

# Indian Mound Affordable Net Zero Prototype Home

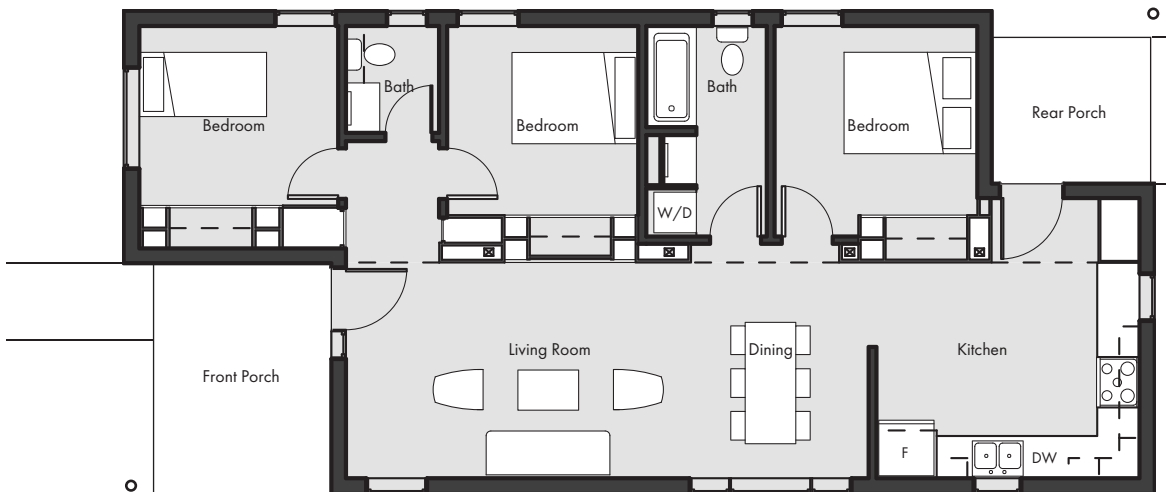


**Purpose** | Located in historic Northeast Kansas City, the Indian Mound neighborhood is diverse, tight-knit, and maintains its eclectic history -- yet the neighborhood is threatened by a shortage of quality, safe, and affordable housing. The studio researched conditions in the neighborhood, observing the condition, ownership, and characteristics of housing in Indian Mound to develop a house design that is right-sized, durable, and functional, taking inspiration from the efficient but livable housing from the neighborhood's past.

The 1033 sq. ft. home, designed and built by the studio, intends to demonstrate a thoughtfully-designed, healthy, energy efficient, and affordable home that can help a household to thrive -- while investing in their neighborhood and strengthening their community in the long term.



**The Net Positive Studio** is an interdisciplinary studio at Kansas State University that is researching and responding to today's crises of housing affordability and energy consumption. The studio partnered with the Mattie Rhodes Center for its inaugural 2018-19 project to realize a prototype home in the Historic Northeast of Kansas City. The studio's mission is to utilize a variety of innovative methods to demonstrate the broad tenants of sustainability in housing: environmental conservation, well-being, long-term economic tenability, and positive social impact.

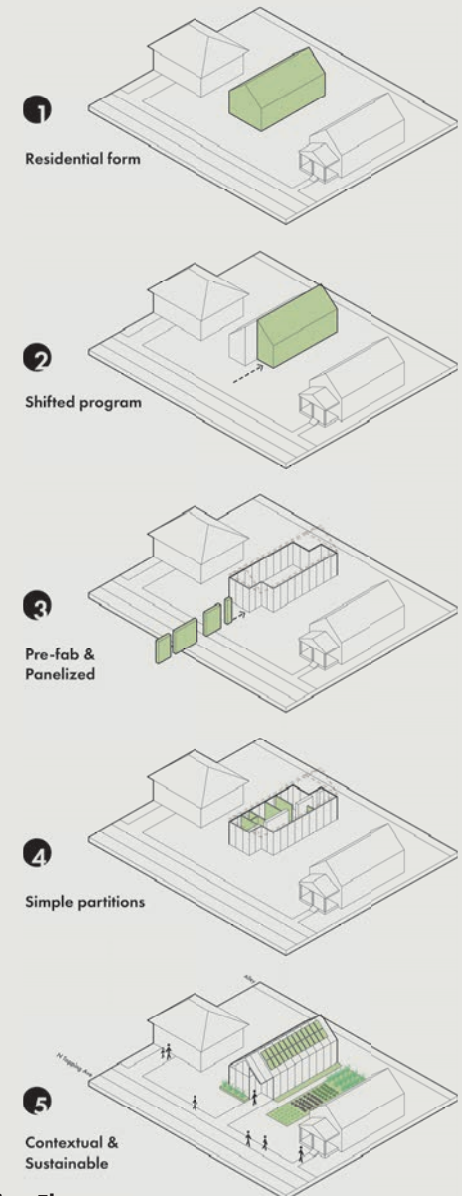


## Design Features

- 1033 sq. ft
- 3 bedrooms
- 1.5 baths
- State-of-the-Art Insulation and Windows
- High-efficiency Appliances
- 3.4 kW PV Array
- Annual Energy Cost = \$0

0 1 2 4 8

## Floor Plan



## Design Elements

The design originated from simple residential forms already abundant in the neighborhood. The house is split between private and public areas, which are shifted to optimize circulation alignment and reduce unnecessary floor area. Panelized construction allows the home to be built off-site, while the economic design minimizes material and energy compared with a typical new home. The home will use its roof for electricity generation, while extra space on the parcel will be available for gardening, gathering, and recreation.

## Project Partners and Affiliates



THE COLLEGE of  
ARCHITECTURE, PLANNING & DESIGN // K-STATE





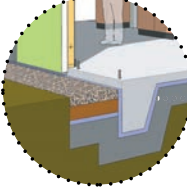
HVAC DUCTWORK AND LIGHTING  
INTEGRATED INSIDE THE CORE WALL



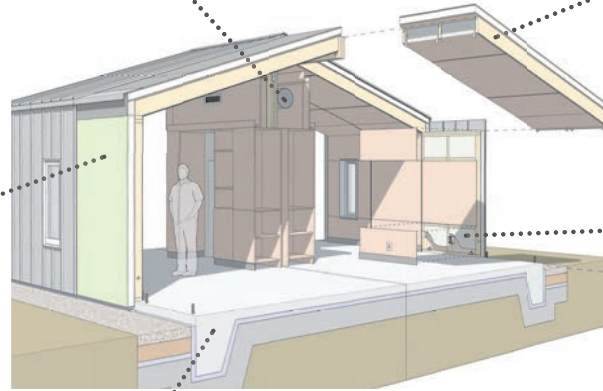
EXTERIOR FINISH (STANDING  
SEAM METAL SIDING)



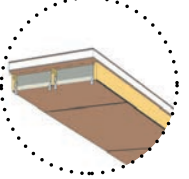
SHALLOW FOUNDATION



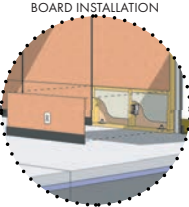
## Prefabricated Construction Methodology



ROOF PANEL MODULE



FINAL INTERIOR FINISH  
BOARD INSTALLATION



WALL PANEL MODULE



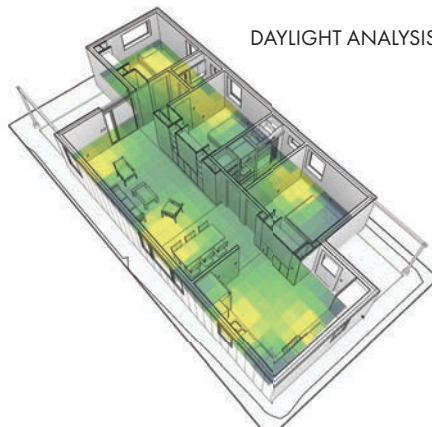
### Affordable and Net Zero |

The home's insulation and construction methods will allow it to use less than 1/5 of the energy used in a typical new home. While the home's energy footprint is small, the home has much more to offer than a typical home, with daylight throughout the house, vaulted ceilings, and durable interior materials that will include recycled porcelain countertops and high-quality wood products. The energy-efficient heating and cooling system will deliver constant, filtered fresh air to maintain indoor air quality and health. Photovoltaic panels on the roof will produce an estimated \$0.40 surplus for every \$1 of energy used. In summary, the house is not just about lifting a burden on household budgets: it's about creating a home environment that is healthier and more liveable.

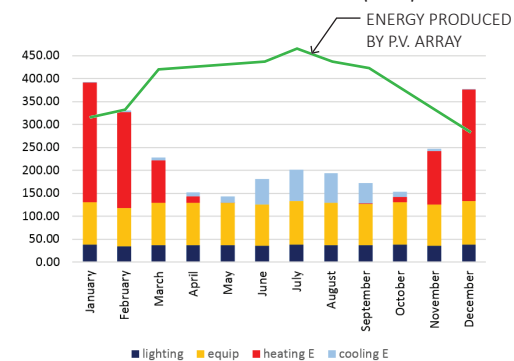


In addition to designing the house, KSU architecture students constructed wall and roof panels in their fabrication shop

DAYLIGHT ANALYSIS



ESTIMATED ANNUAL  
ENERGY CONSUMED (kWh)



### Supporters and Sponsors



Please visit the studio's website for updated sponsorship recognition and to learn more about what we're doing:  
[netpositivestudio.org](http://netpositivestudio.org)