



Reducing Healthcare Facilities' Contribution to Climate Change

According to Younger et al. “(b)uildings contribute to climate change, influence transportation, and affect health through the materials utilized, decisions about sites, electricity and water usage, and landscape surroundings. Land use, forestry, and agriculture also contribute to climate change and affect health by increasing atmospheric levels of carbon dioxide, shaping the infrastructures for both transportation and buildings, and affecting access to green spaces.”ⁱ Hospitals, medical offices and other health care facilities can reduce their carbon footprint by adopting green building principles, choosing construction sites that are close to public transportation and mixed-use areas to cut down on automobile use, by using low-emission and no-emission lighting and heating strategies, and other ways that benefit health and ensure the environmental sustainability of the health care practice.

Facilities situated far from population centers may encourage automobile use, increasing reliance on dirty fuels and causing unhealthy air pollution. Health care sites can be situated in areas that facilitate safe walking, cycling, and social interaction that may enhance physical and mental wellbeing and reduce greenhouse gas emissions. Many health care facilities are seeking “green building” certifications. The Leadership in Energy and Environmental Design (LEED) certification process, designed by the U.S. Green Building Council, guides the development of buildings that are more energy and water-efficient and have lower greenhouse gas emissions. More information on LEED can be found in the Resources section.

Health Care Without Harm and Practice Greenhealthⁱⁱ recommend the following interventions:

- **Incorporate green building principles** – *Use day lighting, natural ventilation, green roofs; consult the LEED programⁱⁱⁱ for guidance.* Optimize the building envelope with better insulation and energy-efficient windows. Green roofs (roofs with planted vegetation) can increase heating and cooling efficiency, reduce the heat island effect and storm water runoff. Chicago’s Schwab Rehabilitation Hospital uses its green roof to provide horticulture therapy for patients, “a process in which plants and gardening activities are used to improve body, mind and spirit.”^{iv,v} Natural roofs may also enhance patient wellbeing. Daylighting – the use of natural light to provide indoor illumination, requires no energy and may improve mood and performance.
- **Consider overall transportation impacts of facility siting** – *When selecting a new building or office site, consider an area near a public transportation hub or advocate for increased public transportation service to the facility. Build in already-developed areas to maintain existing green spaces.*
- **Use native vegetation and plant trees on site, use local and regional building materials** – *Trees and vegetation can reduce heat island effect and act as carbon sinks. Native plants need less*

water. The heat island effect can exacerbate heat-related health problems connected to climate change. The heat island effect, where sunlight reflects off of impermeable, dark pavement and roof surfaces to increase temperature, can be mitigated by planting trees and other native vegetation, while also creating a carbon sink and natural, zero-energy-dependent shade.^{vi}

- **Use local and regional building materials:** *Less energy required to deliver local products to building site.* Lower vehicle traffic means reduce energy use and associated air pollution.
- **Purchase only lumber products certified by the Forest Stewardship Council** – *support sustainable forestry practices. Ninety percent of wood products used in the construction of Mulvaney Medical office building in Idaho were from Forest Stewardship Council-certified forests.*^{vii} The Forestry Stewardship Council is a non-profit organization that sets standards to ensure forests are managed responsibly.

Case Study: Group Health Puyallup Medical Center^{viii}

The Washington State facility was first in the United States to receive LEED for Healthcare Gold certification.

- Facility includes ground-level vegetation and green roof.
- Designed for water use reduction – Special sensors activate cold water for cooling sanitized medical equipment only when necessary.
- Uses a more efficient steam generator boiler.
- Used local and/or recycled construction materials.
- Car charging stations and bike racks on site.

Resources

U.S. Green Building Council: LEED Rating. <http://www.usgbc.org/leed#rating>

LEED 2009 for Healthcare Guide: http://www.usgbc.org/sites/default/files/LEED%202009%20RS_HC_4-2014_cover.pdf

Forest Stewardship Council <https://us.fsc.org/en-us>

Green Guide for Health Care: <http://www.gghc.org/>

Center for Health Design: <https://www.healthdesign.org/topics>

ⁱ Younger M, Morrow-Almeida HR, Vindigni SM, Dannenberg AL. The Built Environment, Climate Change, and Health: Opportunities for Co-Benefits. *Am J Prev Med.* 2008;35(5):517-526. Accessed at <http://www.ajpmonline.org/article/S0749-3797%2808%2900682-X/fulltext?refuid=S0749-3797%2808%2900685-5&refissn=0749-3797>

ⁱⁱ Health Care Without Harm and Practice GreenHealth. Addressing Climate Change in the Health Care Setting: Opportunities for Action. Accessed at <https://practicegreenhealth.org/pubs/toolkit/reports/ClimateChange.pdf>

ⁱⁱⁱ <http://www.usgbc.org/leed#rating>

^{iv} <http://www.beckershospitalreview.com/news-analysis/hospitals-adding-roof-gardens-to-improve-patient-care.html>

^v <http://www.greenroofs.com/projects/pview.php?id=1133>

^{vi} <https://www.epa.gov/heat-islands/using-trees-and-vegetation-reduce-heat-islands>

^{vii} <http://www.usgbc.org/projects/mulvaney-medical-office-building>

^{viii} <https://www.healthcaredesignmagazine.com/architecture/puyallup-medical-center-blazes-trail-leed-healthcare/>