: https://www.census.gov/hhes/www/income/data/historical/household/

[Note 2]: FHFA indexes collected from: http://www.fhfa.gov/DataTools/Downloads/Pages/House-Price-Index-Datasets.aspx#qat

[Note 3]: CPI data collected from: http://www.bls.gov/cpi/#data
MARKET DRIVERS

WHAT ELSE IS DRIVING THE TREND?

- Aging Population
- Desire for Community
- Desire for Independence
- Simplicity (downsizing)
- Sustainability (reduced impact)
- Cultural Shift = Preference Changes
- Autonomy with Security
- Cultural Shift = Preference Changes
- Autonomy with Security
- Simplicity (downsizing)
- Sustainability (reduced impact)
**ECONOMIC VIABILITY**

**COSTS**

- **Land**
  - Lot purchase
  - Space rent

- **Construction**
  - On a per-square-foot basis, tiny homes are often more expensive than traditional site-built homes
  - If on a foundation, this adds to costs

- **Hauling**
  - Shipping (e.g. $2.00/loaded mile)
  - Towing (vehicle, gas, etc)

- **Utilities**
  - Tap fee can be $10,000 (will vary by community)
  - Or off-grid system

- **Financing**
  - Interest rates likely to be 5%-15% (compared to 4-5% for traditional financing)
## CONSTRUCTION COSTS

<table>
<thead>
<tr>
<th>Finished Model</th>
<th>Starting Cost</th>
<th>Sq. Ft.</th>
<th>$/Sq. Ft.</th>
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<tbody>
<tr>
<td><strong>Utopian Villas</strong></td>
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<tr>
<td>The Denali</td>
<td>$99,429</td>
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<td>Cedar Breaks</td>
<td>$76,695</td>
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<td>The Valley Forge</td>
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<td>The Magnolia</td>
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<td>North Cascades</td>
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<td>Acadia</td>
<td>$81,220</td>
<td>400</td>
<td>$203</td>
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<tr>
<td>The Fort Sumter</td>
<td>$93,260</td>
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<tr>
<td><strong>Average</strong></td>
<td>$89,360</td>
<td>395</td>
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<td><strong>Tumbleweek Tiny House Company</strong></td>
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<td>Cypress Overlook</td>
<td>$69,138</td>
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<td>Farallon Vista</td>
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<td>$279</td>
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<td>Cypress Equator</td>
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<td>Roanoke Alta</td>
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<tr>
<td><strong>Average</strong></td>
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<tr>
<td><strong>Average</strong></td>
<td>$83,688</td>
<td>343</td>
<td>$249</td>
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</table>

Source: Economic & Planning Systems
## CONSTRUCTION COSTS

### Dimensions

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Basic Shell Total</th>
<th>Per Sq. Ft.</th>
<th>Finished Total</th>
<th>Per Sq. Ft.</th>
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<tr>
<td>MitchCraft Tiny Homes</td>
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<tr>
<td>8x16</td>
<td>$13,900</td>
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<td>8x18</td>
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<td>$108</td>
<td>$44,000</td>
<td>$183</td>
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<tr>
<td>Average</td>
<td>$19,688</td>
<td>$107</td>
<td>$33,900</td>
<td>$186</td>
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<tr>
<td>Rocky Mountain Tiny Homes</td>
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<td>8x12</td>
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<tr>
<td>Average</td>
<td>$19,722</td>
<td>$111</td>
<td>$54,278</td>
<td>$309</td>
</tr>
</tbody>
</table>

### Source:
Economic & Planning Systems
INFRASTRUCTURE REQUIREMENTS

**Water**
- Municipal water (tap fee)
- Well water
- No running water (hauled)

**Greywater**
- Sewer/septic
- Filtration wetland/pond
- Gravel-filled filtration buckets, down a slope
- French/branched drain system
- Portable water tank, dumped off-site

**Sewage**
- With sewer/septic, can use flush toilet
- Otherwise, composting toilet or other

**Power**
- On- vs. off-grid
- RV-style electric hookup
- Solar ($$)
- Propane
FINANCING

DIFFICULT TO MORTGAGE

- Property Appraisal
- Mortgages don’t move
- The loan would be too expensive to fund

FINANCING ALTERNATIVES

- RV Loan (must be certified RV)
- Personal loan
- Home equity loan (must own additional home)
- Peer-to-peer lending
- Rates can reach 15%
## AFFORDABILITY

- On a lump-sum basis, cheaper than typical site-built single family home
- What about when land, utilities, other costs are included?

<table>
<thead>
<tr>
<th></th>
<th>Cost</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land</td>
<td>$300-400</td>
<td>$45,000 lot cost (20yr loan @ 5%) or $400/mo rent</td>
</tr>
<tr>
<td>Home loan</td>
<td>$670</td>
<td>$45,000 home cost (10% down) + $10,000 tap fee (10yr loan @ 10%)</td>
</tr>
<tr>
<td>Utilities</td>
<td>$150</td>
<td>Assumes on-grid</td>
</tr>
<tr>
<td>Other</td>
<td>$150</td>
<td>Insurance, taxes, etc</td>
</tr>
<tr>
<td><strong>Total Monthly Cost</strong></td>
<td><strong>$1,270-1,370</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Required Income</strong></td>
<td><strong>$50,000-55,000</strong></td>
<td></td>
</tr>
</tbody>
</table>
FAD, OR SILVER BULLET?

- Depth of market demand
  - Increasing gap between supply and demand (= increasing prices, increasing affordability gap)

- Which solutions are most viable?
  - Service provision (e.g. transitional homeless housing), with adequate parameters for management
  - Communities with adequate underwriting of land and utilities
  - ADUs

- Can it be taken to scale?
  - Remains to be seen

- Impediments to broader applications
ANSWERS? OR JUST MORE QUESTIONS?
SOME CONCLUSIONS

- Tiny Homes are a trend – and they might just stick

- They’ve been proven useful for certain specific populations
  - Service provision (e.g. transitional homeless housing)
  - Luxury market (e.g. glamping)
  - Sustainability-minded groups (with $ to spend)

- Are they a tool for general affordable housing?
  - Probably not
  - Unless someone wants to live in 300 sq.ft.

- Hidden costs add up
  - Land
  - Infrastructure
  - Labor
DISCUSSION
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THANK YOU!