



**Name of Project:** QUEEN VICTORIA HOUSE

**Type of Project:** Residential Renovation

**Location:**

4 Queen Victoria Street  
Toronto, ON

**Size of Installation:**

Deep Green Retrofit, 5 kW photovoltaic array, solar thermal hot water

**Ownership Model:** Home owner

**Owner:** Paul Dowsett & Ron Lambert

**Total Energy Consumption Per Year:** 46,397 ekWh (electricity + natural gas equivalent)

**Total Energy Cost Per Year:** \$2,419

**Generation Output Per Year:** 4,946 kWh

**Generation Revenue Per Year:** \$2,649 (+10%, Net-positive cost of energy)

**Tested Air Leakage Rate:** 14 ACH<sub>50</sub> pre-retrofit improved to 5.5 ACH<sub>50</sub> post-retrofit

**Estimated Emissions Reductions to date:** 6.7 tonnes eCO<sub>2</sub> using Bullfrog Power (equivalent to 171 trees saved)

**Builder(s)/Equipment Supplier(s)/Developer(s):**

- Design by Paul Dowsett, Principal Architect, SUSTAINABLE.TO Architecture + Building
- Solar Panels (photovoltaic and thermal) supplied by Generation Solar

**Description:**

This resource and energy-efficient, phased addition and deep green retrofit to a century-old, working-class, single-family home takes advantage of the existing site orientation for natural lighting and shading, and enjoys calming views and breezes from the densely wooded back yard. In addition to the added highly-effective insulation, Queen Victoria House makes use of self-venting, recyclable Galvalume reflective roofing; energy-efficient doors and windows; a 5kW solar photovoltaic array; solar thermal panel to pre-heat water from the municipal main; hybrid hydronic radiant heating strategies; highly-efficient ceiling fans; direction of rainwater to rains gardens rather than into the storm sewer; permeable driveway paving of recycled crushed bricks; and optimal re-use of the existing building's structure to create an urban oasis fit for a 21<sup>st</sup>-century home.

*As a sustainable architect, I was drawn to the challenge of retrofitting an existing, 100 year old, poorly built and poorly maintained home into a model of the maximum energy-conservation achievable on a modest budget. We set Net-Zero Energy as a lofty goal. That, with the benefit of the microFIT program, we were able to achieve Net-Zero Cost of Energy is in itself, remarkable. I believe that we have proven that energy-efficiency is possible in any building on any budget.*

Paul Dowsett, Principal Architect, SUSTAINABLE.TO Architecture and Building