

Reduce Your Facility's Energy Emissions

Health care buildings, including hospitals and outpatient facilities, constitute 9% of energy consumption in U.S. commercial buildings, despite making up just 4% of the total commercial floorspace (1). Cutting your facility's energy use and switching to renewable energy reduces emissions and air pollution associated with fossil fuel generation. Air pollution contributes to asthma and chronic lung disease, among other health problems. Increasing energy efficiency and generating energy from solar panels and other renewable sources can reduce operations costs. The Greenhouse Gas Protocol designates direct emissions from sources owned or controlled by the facility as Scope 1 emissions, such as on-site boilers. Scope 2 emissions come from purchased energy, like electricity. Scope 3 emissions include fuel and energy-related activities not covered under Scope 1 or 2.

Health care facilities can take the following actions to improve energy efficiency and transition to clean energy sources:

- **Take an energy inventory and set sustainability goals:** To start, account for your facility's energy-related greenhouse gas emissions. The National Academy of Medicine recommends health care facilities start the process by measuring, tracking, and reporting energy-related emissions that your facility owns and controls, such as on-site boilers and furnaces, and from sources that your facility purchases, including electricity and natural gas bought from utilities, and any other sources (2). Once a baseline is determined, the facility may set goals for reducing energy-related emissions.
 - The U.S. Department of Energy Building Alliance [provides guidance](#) on how hospitals can develop an energy management program.
- **Install On-Site Renewable Energy Systems:** Hospitals and other facilities can cut emissions and improve resiliency by transitioning from dirty fossil fuel-burning energy sources to clean, renewable energy. Installing on-site renewable energy sources such as solar panels, wind turbines, and geothermal equipment reduces emissions and air pollution (3). Microgrids ensure continued operations during power outages and natural disasters. Kaiser Permanente's Richmond Medical Center installed a microgrid system composed of solar panels, a battery storage unit, smart inverters, and a microgrid controller, which cut energy use and achieved annual cost savings of nearly \$400,000 (4).
 - The [Inflation Reduction Act's Investment Tax Credit](#) helps subsidize the cost of renewable energy projects like solar and wind technologies, geothermal equipment, and energy storage. The Production Tax Credit provides credits to facilities for generating electricity from renewable sources.
- **Purchase Green Power:** Purchased energy (Scope 2) accounts for 11% of total health care sector emissions (5). Health care facilities can reduce their carbon emissions by purchasing clean, green energy from wind, solar, biomass, and other sources. To meet federal sustainability goals, eight Veterans Affairs health care facilities amended their electric contracts to increase their use of renewable energy by nearly 122,000 megawatt hours annually, according to a 2022 report (6). Advocate Health Care has committed to achieving carbon neutrality by 2030 through on-site renewables, purchasing off-site renewable energy, and buying credits to compensate for grid usage (7).
- **Conserve energy:** Facilities can switch to energy efficient lighting, take advantage of natural light, and adjust thermostats to reduce energy use. Facilities can lower their energy use by switching to energy efficient LED bulbs, installing timed and motion sensor lighting, adjusting thermostats to save energy when appropriate. The Cleveland Clinic saved millions of dollars when it switched to more efficient light bulbs and programmed medical computers to transition to sleep mode when not in use (8). Plugged-in electrical equipment may consume energy even when it's powered down. Standby power (or "phantom" loads) can consume up to 5 percent of an electrical plug load (9). Compared to conventional systems, combined heat and power, where electricity and thermal energy are provided from a single fuel source, is a cost-effective, energy efficient way to ensure care continuity during electric grid outages (10).
 - On a larger scale, facilities can optimize the building envelope with better insulation and energy-efficient windows. Health care facilities can seek LEED or similar certification to cut energy, water, and natural resource use. Globally, there are nearly 4,000 health care projects with LEED certification (11). According to the Department of Energy, a "zero emissions building" is one that is energy efficient, free of on-site emissions from energy use, and powered solely from clean energy (12).
 - The Inflation Reduction Act modifies and extends the Energy Efficient Commercial Buildings Deduction, which allows eligible entities to deduct energy efficiency improvements to lighting, heating, cooling, ventilation, and other activities.
- **Purchase Energy-Efficient Products:** Hospitals, health systems, and other health care facilities can purchase products approved by Energy Star or the Federal Energy Management Program-designated products. Medical devices, such as LED microscopes and direct-current vaccine storage refrigerators can also be solar powered. Laptop computers use less energy than desktop computers.

Case Study: Boston Green Ribbon Commission Health Care Working Group (13,14)

- Comprised of 18 Boston-area healthcare organizations.
- Metro Boston hospitals reduced their greenhouse gas emissions by 18% from 2011-2019, the equivalent of eliminating emissions from 195 million miles driven by the average passenger vehicle.
- Reductions in greenhouse gas emissions were achieved by making facilities more energy efficient and obtaining renewable and other zero-carbon electricity. Many facilities installed combined health and power systems, boosting resiliency.
- The changes made during the 2011-2019 period “will result in the associated social costs (health and climate impacts) declining by \$20,628,769 per year, lost or restricted workdays declining by 835.7 per year, and premature deaths declining by 1.3 per year.”

Resources:

HHS Office of Climate Change and Health Equity: **Developing a Climate Resilience Plan for Healthcare Organizations: Key Considerations**

HHS Office of Climate Change and Health Equity: Compendium of Federal Resources for Health Sector Emissions Reduction and Resilience <https://www.hhs.gov/climate-change-health-equity-environmental-justice/climate-change-health-equity/actions/health-care-sector-pledge/federal-resources/index.html>

U.S. Department of Energy Commercial Building Energy Alliance/Hospital Energy Alliance <http://www1.eere.energy.gov/buildings/alliances/>

Energy Star Certified Products. <https://www.energystar.gov/products>

EnergyStar Guidelines for Energy Management: <https://www.energystar.gov/buildings/about-us/how-can-we-help-you/build-energy-program/guidelines>

- 1 U.S. Energy Information Administration. Commercial Buildings Energy Consumption Survey (CBECS): 2018 CBECS: Principal Building Activities, Health Care. Available from: <https://www.eia.gov/consumption/commercial/pba/health-care.php>
- 2 National Academy of Medicine Action Collaborative on Decarbonizing the U.S. Health Care Sector. Carbon Accounting for Health Systems: Steps to Address Scopes 1 and 2. Available from: https://nam.edu/wp-content/uploads/2023/06/Climate-Collab_Carbon-Accounting-Scopes-12_two-pager-final.pdf
- 3 Commonwealth Fund. Sustainability Tax Incentives. January 2024. Available from: https://www.commonwealthfund.org/sites/default/files/2024-03/Sustainability%20Tax%20Incentives%20Guide_20240304.pdf
- 4 US Department of Energy Better Buildings. Kaiser Permanente Pioneers California's First Medical Center Microgrid. Available from: <https://betterbuildingssolutioncenter.energy.gov/implementation-models/kaiser-permanente-pioneers-californias-first-medical-center-microgrid>
- 5 Eckelman MJ, Huang K, Lagasse, et al. Health Care Pollution and Public Health Damage in the United States: An Update. Health Aff (Millwood). 2020;39(12):2071-2079. Available from: <https://www.healthaffairs.org/doi/10.1377/hlthaff.2020.01247>
- 6 US Department of Veterans Affairs. Sustainability Plan. October 2022. Available from: <https://www.sustainability.gov/pdfs/va-2022-sustainability-plan.pdf>
- 7 Advocate Health Care. Commitment to renewable energy. Available from: <https://www.advocatehealth.com/about-us/sustainability-wellness/2030-commitment#:~:text=We%20invite%20our%20fellow%20health,100%25%20renewable%20electricity%20by%202030>
- 8 Chen A and Murthy V. How Health Systems Are Meeting the challenge of Climate Change Harvard Business Review. September 18, 2019. Available from: <https://hbr.org/2019/09/how-health-systems-are-meeting-the-challenge-of-climate-change>
- 9 US Department of Energy. Hospitals Pulling the Plug on Energy-Wasting Electric Equipment and Procedures. July 2011. Available from: https://www1.eere.energy.gov/buildings/publications/pdfs/alliances/hea_plugloads.pdf
- 10 US Environmental Protection Agency. CHP for Hospitals: Superior Energy for Superior Patient Care. Available from: <https://www.epa.gov/chp/chp-hospitals-superior-energy-superior-patient-care>
- 11 US Green Building Council. Applying LEED to healthcare projects. March 2024. Available from: https://support.usgbc.org/hc/en-us/article_attachments/28147271766803
- 12 US Department of Energy. National Definition of a Zero Emissions Building. June 2024. Available from: <https://www.energy.gov/sites/default/files/2024-06/bto-national-definition-060524.pdf>
- 13 Boston Green Ribbon Commission. Health Care Working Group [Internet]. Available from: <https://greenribboncommission.org/working-group/health-care/>
- 14 Metropolitan Boston Health Care Energy & Greenhouse Gas Profile 2011 through 2019, and 2030 Projection. Available from: https://noharm-uscanada.org/sites/default/files/documents-files/6804/Metro%20Boston%20Health%20Care%20Energy%20Analytics%202011-2019_2.pdf