Dartmouth-Hitchcock Health

2020 Environmental Sustainability Goals

Dartmouth-Hitchcock Health (D-HH) recognizes the fundamental connection between environmental and human health. In support of our mission to create a sustainable health system and improve population health, the D-HH Board of Trustees endorsed the following set of 35 goals in December 2015. The goals, organized into seven operational domains, are to be accomplished by the end of calendar year 2020.

Contents

[Leaner Energy and Water 1](#_Toc440523754)

[Better Building 2](#_Toc440523755)

[Cleaner Transportation 4](#_Toc440523756)

[Smarter Purchasing 5](#_Toc440523757)

[Healthier Food 7](#_Toc440523758)

[Less Waste 8](#_Toc440523759)

[Greener Culture 9](#_Toc440523760)

[Summary Table 11](#_Toc440523761)

# Leaner Energy and Water

Hospitals are energy-intensive facilities. They are in use 24 hours per day, 365 days per year. Climate control through heating, cooling, and ventilation requires significant energy, as does lighting, laundry services, food preparation, medical procedures, and sterilization. As a result, hospitals are among the most energy intensive commercial spaces, using about 2.5 times the amount of energy used in a commercial office on a square foot basis. (*Energy Information and Resources for Hospitals in New Hampshire*, April 2015)

Protecting the health of building occupants and the communities is fundamental to the mission of health care organizations. All fossil fuel sources release CO2, sulfur dioxide (SO2), nitrogen oxide (NOx), and mercury among other pollutants, though admittedly they are not equivalent in their impacts. Practice Greenhealth’s Energy Impact Calculator estimates that premature deaths, chronic bronchitis/ER visits, asthma attacks, respiratory symptoms, mercury impacts, and lost work days from health care’s 73 billion kWh energy use cost society over $5 billion annually and $600 million in treatment costs.

Goal Areas

1. GREENHOUSE GAS (GHG) EMISSIONS REDUCTION2. ENERGY EFFICIENCY AND CONSERVATION3. WATER EFFICIENCY AND CONSERVATION

|  |
| --- |
| GOAL AREA 1: GREENHOUSE GAS (GHG) EMISSIONS REDUCTION |
| **Reduce GHG emissions by 25%\* through adoption of energy efficiency and conservation measures, and replacing fossil fuels with renewable sources.** |

\*Based on 2010 baseline.

Rationale: According to the World Health Organization (WHO), climate change has a range of complex health impacts, including temperature-related illness and death, injuries and illnesses due to extreme weather events, the spread of infectious disease vectors, increases in water borne illnesses, and wide-ranging impacts from air pollution. Overall, the need to treat illness and disease due to climate-related changes in our environment will continue to increase. ([*Climate and Health*](https://noharm-uscanada.org/issues/us-canada/climate-and-health))

In its [fourth climate assessment report](https://www.ipcc.ch/report/ar4/), the U.N. Intergovernmental Panel on Climate Change – which represents our best scientific understanding of climate change – found that we need to reduce our greenhouse gas emissions 25-40% below 1990 levels by 2020 and 80% by 2050. If we fail to reach these targets, we will face runaway climate consequences that will challenge our ability to survive on the planet. ([*100 Years Too Late*](https://noharm-uscanada.org/articles/blog/us-canada/100-years-too-late)6/9/15)

|  |
| --- |
| GOAL AREA 2: ENERGY EFFICIENCY AND CONSERVATION |
| **Achieve 20% reduction in Energy Use Intensity (EUI).\*** |

\* Based on 2010 baseline. EUI is the amount of energy used per square foot of building footprint per year.

Rationale: When compared against conventional costs (i.e., fuel and electricity) and renewable energy investments, energy efficiency is recognized as being the most cost effective and stable way to save energy and money. For example, a study by ACEEE (American Council for an Energy Efficient Economy) that examined energy efficiency programs in 20 states from 2009-2012 determined the average cost for electrical energy efficiency measures was $0.028 per kilowatt hour (kWh). Comparatively, the average price for commercially billed electricity in New Hampshire as of October 2014 was $0.138 per kWh. Energy efficiency is frequently the most cost-effective solution to reduce consumption. ([*Energy Information for Hospitals in New Hampshire,* April 2015](http://healthierhospitals.org/sites/default/files/IMCE/energy_information_and_resources_for_hospitals_in_new_hampshire_-_final_1.pdf))

|  |
| --- |
| GOAL AREA 3: WATER EFFICIENCY AND CONSERVATION |
| **Achieve 5% reduction in water use per square foot.\*** |

\*Based on 2010 baseline.

Rationale: Fresh, clean water is a limited resource. Many communities in New England wrestle with the challenge of supporting growth and its associated demand for safe drinking water and wastewater disposal, without depleting aquifers and reducing stream flows. As land development continues in New England, it is becoming increasingly difficult to balance these needs and some areas are experiencing water shortages, reduced stream flow and degraded water quality. Water conservation is an important tool for reducing water demand, and limiting water use should be an everyday practice in New England. ([EPA New England](http://www3.epa.gov/region1/eco/drinkwater/water_conservation.html))

# Better Building

More and more healthcare organizations are creating high-performance, healing environments. From improving patient satisfaction to enhancing staff productivity and reducing injuries, the built environment has a critical role to play in supporting total health. Increasingly, the scientific literature is also drawing correlations between environmental attributes such as daylighting, access to outdoor space and indoor air quality to clinical metrics such as reduced medication errors, shorter length of stay and reducing patient and family stress. ([*Practice Greenhealth*](https://practicegreenhealth.org/topics/green-design-construction) website)

The health of our buildings directly affects our own health. On average, Americans spend about 90 percent or more of their time indoors. Indoor levels of pollutants may be two to five times higher, and occasionally more than 100 times higher, than outdoor levels. Buildings in the United States contribute 39 percent of the nation’s total greenhouse gas emissions, including 18 percent from the commercial sector. Building-related construction and demolition (C&D) debris accounts for 26 percent of total non-industrial waste generation in the U.S. ([*US EPA*](http://ww2.harford.edu/faculty/eaugusti/Environ%20Health/green%20building%20stats.pdf))

Goal Areas

1. NEW BUILDING CONSTRUCTION2. ENERGY USE IN NEW BUILDING DESIGN3. SELECTION OF ENVIRONMENTALLY PREFERABLE BUILDING PRODUCTS4. RENOVATIONS

|  |
| --- |
| GOAL AREA 1: NEW BUILDING CONSTRUCTION |
| **Design and construct to LEED v4 certification requirements\* all new buildings under design beginning in 2016 and to LEED v4 Silver certification requirements\* for buildings designed beginning in 2020.** |

\*As determined by a qualified evaluator.

Rationale: LEED certification is the recognized standard for measuring building sustainability overall. Achieving LEED certification is the best way for you to demonstrate that your building project is truly "green." (NRDC)

|  |
| --- |
| GOAL AREA 2: ENERGY USE IN NEW BUILDING DESIGN |
| **Power all new free-standing buildings with non-fossil fuels as the primary fuel source.** |
| **Design and construct all new buildings to achieve an EUI 20% better than average for its building type in the region (benchmark/s to be determined).** |

Rationale: In 2009, a UCL-Lancet Commission described climate change as “the biggest global health threat of the 21st Century.” In 2010, United Nations member states agreed to try to hold the planet’s temperatures to 2°C (3.6°F) above pre-industrial levels to prevent unacceptably high risks from climate change. In order to stay under the 2°C threshold, 80% of coal, 50% of gas and 33% of global oil will need to remain in the ground ([*How Much Fuel*, January 2015)](http://fivethirtyeight.com/features/how-much-fuel-we-need-to-leave-buried-to-beat-climate-change/). The [American Hospital Association (AHA)Sustainability Roadmap](http://www.sustainabilityroadmap.org/strategies/targetenergy.shtml#.VkoB7tKrRGE) for Hospitalsrecommends hospitals stop all increases in consumption of energy from fossil fuels no later than 2015 and achieve carbon neutrality by 2050.

|  |
| --- |
| GOAL AREA 3: SELECTION OF ENVIRONMENTALLY PREFERABLE BUILDING PRODUCTS |
| **Develop and operationalize a tiered products directory – prohibited, acceptable, preferred – based on a recognized standard\* adopted by leaders in the industry.** |

\*e.g. [Healthy Building Network’s Pharos project](https://www.healthybuilding.net/content/pharos-v3), the [Perkins and Will Transparency](http://transparency.perkinswill.com/) website, [Declare Products](http://declareproducts.com/for-consumers), [Green Wizard](https://www.greenwizard.com/).

Rationale: The materials we build with can affect our wellbeing as much as the food we eat, the water we drink and the air we breathe. For the most part, we can’t see the toxic chemicals that leak into our indoor air (*HBN website*). Many building materials contain substances that are harmful to human and environmental health including polyvinyl chloride (PVC), phthalates, volatile organic compounds (VOCs), perfluorocarbons (PFCs), arsenic, and halogenated flame retardants. Workers, patients and their families are exposed to toxic chemicals from building products every day and those impacts, while difficult to track, can be significant. Toxic chemicals, for example, play a role in rising chronic diseases and conditions, including some cancers, birth defects, infertility, asthma and chemical sensitivities. (Healthier Hospitals Initiative, *Safer Chemicals How-To Guide)*

|  |
| --- |
| GOAL AREA 4: RENOVATIONS |
| **Develop and operationalize a building renovation design specification with environmental sustainability parameters based on recognized standards adopted by leaders in the industry.** |

Rationale: D-HH renovates spaces and buildings continuously to meet the needs of our patients and to best support changing healthcare processes. In the course of this work there are significant opportunities to create more sustainable built environments.

# Cleaner Transportation

Smog and fine particle emissions generated by the combustion of petroleum fuels cause immediate and lifelong respiratory impacts while greenhouse gases (GHG) emitted today will continue to threaten public health and wellbeing for generations to come. Vehicle emissions contribute more than half of the carbon monoxide and nitrogen oxides, and almost a quarter of the hydrocarbons polluting our air. The health risks of such air pollution are serious. Poor air quality increases respiratory ailments, heightens the risk of life-threatening conditions like cancer, and burdens our health care system with substantial medical costs.

In 2013, greenhouse gas emissions from transportation accounted for about 27% of total U.S. greenhouse gas emissions, making it the second largest contributor after the electricity sector ([EPA, *Sources of GHG Emissions: Transportation Sector*](http://www.epa.gov/climatechange/ghgemissions/sources/transportation.html)). Transportation is a significant portion of D-HH’s environmental footprint. As a rurally-located health system, D-HH’s catchment area for staff and patients is large, which limits our public transportation options. In a calculation with 2007 data, the Eco-Health Footprint calculator developed by D-HH showed transportation accounted for 25% of DHMC’s carbon emissions.

Goal Areas

1. REDUCTION OF STAFF VEHICLE MILES TRAVELED

2. PERSONAL VEHICLE EMISSIONS REDUCTION

3. FLEET VEHICLE EFFICIENCY

|  |
| --- |
| GOAL AREA 1: REDUCTION OF STAFF VEHICLE MILES TRAVELED |
| **Reduce single-occupant vehicle (SOV) arrivals to DHMC by 10%.** |

Rationale: Implementing programs that reduce SOV miles traveled – incenting staff to commute via bus, vanpool, carpool or bike instead of driving alone – is an effective means of accruing the environmental, safety, economic and health benefits associated with less emissions. Allowing eligible staff to work from home on some days would help us achieve this goal while contributing to staff satisfaction and retention. While the social, economic, demographic and land-use obstacles to reducing SOV use are formidable, research suggests that employer programs can play a large role in shaping worker transportation patterns, even in Northern New England. ([*UVM Transportation Research Center*](http://www.uvm.edu/~transctr/research/trc_reports/UVM-TRC-13-010.pdf))

|  |
| --- |
| GOAL AREA 2: PERSONAL VEHICLE EMISSIONS REDUCTION |
| **Decrease emissions from employee-owned vehicles by having 15% of employees switch to a vehicle with an improved emissions profile.** |
| **Install additional charging stations to meet or exceed the needs of all staff, patients, and visitors driving electric vehicles.** |

Rationale: For the majority of D-HH staff, driving alone to work is their only practical option. Their work schedules or their remote home locations do not allow for commuting with others or taking public transportation.For these employees, incenting them to switch to a lower-emitting personal vehicle is the next best option for reducing their contribution to the organization’s huge transportation footprint.

EV Charging Stations: The Electric Power Research Institute (EPRI) has shown that a plug-in hybrid electric vehicle (PHEV) with a modest 20-mile electric range could save 300 gallons of gasoline per year, avoiding 6000 pounds of damaging greenhouse gas emissions and reducing pollution by 38 percent. According to [a recent DoE study](http://energy.gov/eere/articles/survey-says-workplace-charging-growing-popularity-and-impact), employees with access to charging stations are 20 times more likely to drive a plug-in car. When charging stations were available, the study found that about 1 in 73 people was likely to drive a plug-in car, compared to 1 in 1,400 for the rest of the workforce ([gas2.org](http://gas2.org/2014/12/04/workplace-charging-stations-encourage-plug-car-use/)).

|  |
| --- |
| GOAL AREA 3: FLEET VEHICLE EFFICIENCY |
| **Replace leased vehicle fleet with the highest fuel efficiency and lowest emission profile available for that fleet type.** |

Rationale: Reducing D-HH fleet emissions would have a direct positive impact on local air quality as well as decreasing GHG emissions that contribute to climate change. Fleet emissions can be reduced by increasing the fuel efficiency of vehicles, improving operating practices, and/or using alternative fuels that emit less CO2.

# Smarter Purchasing

What we buy matters. Hospitals are environments for healing, but many of the products and materials that come into a hospital may be harmful to patients, staff, and those in the community. Many of the chemicals used in products have not been adequately tested for toxicity.

Environmentally Preferable Purchasing (EPP) is the act of purchasing products/services whose environmental impacts have been considered and found to be less damaging to the environment and human health when compared to competing products or services. EPP is “preventive medicine” that promotes the heath of the environment and people. It’s an important part of the process toward sustainable operations. And with the U.S. healthcare industry’s $200 billion annual spend on medical and non-medical products, healthcare institutions have the power to move the markets and make safer, less toxic products available universally. ([*Practice Greenhealth*, EPP](https://practicegreenhealth.org/topics/epp))

Goal Areas

1. EPP INFRASTRUCTURE

2. SAFER CHEMICALS

4. SURGICAL KIT REVIEW

|  |
| --- |
| GOAL AREA 1: EPP INFRASTRUCTURE |
| **Centralize purchasing policies and procedures, implemented and enforced by the purchasing manager and supported by the CFO, to support effective environmentally preferable purchasing (EPP).** |
| **Embed environmental attribute considerations in purchasing standards, decisions, contracting, and requests for proposal (RFP) to prioritize environmentally preferable products and services.** |

Rationale: Without integrating Environmentally Preferable Purchasing (EPP) into the D-HH purchasing infrastructure, it will be difficult to accomplish the goals below and to maintain a robust EPP program.

|  |
| --- |
| GOAL AREA 2: SAFER CHEMICALS |
| **Eliminate the intentional use of formaldehyde, perfluorinated compounds, polyvinyl chloride (PVC), antimicrobials, and all flame retardants from 95% of the annual purchases (based on cost) of freestanding furniture and medical furnishings.\*,\*\*** |
| **Identify and substitute safer product alternatives for 10 products with chemicals of concern\*\*\* that are pervasive in our facilities, where alternatives meet all D-HH requirements.** |

\* Includes seating, work surfaces, built-in and modular casework, systems (walled desks with seating), beds (including mattresses), storage units, shelving, panels and partitions, cubicle curtains, and window coverings.

\*\*Parameters for antimicrobials and flame retardants defined by Healthier Hospitals [Healthy Interiors Challenge](http://healthierhospitals.org/hhi-challenges/safer-chemicals).

\*\*\*As defined in our Environmentally Preferable Purchasing policy.

Rationale: Furnishings are made of chemicals and materials that may be hazardous and may pose risks to workers, consumers and entire communities throughout their life cycle. Some chemicals in products known as volatile organic compounds (VOCs) vaporize into the air, and workers or consumers inhale them. Since toxic chemicals do not stay in place, from their use in manufacturing and products, they migrate into food, air, water and ecosystems across the globe. (HHI Safer Chemicals How-To Guide)

As chemical use has grown in industrialized societies, so have chemical-related diseases, including cancer, asthma, birth defects, developmental disabilities, autism, endometriosis, and infertility. Many products still contain unnecessary hazardous chemicals because federal laws regulating chemicals in products have not been updated in more than 30 years. Health care institutions have a particular ethical responsibility to use products containing chemicals that pose less risk to human health. A growing number of hospitals are taking a "better safe than sorry" approach to chemicals, eliminating suspected hazards and switching to safer alternatives. Benefits of this approach to the bottom line can include reduced disposal costs, reduced liability, and improved health for employees, patients, and nearby communities. ([Health Care Without Harm website](https://noharm-uscanada.org/issues/us-canada/safer-chemicals))

|  |
| --- |
| GOAL AREA 3: SURGICAL KIT REVIEW |
| **Standardize all surgical instruments and supplies by case type, with a transparent tracking and reporting exception process, for all procedural areas at DHMC\* and throughout the D-HH network.** |

\* MOR, OSC, endoscopy, interventional radiology, catheterization lab, EP lab, birthing pavilion.

Rationale: D-HH reviewed 75% of DHMC surgical kits in 2014, looking at purchased supplies and surgical instruments. This work resulted in: reduction in annual case-cart supplies of $858,759; reduction in overall number of instrument sets from 152 to 111; and reduction of number of instruments processed each year by 485,489 (or 91,753 pounds), which eliminated $606,861 in estimated annual labor costs.

# Healthier Food

How food is produced, processed, packaged, distributed and consumed in the U.S. has a significant impact on human health, climate change, air and water pollution and the viability of future agricultural production. The current industrial food system favors long distance distribution of highly processed foods over local and fresh foods, and despite producing large quantities of food, it is wrought by poor nutrition, food insecurity, obesity, and other chronic diseases. Rising rates of food-related chronic diseases are socially and economically-devastating to families and communities and represent an increasing drain on health care resources. Cancer, heart disease, diabetes, and other chronic conditions account for $3 out of every $4 spent on health care nationally. ([*New England Healthy Food in Health Care,* May 2014](http://www.farmtoinstitution.org/sites/default/files/imce/uploads/NE%20HFHC%20Report%202014.pdf))

Goal Areas

1. LOCAL AND SUSTAINABLE FOOD
2. MEAT RAISED WITHOUT ROUTINE ANTIBIOTICS
3. MEAT REDUCTION
4. HEALTHY EATING: COMMUNITY

|  |
| --- |
| GOAL AREA 1: LOCal and SUSTAINABLE food |
| **Increase local and/or certified sustainable food\* purchases to 35% of total food purchases.** |
| **Increase local produce purchases to 15% of overall produce purchases.** |
| **Increase purchases of seafood sourced from New England to 15% of total seafood purchases.** |

\*Consistent with definitions of “local” and “sustainable” promulgated by Health Care Without Harm’s Healthy Food in Health Care program.

Rationale: Diesel exhaust from transporting food long distances is a factor of food production that contributes to air pollution, which can lead to asthma and other respiratory illnesses, cardiovascular disease and lung cancer. By providing fresh, locally grown foods whenever possible, health care supports local food systems. ([*Food and Food Purchasing: A Role for Health Care*, 2006](http://noharm.org/lib/downloads/food/Food_and_Food_Purchasing.pdf)). Certified sustainable products are produced in a manner that limits harm to the natural environment, public health and animal welfare, and promote societal and economic well-being.

|  |
| --- |
| GOAL AREA 2: MEAT RAISED WITHOUT ROUTINE ANTIBIOTICS |
| **Increase purchases of chicken\* raised without routine antibiotics to 100% of total chicken purchases.** |
| **Increase purchases of all other meats (not including chicken) raised without routine antibiotics to 35% of total other meats purchased.** |

\*Does not include processed products like chicken broth or jarred and pureed products.

Rationale: Each year, 23,000 Americans die as a result of antibiotic resistant infections. The vast majority of antibiotics in the U.S. are not used in human medicine—they are used in animal agriculture – and about 70% of the antibiotics used are also used to treat human infections, such as penicillins, macrolides, sulfas, and tetracyclines. These antibiotics are given routinely to otherwise healthy food animals to compen­sate for overcrowded and unsanitary living conditions. More than 300 leading medical organizations, including the Ameri­can Medical Association, the American Public Health Association, and the American Academy of Pediatrics have openly advocated ending the use of non-therapeutic antibiotics in animal agriculture to protect public health and the environment. ([*Expanding Antibiotic Stewardship*, May 2015](https://noharm-uscanada.org/sites/default/files/documents-files/2735/Expanding%20Antibiotic%20Stewardship.pdf))

|  |
| --- |
| GOAL AREA 3: MEAT REDUCTION |
| **Decrease total meat purchases by 25%.** |

Rationale: Significant costs are associated with industrialized meat and poultry production and distribution, including antibiotic resistance, and air and water contamination. U.S. food production relies heavily on fossil fuels, and red meat production has a particularly large climate footprint. Americans eat more than twice the global average for meat consumption. Reducing the overall amount of meat served in hospitals provides health, social and environmental benefits that are consistent with prevention-based medicine. (Healthier Hospitals Initiative Healthier Food How-To Guide)

|  |
| --- |
| GOAL AREA 4: HEALTHY EATING: COMMUNITY |
| **Increase availability of sustainable, healthy food\* to the community through the development and implementation of a minimum of three new programs.** |

\*To be defined by D-HH Registered Dietitians.

Rationale: There are many benefits that result from supporting a healthy, sustainable food system—the development of robust regional food systems, improvements in employee health and wellness through increased access to healthy, local food, and reductions in the chronic disease burden. As mission-driven institutions, hospitals across the U.S. are undertaking innovative community and public health strategies and are finding new support through the Affordable Care Act for devising community benefit programs that incorporate environmental and community health factors. ([*New England Healthy Food in Health Care*, May 2014](http://www.farmtoinstitution.org/sites/default/files/imce/uploads/NE%20HFHC%20Report%202014.pdf))

# Less Waste

DHMC generated just under 3000 tons of waste in 2014, or 8 tons a day. Solid waste either ends up in landfills, which creates methane, a greenhouse gas six times the potency of carbon dioxide, or in incinerators, which emit more CO2 per megawatt-hour than coal-fired power plants. ([Greenhealth Magazine, Sep/Oct 2013](http://greenhealthmagazine.org/no-time-to-waste/))

Goal Areas

1. TOTAL WASTE REDUCTION2. RECYCLING AND REUSE

3. PHARMACEUTICAL WASTE4. HAZARDOUS WASTE REDUCTION

|  |
| --- |
| GOAL AREA 1: TOTAL WASTE REDUCTION |
| **Reduce total pounds of waste per square foot by 10%.** |

Rationale: To reduce the amount of trash going to the landfill, we have looked to recycling, and will continue to put efforts there, but *source reduction* is at the top of the solid waste management hierarchy because it is superior to reuse, recycling, and composting for achieving environmental and economic benefits. By using fewer products, or choosing products with less material and packaging, we prevent the upstream impacts associated with raw materials extraction and refining, product manufacturing, and transportation.

|  |
| --- |
| GOAL AREA 2: RECYCLING AND REUSE |
| **Achieve a 40% recycling and reuse\* rate.** |

\*Defined as materials that are sent to external organizations for reuse.

Rationale: Hospitals continue to glean new opportunities for recycling despite decreasing margins on smaller volume materials. Recycling reduces the amount of waste sent to landfills and incinerators, which in turn decreases GHG emissions (landfills account for 37% of methane gas output) and water pollutants. Recycling also helps to conserve natural resources such as timber, water, and minerals, and saves energy (EPA website).

|  |
| --- |
| GOAL AREA 3: PHARMACEUTICAL WASTE |
| **Roll out DHMC pharmaceutical management best practices to Community Group Practices.** |
| **Decrease risk of improper disposal of pharmaceutical waste in the community by implementing a patient take-back program for hazardous drugs.** |
| **Reduce halogenated anesthetic greenhouse gas emissions by 75%.** |

Rationale: Hazardous waste regulations in the United States were not designed with health care in mind—and many of the requirements are challenging in a health care setting where the hazardous waste can be a single pill not given to a patient. The federal regulations also overlook a number of pharmaceuticals that are now showing up in our waterways—through flushing, drain disposal and human excretion. Recognizing this loophole, many hospi­tals go beyond compliance and either incinerate a certain portion of pharmaceuticals as regulated medical waste, or handle more of their formulary as hazardous than the law requires. (PGH 2014 Benchmark Report)

Anesthetic gases: Most of the organic anesthetic gases remain in the atmosphere for a long time, where they have the potential to act as greenhouse gases. Published atmospheric lifetimes range between 1.4 and 21.4 years for sevoflurane and desflurane, respectively. Worldwide yearly sales of inhaled anesthetics total in the millions of liters, the equivalent of approximately 100 to 1200 passenger car emissions/year/midsized hospital, depending on which inhaled anesthetics are used. ([Yasny and White,](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3522493/) *[Environmental Implications of Anesthetic Gases](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3522493/)*[, 2012](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3522493/))

|  |
| --- |
| GOAL AREA 4: HAZARDOUS WASTE REDUCTION |
| **Evaluate five hazardous waste streams from the clinical labs for hazardous waste minimization opportunities.** |

Rationale: Healthcare and research laboratories use numerous hazardous materials, including chemicals and biological agents that present potential harmful effects to workers, patients, the public and the environment. In addition to the potential risks to human health and the environment, chemicals classified as hazardous waste require special handling and disposal, a process that is both expensive and resource intensive. Hazardous waste streams can be minimized through product substitution, process modification, equipment or technology changes, chemical reclamation or recycling, and inventory management.

# Greener Culture

Organizations that achieve long-term, measurable results have the active support of their medical, management, and board leadership, and have built environmental stewardship into the infrastructure of their systems. (Healthier Hospitals Initiative *How-To Guide on Engaged Leadership*)

Goal Areas

1. SUPPLEMENTAL FUNDING MECHANISMS2. EMPLOYEE KNOWLEDGE AND PARTICIPATION3. LEADERSHIP IN SUSTAINABILITY4. PROGRAM EXPANSION

|  |
| --- |
| GOAL AREA 1: SUPPLEMENTAL FUNDING MECHANISMS |
| **Create supplemental funding mechanisms for environmental sustainability initiatives by establishing a Green Revolving Fund and a donor fund.** |

Rationale: Creating an earmarked funding source for environmental sustainability initiatives will provide D-HH with the environmental, health, employee, community and financial benefits associated with sustainability work.

A Green Revolving Fund (GRF) is an internal investment vehicle that provides financing to parties within an organization for implementing energy efficiency, renewable energy, and other sustainability projects that generate cost-savings. These savings are tracked and used to replenish the fund for the next round of green investments, thus establishing a sustainable funding cycle while cutting operating costs and reducing environmental impact. Established GRFs report a median annual ROI of 28 percent ([*SEI’s Greening the Bottom Line*, 2012](http://greenbillion.org/resources/#reports)), reliably outperforming average endowment investment returns while hedging against rising energy costs.

A donor fund specifically for sustainability projects would provide an opportunity for donors to contribute to projects that would reduce D-HH’s environmental footprint. Donors could include local individuals, vendors and employees. The fund could also be a natural vehicle for foundation-based grants, allowing individual donors and participating foundations to see their funds amplified by other money.

|  |
| --- |
| GOAL AREA 2: EMPLOYEE KNOWLEDGE AND PARTICIPATION |
| **Double employee participation in sustainability efforts and employee understanding of the connection between environmental and human health.\*** |

\*Based on 2016 baseline.

Rationale: Employees energized by their environmental journeys at their workplace become green champions and multipliers in the company and community. In his 2013 book [*Talent, Transformation and the Triple Bottom Line*](http://www.wiley.com/WileyCDA/WileyTitle/productCd-1118140974.html)*,* Andrew Savitz describes the inter-relationship between employee engagement, business results and environmental sustainability as "the golden triangle." The concept describes a mutually reinforcing relationship, whereby organizations positively affecting one of the three factors (sustainability) will, in turn, positively affect the other two (employee engagement and business results).

|  |
| --- |
| GOAL AREA 3: LEADERSHIP in sustainability |
| **Establish clinical leadership in education and advocacy related to the connection between environmental and human health through participation in 10 events or publications.** |
| **Increase sustainability leadership through measures added into performance objectives and regular communication from leadership to the staff and public.** |

Rationale: Actively engaged leadership is essential to achieve success in implementing sustainability in an organization. Engaged leadership is the platform upon which every sustainability project rests. Leaders empower others within the organization to invest the necessary time, energy, resources and focus necessary to execute an effective sustainability program. (Healthier Hospitals Initiative *How-To Guide on Engaged Leadership*)

|  |
| --- |
| GOAL AREA 4: ENVIRONMENTAL SUSTAINABLIITY PROGRAM EXPANSION |
| **Expand environmental sustainability program support to affiliate hospitals.** |

Rationale: As D-HH continues to grow, our environmental sustainability initiatives will further enhance the value we bring to the affiliates and the region.

Summary Table: Dartmouth-Hitchcock Health

2020 Environmental Sustainability Goals\*

| DOMAIN | GOAL |
| --- | --- |
| Leaner Energy and Water | Reduce greenhouse gas (GHG) emissions by 25%. |
| Achieve 20% reduction in Energy Use Intensity (EUI). |
| Achieve 5% reduction in water use per square foot. |
| Better Building | Design and construct all new buildings to LEED certification requirements. |
| Power all new free-standing buildings with non-fossil fuels as the primary fuel source. |
| Design all new buildings to achieve an EUI 20% better than average for its building type in the region. |
| Develop and operationalize a tiered building products directory based on environmental attributes. |
| Develop and operationalize a building renovation design specification with environmental sustainability parameters. |
| Cleaner Transportation | Reduce single-occupant vehicle (SOV) arrivals to DHMC by 10%. |
| Decrease emissions from employee-owned vehicles by having 15% of employees switch to a vehicle with an improved emissions profile. |
| Install additional charging stations to meet or exceed the needs of all staff, patients, and visitors driving electric vehicles. |
| Replace leased vehicle fleet with the highest fuel efficiency and lowest emission profile available for that fleet type. |
| Smarter Purchasing | Centralize purchasing policies and procedures to support effective environmentally preferable purchasing (EPP). |
| Embed environmental criteria into all standards, contracts, and requests for proposal (RFP) to prioritize environmentally preferable products. |
| Eliminate persistent, bioaccumulative and toxic chemicals from 95% of the annual purchases of freestanding furniture and medical furnishings. |
| Identify and substitute safer product alternatives for 10 products with chemicals of concern that are pervasive in our facilities. |
| Standardize all surgical instruments and supplies by case type, with a transparent exception process, for all procedural areas throughout D-H. |

|  |  |
| --- | --- |
| Healthier Food | Increase local and/or certified sustainable food purchases to 35% of total food purchases. |
| Increase local produce purchases to 15% of overall produce purchases. |
| Increase purchases of seafood sourced from New England to 15% of total seafood purchases. |
| Increase purchases of chicken raised without routine antibiotics to 100% of total chicken purchases. |
| Increase purchases of all other meats (not including chicken) raised without routine antibiotics to 35% of total other meats purchased. |
| Decrease total meat purchases by 25%. |
| Increase availability of sustainable, healthy food to the community through the development of 3 new programs. |
| Less Waste | Reduce total pounds of waste per square foot by 10%. |
| Achieve a 40% recycling and reuse rate. |
| Roll out DHMC pharmaceutical management best practices to Community Group Practices. |
| Decrease risk of improper disposal of pharmaceutical waste through the implementation of a patient take-back program for hazardous drugs. |
| Reduce halogenated anesthetic GHG emissions by 75%. |
| Evaluate 5 hazardous waste streams from the clinical labs for hazardous waste minimization opportunities. |
| Greener Culture | Establish and operationalize supplemental funding mechanisms for environmental sustainability initiatives. |
| Double employee participation in sustainability efforts and employee understanding of the connection between environmental and human health. |
| Establish clinical leadership in education and advocacy related to the connection between environmental and human health. |
| Increase sustainability leadership through measures added into performance objectives and regular communication from leadership. |
| Expand environmental sustainability program support to affiliate hospitals. |

\*Table contains summary language for some goals. See detailed list of goals for complete wording.