



# Warrior Home Kehl-0



University of Waterloo  
Attached Housing

## 1.0 Project Summary

The Kehl Street Development is a community being built by Habitat for Humanity in the Waterloo Region (HabitatWR). Kehl-0 is a 4-unit townhome within the Kehl Street Development project, which intends to bridge the gap between affordable housing and energy efficiency. While embodying HabitatWR's goals, Kehl-0 focuses on fostering and nurturing communities through its constructability and long-term adaptive design.



## Relevance of Project to Goals of the Competition

The ever-increasing cost of energy and the growing demand for sustainability are leading the building industry towards more energy-efficient designs. This shift in the industry has placed a heavy burden on homes designed for the affordable housing market, which are currently built to the minimum code requirements. Warrior Home will provide practical and cost effective solutions to improve HabitatWR's current home design, while meeting the Net Zero Energy Ready requirements. Kehl-0 can potentially be implemented by HabitatWR in future developments, including one planned for 2021.

## Design Strategy and Key Points

Warrior Home's approach is to improve the current HabitatWR design, which is based on the minimum energy performance requirements. Kehl-0 focuses on ease of constructability, affordability, and energy conservation, while following the net zero energy ready requirements. Kehl-0 will maintain a simple house geometry, and will ensure the continuity of the control barriers in the building enclosure. Fundamentally, Warrior Home will future-proof the design to allow families to live in their homes comfortably for many years, without the need for major retrofits.

## Project Data

- Kitchener, Ontario, Canada
- ASHRAE Climate Zone 6A [1]
- Square footage per Unit 1116 ft<sup>2</sup>;  
Lot Size per Dwelling Unit: 1346 ft<sup>2</sup>;  
Total Lot Size: 5382 ft<sup>2</sup>
- 2-Storey, 3 Bedrooms, 1 Bathroom, average 5 occupants per unit
- HERS 0 with PV, HERS 48 without PV
- Utility Costs (electricity): \$57CAD/Month
- Utility Costs (water): \$30CAD/Month

## Technical Specifications

- Wall Insulation: 40 hr.ft<sup>2</sup>.°F/BTU
- Foundation Slab Insulation: 12 hr.ft<sup>2</sup>.°F/BTU
- Roof Insulation: 60 hr.ft<sup>2</sup>.°F/BTU
- Window U-Value: 0.24 BTU/hr.ft<sup>2</sup>.°F
- Window SHGC: 0.25
- HVAC Specifications: ERV, Mini-split heat pump system for heating and cooling
- Electric heat pump water heater with drain water heat recovery
- Solar PV: REC355 Twin Peak 2S72 module