

# Robotic Construction Debris Recycling: A Real Nail Biter

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## Urban Machine

Converting 37 million tons of wood waste  
into premium lumber products



## The Problem

# We are Solving

- 37M Tons of lumber wasted annually
- In 60 years all landfills will be full
- Lumber price volatility
- Lumber Shortages

\$1500  
\$1000  
\$500

**\$1645**

May 2021

**\$1497**

March 2022

2017

Lumber Price Index

2022



How?

# Make it Circular

A circular economy focuses on salvaged materials—giving that resource a second life as a part of a new project.



*building*



*mill*



*Urban  
Machine*

*the forest*



# Reclaimed, Premium Lumber Our Partners

**C&D  
Facilities**

**Partner  
With Us!**



**Demolition  
Contractors**



**Designers**

**CORRAL**



**Wood Manufacturers**



## Robotics & AI The Machine

- Precision end effectors
- High speed gantries
- Vision systems to remove nails, screws & staples



Enough Business  
**Let's Talk Tech**

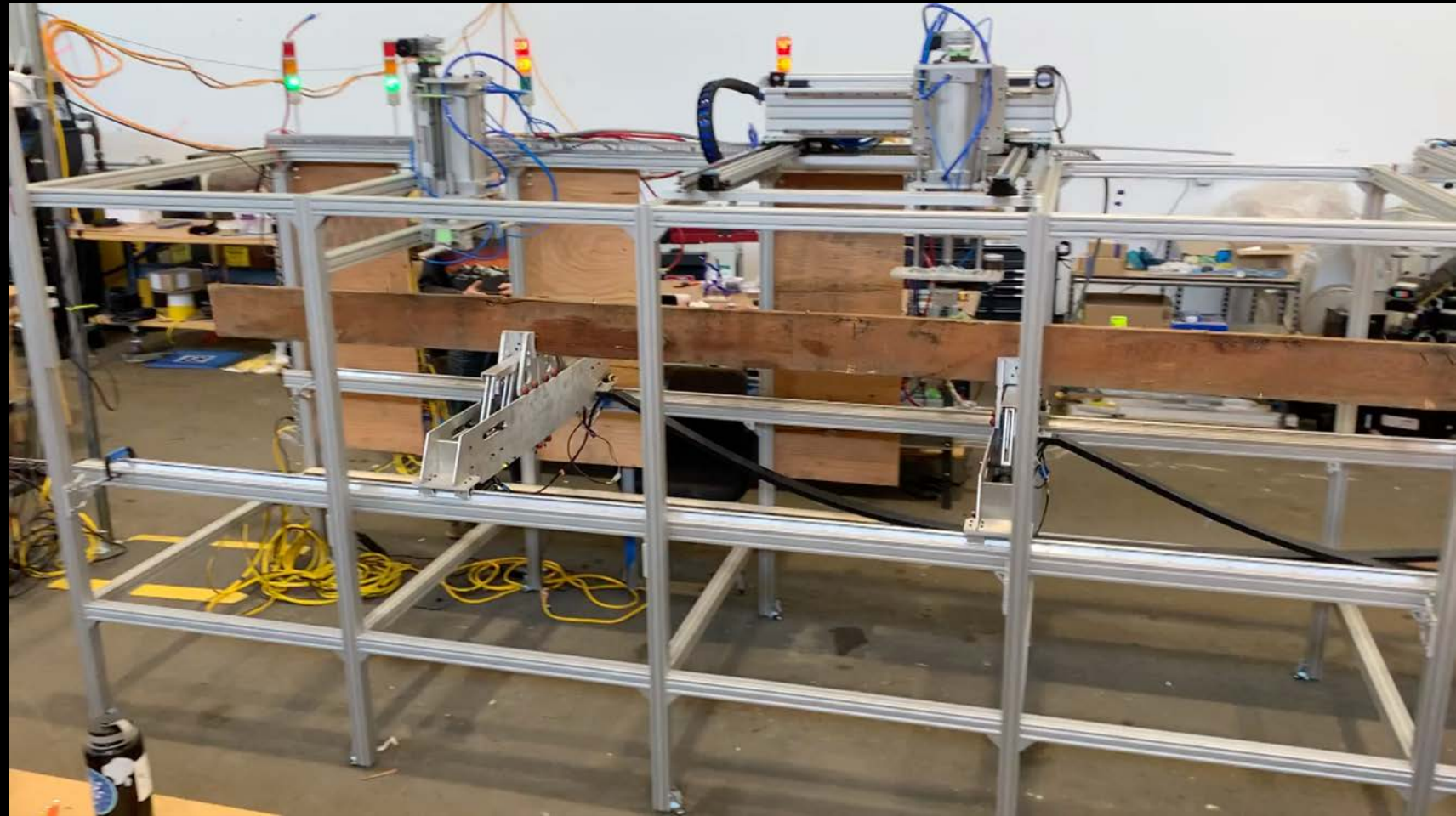
**So much prototyping!**

- Awesome Ash
- **Brave Baobab**
- Charming Cypress

80/20 is King!



Our Hardware  
**Shuttle Races**





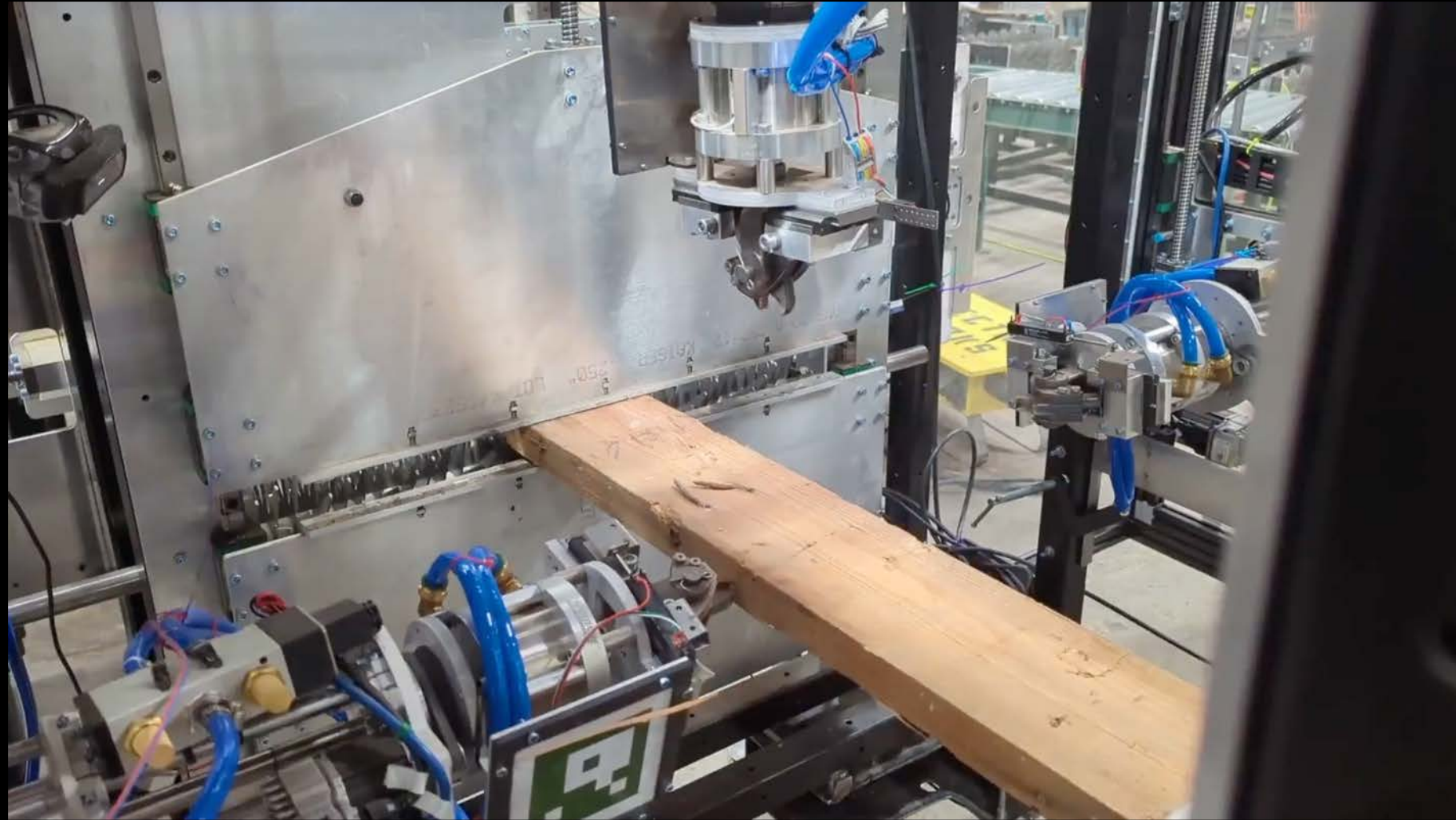
# Manipulation End Effectors



Our Hardware  
**Spiked Rollers**



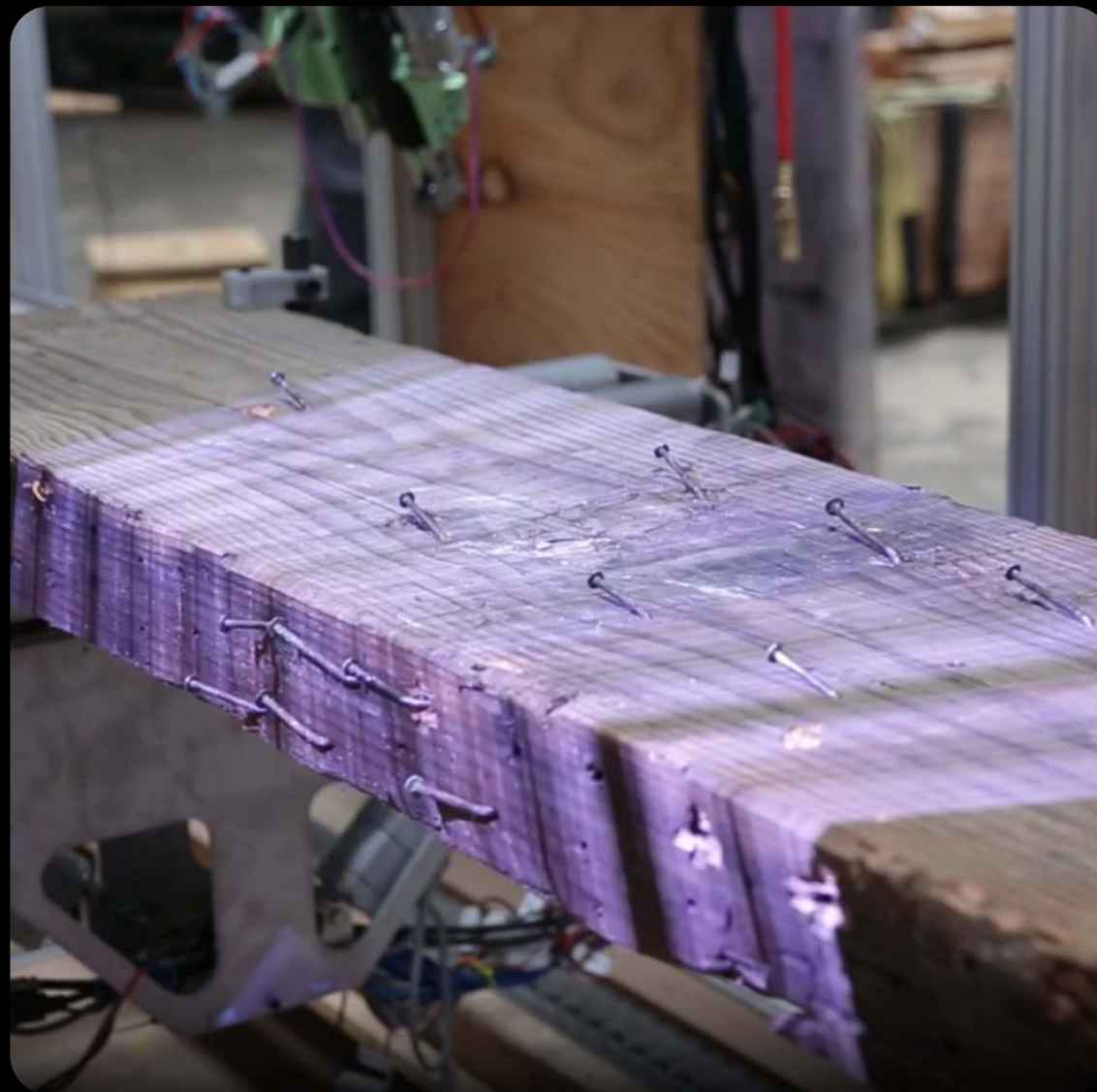
Our Hardware  
**Nail Songs**



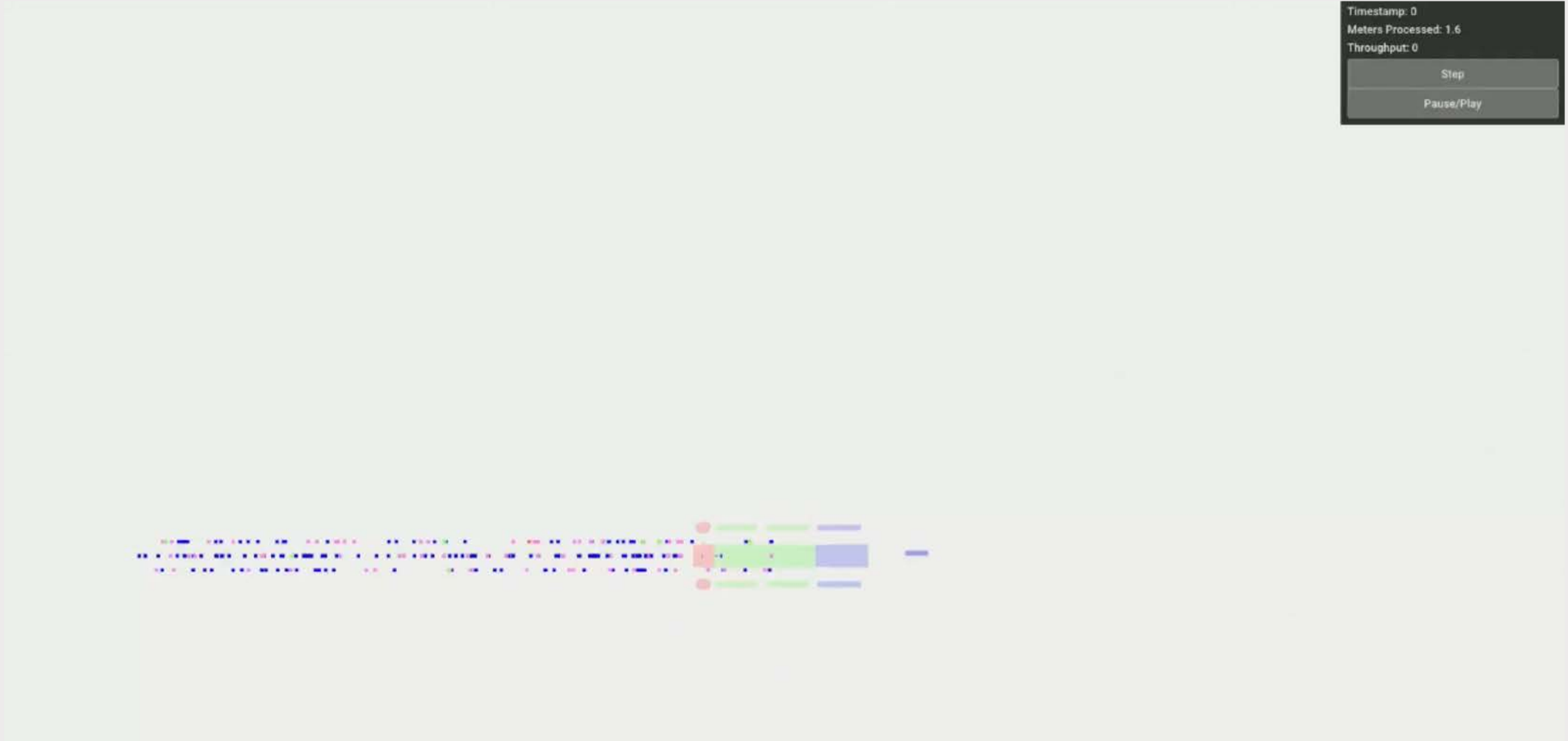
Our Hardware  
**Blast Gates**



Artificial Intelligence  
**Perception**



## Process model / throughput Simulation



The Robot Now  
Field Model



## Next Steps Scaling

### Looking for More Partners!

- Owners
- Demo Contractors
- Designers
- GCs

2023

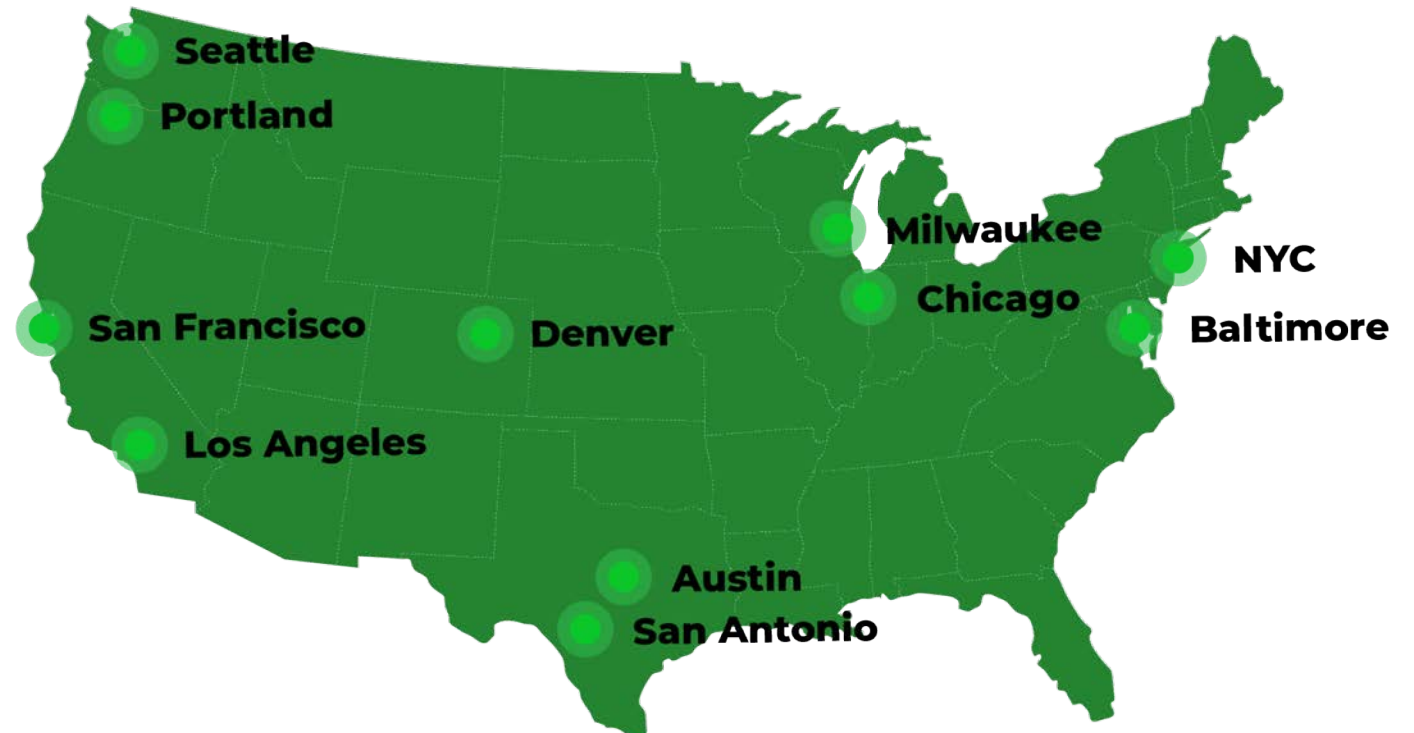
Proving Technology  
& Economic Model

2024

Multi-City  
Validation

2025

Start Mass  
Production







Thank you!

**um** urban  
machine



[urbanmachine.build](http://urbanmachine.build)

# **ENR** FutureTech

Engineering News-Record

CONSTRUCTION'S LEADING TECHNOLOGY FORUM

**HILTON UNION SQUARE  
SAN FRANCISCO**

