



Green Building Renovations

The University of Washington as a Case Study



GHG Emissions and Buildings

In the U.S. buildings account for 36% of total energy usage, 30% of all greenhouse gas emissions, 30% of raw materials use and 30% of our total waste output. The way buildings are made and maintained has a significant impact on how much energy and materials they require, and thus how much GHG they produce.

For example, at the University of Washington, the on campus power plant is responsible for almost half of the universities emissions. A primary product of the plant is steam for heating campus buildings; using green building techniques could significantly lower demand from the plant.

Green Building Certification

Leadership in Energy and Environmental Design (LEED) is a green building rating system for building design, construction and operation that has become a nationally accepted standard. A number of universities and governments, including the State of Washington, have mandated that all new buildings be built and certified to at least LEED Silver standards.

Many organizations give less attention to the greening of existing buildings, but there are significant gains to be made through green building renovations. LEED does not address all potential green building actions, but these standards provide valuable benchmarks that help organizations create environmental, social and economic benefits.

Select Resources

UW Climate Partnership Green Building Renovations. Available: <http://courses.washington.edu/emksp06/uwclimate/index.html>

US Green Building Council Website. Available: <http://www.usgbc.org/>

UNEP Buildings and Climate Change Report. Available <http://www.unep.fr/pc/sbc/publications.htm>

EPA Green Building Information. Available: <http://www.epa.gov/greenbuilding/>

Benefits of Green Building

Environmental:

- Protect ecosystems and biodiversity
- Improve air and water quality
- Reduce solid waste
- Conserve natural resources
- Reduce greenhouse gases

Social:

- Increased productivity
- Improved health

Economic:

- Reduced operational and maintenance costs

Green Renovation Strategies

Site Design & Planning:

- Reduce the use of pesticides and fertilizers in your site maintenance by using only on an as-needed basis.
- Make your building bike friendly by installing bike racks.

Energy & Atmosphere:

- Set all equipment for automatic shut-down and replace old appliances and equipment with more efficient models.
- Replace lighting with more efficient light bulbs for a 75% increase in efficiency and install motion sensors on lighting to conserve even more.
- Purchase green energy from your energy provider for a premium of \$0.03 per kWh.

Water Efficiency:

- Replace outdated fixtures with modern energy saving models such as low-flow or dual-flush toilets.
- Create storm water collection gardens as part of your landscaping.

Materials & Resources:

- When in need of remodeling use sustainable-certified or recycled materials such as recycled carpets.
 - Paint your walls using low VOC paints.
- Recycle and compost waste rather than sending it to the landfill.

Example Green Renovation Projects

Cambridge City Hall Annex

- \$55,175 in cost savings as a result of reuse and recycling of construction waste in this 32,000 sq. ft. commercial renovation.

Downtown Seattle Office Building

- Installed double-paned, angle-cut windows to increase daylight and energy efficiency, and implemented an innovative energy saving modular mechanical system saving \$0.43/sq. ft. and 690,000 tons of GHG emissions.

In Partnership with the City of Seattle
2006-2007 Luce Keystone Project: UW Climate Partnership Team
Environmental Management Certificate Program
Program on the Environment, University of Washington