

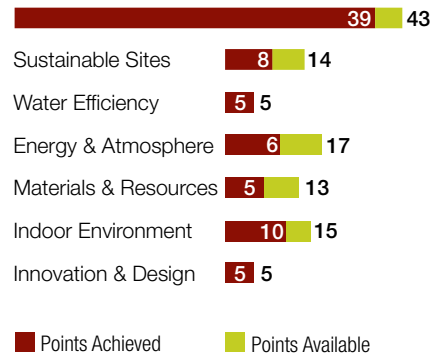
# Seattle City Hall Seattle Fleets & Facilities Department



Photo by Nic Lehoux

**Square Feet:** 198,000, 7 stories  
**Site:** 72,000 square feet  
**Location:** Downtown Seattle  
**Construction Cost:** \$363/square foot  
**Completed:** July 2007

## LEED Facts - NC Gold



## Benefits

- 24% reduction in energy use
- 100% less potable water used for irrigation
- 30% less potable water used indoors
- 27% reduction in rate of stormwater runoff
- 75% of waste generated by construction recycled

## Project Overview

Seattle City Hall is the center of a three-block civic campus in Seattle. The building has two components: a seven-story office tower on the north side and a two-level structure containing the council chamber and public meeting room to the south. These are linked by a see-through public lobby spanning the entire ground floor. The building is designed to connect a sweeping, terraced public plaza with a grand outdoor staircase, public seating areas and water features.

It is designed to endure for 100 years, with the ability to adapt to changing city services, replacing a municipal building which experienced only 40 years of use. The older building lacked flexibility, a sense of civic place, and earthquake safety.

The building is intended to express the spirit and values of the city, including the beauty and health of the natural environment. It connects people to the outdoors with natural light and views.

## Art at Seattle City Hall

Seattle City Hall offers a broad array of site-integrated and portable artworks and cultural displays that reflect Seattle's rich creative life.

Three artworks by design team artist Beliz Brother, who developed an art plan for City Hall, reflect various aspects of Seattle:

*return*: Seventy-four glass panels form a sweeping curved glass wall enclosing the Bertha Knight Landes Room in the main lobby. Each panel contains an image of historic or contemporary Seattle.

*continuum*: Five backlit glass panels at the second floor entrance to the City Council offices floor glow luminously blue with an assembled collection of more than 5,000 archival and contemporary images featuring the people of Seattle.

*illumine*: Dichroic glass discs, 24 inches in diameter, are strung like beads on eleven steel cables suspended from the ceiling of the vertical glass tower "lantern" on the northwest corner of the City Hall plaza.. The discs rotate and twist, catching light and color and reflecting the surrounding Seattle environment.

Vancouver, B.C., artist Eric Robertson's 72' long wall installation, *Evolving Wing and the Gravity of Presence*, at the 5th Avenue entrance, draws formal inspiration from regional sources including Northwest tribal culture and the aerospace industry. Aluminum canoe gunnels and yellow cedar paddles reflect local Duwamish and Suquamish maritime traditions. Stylized airplane wings along the top of the wall reference the history of aeronautical engineering in the region.

*Blue Glass Passage*, by James Carpenter of New York, hovers as an integrated walkway spanning the lobby from the office block to the City Council Chamber. Blue structural glass panels form a 60-foot-long bridge deck supported by a steel beam and steel cables. The guardrail on the west side incorporates generous wood leaning plates and footrests, encouraging the viewer to stop and contemplate the view.

Nobuho Nagasawa's *Water Weaving Light Cycle* hangs in a City Hall stairwell. During the day, the optical fiber tapestry has the appearance of a woven glass net; at night, blue light pulses through the fiber, simulating flowing water. An audio component mixes the sound of lapping waves recorded at local beaches with weather-related environmental sounds.



Photo left by Erik Stuhaug and right by Nic Lehoux

Although crowds occasionally fill all or part of the building, the average workday occupancy is estimated at 320.

### Sustainable Sites

Seattle City Hall is part of a three-block hill climb civic complex that includes the Justice Center for police and courts on the uphill block, an adjoining plaza on the same block, and a more extensive plaza and gathering place on the block below, with light rail station.

With generous amounts of public space for occasional visitors, large civic events or informal gatherings, City Hall serves environmental goals by contributing to a vibrant and healthy community and workplace, general quality of life, and social equity. The new building also fosters public participation, with indoor and outdoor spaces that flow together spatially and visually.

The highly transparent lobby serves as an indoor civic square and the City's "front porch." The side walls of the Council chamber are glass, as is the pedestrian bridge (part of Seattle's Public Arts program) that links Council Chambers to offices. Live video feeds to an overflow assembly area and taped video to the city's web and cable stations to increase options for public involvement. Barrier-free design ensures equal access for all and exceeds ADA requirements. Artworks commissioned through Seattle's Public Art Program are accessible to community members.

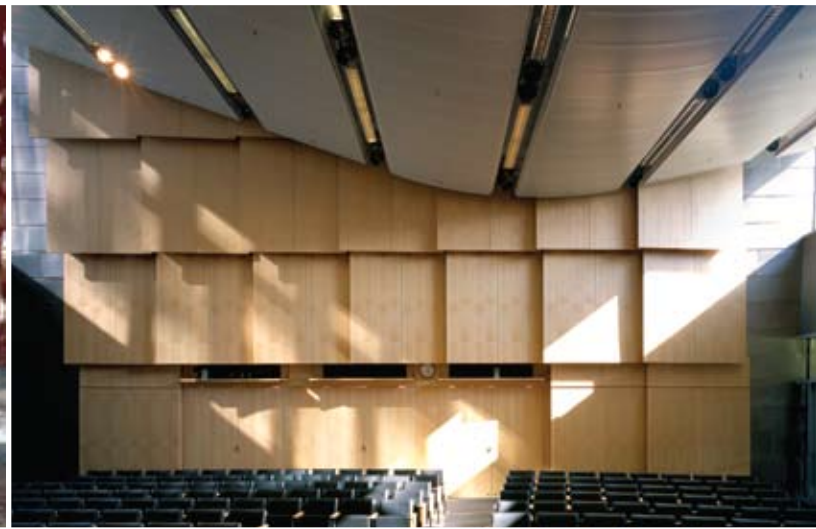
The City aims to increase the numbers of juvenile salmon migrating out of Seattle's fish-bearing creeks. As salmon are part of a complex ecological system, they can be affected by demands for hydropower and drinking water, water quality, and disruptions due to global warming. City Hall sets an example for contributing to a healthy salmon habitat through a living, vegetated roof that absorbs rainwater and slows peak flows. A rainwater collection system provides an example for the community, reducing stormwater runoff and providing reusable water for irrigation and toilets.

Exterior lighting is designed to avoid contributing to light pollution.

### Water Efficiency

Harvesting rainwater for non-potable uses, including irrigation and toilet flushing decreases stormwater runoff and decreases the need for potable water. The rainwater retention reservoir is a 225,000-gallon tank which stores up to 30,000 cubic feet of water. It is installed inside the basement walls of the former building in unused space under the plaza stairs. Because it is housed by the basement walls from the former building, the design helps to minimize demolition waste and new construction materials.

Over the course of a year, the system collects approximately 913,400 gallons for use in drip irrigation for landscaping and in low-flow lavatories. As modeled, it reduces stormwater runoff by 27 percent and potable water use by 30 percent.



Photos by Nic Lehoux

All stormwater drains on the roof, the plaza and the rest of the site are piped into the storage tank. Sediment collects in a hopper at the tank intake, where it can be easily cleaned out. For use inside the building, the water is pumped into a separate day tank, which is topped off with potable water in the unusual event there is not enough runoff collected.

## Energy & Atmosphere

In office areas, a raised floor system creates sub-floor space for the distribution of fresh and heated air as well as electrical wiring and data cabling. Special floor diffusers deliver fresh air to occupants allowing them to control the ventilation and temperature for personal comfort. Although knowledge of these systems continues to evolve, displacement systems have higher energy efficiency due to lower level distribution and variable fan speeds. They are able to speed up with higher occupancy, and use less extreme heating and cooling air temperatures.

Elevators use a direct drive, permanent magnet motor that decreases energy use by up to 50 percent over standard hydraulic elevators.

The building is designed to capture natural light, decreasing the need for artificial lighting. Each side has special adaptations that reduce energy needs, based on solar orientation. South and southeast sides are dominated by low-e (emissivity) glass with built-in shading from ceramic frit strips. On the west side, clear upper glazing and light

shelves bounce light deep into the space while workers are protected from glare by exterior frit glass sunshades below. Vertical fins serve as light catchers on the north side. The east side is shaded by the taller, adjacent Justice Center.

The electrical system and roof are designed to accommodate a 30 kilowatt solar electric panel array, which will be installed at a later date. Energy-saving features include high-efficiency light fixtures and lighting controls.

Further savings have been achieved using high-efficiency water chillers, variable-speed fans and pumps, and demand-driven ventilation. For example, demand driven carbon dioxide controlled ventilators were used for the Council Chambers meeting room.

Mechanical infrastructure was placed within the Council Chambers Annex to enhance the view from the adjoining office tower and the surrounding highrise buildings. Judicious sizing of mechanical infrastructure will support varying uses over time, such as the addition of retail spaces in the lobby areas, and helps to preclude major overhaul of core systems to accommodate changes in the building's use.

## Materials & Resources

By weight, over 75 percent of waste generated in construction was recycled. A variety of recycled content materials were used in the building, including structural and ornamental steel, carpet, ceiling tiles,

gypsum wallboard, concrete with high post-industrial content of fly ash, restroom partitions made of recycled plastic grocery bags, and ceramic tile.

Locally and regionally produced materials that support the local economy and reduce transportation impacts used on the project include curtain wall, gypsum board, ceiling tiles, concrete, casework and cabinetry, ornamental metal work, and structural steel.

## Indoor Environment

Several design features and strategies promote indoor air quality. Entryway grate systems capture contaminants from people's shoes before they come into the building. Air quality is also enhanced with optimum ventilation, which is supported by fresh air intakes far from contamination sources. CO<sub>2</sub> monitors are coupled with automatic adjustments within the system to protect air quality. Copier room spaces, chemical storage and housekeeping areas are separately ventilated.

Materials are selected with interior air quality in mind, including adhesives, sealants, paints, coatings that are low in volatile organic compounds and other toxics. An indoor air quality-management plan was in place during construction, and a mandated a two-week "flush" of interior spaces with 100 percent outside air before move-in helped to protect occupants, removing contaminants associated with construction activities and newly finished materials.



Photo by Nic Lehoux

## Innovation & Design

- Materials Recycling
- Water Efficiency
- Education
- Post Occupancy Evaluation
- LEED Accredited Professional

## Lessons Learned

- Large spatial volumes inside public buildings contribute to the civic character, the quality of the indoor environment, views and natural light, and the value of the building as a public gathering space. However, these volumes add to the demands of heating and cooling the building. Efficiencies in energy systems can more than offset these energy needs.
- Green roofs are very viable and effective in slowing runoff. Depending on their position within the entire building composition, they also enhance views. The Seattle City Hall green roof is thriving five years after construction, and although it is not accessible to the public, it enriches the view from the upper levels of the administration wing and from the upper floors of the adjacent Justice Center.

- Harvested rainwater from a vegetated roof can be tinged with color in toilet bowls, with disconcerting consequences among those who are not aware of the sustainable system involved. This color is highly correlated with the organic content of the soil, which will tend to decrease over time if not amended. To prevent discoloration in the first place, it is prudent to restrict organic content to 2 percent or 3 percent, the minimum required to support most roof plantings.
- Natural light, widely appreciated by users of Seattle City Hall, is not welcomed by video crews. A blind system had to be installed in Council Chambers to block natural light when videotaping is in progress.
- When installing a raised floor system, it is important that carpeting modules and floor modules correspond in dimension so that the modules can be shifted easily as workstations are rearranged. Also, in-floor diffusers must be designed to resist sticking. Floor grit tends to enter the mechanism, causing it to be difficult to adjust as designed.

## Rating & Awards

U.S. Green Building Council LEED® for New Construction Gold Rating

2006 Merit Award, IDEAS Awards Program  
American Institute of Steel Construction

2006 Honor Award for Design  
AIA Washington Council

2003 Award of Excellence for Electrical Design  
Northwest Construction

## The Team

### Owner

Seattle Fleets and Facilities Department  
[www.seattle.gov/fleetsfacilities](http://www.seattle.gov/fleetsfacilities)

### Architect

Bassetti Architects/Bohlin Cywinski Jackson  
[www.bassettiarch.com](http://www.bassettiarch.com), [www.bcj.com](http://www.bcj.com)

### Mechanical Engineer

Wood/Harbinger  
[www.woodharbinger.com](http://www.woodharbinger.com)

### Landscape Architect

Gustafson Partners with Swift & Co.  
[www.ggnltd.com](http://www.ggnltd.com), [www.swiftcompany.com](http://www.swiftcompany.com)

### Civil & Structural Engineer

SvR Design Company  
[www.SvRdesign.com](http://www.SvRdesign.com)

### Electrical Engineer

Sparling  
[www.sparling.com](http://www.sparling.com)

### Lighting Designer

Fisher Marantz Stone (public areas)  
[www.fmsp.com](http://www.fmsp.com)  
Candela (offices)  
[www.candela.com](http://www.candela.com)

### Daylighting Consultant

The Daylighting Lab  
[www.daylightinglab.com](http://www.daylightinglab.com)

### Contractor

Hoffman Construction  
[www.hoffmancorp.com](http://www.hoffmancorp.com)

### Commissioning Agent

Engineering Economics Incorporated  
[www.eeiseattle.com](http://www.eeiseattle.com)

## To Learn More

**City Green Building** promotes green building through education, technical assistance and incentives.  
[www.seattle.gov/dpd/greenbuilding](http://www.seattle.gov/dpd/greenbuilding)

**LEED®** is the national benchmark for high performance green buildings developed by the US Green Building Council.  
[www.usgbc.org](http://www.usgbc.org)

**Office of Arts & Cultural Affairs** promotes the value of arts and culture in and of communities throughout Seattle.  
[www.seattle.gov/arts](http://www.seattle.gov/arts)