

out think the box

REST in Urban Agriculture & S.E.E.C. Home

Everyday brilliance for disaster resilience

Baltimore, MD, USA

21 March 2023

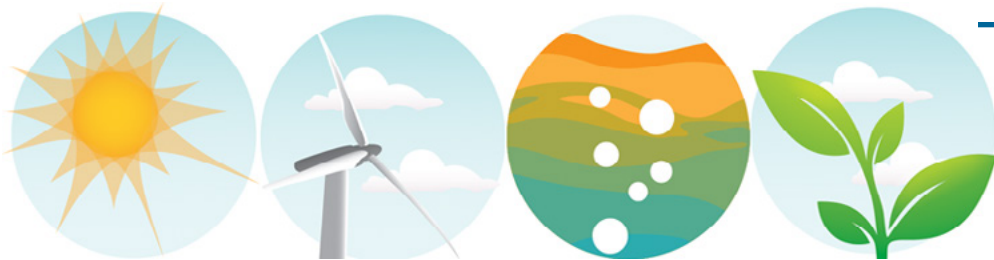
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out think the box

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introduction

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Out think the box.
Prepare. Respond. Adapt.

The problems:

- Underhoused/Homeless farm stewards
- Dilapidated and failing municipal infrastructure
 - Water
 - Electricity
- Resource scarcity (energy, potable & drinkable H₂O)
- Access to affordable housing
- Access to nutritious, fresh produce
- Access to jobs



introduction (focus)

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Out think the box.
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The housing problem:

- Access to vacant lots in proximity to farmer housing
 - Policy and zoning updates needed
 - Improve stakeholder engagement w/private property owners
- Access to financial resources
 - Grants not loans
 - Reduced housing costs e.g. rent to own?
 - Security for investments (infrastructure, tools, time)
- Access to infrastructure
 - Water
 - Electricity
 - Security measures



Homeless Garden Project (Santa Cruz, CA)

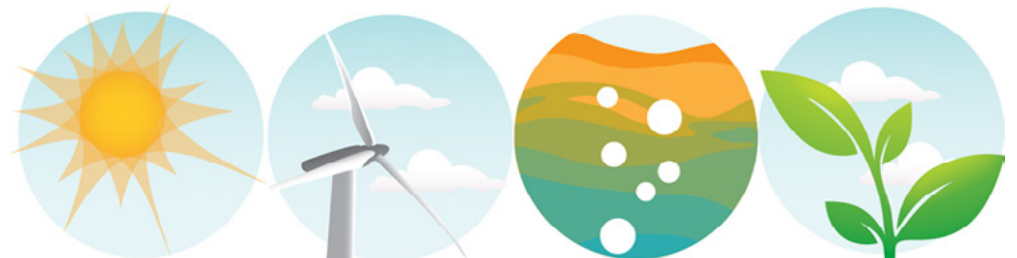
- Provides job training, transitional employment, and support services to the homeless on an organic farm.

Hantz Farms (Detroit, MI)

- Transforms blight, and vacant, abandoned properties to fields for agricultural production.

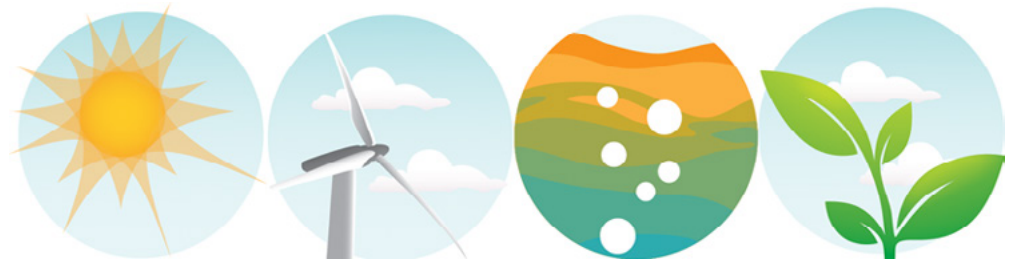
Urban Adamah (Berkeley, CA)

- First urban Jewish community farm community built on an undeveloped lot.



A holistic solution incorporating Renewable Energy Systems Technologies [RESTs] engineering and sustainable development to address:

- Affordable housing access
- Nutritious, fresh produce access
- Resource scarcity
- Jobs access
- Carbon sequestration



one solution

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Out think the box.
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The an agile, adaptable mobile home/dwelling that is S.E.E.C.:

NB: S.E.E.C. pronounced 'seek'

- (S)ustainable
- (E)nergy (E)fficient
- (C)omfortable

...because space is the final frontier.



one solution | tiny dwelling 8



METRO

Living space: 169 ft² + 45 ft² in loft (8' 4" W x 20' L)

Features: Dry toilet, 4-1/2" Structural Insulated Panels (R16), plug-n-play all electric w/50 amp panel, LED lighting, refrigerator and freezer, 1,000-watt Cadet® heater, shower, built-in storage closet

one solution | metro artisan tiny house

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Artisan Tiny House - METRO

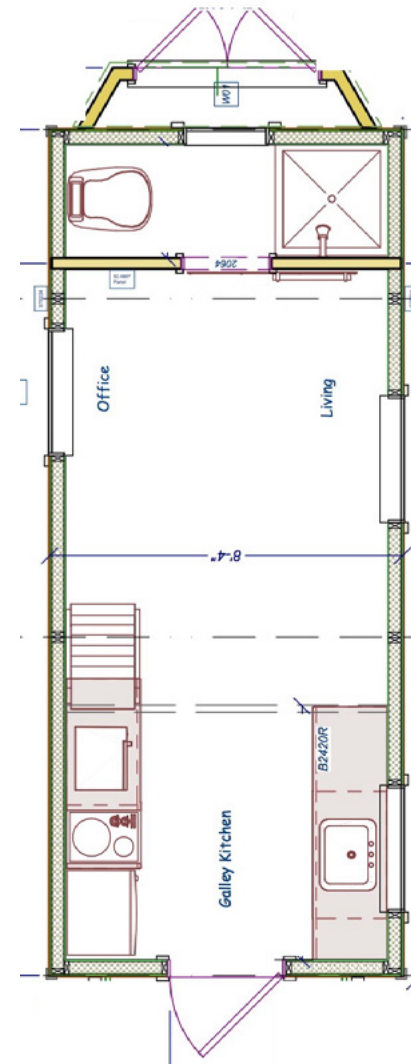
Park Model code ANSI a119.5 design and green building guide

Purchase price in 2020: \$37,000

Monthly, rent-to own (5 years): \$650.00

More Features:

- Full bathroom w/shower & eco-san dry, compost toilet system
- Solar PV ready w/battery storage
- Apartment size appliances
- Premier SIPs (structural insulated panels)
- Weight 8,600 pounds

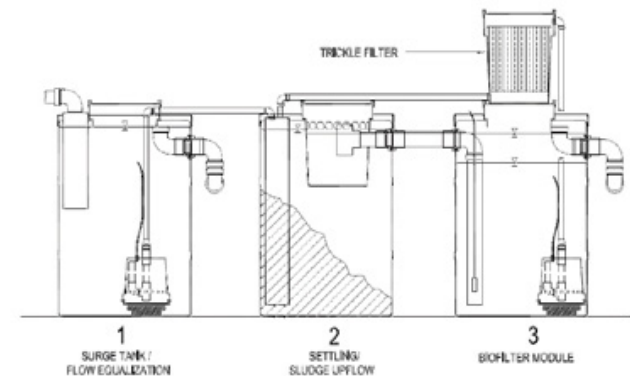


Energy Efficient (E.E.) & Conservation (C.)

- Thin film rooftop (PV) + awning + façade + ...
- One-person capacity
- 20' (length) x 8'4" (deep) x 7'10" (high)
- Sustainable (S.) building envelope [E.E. building materials, lighting (LED, daylighting), passive heating/cooling, solar thermal]
- Manage 'waste' stream (dry, ecosan compost toilet system, food compost)
- Energy storage (Mobi Battery)
- Comfort & Conservation on wheels

GreyWater Treatment System

- Simple, modular design
 - Cost ~\$200 common materials (55 gal plastic drums, PVC)
 - Module 1 - Surge tank (capacity 40 gallons)
 - Module 2 - Settling particulates/upflow
 - Module 3 - Biofiltration
- Low maintenance
 - Non-corroding materials in contact with waste water
 - No moving parts
- Low energy use
 - 10 Watts peak
 - < 1/3 kWh/day
 - Suitable for use with RESTs



Dry, Compost Toilet Types

- Dry Compost Toilet using Vermi- (Worms)
- Urine Diverting Dry Toilets (UDDTs)

On-site Humanure Production Treatment

- Thermophilic (high-temperature/heat) composting
 - 122°F (50°C) maintained in the faeces pile > 1 week
 - > 140°F (60°C) maintained for a 24-hrs (complete pathogen die-off for safety)
 - Solar drying (sanitizing)
 - Soil conditioner for fruit trees
- Vermi-composting (finishing safety factor)
 - Red Wigglers, Earthworms, etc.
 - Other mesophilic microorganisms

↑ Economic viability & empowerment

↑ Job opportunities

↑ Healthy communities

↑ Healthy, nutritious, fresh food access

↑ Resilience

↓ Homelessnesses

↓ Dependency on social services

↓ Stress on municipal H₂O & electricity infrastructure

↓ GHG emissions e.g. locally grown produce

outcomes

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Issues addressed

Out think the box.
Prepare. Respond. Adapt.

- Affordable housing for sheltering urban farmers
- Reduce stress on the municipality
 - Water scarcity, energy access, waste and resource management
 - Passive extraction of water vapor from the air for drip irrigation
 - Use REST for solar (PV, thermal)
 - Eco-sanitary, dry compost toilet system
- Fresh food ready-access for the community



parting thoughts

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Out think the box.
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We need to S.E.E.C. out everyday brilliance for disaster resilience.

We need to put waste to work to better manage scarcity.

It's only waste if it isn't used. - H. Skermer

