

Seaport Farmers' Market

Halifax, NS

The technology

Green building to house Halifax Farmers' Market: the complete renovation of a waterfront warehouse.

Overall energy requirements are minimized. Heating requirements are met by geothermal and solar means, effectively heating the building without fossil fuels or CO₂ emissions. A combination of wind and solar energy power the system. In summer, excess heat from the solar tubes is stored in the geothermal wells for winter use.

One of the largest green roofs on North America cools the building naturally, eliminating the need for power-hungry air conditioning, and the sun preheats hot water for bathrooms and vendors. Stormwater flows are mediated; rainfall irrigates the roof and supplies a grey-water cistern. The roof increases natural habitat in an urban environment, providing an ecological oasis for many species of butterflies, bees, insects, and birds. It's also great for the human spirit.

The new market is a clean-air environment: ventilation is natural and materials are non-toxic.

The design lets in natural light to provide a brighter indoor environment to work and shop in, while significantly reducing electrical usage.

Specifications

[Reductions are based on a traditionally constructed building of equivalent size and purpose.]

- Water conservation: water use reduced by 80%; 10,000 gal. (45,000 L) rainwater cistern supplies grey water to toilets (gravity-fed), spray-down hoses, irrigation
- Energy conservation: energy use reduced by 70%; high-performance insulated walls and windows; high-efficiency lighting; high-performance heat pumps; in-floor radiant heat; automated passive ventilation in summer; heat recovery ventilators in winter
- Electricity generation: roof-mounted solar photovoltaic and four 2 kW microwind turbines
- Construction materials: one-third recycled; one-third locally sourced (remainder transported by rail or sea); wood products from sustainable sources (FSC-certified, Hurricane Juan salvage, other); all sealants, adhesives, paints, carpets, wood products, and furniture subjected to green certification; 95% construction waste diverted from landfill
- Heating, cooling, ventilation: geothermal; green roof; living wall; 100% natural ventilation; 100% reduction of fossil fuels
- Geothermal wells: 17 at 650 ft. depth; store excess heat in summer for use in winter (seasonal storage); pumps powered by wind and photovoltaics
- Hot water and space heating: roof-mounted solar evacuated-tube collectors
- Lighting: natural daylighting; automatic shutoff in unused rooms; sensor-controlled lighting turned on only where and when needed
- Composting: onsite vermiculture; compost used for onsite gardening

- Green roof: features 10 different species of sedum, drought-tolerant succulents native to the region; absorbs stormwater

Environmental Benefits

CO₂ and other GHG reduction in proportion to energy-use reductions, green energy sources, materials acquisition; no toxins off-gassing chemicals into the building

Applications

Many of the elements are applicable to private and public buildings alike – existing, new, or renovated.

Advantages

The Seaport Farmers' Market expands upon the premise that locally grown produce from farmers' markets is key to a healthy lifestyle and reduced environmental impact by actively reducing environmental impacts in its construction and operation.

The new market promotes water and energy conservation, natural lighting and ventilation, a non-toxic environment, and sustainable leadership.

The province of Nova Scotia contributed 20 percent of the cost of construction.