

## CREATING AN ENERGY EFFICIENT, INTELLIGENT BUILDING

The Innovation Center is a newly rehabilitated office building located on the historic campus of the US Embassy to Finland. Built in 1915 as an apartment building, but long ago converted to an office building, by 2010 the facility was in dire need of life safety, accessibility, and security upgrades. Through the initiatives of the U.S. Department of State Bureau of Overseas Buildings Operations (OBO), Ambassador Bruce J. Oreck, and his embassy staff, the necessity to renovate the building became an opportunity to showcase advanced sustainable design technologies and practices while demonstrating how “green” building can translate into long term economic benefit. This humble, unassuming five-story building has been transformed into a model of intelligent energy management and efficiency. Without jeopardizing the historic character of the original building, the Innovation Center design strikes a balance of new functions with sustainable responses to energy, natural resources, and materials. This building rehabilitation project is registered with the U.S. Green Building Council with the goal of LEED® certification.

## INNOVATIVE FEATURES

Landscaped Open Space + Plazas (of site):	48%
Reflective Roof:	100%
Water Use Reduction:	31%
Energy Cost Savings:	47%
Green Power:	100%
Recycled Construction Waste:	75%
Interior Spaces with Views to the Exterior:	95%
Existing Building Structure Reused:	64%

## PROJECT INFORMATION

The Innovation Center  
Embassy of the United States of America, Helsinki Finland  
Registered with the goal of LEED® certification

**Size:** 2563.38 square meters | 27,592 square feet

**Building Type:** Office

**Owner:** United States Department of State –  
Bureau of Overseas Buildings Operations (OBO)

## PROJECT TEAM

**Design – Builder:** B L Harbert International, LLC

**Designers of Record,  
Architecture &**

**Interior Design:** Page Southerland Page, LLP

**Engineering:** Hankins & Anderson, Inc  
Ehlert/Bryan, Inc  
Hinman Consulting Engineers, Inc  
KPF Consulting Engineers  
Schnabel Engineering, LLC

**Landscape Architecture:** Rhodeside & Harwell, Inc

**Concept Design:** Moore Ruble Yudell  
Architects & Planners



# THE INNOVATION CENTER

THE EMBASSY OF  
THE UNITED STATES OF AMERICA

HELSINKI, FINLAND





### ACCESS TO PUBLIC TRANSPORTATION—WALKABLE COMMUNITY

Site selection is often overlooked when calculating the benefits of sustainable design, but it is one of the most crucial components for the environmentally conscious. By retaining the current historic location, the embassy continues to have access to Helsinki's abundant public transportation system, foot paths, and convenient proximity to amenities.



### BICYCLE NETWORK

The embassy campus borders Helsinki's extensive 1,000 km (621 miles) long bicycle network path—its length is equivalent to a round trip to St. Petersburg, Russia. To promote embassy staff to ride bikes, the Innovation Center has showers and lockers for quick changes. Not only do cyclists contribute to the city air quality and diminish congestion, they also contribute to their health through beneficial physical exercise.



### WATER USE REDUCTION

Throughout the Innovation Center, water conserving plumbing fixtures has been installed including low-flow toilets, showerheads, and waterless urinals. The use of these fixtures reduces the water consumption by 31% from the baseline. That is more than 95,000 litres (~25,000 gallons).

### ECOLOGICAL LANDSCAPING

The landscape architects conscientiously designed with beautiful, local plant materials. This thoughtful integration of indigenous plants, such as the campanula flower, eliminates the need for a permanent irrigation system, which in turn reduces water consumption.



### ENERGY EFFICIENCIES—NATURAL LIGHT AND VENTILATION

The existing windows of the Innovation Center were previously replaced with operable triple pane windows. It made economic sense as well as friendly recycling sense to keep these high performance windows. The abundance of large sized windows increases the energy efficiency by utilization of natural ventilation and natural daylighting. They further enhance occupant comfort with pleasant views to the Gulf of Finland and environs.



### ROOFING MATERIALS—HEAT ISLAND EFFECT REDUCTION

One hundred percent of the Innovation Center's roofs have a solar reflective index (SRI) of 55 or better, enabling them to stay cool and not contribute to the "heat island effect". Cool roofs reduce thermal differences between developed and

undeveloped areas, thus reducing potential micro-climate changes in urban areas.

### ROOFING MATERIALS—ENVIRONMENTALLY FRIENDLY

The standingseam material on the gable roof is zinc. Of the non-ferrous metals, zinc has the lowest embodied energy. It is 100% recyclable at the end of its usable life, which can be up to 100 years.

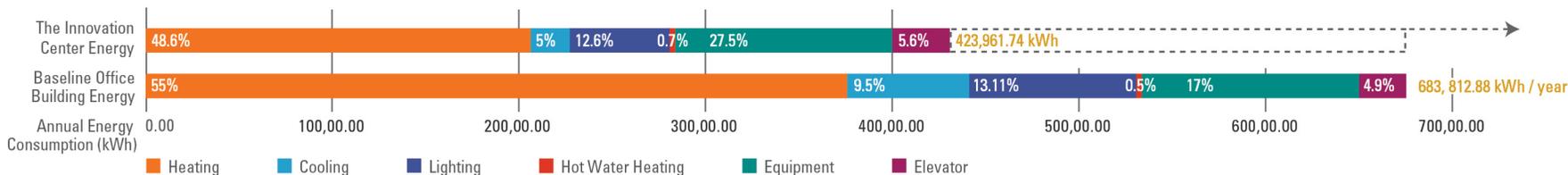


### ENERGY EFFICIENCIES—POWER, HEATING AND COOLING.

Taking a holistic approach, the Innovation Center utilizes a combination of energy-efficiency strategies to reduce energy costs by over 47% compared to a baseline office

building\* (energy consumption reduction by over 38% as depicted in the graphic below). The majority of energy savings can be attributed to space heating, high efficacy luminaires, natural ventilation and high efficiency fans. Hot water for heating and chilled water for cooling is supplied by the thermal district energy system (DES). This centralized system provides an increased level of efficiency and uses local resources—such as chilled water from the Gulf of Finland—proving to be the reason for Helsinki's superior energy performance, low CO<sup>2</sup> emissions and clean air. Architectural strategies, including enhanced insulation and operable, triple pane windows, further improve heating and cooling performance.

\* Baseline Office Building energy use based on ASHRAE Standard 90.1-2007



An annual energy savings of 259,851 kWh compared to the baseline office building, which amounts to enough energy to power five homes in Helsinki for one year.

### BIRD'S EYE VIEW OF THE INNOVATION CENTER ON THE US EMBASSY SITE



### BUILDING REUSE

"The greenest building is one already built." Not demolishing and rebuilding is a great way to steward the environment by taking advantage of the non-recoverable embodied energy. The Innovation Center maintained 64% of the original structure, offsetting enough embodied energy to equate to 992,365 litres of petrol (262,155 gallons of gasoline). You could drive a midsize diesel automobile around the Earth's equator more than 300 times.



### ENERGY EFFICIENCIES—LUMINARIES

The light fixtures for the interior of the Innovation Center are all Next Generation Luminaire (NGL) Solid State Lighting (SSL) winners. These emerging technology fixtures demonstrate the variety of illumination available with light-emitting diodes (LED) and organic light-emitting diodes (OLED). Not just a pretty package, these luminaries use substantially less electricity, generate less heat and have an ultra-long source life.



### ENERGY EFFICIENCIES—LIGHTING CONTROLS

The Innovation Center's state-of-the-art lighting system controls light levels with occupancy sensors, dimming panels, daylight sensors and/or 4-button wall stations on a space-by-space basis. This well-tailored lighting design will not only increase energy performance—by way of automatically shutting off lights when a room is not occupied or dimming lighting fixtures when sufficient natural light is provided—but occupant productivity, comfort and sense of security is widely recognized to be positively affected.