

Sustainable Initiatives to Guide Healthcare Transformation (SIGHT): Recommendations on Sustainable Healthcare in New Jersey

Elizabeth Cerceo, MD, FACP, FHM

Chair of Health and Public Policy, American College of Physicians (ACP), NJ Chapter

Task Force Members:

Kyle Tafuri, Hackensack Meridian Health

Catherine Chen, MD, FACP Robert Wood Johnson Medical School

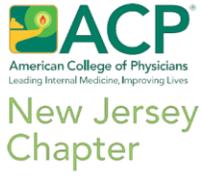
Carolyn Brown-Dancy, Atlantic Health System

Gregory Evans, Penn Medicine Princeton Health

Howard Halverson, The Valley Hospital

Jill Aquino, RN

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Background

As the COVID-19 pandemic has shown us, in the face of an emergency, health systems must institute rapid change to meet the needs of patients and of communities. Climate change is resulting in more severe weather events that are leading to devastating consequences for NJ and its residents. Severe storms are exacting a cost from NJ, both in terms of dollars and lives. From Superstorm Sandy to Hurricane Ida, the frequency of these events cannot be ignored and should be considered the new normal. It is imperative that the healthcare infrastructure respond to this threat by building resiliency into the hospital and ambulatory system and by responsibly developing sustainable practices.

The global health care sector collectively spends \$7.2 trillion annually or 10% of world GDP. In the U.S., health care is 18% of GDP and the [federal government spends over \\$25 billion](#) on general health care, drugs, and medical supplies, with additional billions of dollars to support the operation of buildings and purchasing products such as meat and poultry. In the U.S., eliminating fossil fuel pollution can save hundreds of thousands of lives and \$880 billion annually. (1) The health care sector is responsible for 8.5% of all U.S. greenhouse gas emissions with hospitals generating over one-third of those emissions. (2, 3) Health care facilities can implement changes that decrease greenhouse gas emissions while reducing operating costs and promoting resiliency. Health care can also leverage its enormous purchasing power, 18% of US GDP, to help decarbonize the supply chain, the largest portion of the sector's carbon footprint.

The House Select Committee and Senate Democrats' Special Committee reports on the climate crisis provide a comprehensive plan for the federal government to support a resilient health care infrastructure and supply chain, and community preparedness for climate-related health impacts, while improving overall public health and addressing disparities. We support the full set of recommendations in the health sections of both the House Select Committee report "Solving the Climate Crisis: The Congressional Action Plan for a Clean Energy Economy" ([Climate Crisis Action Plan.pdf \(house.gov\)](#)) and a Healthy, Resilient, and Just America and the Senate Democrats' Special Committee report The Case for Climate Action: Building A Clean Economy For The American People ([SCCC Climate Crisis Report.pdf \(senate.gov\)](#)). The below recommendations, pulled primarily from those reports, are the priority recommendations to support the transition to a climate-smart health care system

Key Recommendations are as follows:

- To charge DOH with developing a state health care decarbonization strategy in line with our national goal to reduce emissions by 50% by 2030 and net-zero emissions by 2050 and track sector progress towards achieving emission reductions.
 - Require health systems to track emissions
 - Require health systems to set science-based reduction targets
- To direct the DOH to develop a comprehensive plan to address the physical and operational risks from climate change to public health systems and health care facilities, and to assist communities, public health departments, and safety net and rural hospitals in preparing for and responding to the public health risks of the climate crisis, including mental health and food insecurity. This strategic planning process should provide for meaningful public input, particularly from vulnerable populations and frontline communities.

- Require health care facilities to conduct assessments and prepare for extreme weather events based on the most current climate projections and enable hospitals and other health facilities to be epicenters of community resilience.
- To provide funding, tax incentives, and financing that health care facilities can use to reduce their greenhouse gas emissions and invest in clean energy and resilience
- To create state codes that are updated to allow for all electric buildings which then allows for buildings to fully decarbonize and would allow for more energy efficient buildings (reduce outside air requirements, required air changes per hour (ACH) and allow for battery backup power in lieu of diesel backup generators).

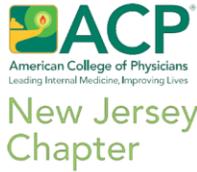
Additionally, hospitals and healthcare systems must identify means to curtail costs while improving the overall patient experience. Making an active commitment to sustainability provides multiple strategic benefits to health systems and builds resiliency. Developing truly sustainable solutions requires attention to creating policies that are both fiscally sound and do not harm the industry.

Adopting policies and procedures aligned with environmental goals lead to multiple ancillary benefits as well. Sustainability efforts contribute to a healthier environment, help their local communities by reducing pollution and reducing the use of community resources such as water and energy, and improve the organization's public perception and brand loyalty. Environmental sustainability is also good business, as it helps lower operational costs and allows hospitals to direct more resources to patient care by providing timely preventative measures to decrease avoidable healthcare utilization which is an integral part of healthcare quality. These benefits can help health systems meet the Quadruple Aim—improving population health, improving the patient experience, reducing per capita cost, and improving workforce experience. (4) (5)

Hospital systems are facing incredible financial and regulatory pressures as healthcare environment shifts from a volume-based market to a value-based market. In a 2011 report “Hospitals and Care Systems of the Future,” the American Hospital Association outlined key strategies hospitals must use to succeed in the evolving, value-based environment. Achieving sustainability goals can help hospitals pursue several strategies listed in the report, including becoming increasing efficiency and focusing on population health. (6) Securing healthcare systems against climate change-related extreme weather events facilitates longer term strategic planning. Sustainability efforts must be financially viable to succeed in the long term.

Rising energy costs coupled with the unique requirements of health care facilities are increasingly leading to financial challenges. Health care organizations spend more than \$6.5 billion on energy costs every year. (7) That figure represents a tremendous opportunity for savings. By trimming just 5-10% from energy bills, hospitals and care systems can make a real impact on their finances. Every \$1 a nonprofit hospital or care system saves on energy is equivalent to generating \$20 in new hospital revenues, and for-profit hospitals can raise their earnings by a penny a share by reducing energy costs just 5 percent. (8)

Importantly, as physicians, we have taken an oath to first do no harm. The current care we deliver accounts for damage wrought on all communities but especially the poor and disadvantaged, those we must first protect and care for. Environmental justice communities bear the brunt of the impacts of climate change whether it be from flooding because they live in low lying areas, from heat-related illness due to lack of vegetation or air conditioning, or from air pollution from living in heavily industrialized areas in regions with heavy trucks and incinerators, many of which burn healthcare-related waste. We are called to advocate for these individuals most vulnerable to the effects of environmental degradation. We as the scientific community attest to the many diseases caused or exacerbated by pollutants and climate change. Pollution can contribute



to health problems including respiratory tract irritation, chronically reduced lung function, cardiovascular disease, mental health conditions, kidney problems, neurological disorders, certain cancers, and infectious diseases. Studies have also pointed to the increased risk of acquiring and dying from COVID-19 in areas with high levels of air pollution.

NJ must focus our efforts on aspirational goals to deliver the basic human right of health because this is not a privilege. Solutions developed should be uniquely scoped to the regional and geographic specificities of the hospitals served. Options for renewable energy are dictated by local availability and energy cost scales can vary widely across the country. As such, the following recommendations are mindful of the local landscape of NJ, both literal and political, and of the needs of the health systems of our state. Focusing on even one project can result in substantial cost savings and beneficial environmental impact. Combining multiple projects and addressing a wide range of sustainability opportunities can lead to even greater effect. Beginning with assessing baseline measures of energy use, waste stream, and water consumption, health systems can begin to develop, implement, and track sustainability initiatives.

We hope that collective efforts will be shared and successes celebrated across the state. Friendly competition can support more rapid change and benchmarking of data from the tools below (appendix A) can drive evidence-based decision-making and informed process improvement across the health systems of NJ. The following list of recommendations is only a starting point and much more will have to be done on the state's journey to a sustainable future. Every journey begins with the first steps though. That is what this document is meant to represent. It is the responsibility of all physicians to prevent disease and care for communities, not just the patient immediately in front of us. It is the responsibility of our healthcare institutions to drive public health and safety. It is the responsibility of our political leaders in NJ to continue guiding with policies that will protect our children and our communities into the future.

Recommendations

LEADERSHIP

Summary statement: To drive sustainable changes throughout health systems, there must be buy-in by senior leadership and integration of sustainability in every decision made in a healthcare network. Sustainable health-care systems must be developed that provide health care for patients today without compromising health and care provision in the future. In order to know what is sustainable, researchers and policy makers must analyze full resource utilization—or triple bottom line framework—of all actions to inform prioritization. The three elements of the triple bottom line are environmental, social, and financial. These elements should be considered in all procurement and advancement decisions made the health system. Lean systems will minimize waste and expense and lean methodology can be applied to all decisions, incorporating environmental and population outcomes as additional metrics. When leadership gets on board with the notion that sustainability is connected to public health, employee satisfaction, quality care, and other outcomes, there is greater opportunity for successful integration into decision-making and day-to-day operations.

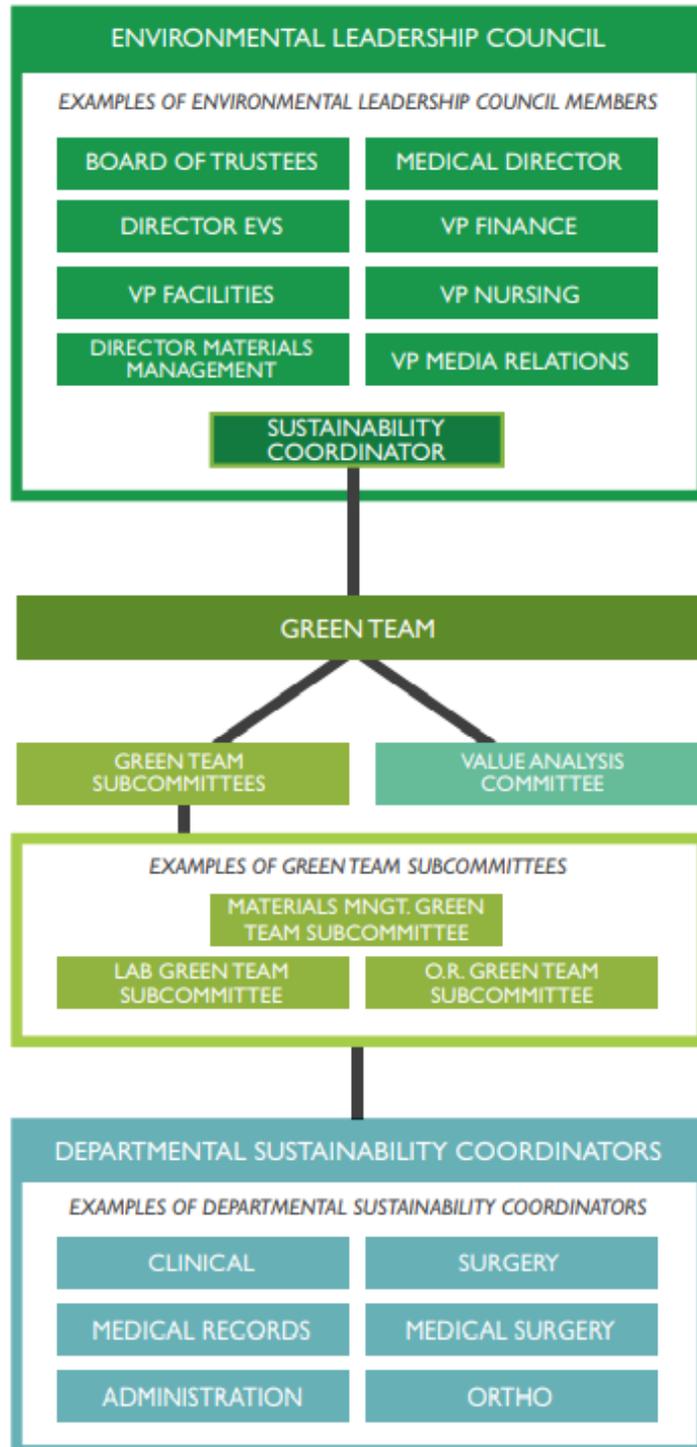
By expanding sustainability to encompass more than just energy reduction and by utilizing quality improvement methodology, performance excellence initiatives, Lean training, or the Baldrige award criteria, greater gains can be realized. Lean approaches to become more efficient in various processes naturally align with many sustainability and population health efforts and can be overseen by quality/performance improvement departments.

Goal example	Tactics example
Create a green team	Create a committee and work group structure connecting sustainability with community resilience and other strategic areas. Individuals that may contribute to the team include but are not limited to the following: Director-level representative from departments responsible for implementing sustainability programs such as Environmental services, Dietary, Purchasing/Supply chain, Nursing, Lab, Infection control, Physician engagement Example: Biannual review of Clinical Performance, Costs, Inventory, Resource Utilization, and Waste generation
Earn recognition through awards such as Practice Greenhealth Environmental Excellence Awards or Circle of an Environmental Award	Develop a sustainability strategy
Set public greenhouse gas emission reductions	Create and Environmental Commitment Statement and a team charter
Capture performance data	Track Scope 1, 2, and 3 emissions
	Identify champions (clinical champion, executive sponsor, greening the OR champion)
	Engage physicians and nurses in sustainability and climate work through educational and organizational events
	Consider creating dedicated positions for Sustainability Officers

	Consider creating Departmental Sustainability Coordinators as these individuals are important for implementing sustainability efforts.
	Use a common language across health systems in NJ to measure carbon and thread these throughout research, evidence reviews, quality-adjusted life years, life cycle analyses, and budgets.
	Join Health Care Climate Challenge Home Health Care Climate Challenge
Partner with communities for specific goals/projects	Assess climate-related campus, system, and community infrastructure vulnerabilities
	Develop health system resiliency plans based on these weaknesses
Include climate activities in community benefit work.	Identify climate-related health risks in your communities, identify current projects that have climate co-benefits, and integrate climate and health into the community health needs assessment.

$$\text{Sustainable value} = \frac{\text{Outcomes for patients and populations}}{\text{Environmental + social + financial impacts (the 'triple bottom line')}}$$

Mortimer F, Isberwood J, Wilkinson A, Vaux E. Sustainability in quality improvement: redefining value. Future Healthcare Journal. 2018 Jun;5(2):88-93



Source: American Society for Healthcare Engineering, 2014.

FINANCING

Summary statement: Many environmentally responsible changes to health systems are also fiscally responsible. Health systems can prioritize sustainability activities and can easily address the “low hanging fruit.” However, for larger, higher yield projects that require initial capital investment, return on investment models can be helpful to inform decisions. Alternative funding sources may also be an option.

Alternative funding options include:

- Grants, rebates and donations: from utility companies as well as philanthropic donors, including individuals, organizations and businesses. Foundation departments can often help write grants or solicit donations.
- Shared-savings agreements: A third party agrees to finance, design and install energy projects, with the costs paid from energy savings that result from the projects.
- Power purchase agreements: A third party owns, installs and operates a power-producing asset such as a renewable energy source. In turn, the hospital agrees to purchase the power generated from the plant.
- Carbon-emission offsets or renewable energy credits: Can be purchased from voluntary markets. Should be seen as a temporary measure as these still allow for fossil fuel use and carbon dioxide production.
- The [American Council for an Energy-Efficient Economy](#) estimates for an average annual savings of \$575,000 for a hospital operating on 2% Net Operating Income, net savings of \$1 is equivalent to \$50 in gross revenue. In this example, \$570,000 saved equals \$28.5 million gross revenue. Similar work done by the University of Washington Target 100! shows that \$800,000 in annual energy cost savings can be equal to \$16 million in revenue generating services. Financial resources saved through energy and other measures can be channeled back into patient care or further sustainability improvement projects.

SUPPLY CHAIN

Summary statement: Emissions from the supply chain (scope 3 emissions) constitute 80% of a healthcare systems overall greenhouse gas emissions. Purchasing power can be exerted to minimize waste and optimize the carbon footprint. Purchasing power can move to greener alternatives to products and minimize unnecessary devices and packaging.

Goal example	Tactics example
Train 100% of supply chain/procurement staff on the total cost of ownership for purchasing decisions.	Evaluate the total cost of ownership rather than just the initial price can identify hidden cost savings.
Preferentially use suppliers who employ sustainability practices like reusable packaging materials.	Use Kaiser Permanente Sustainability Scorecard to evaluate environmental impacts of medical equipment
Purchase EPEAT registered electronics e.g., computers, imaging devices, televisions, cell phones, servers) which meet multiple sustainability criteria including reducing the use of energy to minimize greenhouse gas emissions. Impacts reduced can be measured through their calculator.	Report expenditures on greener electronics with a goal of 80% registered with EPEAT (Electronic Products Environmental Assessment Tool).
Build Diversity into supply chain	Support local/regional vendors, those with strong sustainability practices, those with diverse leadership and with goals that match the institution's
	Ask suppliers about the life cycle of their products
	Work with supply chain and custom pack vendor to coordinate a review process and identify items that are frequently unused and disposed of.
	Work with supply chain and reprocessing vendors to identify non-invasive devices that can be collected and purchased back for reprocessing.
	Evaluate expired materials (eg. Procedure kits) for excess supply and diversion to teaching centers (eg. SIM/GME programs)
	Supply concentrated liquids where feasible (ie, dialysate, cleaning agents, or pharmaceuticals)
	Assess expired materials for potential donation through programs like https://projectcure.org/take-action/donate/donate-medical-supplies/hospitals/

WASTE

Summary statement: Hospitals and health systems produce large amounts of waste, estimated at almost 30 pounds per patient per day in the hospital. This is costly to the institution which must pay for disposal and has obvious environmental costs. Everything hospitals procure should be evaluated for its end of life disposition. Steps can be taken to reduce both volume and toxicity of materials and wastes.

Goal example	Tactics example
Achieve a system recycling rate of 15% for all hospitals and clinics.	Develop a hazardous material and waste plan as part of The Joint Commission Environment of Care requirements, including a written plan for recycling.
Achieve a RMW (red bag) rate below 6% or 100 tons of waste per OR each year.	Eliminate red bag receptacles from patient rooms to decrease amount of incorrectly segregated waste in recyclable and hazardous material bags. Include RMW segregation training and signage for all new employees and for annual refresher training.
Institute a construction debris recycling and diversion program for large projects, achieving at least a 80% recycling/diversion rate.	Ensure that HIPAA confidential paper recycling is included in recycling rates.
Determine a food waste to landfill baseline in pounds per year and achieve a 10% reduction in food waste to landfill from baseline year.	Partner with composting facilities to minimize food waste going to landfills.
Decrease overall waste per adjusted patient day to 18-20 lbs per day	Meet with recycling vendors and visit recycling material recovery facilities for clarity on what materials can and cannot be marketed successfully.
	Recycle batteries, fluorescent bulbs, and other mercury-containing equipment.
	Eliminate excessive components on some procedure trays.
	Install fountains for water bottle refill. Discourage plastic water bottles at meeting
	Eliminate Styrofoam from patient and staff food sources. Convert to paper straws.
	Use reusable isolation gowns and curtains
	Promote reusable utensils, mugs, water containers
	Decrease printed material - Use online, EMR-based resources to eliminate paper charts, faxes, etc. Encourage online materials for meetings
	Conduct waste audits

WATER USE REDUCTION

Water quality and availability are both essential to protecting patient and worker health and critical to daily hospital operations. The World Economic Forum’s 2016 Global Risk Report states, “... the failure of climate change mitigation and adaptation has risen to the top and is perceived in 2016 as the most impactful risk for the years to come, ahead of weapons of mass destruction, ranking second, and water crises, ranking third.” Health care facilities are often not only the largest consumer of water in a community, but also can potentially be inadvertent water polluters through poor control of pharmaceutical and hazardous materials. Reducing overall water use can reduce the amount of pollution a facility generates and it can also save money.

Goal example	Tactics example
Achieve 40 gallons per adjusted patient day (good target). Achieve 26 gallons per adjusted patient day (excellent target)	Install WaterSense products, like low water use fixtures (e.g., sinks, toilets, shower heads).
Reduce your landscape irrigation water use by 50% from baseline year.	Plan for indigenous, resilient landscaping with low watering requirements.
	Use alcohol-based hand rub.
	Review all building equipment to ensure water is not being wasted when equipment is not in operation.
	Conduct a water audit.
	Use non-potable water for irrigation. Some local utilities offer reclaimed water for irrigation.
	Capture rain water and use it for irrigation through a gravity fed system. Use condensate drain water for irrigation.
	Enroll your institution in the Tree Campus Healthcare program. Tree Campus Healthcare - The Arbor Day Foundation
	Assess stormwater management with bioswales and retention ponds, vortex systems, etc.
	Maintain cooling tower operations and invest in “free cooling” using ambient temperatures to assist in chilling water.

GREENING THE OPERATING ROOM (OR)

The OR has the largest footprint of any department in a hospital, and also yields significant savings opportunities. Understanding where to begin requires understanding what practices are currently in place. The OR can generate 30% of a facility’s regulated medical waste and can represent 40-60% of a facility’s supply costs. Operating rooms consume three to six times more energy per square foot than any other department. Reviewing OR kits to remove items frequently unused yields up-front purchasing savings, as well as avoided waste savings. The OR generates 30% of a facility’s RMW. Using reprocessed single use medical devices diverts RMW and yields cost savings for facilities. Starting first with non-invasive devices can help ease potential concerns around quality or safety. Anesthetic gases are Scope 1 greenhouse gases, vented directly from the hospital into the atmosphere. Anesthesia providers have an opportunity to directly impact their organization’s GHG emissions by considering anesthetic gas use while still providing quality patient care. With challenging recycling markets, especially from acute care areas, waste prevention is a priority for leading organizations. Switching to reusables, single-use device reprocessing and manufacturer take-back programs are strategies to make less waste as well.

Goal example	Tactics example
Establish baseline inventory of waste across ORs	Assess current practices and identify areas of opportunity
Reduce waste in the OR by 30%	Utilize reusable sterilization containers.
Implement a HVAC setback program and LED lights in 100% of ORs.	Work with the facility or energy manager to utilize the building automation system and/or occupancy sensors to setback air exchange rates when the OR is unoccupied.
Review and reformulate (where appropriate) at least 80% of total OR kit types	Review components of OR kits and reduce unused items on procedure trays. Create tray optimization committees and partner with surgeons. Transition one OR instrument from list per year.
Collect and purchase at least 20% reprocessed non-invasive devices compared to health system’s total	Reprocess single use medical devices.
Reduce GHG emissions from anesthetic gases by 30%.	Establish a baseline and track anesthetic gas use. Reduce or eliminate desflurane from the formulary. If desflurane has been eliminated, reduce GHG emissions by 5% and maintain emission levels. If desflurane is still in use, reduce GHG emissions by 50% from baseline.
Transition from single-use, disposable products to reusable products where applicable.	Work with supply chain and reprocessing vendors to identify non-invasive devices that can be collected and purchased back for reprocessing.
	Work with supply chain and custom pack vendor to coordinate a review process and identify items that are frequently unused and disposed of.
	Conduct education for anesthesia providers on the environmental impacts of inhaled anesthetic gases.
	Implement a fluid management system.
	Minimize nitrous oxide use. Use low flow (<2L/min) after induction. Use intravenous anesthetics when possible.
	Install scrubbers in ORs to minimize inhalant escape.



New Jersey Chapter

	Reduce unneeded OR drapes. Reuse OR blue towels (such as for drug sniffing dog training programs or shelters). Reuse surgical blue wrap (sew into bags or sleeping mats for homeless)
	Consider moving some procedures to outpatient surgical centers or clinic setting as these typically generate less waste and often use minor field sterility.
	Laryngoscope blade recycling programs

ENERGY

Summary statement: Health systems are extremely resource-intensive entities creating opportunities to move to sustainable energy and for cost-saving initiatives. A hospital that is energy efficient will save the organization money and help make the surrounding community healthier by reducing carbon emissions. In the U.S., eliminating fossil fuel pollution can save hundreds of thousands of lives and \$880 billion annually. Electricity produced from renewable energy sources, like wind and solar, are the least expensive source of energy in more than half of the world and are on track to be the least expensive source almost everywhere by 2030.

Goal example	Tactics example
Fully decarbonize (carbon net zero) by 2050 and to reduce overall emissions by 50% by 2030 to avoid a 1.5 C increase in overall global temp	Race to Zero campaign to support health care fully decarbonizing. Global Roadmap for Health Care Decarbonization is a resource to help support health systems in their GHG emission reduction.
Achieve an Energy Star score greater than or equal to 75.	Install energy efficient equipment (Energy Star rated when possible, LED lighting, install inactivity sensors on lights) .
Achieve an energy use intensity (EUI) of less than or equal to 205 kbtu per square foot.	Use less overall energy (provide only the energy needed instead of keeping your entire building running 24/7, power down unused areas or during off times, decreasing air returns in OR during off hours, turn off lights, computers, machine, evaluate setbacks of temp and airflow at night).
Increase renewable electricity procurement to 100% by 2030.	Complete an energy audit.
	Turn thermostat up a few degrees in summer and down a few degrees in winter.
	Investigate ways to utilize heat recovery methods to reduce energy use.
	Install onsite or offsite renewable energy (e.g., solar, wind, geothermal).
	Add auto and retro commissioning software to building infrastructure to help identify wasted energy use.
	Purchase renewable energy credits
	Divest from fossil fuels

EDUCATION

Summary statement: All initiatives should be bolstered by educational efforts. When patients and employees are informed, they can make healthier choices for themselves and their environment. Effective education can model and change the culture of an institution as well.

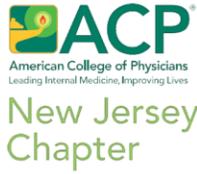
Goal example	Tactics example
Effective dissemination within health systems of sustainability programs and their scope, intended outcomes	Regularly recurring newsletters and organizational announcements to employees
Patient education on link between health and climate change	Community education on health and climate change such as seminars, meetings
Integration of sustainability efforts with the community	Community projects (park/river clean-ups, tree planting, etc)
Physician/nursing education	Continuing medical education programs for practicing clinicians on topics such as Polypharmacy and impactful prescribing practices, How to talk to patients about climate change, Sustainable quality improvement (QI) as well principles of health and climate change
Medical education programs for residents	Lectures, QI projects
Medical education programs for students	Integration of health and climate change content as a social determinant of health throughout the curriculum. Specific courses or lectures dedicated to climate change.

AGRICULTURE

Summary statement: Sourcing food locally encourages economic growth. Offering whole foods promotes healthier lifestyles and preventative practices. Hospitals have significant buying power as they are often one of the community’s largest consumers. By purchasing local and regional food, hospitals amplify their healing mission by addressing some root causes of health risks, increasing employee and patient health and satisfaction, and bolstering regional economies to create community resiliency. By purchasing food and beverages that have earned trusted third-party certifications for quality and sustainable practices, hospitals can shift the entire food system toward sustainability, without significant cost increases to total food service spending. By using purchasing power to move away from detrimental food production practices like the overuse of antibiotics in animal agriculture to transform the food supply chain in order to better protect human and environmental health. Diets that embrace plant-based proteins are popular for both health and environmental reasons. One in four consumers are eating less meat and roughly half of younger consumers and one-third of older people already regularly choose plant-based foods instead of meat.

Goal example	Tactics example
Set policy to guide the development of healthy and sustainable food service operations.	Sign the Healthy Food in Health Care pledge
Implement a plant-forward food service program to reduce animal products served and increase plant-forward menu options.	Take The Cool Food Pledge - Cool Food . Request a presentation on taking the Cool Food Pledge. Get an executive to sponsor your sign on. Make it an event at your site to help create awareness. Use the Cool Food calculator or join Cool Food and we will track your emissions for you.
Reduce meat purchased by 10% annually with a goal of 1.5 ounces of meat per serving averaged over all meals	Offer Meatless Mondays
Increase the percentage of local and diverse food purchases by 5% annually or achieve the ultimate goal of 20% of the total (dollars).	Contact your food service distributor and have them share vendors (e.g., farmers, food manufacturers) that are within 250 miles of your facility. This will help you determine a baseline and set a target (note that only products with the majority of ingredients, less than 50% by weight, grown/raised and processed within the 250-mile radius may be considered local).
Reduce greenhouse gas emissions from food purchasing by 20% by 2030 and track emissions.	Contact your food service distributor and have them share vendors that meet the third party certifications for sustainable foods. This will help you determine a baseline and set a target.
Increase the percentage of sustainable food purchases by 5% annually or achieve ultimate goal of 20% of the total (\$).	Contact food service distributors to establish goals and vet appropriate vendors. Develop an on-campus program, like farmers markets and farm stands, on hospital campuses to provide easy access to healthy, locally grown foods.
Increase plant-forward menu options annually to achieve 70% of all entrees being plant-forward by 2030.	Contact food service distributors to establish a baseline of meat and poultry that meet the standards for sustainable meat and poultry. Determine baseline and set a target. Work with Wellness teams to message healthy dietary options.

Increase healthy beverage options by implementing a healthy beverage program.	Eliminate bottled water from patient menus and the cafeteria.
Increase access to tap or fruit-infused water, milk, tea, coffee, etc.	Sell or provide reusable beverage containers at affordable prices in the cafeteria and gift shop and give them away at special events.
Reduce sugar-sweetened beverages (SSBs) by 100%.	Showcase your culinary creativity in the Health Care Culinary Contest. Engage your food team by recruiting a chef in your organization to participate.
Increase access to healthy foods for the community on campus.	Change the relative price of healthy compared to unhealthy beverages to make healthy choices more affordable and desirable.
Eliminate 100% of polystyrene (Styrofoam) products in clinical and non-clinical settings.	Develop onsite food gardens and farms to provide produce for food service and for donation to food insecure communities. These green spaces can also serve as healing gardens for patients and staff.
Establish a baseline of pounds of food waste landfilled per year and set a target for reduction with a food waste reduction and donation program in alignment with EPA food recovery hierarchy.	Engage community benefit programs within nonprofit hospitals to work with community partners to address needs and to support community level food access programming.
Increase investment in local food systems	Engage hospital administration to target program-related investments that support community food enterprises.
Design and implement a food waste reduction, recovery, and management plan.	Establish community-supported agriculture (CSA) programs to provide staff with a regular source of food from a local farm.
Reduce food waste to landfill by 20% (ReFED goal) from baseline year.	Use reusable food service ware and choose sustainable food service ware options wherever possible.
Scale food purchases and develop portion sizes appropriately	Reduce food purchases to minimize overages and procure food in a responsible way to cut down on the amount of uneaten food that is potentially discarded.
Reduce local food insecurity through food donations	Increasing food donations contributes to waste reduction goals but also allows hospitals to reduce food insecurity in the surrounding community and address one of the major social determinants of health for the people they serve.
Begin composting programs	Initiate strategies that reuse or recycle food waste, like composting, animal feeding, or anaerobic food digestion.
	Create a shared project between community benefit and food and nutrition for a shared strategy on food waste reduction, edible food donation, and composting/digestion for landfill avoidance.
	Collaborate with growers for vegetable “prescriptions” for patients.



	Offer trayless dining (saves 1 quart of water, plus the detergent and energy used for washing)
	Promote healthy food in vending machines and in cafeteria (salads, smoothies, etc) with less saturated fats.
	Install filtered water stations, “spa water,” or water bottle filling stations throughout the facility or in cafeterias.

CHEMICALS

Summary statement: Many substances employed in health systems can have unintended negative impacts on people and the environment. For example, polyvinyl chloride (PVC) and di(2-ethylhexyl) phthalate (DEHP) are chemicals that have a negative impact on our environment and human health. The Food and Drug Administration has recommended hospitals limit exposures to DEHP for sensitive populations, especially male neonates and infants. Mercury is toxic to human health, posing a particular threat to the development of the child. Some traditional cleaning products contain ingredients that have been linked to occupational asthma. It is possible for hospitals to maintain optimal infection prevention and control while also reducing staff, patient, and visitor exposure to harmful chemicals present in many traditional hospital cleaners. Antimicrobial ingredients, like triclosan and triclocarban – which are used widely in health care for hand hygiene – have also been shown to pose health risks to long-term users. Evidence shows that many of the chemicals used in these products off-gas, or migrate out, from the finished product and get into the air and dust, exposing employees, patients, and visitors to the chemicals. Health systems can promote less toxic chemical usage and manage disposal effectively.

Goal example	Tactics example
Eliminate PVC/DEHP from at least two of the seven product lines.	Identify two products that are cost effective to eliminate. Easy wins are sometimes associated with breast pumps and accessories and gloves. Work with your purchasing and value analysis teams to identify more products.
Apply for the Making Medicine Mmercury-free award. Eliminate or reduce mercury from your hospital's environment.	Identify and scan where mercury exists in your hospital. Check with pharmacies, facilities (boiler switches), refrigerators, and ovens. Identify and make a plan to eliminate mercury. Make sure you label switches if they exist.
Inventory cleaning products and purchase 90% Green Seal or UL ECOLOGO certified cleaning products in the following categories: carpet, window, all purpose, bathroom, and general floor care.	Hospitals that have most successfully reduced the impacts of harmful cleaning products throughout their facilities look at the full spectrum of cleaning procedures and design comprehensive cleaning policies that align with hospital goals.
Level 1: Establish baseline and achieve 80% of hand hygiene product spending on products that do not contain triclosan and triclocarban. Level 2: Establish baseline and achieve 100% of hand hygiene product spending on products that do not contain triclosan and triclocarban.	Work with your infection control team and purchasing department to achieve this goal.
Ensure 30% of the annual volume of furnishings and furniture purchases (based on cost) eliminate the use of formaldehyde, perfluorinated compounds, PVC, antimicrobials, and all flame	Many hospitals now incorporate Practice Greenhealth's healthy interiors goal into their institutional purchasing policy

retardants.	
Ensure that at least 25% of flooring and carpet installed per year meets the healthy flooring silver (equivalent to the Greenhealth Approved seal) or gold level criteria.	Indicate to suppliers that sustainable flooring is desired.
Integrated pest management	Use non-toxic pesticides and minimize human exposure. Consider non-chemical based treatment modalities.
	Implement and manage a best practice pharmaceutical waste management program to minimize waste.

CONSTRUCTION

Summary statement: The new construction built today can be expected to be our healthcare setting for the next 50 years. Buildings in NJ must thus be constructed with an eye to the future in terms of resilience as well as energy efficiency. The [Leadership in Energy and Environmental Design \(LEED\)](#) building system is the most widely recognized certification system for green buildings. Unfortunately, of NJ's 2270 LEED-certified buildings, only 3 hold full healthcare certification. The average age of a US hospital calculated in Hospital Plant Years has continued to increase with a concomitant decrease in Value Based Purchasing (VBP) Total Performance Scores, including [clinical care and patient experience](#).

Goal example	Tactics example
Achieve a recycling rate and/or landfill diversion rate in construction waste of 90% or greater in all renovations and major additions annually.	Expand recycling programs to partner with vendors that identified construction waste.
Develop organizational design and construction standards to include each aspect of LEED design as highlighted by the U.S. Green Building Council.	Require designers, builders, and contractors to have experience with LEED or other green building rating systems, like Green Globes or WELL Building Certification.
Achieve LEED certification or greater in all new buildings or major renovations.	Add language to contract specifications that building contractors will follow LEED requirements and provide documentation.
	Consciously select flooring, wall coverings, paints, materials, finishes, furniture, or exterior materials that avoid target chemicals of concern. Implement a building and renovation strategy that maximizes daylight for occupants, install water saving measures that will substantially reduce potable water use or reuse non-potable water, integrate design elements that will reduce or reuse water, institute other innovative green design and construction elements, and install energy systems that exceed ANSI/ASHRAE/IESNA Standard 90.1-2013.
	Implement construction standards that avoid chemicals of concerns into the master specifications.
	Audit building and insulation/thermal assessment.
	Install garden and green spaces for building occupants to view or access. Green spaces can include a green living roof (viewing only or public accessible), living green wall, healing garden, or food-producing garden.
	Decrease mowed lawn space in favor of native landscaping. Increase trees onsite.
	Use battery-powered landscaping equipment which is quieter and decreases air pollution. Hire a quiet landscaper.
	Mow high (3-4") with sharp blade and return

	shredded clippings to the lawn
	Plant native groundcovers, trees, shrubs, or perennial flower beds and those with low water requirements. Minimize pesticide use.
	Constructions and grounds that are flexible to grow and adapt to community needs
	Furnishings should be reused, donated, refurbished, and recycled where possible.
	Minimize patient/staff exposure to chemicals of construction
	Use local/regional building material
	Incorporate natural design components like daylight, natural ventilation and temperature management

TRANSPORTATION

Summary statement: Transportation is the largest contributor to carbon pollution in NJ which directly causes poor air quality (ozone and particulate matter 2.5) and impacts to climate change. Mobile fuel combustion is the top source of U.S. greenhouse gas emissions. On average, 76% of the U.S. workforce drives alone to work. Emissions from transportation contribute to air pollution, a known public health threat. Increased fuel efficiency reduces distribution costs and environmental emissions. For every hour it idles, an ambulance burns 1.5 gallons of fuel, emits 33 pounds of carbon dioxide, and wears down the engine the equivalent of traveling 35 to 50 miles.

Goal example	Tactics example
Reduce employee single occupancy vehicle (SOV) commute rate by 3% per year from baseline (with a cumulative goal of 15% reduction in 5 years).	Work with Human Resources Departments to incentivize carpooling.
Increase the percentage of alternative fuel fleet vehicles by 3 to 5% per year from baseline (with a cumulative goal of 15% increase in 5 years).	Cut their transportation emissions by effective siting (near public transportation infrastructure) of hospitals, encouraging hospital staff and patients to use bicycles, public transportation and carpools, and by purchasing from local suppliers or/and suppliers who use fuel-efficient transportation
Convert all health system-related vehicles to green vehicles.	Purchase alternative fuel fleet vehicles
Promote telehealth.	Offer more telehealth options to patients. Telemedicine has the potential of reducing air pollution, by reducing travel and transportation while simultaneously increasing access to care.
Encourage electric vehicles among employees.	Install electric vehicle charging stations in parking facilities.
Achieve an idle-free campus.	Implement idle-free practices, protocols, and zones
Increase percentage of EPA SmartWay partners to >80%.	SmartWay US EPA
Decrease air travel by 70%.	Encourage and incentivize virtual meeting participation

INFRASTRUCTURE RESILIENCY

Summary statement: Health system resilience is the ability to maintain optimal system performance in times of adversity/crises. However, achieving resilience requires constant balancing of alignment, collaboration, adaptation and transformation of supply, demand, and contextual factors within and outside of the system. Extreme weather events and climate change have taxed the ability to deliver care in times of crisis as has the COVID-19 pandemic which too has roots in climate pressures and the increasing proximity of humans to animals usually kept separate. Shocks to the healthcare infrastructure can be large and complex, such as infectious diseases, natural disasters, and refugee influx, or can be slower onset, such as shifting demographics, droughts, urbanization, and migration. Any expected or unexpected shock will further deteriorate the health system's existing performance. The fragility of a health system also results from supply- and demand-side factors. The supply factors include weak management of or poor planning for availability of medicines or supplies, or poor distribution of human and financial resources to match population health needs. Demand factors imply that people perceive the utility of services and trust them to change their health-seeking behaviors. Health system resilience should be fostered by paying continuous attention to supply, demand, and contextual factors and their interdependencies and linkages. (17)

There must be a paradigm shift away from focusing on acute, sudden onset shocks toward building capacity to address regular disruptions. Implementing this paradigm shift in resilience requires:

- Moving away from a narrow conception of resilience as a collection of capacities that are needed to keep systems' performance at its routine level during sporadic emergencies.
- Recognizing that resilience is inherent in how the system is organized to perform through alignment and collaboration among the supply, demand, and contextual factors and emerges to maintain its performance when systems are hit by expected or unexpected crises.
- Acknowledging that fostering resilience requires programs to emphasize better collaboration and alignment among supply, demand, and contextual factors.

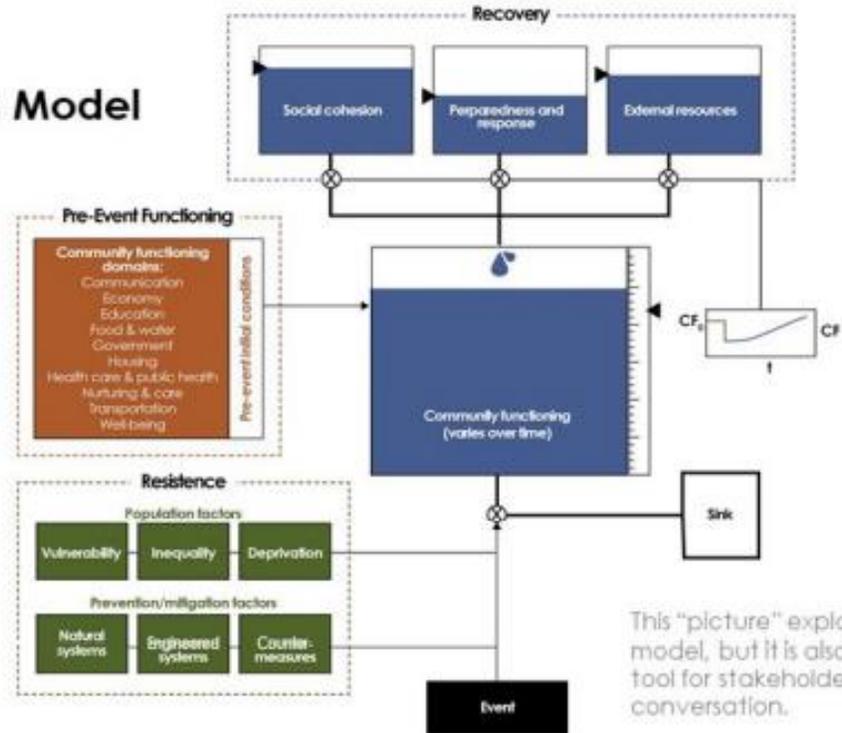
Goal example	Tactics example
Health system resilience cannot be achieved in silos.	Adopt a multi-sectoral approach that encourages engagement of the public and private sectors, faith-based organizations, and civil society plus working with non-health sectors, such as agriculture, environment, education, and security.
Strengthen community and regional ties.	Cultivate linkages with nongovernmental organizations and the private sector with experience and expertise in providing basic services during shocks.
Planning for shocks should be incorporated into activities now.	Develop resiliency teams and build disaster-preparedness into current decision-making processes. Build in intentional redundancy to create resilient systems.
Evaluations of health system resilience should include the intersection of pressures on supply and demand as well as unique regional contexts.	Track and measure resilience to generate evidence and design better programs. Conduct simulations of various disasters to assess areas of vulnerability.
A strong and resilient health system must start by building trust with the population in that system.	Community outreach from the health system, clear messaging, and integrated activities with the community can build trust.
Cultural shifts are needed so that people throughout an organization take ownership to make changes and respond to unexpected and routine work crises to cultivate health system resilience.	Reward innovation among teams and individuals Foster an understanding of interdependence among healthcare professionals and others within the system. Clearly and transparently communicate goals and initiatives.
Involve staff in emergency programming.	Run disaster drills.
Evaluate current systems according to a Plan-Do-Study-Act (PDSA) model.	Integrate resiliency and emergency-preparedness efforts with performance/quality improvement initiatives.
Apply evidence-based strategies for community resiliency.	COPEWELL model from CDC Current Research CDC has been used to predict resilience after a disaster in all 3,100+ counties in the United States.
Ensure an adaptable, integrated, interoperable, functional, and comprehensive Health Information System (HIS).	Assess the HIS via the Stages of Continuous Improvement (SOCI) tool developed by MEASURE Evaluation
Have an evaluation lens that is larger than the project you are evaluating.	Human Systems Strengthening – Monitoring, Evaluation, & Learning (HSS MEL) guide document (measureevaluation.org)

Copewell System Dynamics Model

The computational model is populated in each domain with publicly available indicators at the county level.

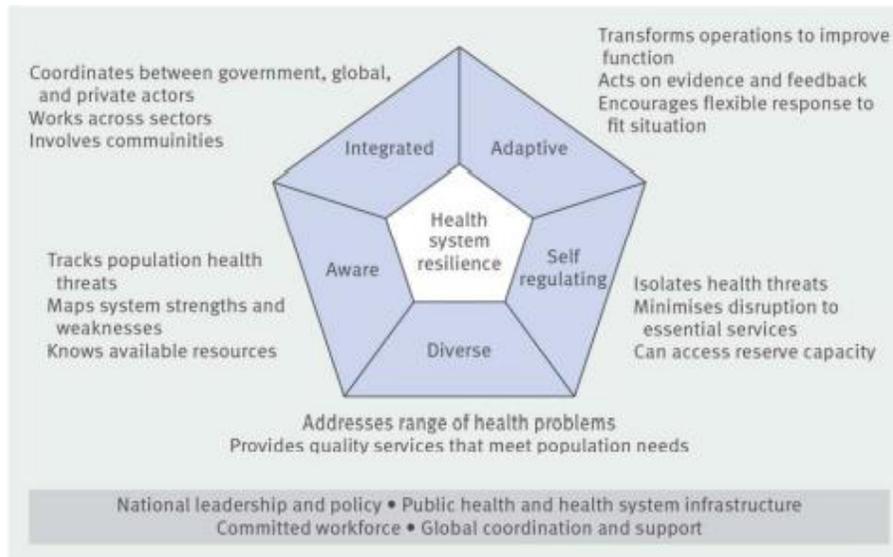
Copewell = "composite of post-event well-being"

Source: Johns Hopkins Bloomberg School of Public Health
<https://www.jhsph.edu/research/affiliated-programs/copewell/the-copewell-model/index.html>



This "picture" explains the model, but it is also a useful tool for stakeholder conversation.

Adapted from Jonathan Links, a medical physicist from University of California, Berkeley. (18)

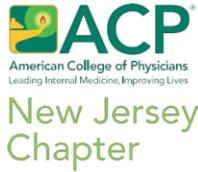


Adapted from Margaret Kruk, associate professor, Harvard University. (18)

[From Fragile to Resilient Health Systems-Meeting Report TR-19-362.pdf \(usaid.gov\)](#)

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Appendix A

– Adapted from ASHE’s Sustainability Report

Benchmarking Tools and Other Sustainability Resources

Several resources are available to track this data over time, including the Environmental Protection Agency’s ENERGY STAR Portfolio Manager. (9) More information can be found on the AHA’s Sustainability Roadmap for Hospitals website (www.sustainabilityroadmap.org), an online resource that includes detailed material tailored specifically to hospital and care system needs (10) and from the American Society for Healthcare Engineering’s program, Energy to Care to help hospitals track energy consumption (www.energytocare.com). (11) Practice Greenhealth is a leading organization focused on health systems sustainability. (12) Additional resources can help guide individual practices. (13-16)

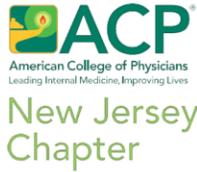
Portfolio Manager: Facility managers and others use the Environmental Protection Agency’s ENERGY STAR Portfolio Manager online benchmarking tool to securely track energy and water use over time. Access the tool and get more information at <http://portfoliomanager.energystar.gov>.

Energy to Care program: The free Energy to Care program helps hospitals track energy consumption and rewards progress. Participating hospitals track their energy use through the Portfolio Manager online benchmarking tool and can visualize energy trends using a robust dashboard. In addition to gaining recognition for reducing energy use, hospitals can participate in challenges that add friendly competition to the mix. Hospitals can compete against other facilities in their health systems, states or regions. The program is coordinated by the American Society for Healthcare Engineering. Information is available at www.energytocare.com.

Sustainability Roadmap for Hospitals: The Sustainability Roadmap website—accessible at www.sustainabilityroadmap.org—shows hospitals how to implement real-world sustainability projects that can enhance their existing efforts and give them a platform for sharing successes with other facilities. The website features search functions, how-to guides, tools, case studies and other technical resources. The roadmap was created by three personal membership groups of the American Hospital Association: the American Society for Healthcare Engineering (ASHE), the Association for the Healthcare Environment (AHE) and the Association for Healthcare Resource & Materials Management (AHRMM).

Energy University: Energy University, a vendor-neutral, e-learning program from Schneider Electric, offers online courses to facility managers and others involved in operations and maintenance of facilities. Members of the American Society for Healthcare Engineering can access these tools for free. Visit www.ashe.org/energyuniversity for more information.

ASHE commissioning publications: Commissioning hospital facilities is a more complex process than commissioning other types of buildings because of the unique and complex systems and equipment found in health care facilities. However, one set of commissioning guidelines is specifically tailored to health care facilities. The Health Facility Commissioning Guidelines book outlines the process of commissioning health care facilities. An accompanying Health Facility Commissioning Handbook includes step-by-step instructions on how to implement the Guidelines. Access both at www.ashestore.com. **ASHE, AHE, AHRMM membership:** Facility managers and others involved in environmental sustainability can have free access to



valuable resources and tools by becoming members of one of three personal membership groups of the American Hospital Association.

- The American Society for Healthcare Engineering (ASHE) has more than 11,000 members who rely on ASHE as a key source of professional development, industry information, and advocacy, including representation on issues that affect their work in the physical health care environment. www.ashe.org
- The Association for the Healthcare Environment (AHE) represents, defines, and advances the work of professionals responsible for care of the patient environment to ensure quality patient outcomes and healthy communities. AHE serves more than 2,000 members and provides education, networking and recognition for personal and professional achievements as well as collaboration with the AHA on public policy and advocacy issues related to the health care environment. www.ahe.org
- The Association for Healthcare Resource & Materials Management (AHRMM) is the leading national association for executives in the health care resource and supply chain profession. 29 Environmental Sustainability in Hospitals: The Value of Efficiency AHRMM serves more than 4,200 active members. Founded in 1951, AHRMM prepares its members to contribute to the field and advance the profession through networking, education, recognition, and advocacy. www.ahrmm.org

Appendix B

Examples of Healthcare Sustainability Innovation in the US

The following details the many innovative ways other health systems across the country have been implementing environmentally-conscious programs in their institutions. These efforts also resonate with patients who have choice as consumers in which health systems they want engage with for care. They also increase employee engagement as they show that health systems care for them as persons as well.

Using renewable energy

More than half of health care's carbon footprint comes from energy use, according to the HCWH report, which recommends a "transition to clean, renewable energy and transportation." That shift is already underway at many hospitals. The University of Vermont Medical Center began generating electricity via a [solar array on its rooftop](#) in December 2018 and participates in the Vermont Gas Renewable Natural Gas Program, which captures methane from a landfill in Quebec, Canada. The Boston Medical Center (BMC) [buys electricity](#) from Summit Farms, a 650-acre, 255,000-panel solar farm in North Carolina. Each year, BMC eliminates 119,500 metric tons of carbon dioxide emissions (which is like removing 25,250 cars from the highway).

With a mandate to be carbon neutral by 2025, the University of California, San Diego's (UCSD) two medical centers are working to reduce energy use and find renewable options. The university will prohibit new buildings from using fossil fuels after 2020 — a significant challenge as UCSD prepares to rebuild its Hillcrest Medical Center. The medical centers buy some sustainable energy from the University of California, which generates onsite alternative energy on its campuses, but eventually their sustainability officer has plans to generate their own. This comes with the understanding that, as energy prices continue to go up, there will be a better ROI for systems to invest in more distributed renewable energy onsite.

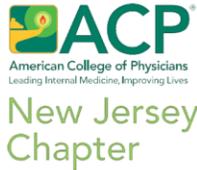
Energy efficiency

The Environmental Protection Agency has ranked inpatient health care as the second largest commercial energy user in the United States. To change that, medical centers like University of Wisconsin Health in Madison, Wisconsin, have taken a variety of energy-saving steps, [such as using lighting controls and LEDs, installing high-efficiency equipment, and adding HVAC occupancy sensors and demand-reduction strategies](#). Many facilities, like the University Hospitals Ahuja Medical Center in Beachwood, Ohio, use natural light to reduce energy (Ahuja also has a white roof, which absorbs less heat). There can be simpler initiatives like turning off TVs in waiting rooms if no one is watching it.

Energy improvements can be expensive, but the savings can be impressive. BMC's energy-saving measures have reduced operating costs by about \$25 million. The Cleveland Clinic, which has 15 LEED certified buildings, has reduced its [energy use intensity](#) (energy per square foot) by 19%, which has led to \$50 million in savings.

To finance investments in energy efficiency, the Cleveland Clinic established a \$7.5 million [Green Fund](#) in 2016. As money is used for various projects, the savings are reinvested in the fund. Initiatives have included an [LED retrofit](#) that has reduced electric consumption by 28.6 million kilowatts per year (an annual savings of \$2 million), programmed systems that shut off lights in unoccupied areas (lighting accounts for 16% of the clinic's total energy use), and more efficient chillers. About one-third of the savings have come from operating room (OR) improvements.

Money is saved with no compromise of clinical care by decreasing the number of air exchanges in the OR from 25 to 20, "The most energy-intense part of hospital operations is the operating room," says Jon Utech,



senior director of the. Through Cleveland Clinic’s Sustainable Strategy Implementation talking with surgeons, the clinic reduced air exchanges from 20 times an hour to six when operating rooms aren’t in use. The savings: \$2 million a year.

Buildings aren’t the only focus. In 2017, when Emory University Hospital removed trees to build its 450,000-square-foot, [LEED-certified tower](#), it planted three times as many trees at a variety of locations. The Cleveland Clinic has committed to planting one thousand trees and has partnered with the Arbor Day Foundation for its recently launched [Tree Campus Healthcare USA](#) program, which recognizes institutions that are boosting urban tree canopies.

Many hospitals encourage biking, public transportation, and car pools (the University of Pennsylvania Medical Center’s Children’s Hospital of Pittsburgh offers [bike racks and showers](#), plus discounted parking for car poolers). At New York-Presbyterian (NYP), the NYP Green program promotes environmental consciousness through staff education, incentive programs, and volunteer events. The Cleveland Clinic provides educational campaigns to encourage its 62,000 staff members to conserve energy like turning of lights and TVs when not in use.

Laboratory innovation

At Harvard University, [labs compete](#) to see which one can use the least amount of energy for lighting with the winner receiving a solar-powered lamp. This friendly competition, through [Harvard’s Green Labs Program](#), has even led to some groups working in the dark because the “want to win.” Some even removed some of the light bulbs.

At Harvard, labs account for nearly 44% of energy use yet only 20% of the university’s space. Competitions help, particularly one called [Shut the Sash](#), which focuses on fume hoods (a ventilated cabinet for storing chemicals). Keeping them closed when they’re not used saves energy by reducing exhaust airflow. The program cuts greenhouse gas emissions by 300 metric tons each year and saves about \$240,000 annually (and the labs compete for a biannual wine and cheese party).

Another energy-saving effort involves freezer temperatures. Ultra-low temperature (ULT) freezers are typically set at -80 Celsius, but -70 degrees is just as safe for samples — and it uses a third less energy, says Gilly. At Harvard, the effort is still in its infancy: Of the 900+ ULT freezers on campus, about 20 have been set to -70. At the University of Colorado Boulder (CU), about 50% of ULT freezers are set at -70, up from 3% in 2010 (CU has created a [web page](#) on its -70 efforts). The CU Green Labs Program also has a [financial incentive program](#) that encourages the purchase of energy- and water-efficient equipment, including energy-efficient ULT freezers.

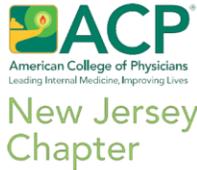
Many programs work with the nonprofit [My Green Lab](#), which helps create sustainable labs. At UCSD, 69 of its labs have been [certified](#) by My Green Lab. The nonprofit also assesses laboratory products and equipment through its [ACT](#) label program, which shows if products are environmentally friendly.

Reusing supplies is another priority. UCSD is expanding its [ChemCycle](#) program: Instead of disposing of unused chemicals, the Environmental, Health, and Safety office distributes them to other labs. The CU Green Labs Program wrote a [case study](#) showing the benefits of sharing space and equipment in terms of cost and environmental impact.

At Harvard, their lab hosts periodic [laboratory free cycle days](#), offering everything from lab equipment to office supplies to promote waste reduction and reuse. People come to an outdoor event where tables are set up with free items and they come away with carts of supplies.

Recycling and reducing waste (including food)

[Hospitals generate over 5 million tons of waste each year](#), from everyday trash (such as packaging and food) to regulated medical waste, which includes blood-saturated items and objects such as gowns, gloves, scissors, and syringes. Reducing or recycling such waste can be difficult, but UC San Diego Health is establishing new waste reduction goals for January 2020. Its two hospitals create about 30 pounds of waste per adjusted patient day (APD), but the median for hospitals that earn environmental awards from [Practice Greenhealth](#) is 20



pounds per APD. To reach that goal, UCSD has launched an RFP for waste services and is working to expand its recycling programs and offer education programs for staff, physicians, and patients. In 2018, the UCSD hospitals disposed of 3,200 tons of regular trash but recycled more than 2,200 tons. Likewise, the Mayo Clinic operates [its own 11-employee recycling facility](#) at its campus in Rochester, Minnesota, where it recycles not only products like plastic and glass but also materials such as surgical blue wrap (which is sold to a company that converts it back into polypropylene). The University of Vermont also has a program that has [diverted 50 tons of blue wrap](#) since 2010.

As China accepts fewer plastics from the United States, the overall recycling market is struggling but hospital systems are finding unique ways to reduce waste. NewYork-Presbyterian works with [The Afya Foundation](#), which distributes surplus or phased-out medical supplies to underserved health systems worldwide. Through Afya, NewYork-Presbyterian has diverted [more than 340,000 pounds of medical supplies](#) and equipment. Similarly, the University of Vermont Medical Center has established drug waste collection points so patients can safely dispose of pharmaceuticals.

Sustainability also applies to food. UCSD's goal is 20% sustainable and local food and beverage procurement. The University of Washington Medical Center works with the Northwest Agriculture Business Center, a local farmers' organization, to [provide organic, sustainable foods](#) to patients and retail customers. At the Boston Medical Center, a 7,000-square-foot [rooftop farm](#) produces around 5,000 pounds of food during growing seasons, from arugula to kale.

Organic waste emits methane, a powerful greenhouse gas, so UCSD's two medical centers have food waste collection programs. Excess food is composted or donated to the [Bannister House](#), a home for families of patients undergoing long-term care (NewYork-Presbyterian also [composts food waste](#), which is converted to renewable energy at a local treatment plant). The UCSD medical centers want to reduce food-related emissions 25% by 2030. "We're doing that by reducing the amount of meat and dairy and eggs we buy and increasing the number of vegan and vegetarian options on our menu," says Hamilton. "That's good for human health *and* the environment."

That connection is important for health care providers. Everyone has a responsibility to address climate change, but hospitals may have a greater obligation given global warming's effects on human health. As medical professionals our commitment is to 'first, do no harm.' Places of healing should be leading the way, not contributing to the burden of disease.