Mezzacello

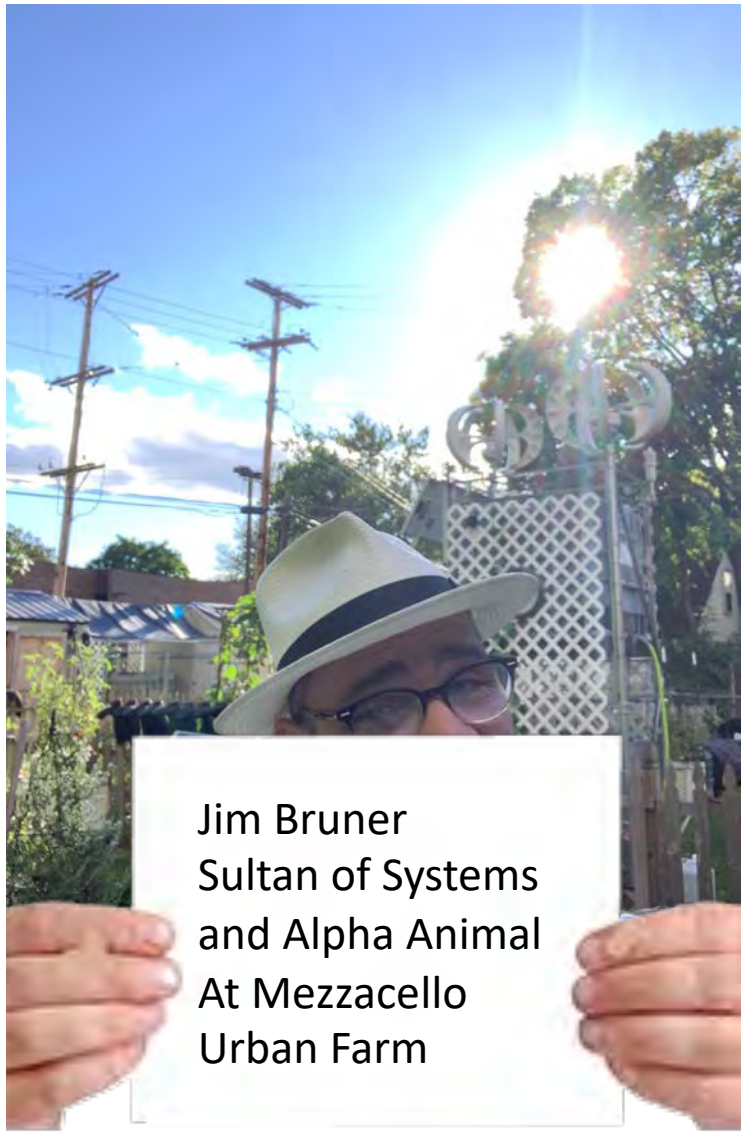
Robots, Sensors, Energy, Systems and Farming?

One Invention Over Three Years

1. The Bioreactor
    1. Power
    2. Communications
    3. Compost
    4. Water
    5. Fertilizer
    6. Data

Presented by Jim Bruner

About Mezzacello



Mezzacello is an Urban Farm and Learning Lab located in downtown Columbus, OH, in the United States.

Grow, Maintain, Sustain, and Explain

We focus on systems design, farming and technology concepts and experiences for young people (and adults).

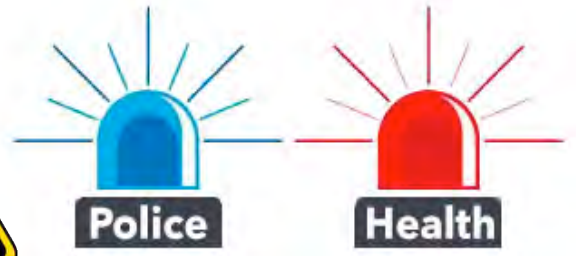
Our vision is to help communities build food oases in any densely populated urban environment on earth and beyond.

Presented by Jim Bruner

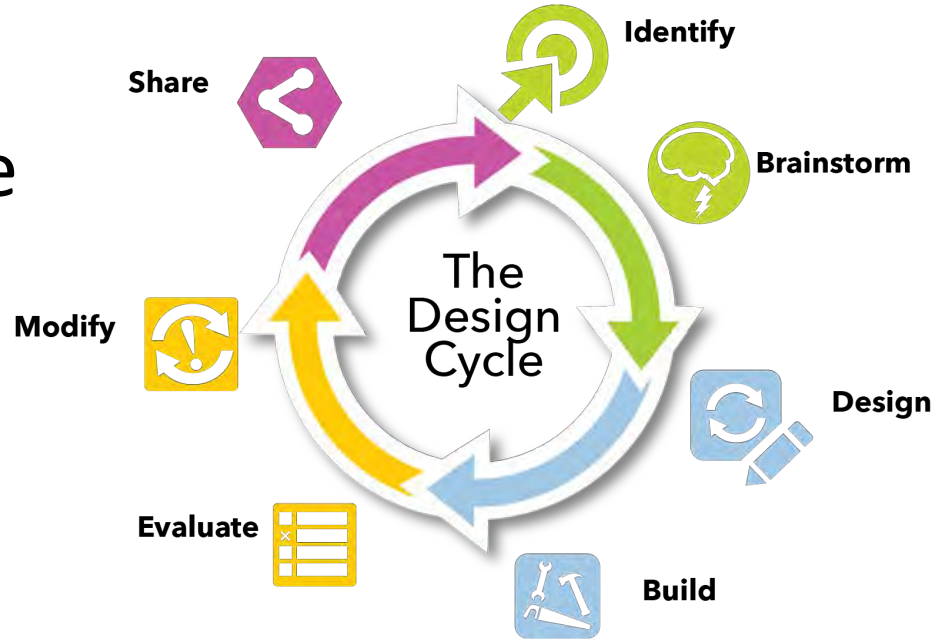
The Problem Statement

An **Urban Farm** like Mezzacello has unique challenges **that traditional rural farms** do not.

4 unique urban issues:



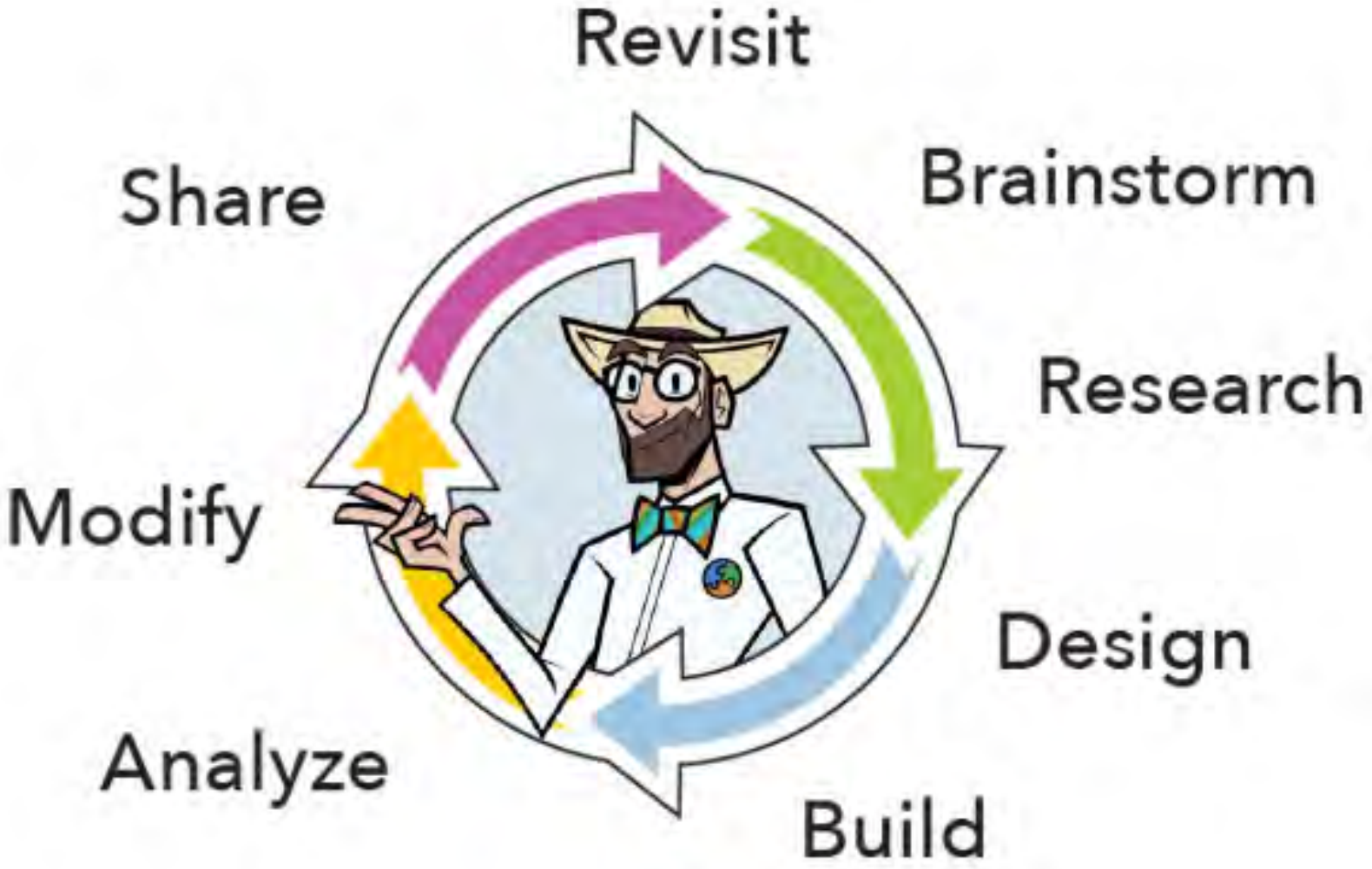
All of these can be addressed with the **DESIGN CYCLE**



The Design Cycle

To **build the BioReactor** I had to go through the **DESIGN CYCLE many times!**

The **DESIGN CYCLE** is how **humans play and learn.**



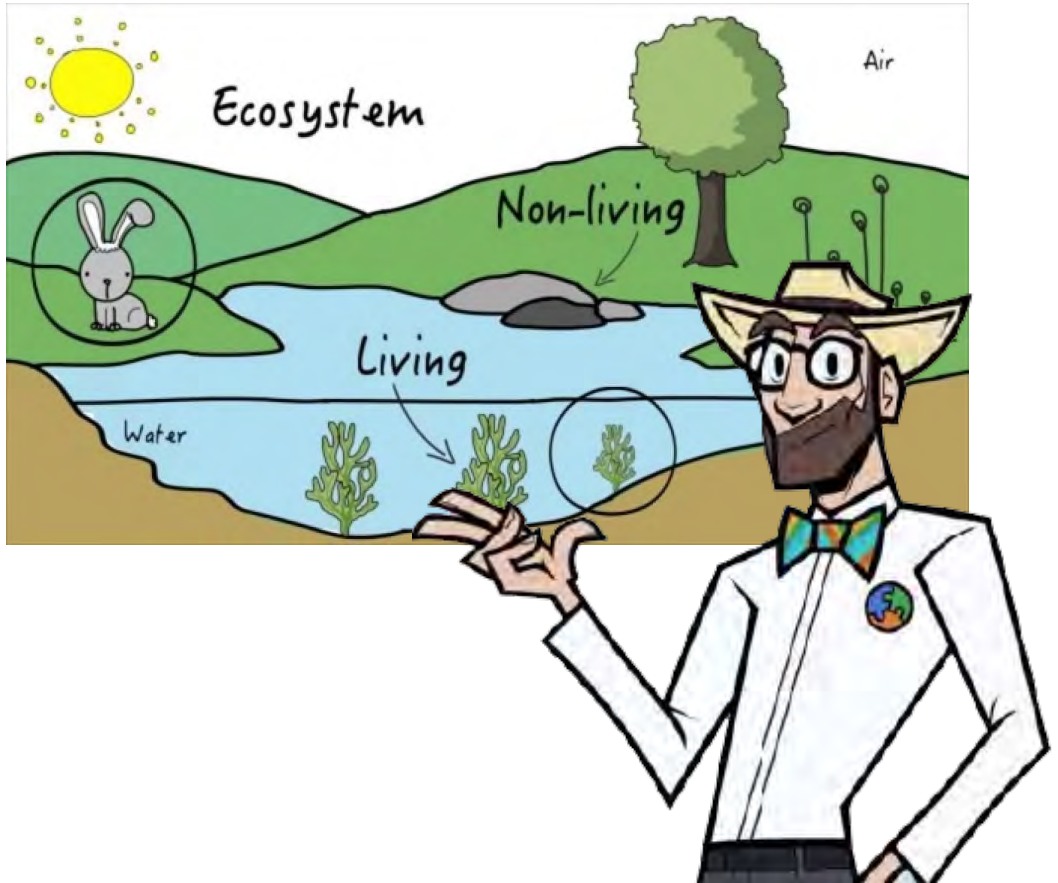
A Note on Sustainability

Mezzacello is a closed, self-sustaining, integrated and inter-dependent series of ecosystems.

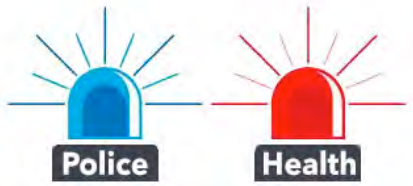
No "Wastes" just new inputs

Systems for managing the lifecycle of an **organism**

Energy is **measured** in **discrete amounts** of time and seasons



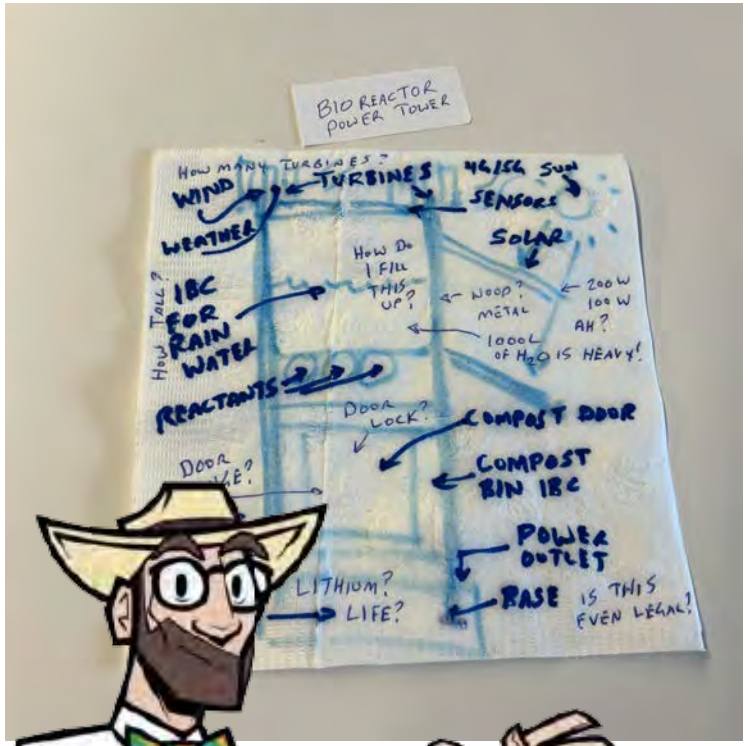
The Problems to be Solved

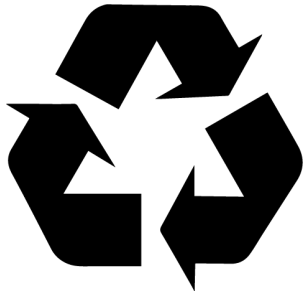


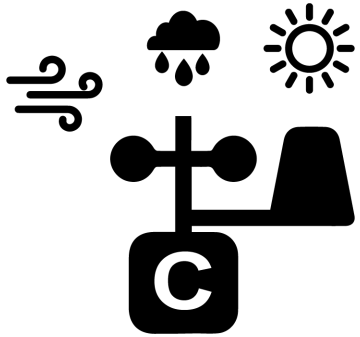
Specific issues at Mezzacello Urban Farm:

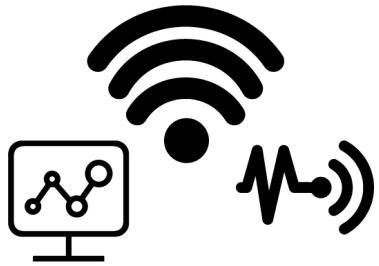
1. **Biomass** + **health codes** + **legal variances**
2. **Electrical loads MUST be to code and not exposed**
3. **Animals** and **Plants** need **water** and **fertilizer safely utilized**
4. **All Laws** are **followed!**

One Invention Over Three Years





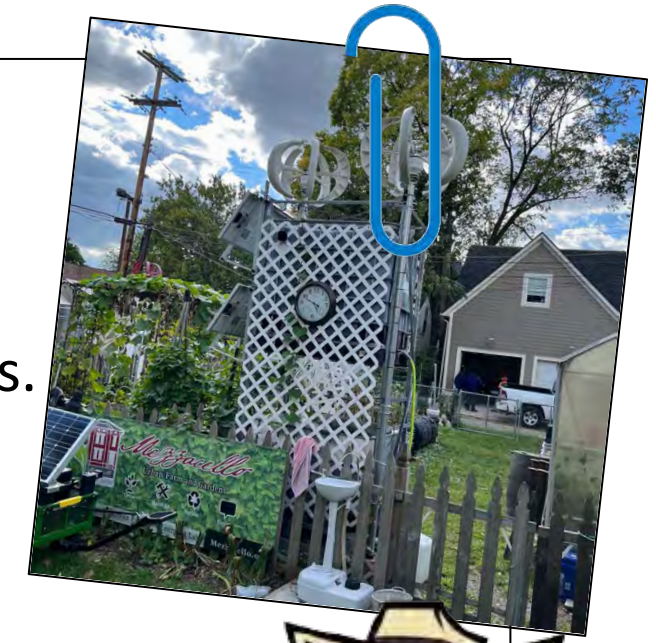




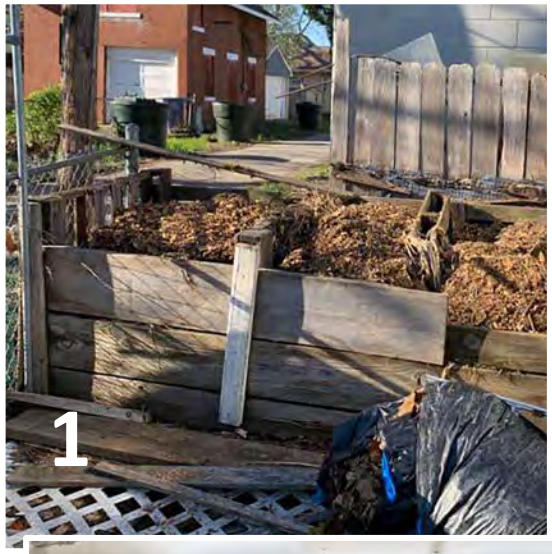
What Do These Have to With Farming?

Composting, Water Collection, Actionable Data, and Energy

- Collect and **process compost** and **accelerate** composting process.
- This design optimizes all three of those needs and:
  - adds a WiFi repeater,
  - weather data,
  - atmospheric sensors,
  - wind turbines,
  - security cameras,
  - drone launching and recharging platform,
  - and a central solar-powered collection hub for rain barrels around my urban farm.



Evolution & Iteration of Designs



How It Is Used Today

1. To teach students
2. To provide community resources
3. To power research stations
4. To create high quality soil and water

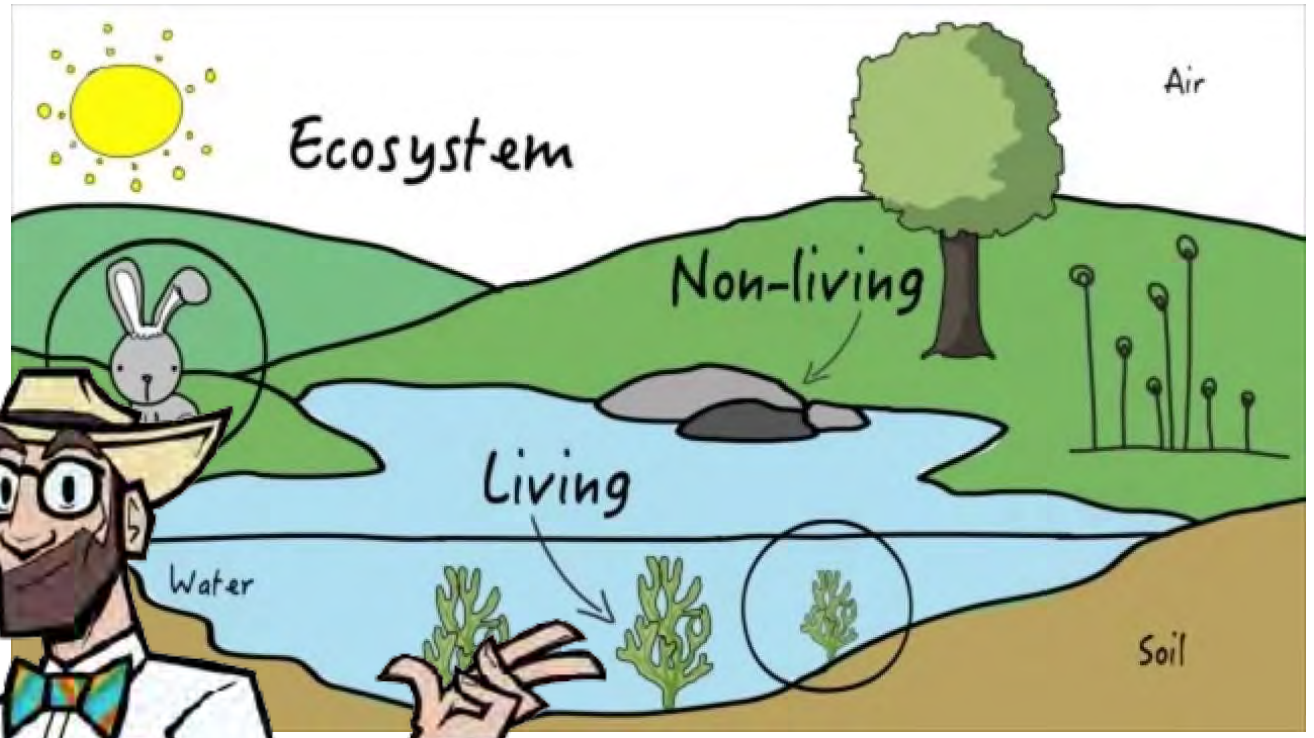
Power Generation Action Shots!

Winds up to **35kph**

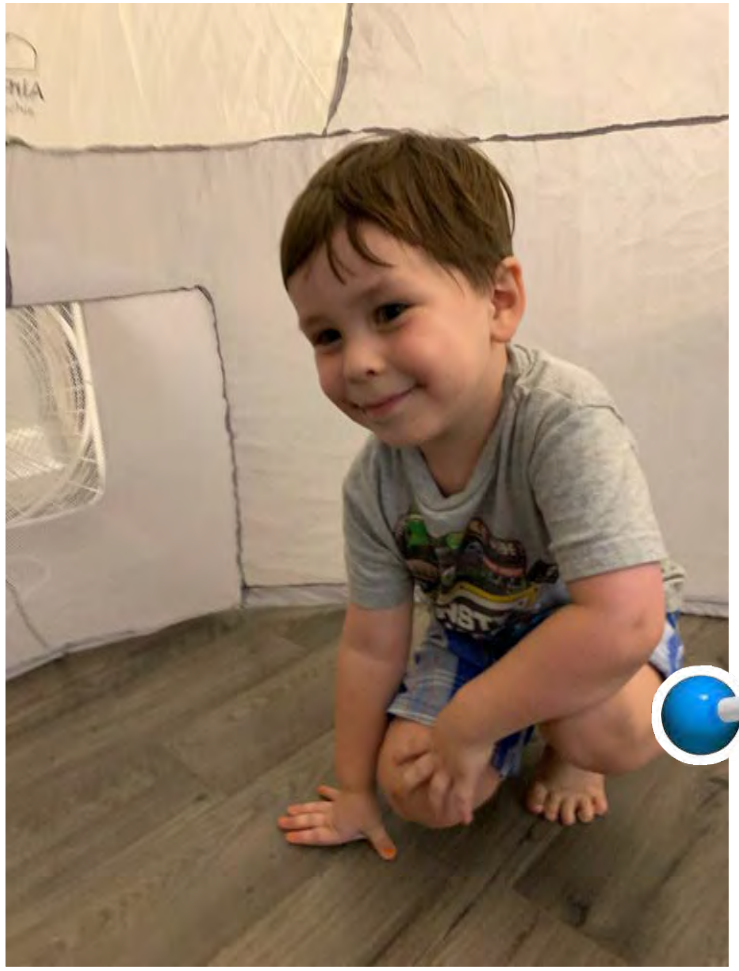
Batteries **topped off** after **30 minutes!**

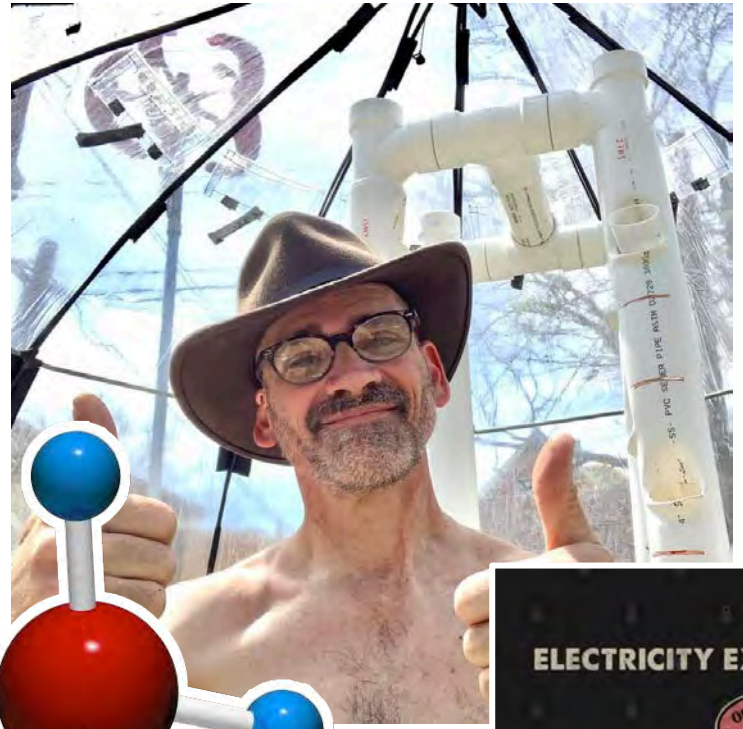
Mezzacello urban farm

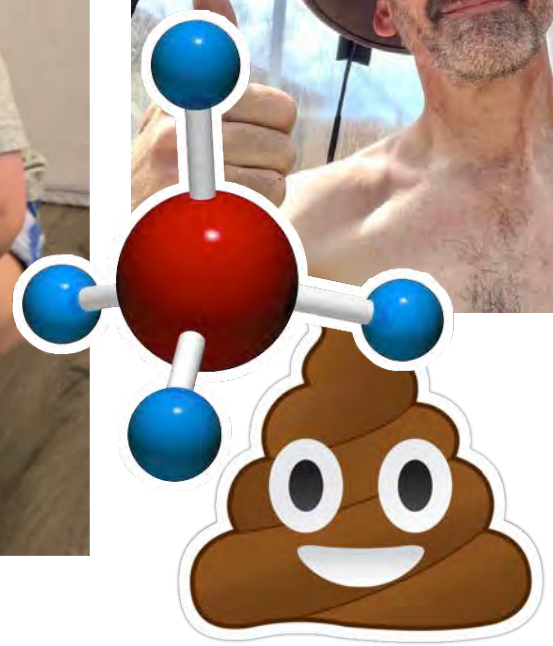
Sustainable Ecosystem Plan

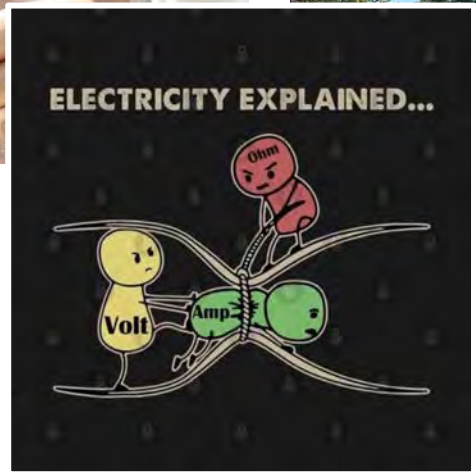


Future Plans and Infrastructure









Contact Us and Stay in Touch

Thank You for Your Time!

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Sultan of Systems

at
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Mezzacello.org