

Solar Architecture in Atlantic Canada: Reshaping the Icons

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Solar Architecture & Urban Planning 4th Energy Forum, Bressanone, Italy, 02 - 04 December 2009

Presentation Summary

The modern built environment has been developed in a context of readily-available, low-cost energy from highly concentrated fossil fuels. Today's global energy landscape has dramatically changed; energy costs have become significant in the operation of buildings, and the sector uses a major portion of the global resources of fossil fuels.

In recent years a major focus of green building development in North America and internationally has been on setting up sustainable energy practices for the built environment. While advancing energy conservation and efficiency measures for buildings, onsite clean energy generation is now positioned as a critical next step in meeting increasing energy demands and enhancing the functionality and comfort of buildings. "Solar Architecture" as a green building concept addresses sustainable energy practices and needs of the three major tiers of the built environment: new construction, existing buildings and community planning.

Three projects are presented as examples of collaboration by solar architects and energy engineers in deploying the Solar Architecture concept to reshape the built environment in Atlantic Canada:

Solar Architecture for New Construction – Building on the Resource: **Joggins Fossil Centre** integrates solar architecture and energy engineering into new construction. New buildings provide opportunities for the most comprehensive approach in utilizing solar energy in a building energy mix. The Centre incorporates the key elements of solar architecture – advanced use of solar resource and solar energy generation technologies – with conservation and efficiency to reduce energy consumption by 64.5%, compared to the baseline, and provide over 50% of the energy demand by on-site renewable energy generation.

Solar Architecture for Existing Buildings - Reshaping the Icons: **Maritime Centre Re-invented** project describes opportunities for solar applications in combination with re-cladding an existing building. The Maritime Centre is an iconic urban structure built in the 1970's. Re-cladding provides the opportunity to provide a contemporary image and to address building envelope and indoor air quality issues. It also provides the opportunity to reduce energy needs, add more natural ventilation and integrate renewable energy technologies. Energy modeling shows the existing extreme peaks of energy to heat and cool the building; this helps to set the criteria for energy storage, performance of the building envelope and solar heating, cooling and power supply.

Solar Energy for Communities – Advancing the Vision: **Solar Architecture concept for Dalhousie University Master Plan** describes the integration of solar energy into a University Campus Master Plan. The application of solar architecture principles to community master planning involves quantifying solar energy applications. The new Dalhousie University Campus Master Plan utilizes advanced solar energy generation potential mapping and the SolarStar Rating™ system to facilitate the integration of solar technologies in the community energy mix. The advanced mapping also serves as a decision tool in planning the landscaping of the campus by shaping areas of high and low solar gain throughout the year.