



## Lanefab Design/Build

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Lanefab Design/Build is a small firm composed of designers and construction professionals that produce custom homes and laneway houses in Vancouver. The team is led by Bryn Davidson, a LEED accredited designer, and Mat Turner, a Journeyman carpenter with over 15 years of homebuilding experience. Davidson and Turner draw from their own experience of small scale living and aspire to incorporate this real-world practice in their work. Both partners in the company, they are the creators of the Net Zero Solar Lane House.

## Net Zero Solar Lane House

The Net Zero Solar Lane House is situated at the rear of the Youngs' existing home, transforming an underutilized area into a much needed, affordable, efficient living space within an existing Vancouver neighbourhood. At 1050 square feet, this project contains one bedroom, two bathrooms, a combined living / kitchen / dining area, a balcony, patio space and a one car garage. The Youngs plan to rent out the lane house, providing a new rental housing alternative to tenants in Vancouver while themselves earning extra income.

Given that the new dwelling was to be constructed on a laneway (alley), it was integral to properly consider a range of challenges and restrictions throughout the design stages. By building on existing property, this project ensures that the laneway house does not take up any new space in the city. Size restrictions – including an 18' height limit - were in place to ensure the new building did not impact neighbouring properties or cause significant over-shadowing.

Many features were designed to take as much advantage of space as possible, such as transforming the area under the staircase into a powder room. The second floor was limited to being just 60% of the size of the ground floor. It was therefore essential to design as efficiently as possible. The living and dining areas were combined with the kitchen in a flexible open plan concept on the ground floor that allows for maximum use of the permitted footprint, while a bedroom and bathroom upstairs result in a private second floor.

The Net Zero Solar Lane House introduces a new type and size of housing that better utilizes resources, reduces waste and enhances neighbourhood livability. The residence also maximizes space and introduces sustainable technologies without sacrificing affordability. This project adds to the Youngs' current property value, provides them with an extra source of income, improves the quality of the city's lanes and helps reduce their community's environmental impact.

The Net Zero Solar Lane House presents several examples of excellence in sustainability and environmental responsibility. Local, renewable and recyclable materials were consistently employed while low VOC paints and finishes were key. The residence's walls and roof consist of structural insulated panels which were fabricated off site. Constructing these prefab panels ensured efficient use of materials and very low waste. They also provide a much higher insulation rating compared to regular walls, ensuring efficiency of heating and cooling during the use of the building. Walls are a true R40 and the roof is an R50 – three times the insulation compared to regular structure. All fiberglass windows and fir doors are triple glazed, ensuring a further level of efficiency while LED lighting is used throughout the interior and exterior. A 12 panel 2kW photovoltaic system provides all of the energy required for the lane house throughout the year, rendering this project 'net zero'. The system will produce excess energy during the summer and will draw power back from the grid as needed over the winter. In addition, the house is host to a drainwater heat recovery system that recycles waste heat from shower drain water while an EKO heat recovery ventilator retains up to 80% of the home's heating or cooling. Further, interior space heating and cooling is efficiently generated by an air source heat pump. An additional sustainable feature is the project's 500 gallon in-ground rainwater storage tank that will act as a water source for landscape irrigation. To provide the clients with a comprehensive way of understanding their energy consumption, the lane house includes a whole house energy monitor that displays energy consumption in real time.

Lanefab's projects not only improve the quality of Vancouver's lanes, but help reduce a community's environmental impact. Lanefab believes that small infill dwellings in walkable, transit-accessible neighbourhoods are the best way to build.