

ThermoVERSE™

Project Problem Statement

We are developing a **smart wallpaper™** for property managers of **affordable residential buildings** that were built before the 1980's, **who want** an energy efficiency upgrade that guarantees LEED and carbon neutral certifications, but do not want to displace renters during the upgrade.

Background Friends > Neighbors > Customer Discovery Sidekicks



FOUNDER
Shantonio Birch, PhD
 Expertise: Thermal Science & Scientific Computing



CONSULTANT
Mark Kielb
 Expertise: Former CTO of 100 mil. Company, CEO, Board member of several companies.

'As is' state (CONCEPT PHASE) TRL > 9-29% savings

2	zone temperature control	3-4	technical energy saving of 0-5%
3	smart thermal insulation	1-2	technical energy saving of 9%
4	waste heat upcycling	3-4	technical energy saving of 0-5%

Desired end state / impact

Augmented Space Heating & Cooling™:

Grid-interactive space heating, cooling and thermal insulation toward a more decentralized, electrified, resilient, equitable and efficient energy grid.



Key Milestones	Timeline	Capital Required
Technology Milestone 1: Wafer-sized demo & control desig	October 2022 > December 2022	\$20k (HR) + RnD (\$10k) → \$30k
Technology Milestone 2: Wallboard Implementation	January 2023 > April 2023	\$20/sf (+ outsourcing fees) → \$120k
Technology Milestone 3: Wallpaper Implementation	January 2023 > August 2023	\$2.60/sf (+ outsourcing fees) → \$15.6k
Commercial Milestone 1: Securing IP & Trademarks	September 2022 >>> 2023	\$30k (Patents) + \$10k (TM) → \$40k
Commercial Milestone 2: Conduct Pilot/field testing	March 2024 > February 2025	\$100k (Design) + \$40k (per dwelling) = 140k
Commercial Milestone 3: Build Manufac.facility/warehouse	July 2024 > February 2025	\$55 or \$60 per square foot (cf. \$15-\$25 M for precast concrete facility in CA)
Other Milestone 1: Building the team	September 2022 > April 2023	\$80-110k /yr (per cofounder) → 240k + ben.
Other Milestone 2: Securing Key Partners	April 2023 > April 2024	via Letter of Intent

1Yr Total: \$585.6k + \$25M (facility)