Grassroots Microgrid
Bottom-up neighborhood planning, Detroit, USA

Summary and appraisal of the project by the jury
The design proposal for a neighborhood in Detroit re-positions infrastructure as a civic project, under the name of The Seedbank Pilot (TSP). Building on long-term community engagement, the large group of collaborators proposes a pilot project for local energy and food production, water and waste management, and community empowerment. Solar photovoltaic canopies, rainwater collection, geothermal wells, and community gardens are stitched through the existing neighborhood on currently empty lots. The collective-owned and managed infrastructure is both a gathering point and a new revenue stream for additional community services and an enhanced public realm. The jury commended the proposal’s fundamentally optimistic approach. Taking the pocket vacancies normally characterized as the biggest problem in Detroit, the design turns them into an opportunity to create a compelling sustainable neighborhood. The combination of solar and geothermal energy, rainwater collection, and community gardening is particularly powerful in a city that struggles to provide basic services at the municipal level. Physical investment is complemented with education through training programs and investment through collective ownership and revenue sharing. Here, the infrastructure of energy and food production reinforces the infrastructure of community building. The strengths of the project in organization and planning are not yet matched by its architectural expression and the jury noted that the multifunctional umbrella roof being proposed will need to be refined as it moves into more detailed design phases.

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Project data
Project group: Landscape, urban design, transportation infrastructure and public utilities
Client: It Starts @ Home (IS@H) and Residents of Detroit 48204
Project background: Private commission
Planned start: August 2017

Statements on the sustainability of the project by the author
Leveraging vacancy, climate and passion to form a neighborhood armature of energy avenues Detroit’s 48204 zip code is home to 27,000 low- and moderate-income residents with promising demographics: high percentage of home ownership, college degree attainment, and employment in Health/ Education. The team’s pro bono commitments have been vital but Detroit is emerging from economic decline, and 48204 is hard hit by lack of resources and opportunities, especially for youth. Our Mayor focuses on neighborhood development, so TSP can be a replicable model for stabilization and sustainable growth. Hybridized ecosystem for Infrastructure and Renewable Systems (HEIRS) generative infrastructure and renewable systems decarbonizes and makes 48204 self-sufficient. Michigan’s colder climate is ideal for solar power generation. Specified PV increases the power output 41% for every degree Celsius drop in temperature. Bloomberg/Deutsche Bank rank Michigan 14th best for return on solar dollar.

Further authors
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Further images
Image 1: The HNZE canopy framework for 48204 creates an HNZE district, anchoring a Community Center Kitchen as the epicycle of a collectively owned Microgrid. TSP reveals and deploys the capacity of 23 acres of publicly-owned vacancy concentrating along 3 streets, or Energy Avenues. TSP pairs HEIRS Canopy framework with community gardens, water treatment, solar and HNZE geothermal, and water management, food production, and waste treatment. TSP can be expanded to a neighborhood cycle of microgrids.

Image 2: TSP Phase 1 signals a return to HEIRS traditions and a new economic trajectory. An interior Community Center Kitchen and adjacent residencies benefit from HNZE Microgrid production. A public realm between two Loft buildings is activated by HNZE 19 Spatial Canopies and enables education, youth programs, training, entrepreneurship, and workforce development for living wage jobs. Success is measured by reduced utility costs, improved formal and aesthetic conditions, and generation of cooperative wealth.

Image 3: IS@H wishes to secure, make stable, and sustainably own MicroGrid integrating infrastructure with public and private realms. The IS@H MicroGrid is a “reefedged stool” of solar, geothermal, and storage that will distribute energy from PV to strengthen and stabilize the grid. IS@H has established emerging partnerships with local university, banking, and utility sectors in support of their vision and program. Weatherization and efficiency programs will directly engage the community and link the enhanced public realm of the micro grid to the private realm of homeowners and constituents.

Image 4: The HEIRS framework for vacancy, NZE generative infrastructure and public realms interventions. Here, the infrastructure of energy and food production, rainwater collection, and primary education and training opportunities, their vision and program. Weatherization and efficiency programs will directly engage the community and link the enhanced public realm of the microgrid to the private realm of homeowners and constituents.

Image 5: TSP is Phase 1 of a larger design framework to revitalize the historic Old Woodward – 48204.

Image 6: IS@H canopy computational design/dig fab methods meeting performative, cost, and aesthetic metrics.

Image 7: TSP collaborative rooftop will be a large endeavor on a slope that has never been seen in the USA.

Image 8: This HNZE Canopy ecosystm's rainwater harvesting and primary education and training opportunities, their vision and program. Weatherization and efficiency programs will directly engage the community and link the enhanced public realm of the microgrid to the private realm of homeowners and constituents.