

# 32 Mill Street Net-Zero Energy Retrofit

Warrior Home  
Solar Decathlon Team

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# Project Report

U.S. Department of Energy  
Solar Decathlon 2023 Build Competition

## 32 Mill Street

*Market Analysis Narrative*

*23BC\_WH\_D8\_REPORT\_2023-03-28*

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*In partnership with the*  
**KW Urban Native  
Wigwam Project**

# Project Report

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## ***Updated Summary of the house***

The Warrior Home Student Design Team is competing in the 2023 Solar Decathlon Build Challenge, Retrofit Division. The team will be working on a retrofit project with the Kitchener

Urban Native Wigwam Program at their house at 32 Mill St, Kitchener, On. The Kitchener Urban Native Wigwam Program is a program that provides affordable housing to low-income indigenous families in the Kitchener Waterloo region and addresses the housing crisis that is affecting many indigenous communities in Canada. Warrior Home has developed a design for a more open-concept family home, with an additional washroom. The team hopes the design will provide the family with a home that is energy-efficient, comfortable and resilient, while remaining affordable.

## ***Design Philosophy and House Design***

Attributes of the indigenous culture directed the design towards a more family oriented space. The galley kitchen provided more opportunity for family dinners, allowing members of the family to easily travel from the kitchen to the dining table, with ample light from the large South picture window at the front of the house. The semi-open concept design helped to make the space feel larger for the small existing footprint of the house. In addition, the open concept allows for natural light to flood the space leading to less use of artificial lighting.

Rooms were intended to be equalized in size to remove uncomfortable small bedrooms like what was existing in the home. Large bathroom with a double vanity sink allows multiple occupants to get ready in the morning. Emphasis was also heavily placed on optimizing the layout on the second floor in order to create spacious bedrooms to maximize comfort and usability of the space.

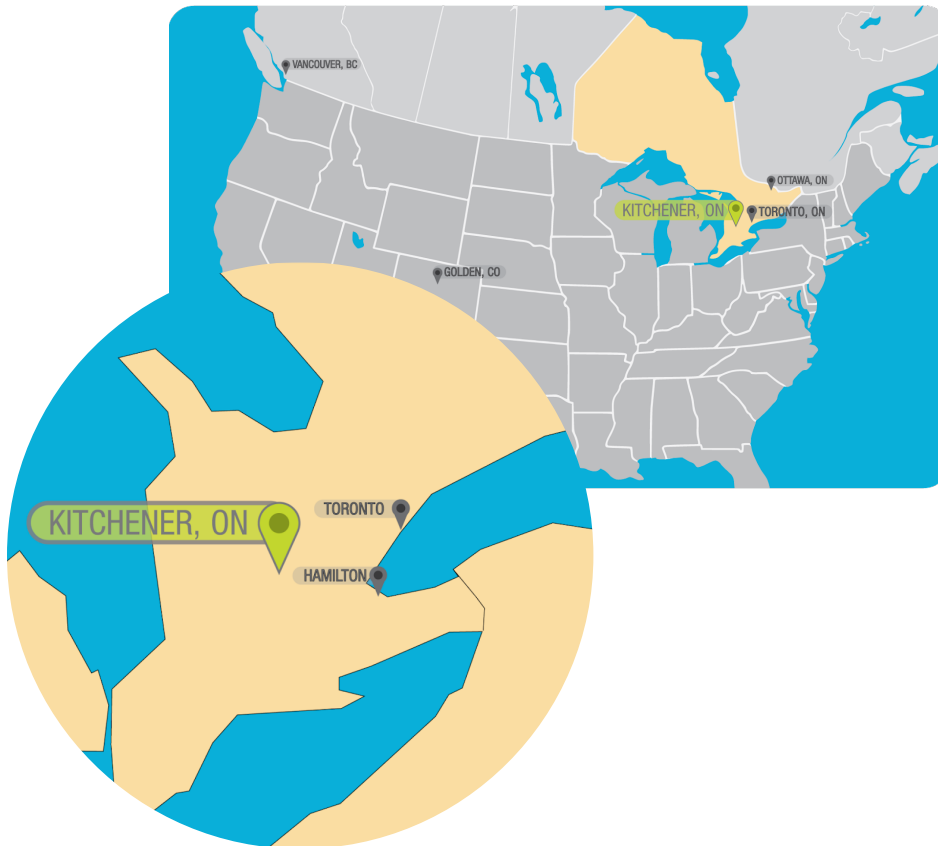
By benching and underpinning the basement, the space becomes usable. The additional usable basement space creates a large flex space that can be used for a variety of functions such as a study, play area for kids, or storage.



## Construction Site Details





The retrofit project is located in Kitchener, Ontario, Canada, meaning the local jurisdictions that have authority of the site are the City of Kitchener and the Province of Ontario. The home steps from Downtown Kitchener, Victoria Park and light rail transit. Being in such a central area, the occupants of the home will be able to get around easily with many facilities nearby like grocery stores and parks for children or pets.

The retrofit site is located on a city street with a secondary multi-use pathway connection. It is zoned as an Existing Use Floodplain (EUF-1), according to the City of Kitchener building by-law. This zone does not permit development or the development of an extension from the existing building. Since the thome is located on an engineered floodplain, and would be flooded in a 100-year storm event. This long-term flood risk was centrally considered in the design of our retrofit. Official Plan has designated the site as Open Space under the Secondary Plan Policy; Mill Court Woodside Park Neighbourhood Plan which requires special consideration for the neighbouring parks, adjacent floodplain and Urban Design Manual from the City of Kitchener. Additionally, the site is a part of the Ecological Restoration area and the Kitchener Core Natural Heritage features, which considers significant wetlands and locally significant wildlife. Because of that redevelopment is not permitted unless an Environmental Impact Study has been completed for the area. An Environmental Impact Study was not needed for the scope of our retrofit.



## Construction Partner Details

As a team, Warrior Home was lucky to have many organizations aid us, whether it was time, resources, labour, or funds, in our retrofit project. Below are our sponsorship levels and the respective sponsors. We are grateful to them for making our project a reality.

			
<p><b>Title Sponsor</b> <b>\$20,000+</b></p> <ul style="list-style-type: none"> <li>Project naming rights for the competition</li> <li>Large logo on team publications and uniforms</li> <li>Large exhibition signage</li> <li>In-competition acknowledgement</li> <li>Invitation to team events with media and VIPs</li> </ul> <p>+All other lower level benefits</p>	<p><b>Gold Sponsor</b> <b>\$10,000 - \$20,000</b></p> <ul style="list-style-type: none"> <li>Large logo on team publications and uniforms</li> <li>Large exhibition signage</li> <li>In-competition acknowledgement</li> </ul> <p>+All other lower level benefits</p>	<p><b>Silver Sponsor</b> <b>\$5,000 - \$10,000</b></p> <ul style="list-style-type: none"> <li>Recruitment event opportunity</li> <li>Sponsorship postings, team meetings and publications</li> <li>Photo opportunities</li> </ul> <p>+All other lower level benefits</p>	<p><b>Bronze Sponsor</b> <b>\$1,000 - \$5,000</b></p> <ul style="list-style-type: none"> <li>Team meeting acknowledgement</li> <li>Logo on team publications and uniforms</li> <li>Exhibition signage</li> <li>Access to team resumes</li> <li>Monthly project updates</li> </ul> <p>+All other lower level benefits</p>

### TITLE SPONSOR



### OUR GOLD SPONSORS



### OUR SILVER SPONSORS



### OUR BRONZE SPONSORS





## Construction Partner Details

In addition to these sponsors we have a number of organizations aid us in time and guidance throughout the design and construction processes. They are listed below. The remaining of our partners and on site trades can be found in the updated team roster.



## Future Plans for the House

The house at 32 Mill St is currently occupied by a family with 3 children. The occupants are chosen by the Kitchener-Waterloo Urban Native Wigwam Program Housing Manager. The current family will live in the house again after renovations take place, however the retrofit was designed to benefit the current and future occupants through thermal comfort, adequate ventilation, comfortable living space and low utility cost.

## Final Details for Community Exhibition & Summary of Online and Public Exhibition Success

Public tours are scheduled for mid-April. The event will be open to students and faculty at the University of Waterloo as well as members of the local community. Parking will be available at the Schneider Creek lot, located less than 50 metres away from the house at 32 Mill Street, Kitchener.

The attendance of the tours is projected to be similar to the groundbreaking ceremony, held November 2022. Over 40 people came to the house to celebrate the start of construction. The event received coverage from CTV Kitchener as well as the University of Waterloo. Additionally, government officials as well as faculty from the University attended and spoke at the event.



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