



LESSONS IN RESILIENCE FOR CRITICAL BUILDINGS

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Principal Perkins+Will and Senior Advisor Health Care Without Harm
November 22, 2016



The Lancet Commission

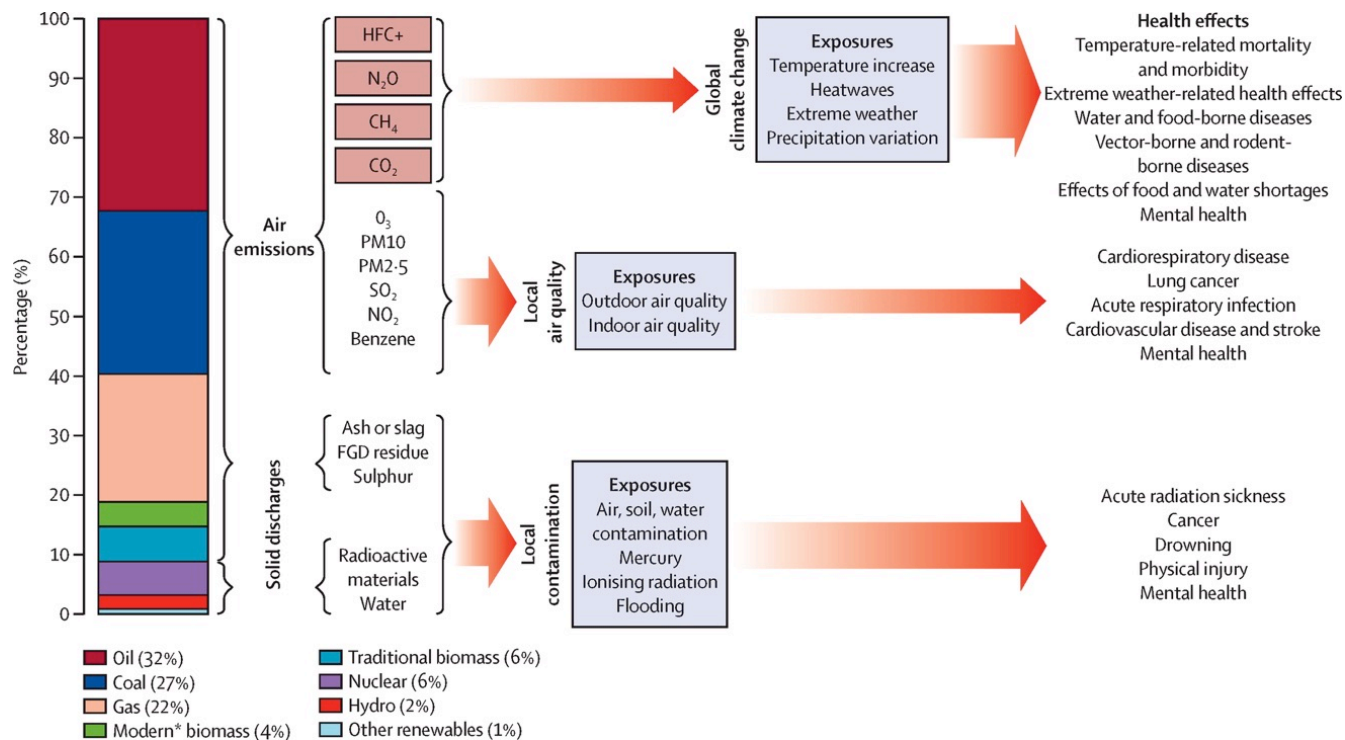
“The effects of climate change are being felt today, and future projections represent an unacceptably high and potentially catastrophic risk to human health.”



“Hospitals and health systems, particularly in more industrialized settings, have a significant carbon footprint.”

“By moving toward low-carbon health systems, health care can become more resilient to the impacts of climate change, save money, and lead by example.”

Fossil Fuels and Health

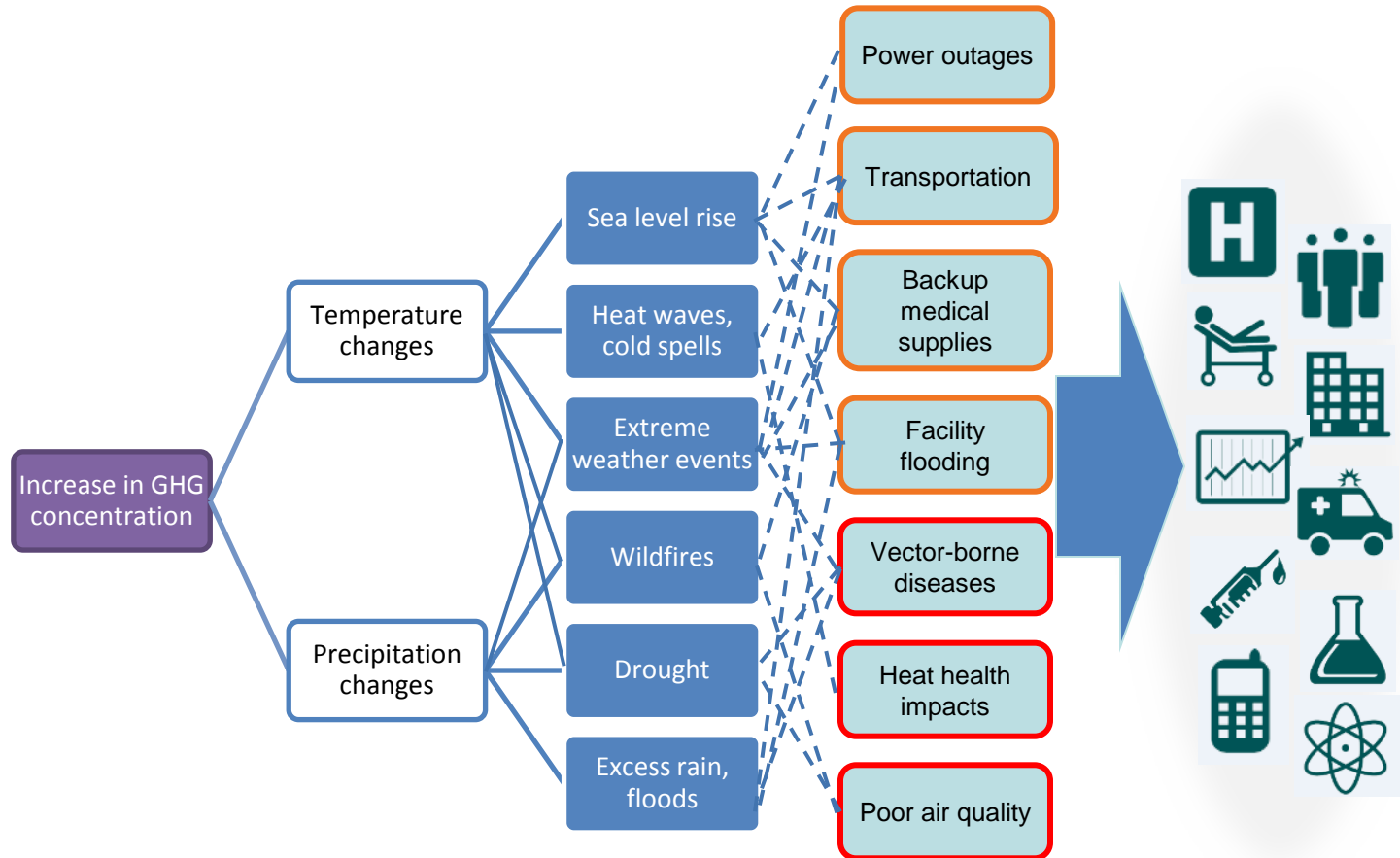




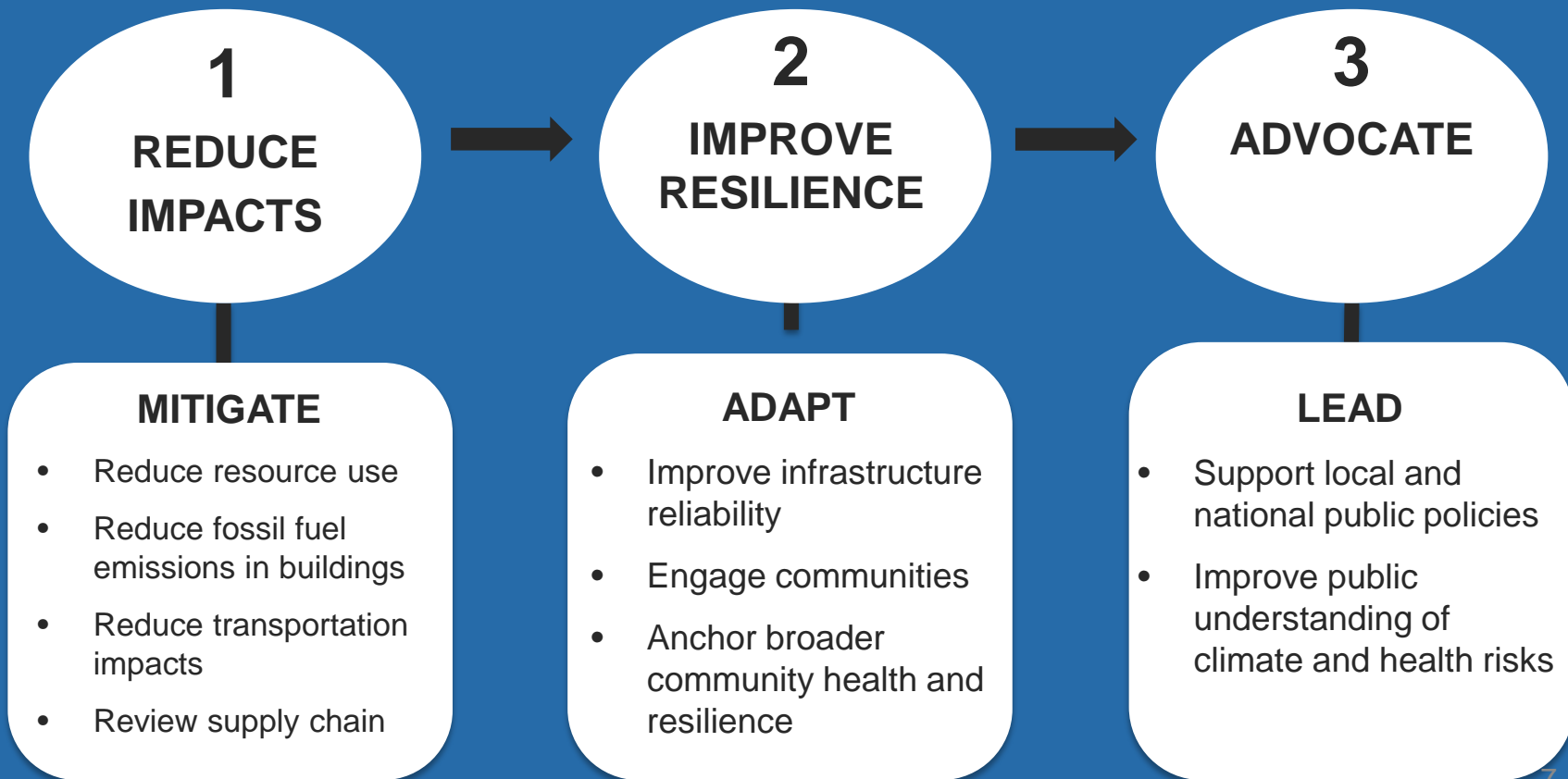
IS OUR HEALTHCARE INFRASTRUCTURE RESILIENT TO CLIMATE CHALLENGES?



Mapping Climate Impacts on Hospitals & Health



Health Care's Role



MITIGATE

Reduce Energy And Water Use

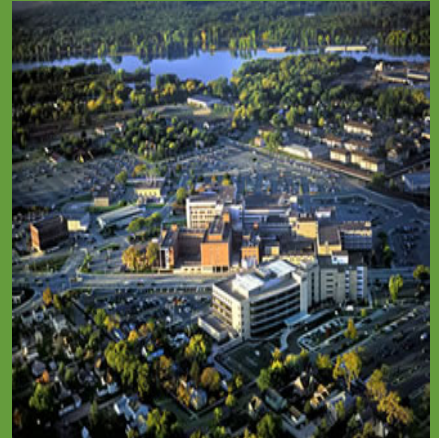




Energy Independent by 2014

“We did not set out to be the greenest health system. We set out to make the air better for our patients to breathe, control our rising energy costs and help our local economy.”

—Jeff Thompson, MD
Gundersen Health System 2014







- Low-energy design
- Passive design strategies – operable windows
- On-site power generation
- On-site renewable energy



- Low water use design
- Recycled and reclaimed water reuse
- Independent water source

Kiowa Memorial Hospital
Greensburg, KN
(EF-5 tornado, 2008)

Press Release

Kaiser Permanente Pledges Bold 2025 Environmental Performance to Benefit People and Planet

Already a global leader in climate action, organization sets in motion its most ambitious plan ever for a healthier future

May 17, 2016



carbon positive

Kaiser Permanente
Oakland, California



ADAPT

Improve Healthcare Infrastructure
Anchor Community Health and Resilience





Focus on patient health and safety and provider outages that will strain the healthcare system:

- 1 Reduce the risk of emergency evacuations
- 2 Be able to take on acute emergent patient needs (during and after)
- 3 Avoid extended facility outages that strain the system
- 4 Reduce how many patients cannot access their normal provider

Minimize disruptions in the **healthcare system** in order to preserve the wellbeing and health of staff, patients and community

Operate continuously

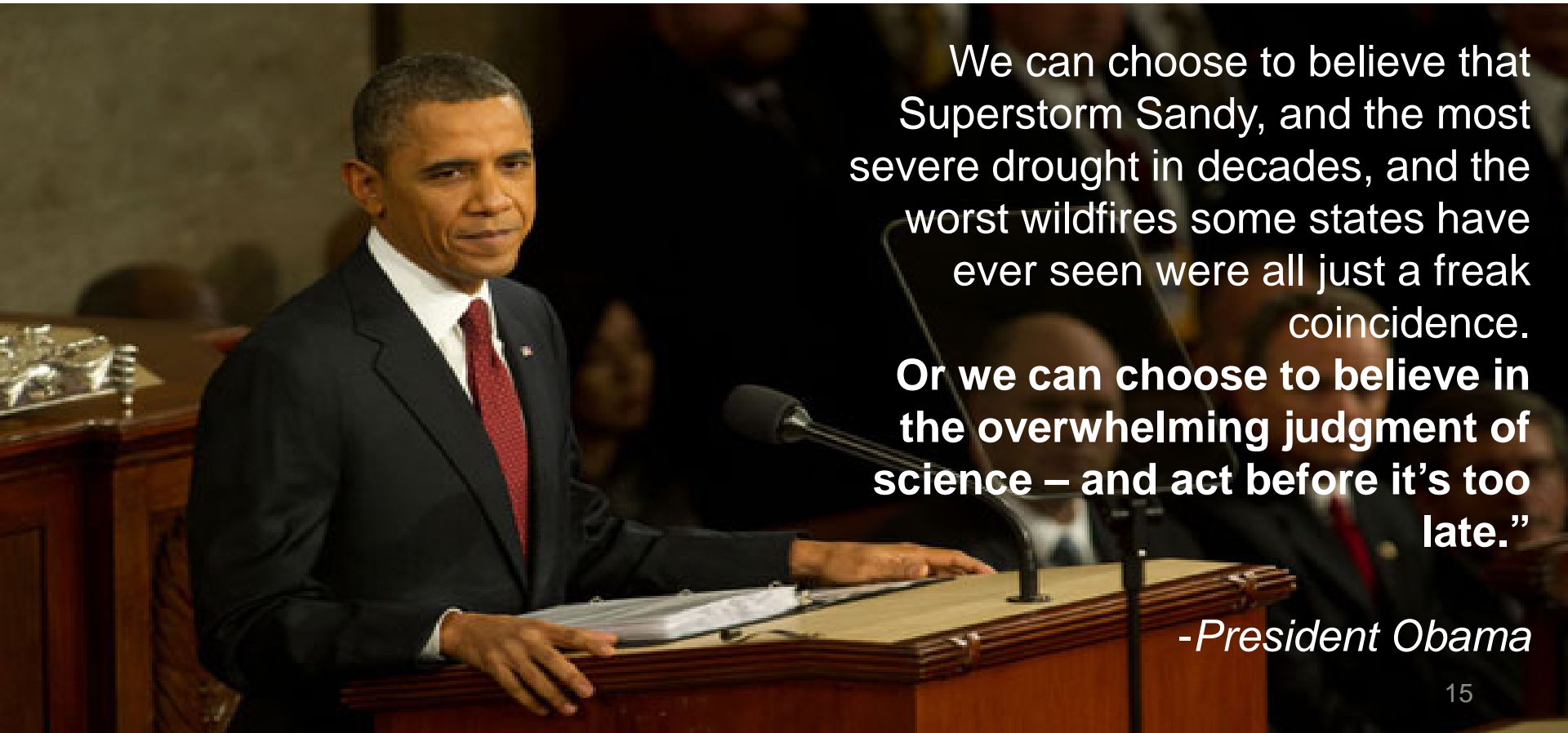
or

Re-open quickly

Key strategies

- 1 Ensure critical healthcare providers' operability through redundancy and the prevention of physical damage
- 2 Reduce barriers to care during and after emergencies

The President's Climate Action Plan- June 2013

A photograph of President Barack Obama standing at a wooden podium, speaking into a microphone. He is wearing a dark suit, a white shirt, and a red tie. His hands are resting on the podium. The background is slightly blurred, showing other people in the room.

We can choose to believe that Superstorm Sandy, and the most severe drought in decades, and the worst wildfires some states have ever seen were all just a freak coincidence.

Or we can choose to believe in the overwhelming judgment of science – and act before it's too late.”

-President Obama

THE PRESIDENT'S PLAN WILL

PREPARE THE U.S. FOR THE IMPACTS OF CLIMATE CHANGE

WE'VE MADE GREAT PROGRESS



The Administration and partners developed national strategies to help decision makers address the impacts of climate change on freshwater resources — fish, wildlife, and plants — and oceans.

PROGRESS:

In 2013, federal agencies released Climate Change Adaptation plans for the first time, outlining strategies to protect their operations, missions, and programs from the effects of climate change.



PROGRESS:

The US Global Change Research Program, NOAA, USACE, and FEMA developed and released interactive sea-level rise maps and a calculator to aid rebuilding efforts in NY and NJ after Superstorm Sandy.



THERE'S MORE WORK TO DO

Moving forward, the Obama Administration will help states, cities, and towns build stronger communities and infrastructure, protect critical sectors of our economy as well as our natural resources, and use sound science to better understand and manage climate impacts.



SUPPORT CLIMATE-RESILIENT INVESTMENTS

at the community level by removing policy barriers, modernizing programs, and establishing a short-term task force of state, local, and tribal officials to advise on key actions the federal government can take to support local and state efforts to prepare for climate change.

REBUILD AND LEARN FROM SUPERSTORM SANDY

by piloting innovative strategies in the Superstorm Sandy-affected region to strengthen communities against future extreme weather and other climate impacts and building on a new, consistent flood risk reduction standard established for the Sandy-affected region, agencies will update their flood-risk reduction standards for all federally-funded projects.



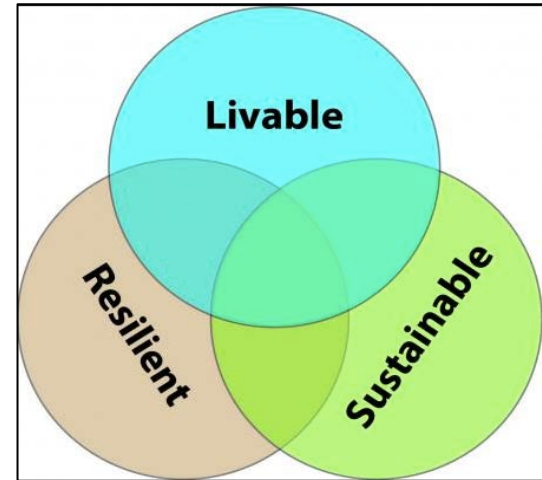
LAUNCH AN EFFORT TO CREATE SUSTAINABLE AND RESILIENT HOSPITALS

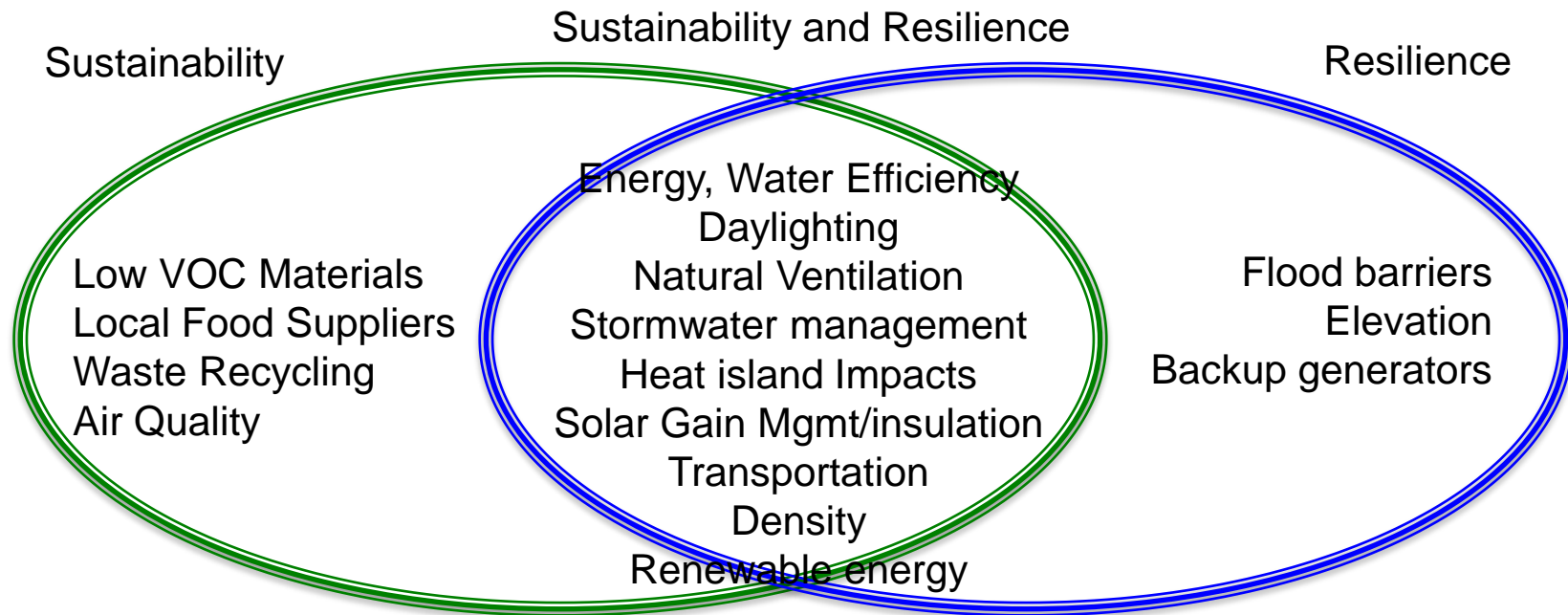
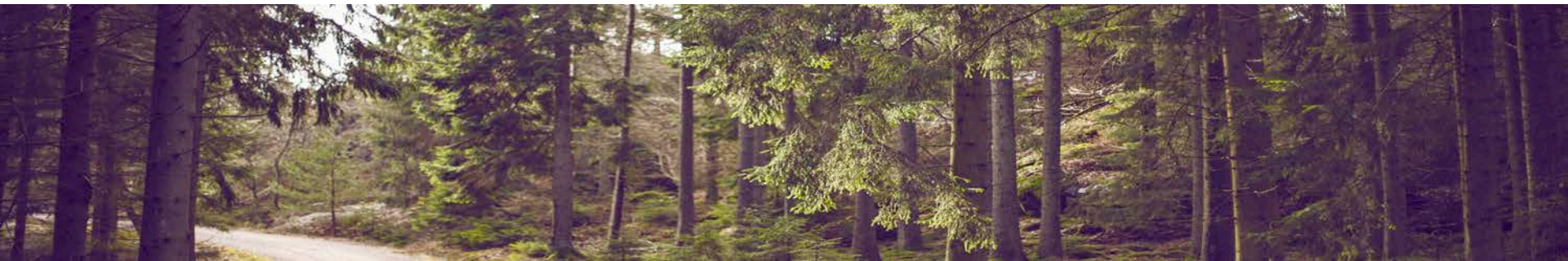
in the face of climate change through a public-private partnership with the healthcare industry.



Why Integrate Sustainability and Climate Change Adaptation?

- **Facilities perspective**
 - Synergies in building resilience and reducing carbon footprint
- **Public health perspective**
 - Synergies with urban planning, community design
 - Sustainability + climate mitigation
 - = health benefits





Toolkit.climate.gov



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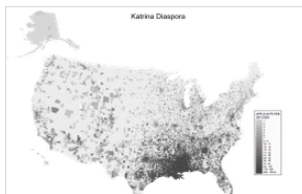


Building Climate Resilience in the Health Sector

The United States depends on its health sector to provide needed services on demand, whatever the emergency—but to do this, the health sector must remain operational. Climate variability and change jeopardize the responsiveness of our health care delivery system and its public health facilities, making Americans more vulnerable to the negative health impacts of heat waves, floods, wildfires, extreme storms, and their aftermath.

Climate change poses several risks to the health sector:

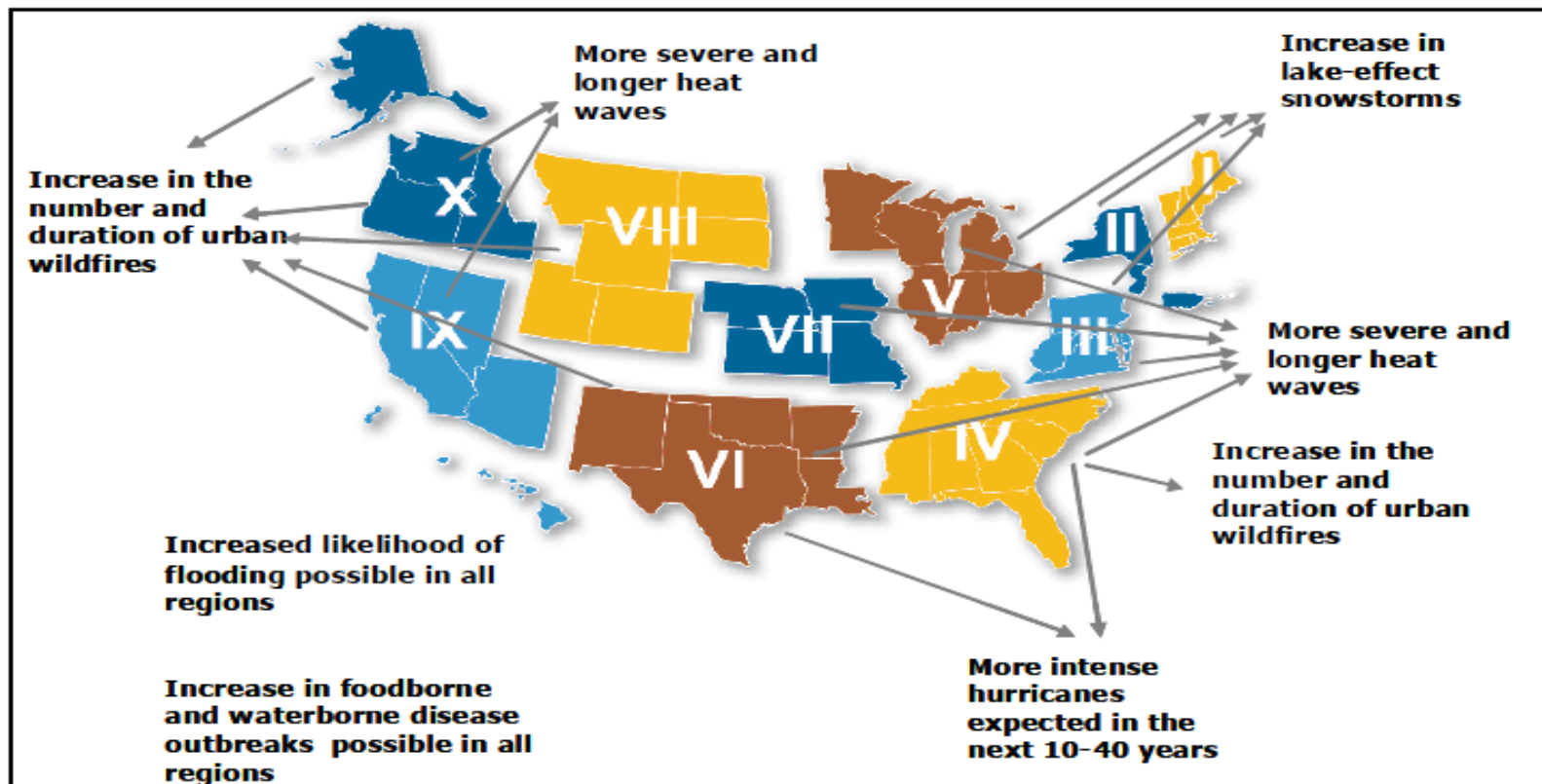
- Events like Hurricane Katrina and Hurricane Sandy have demonstrated that extreme weather can damage and shut down critical healthcare facilities such as hospitals and nursing homes. Climate change is expected to increase the severity of some extreme weather events, adding to the hazards healthcare facilities must be able to withstand.
- Healthcare facilities in coastal areas must also contend



Browse Topics

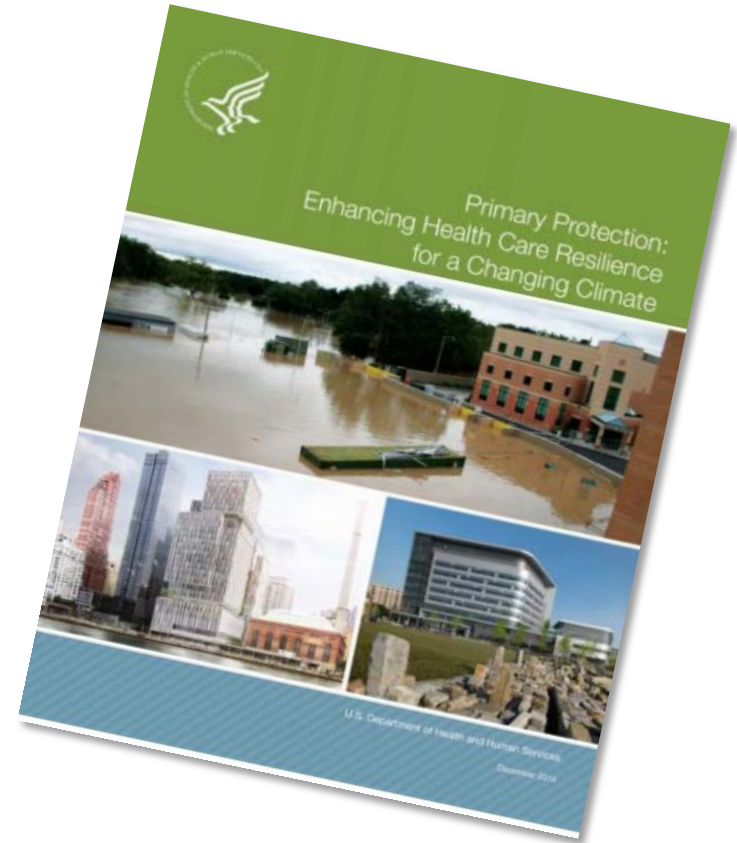
- > Coastal Flood Risk
- > Ecosystem Vulnerability
- > Food Resilience
- ✓ Human Health
 - Extreme Heat
 - Severe Storms and Flooding
 - Increased Levels of Air Pollutants
 - Changing Ecosystems
 - Altered Risk of Infectious Diseases
 - **Building Climate Resilience in the Health Sector**

Predicted impacts of climate change across the U.S.



Primary Protection: Enhancing Health Care Resilience for a Changing Climate

- Assist organizations in reducing future vulnerabilities and losses, and improve the functioning of a broad range of health care facilities





What happens?

- Increasing design thresholds to recognize ***more severe weather intensities***— design temperatures, wind velocities, mean flood elevations
- Increasing warehousing and storage capacities to recognize ***longer severe weather durations***— increasing the minimum amounts of on site food, water and fuel storage



Bellevue Hospital Evacuated After Two Days on Emergency Generators

By Julie Shapiro and Jeff Mays on October 31, 2012 2:32pm | Updated on November 1, 2012 12:21am

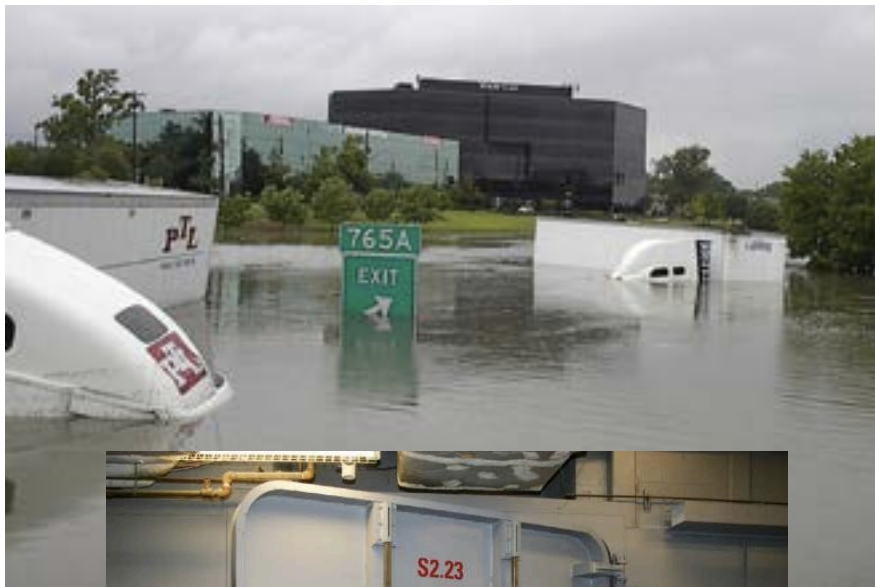
KIPS BAY — **Bellevue Hospital Center** was evacuated Wednesday after running on emergency generators for two days and could be closed for two to three weeks, officials said.

The East Side hospital transferred its most critically ill patients after losing power during Hurricane Sandy's floods, and on Wednesday, Bellevue began moving the roughly 500 patients that remained, Mayor Michael Bloomberg said.



What happens?

- Enacting requirements for hardening and adapting facilities in ***new geographic regions to respond to changing extreme weather patterns***
- Increasing capabilities for “islanding operation” that recognizes that on site infrastructure may be required for extended periods of time because of ***damaged community infrastructure***



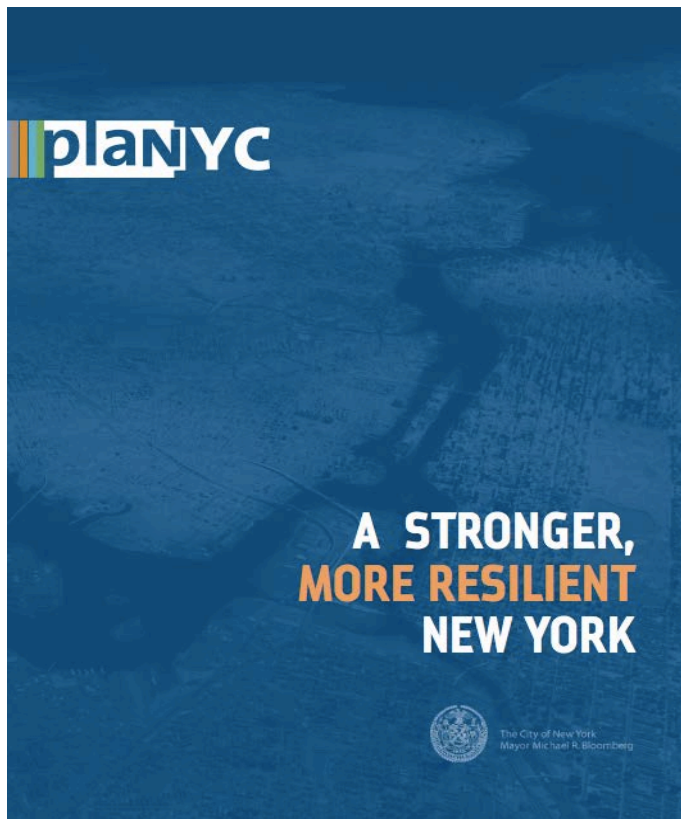
Texas Medical Center
Houston, TX
Tropical Storm Allison, 2001



Charity Hospital and VAMC
New Orleans, LA
(Hurricane Katrina, 2005)



NYU Langone and Bellevue
New York, NY
(Hurricane Sandy, 2012)



<http://www.nyc.gov/html/sirr/html/report/report.shtml>

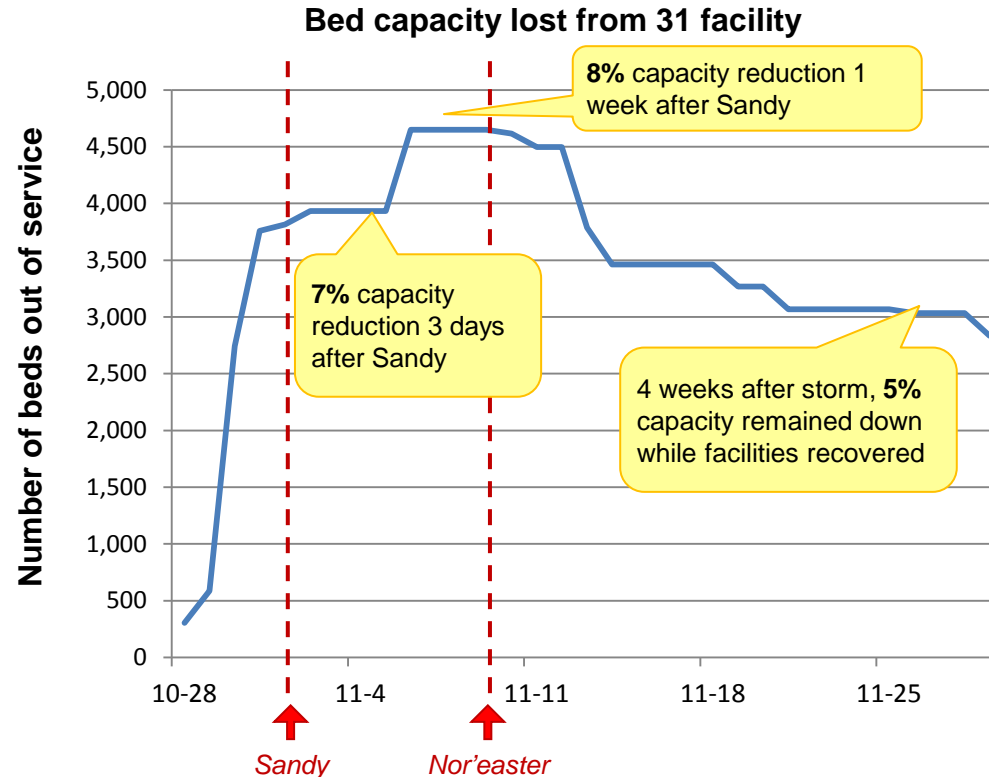




Nursing Homes/ Adult Care Facilities

What happened during Sandy

Patient impact:
emergency
evacuations, reduced
citywide bed-capacity,
hospitals couldn't
discharge



Critical system failures caused evacuations

Providers	Impact	Building	Equipment (elevators, Imaging)	Utilities (power, water)	Heating/ cooling	Communi- cations/ IT	Staff	Supplies
Hospital	Evacuations/ closures/ reduced services	Flooded	Flooded	Back-up failed	Flooded	Phone/ internet outages	Staff couldn't travel	Limited deliveries
Nursing homes/ adult care facilities	Evacuations	Flooded	No back-up power	Back-up failed (NH) / no back- up (ACF)	No back-up	Phone/ internet outages	Staff couldn't travel	Limited deliveries
Community-based providers	Closures / reduced services	Flooded	No back-up power	No back-up	No back-up	Phone/ internet outages	Staff couldn't travel	Limited deliveries
Home-based providers	Reduced services	Disruptions in patients' homes/residences, e.g. loss of power, elevators not working				Phone/ internet outages	Staff couldn't travel	Delayed deliveries

■ Primary reason for disruption
 ■ Secondary reason
 ■ Tertiary reason

What is the risk this could happen again to the same number or even more providers?



Disasters Impact Healthcare Facilities

Dollars and Cents

- After Superstorm Sandy
 - NYC public hospitals:
 - \$800 Million in damage
 - NYC overall:
 - Estimated \$3.1 billion recovery costs to healthcare facilities
 - Research:
 - Lost research animals valued at more than \$100,000
 - Research losses estimated above \$200 Million
 - FEMA Assistance:
 - \$25.9 Million for Equipment replacement



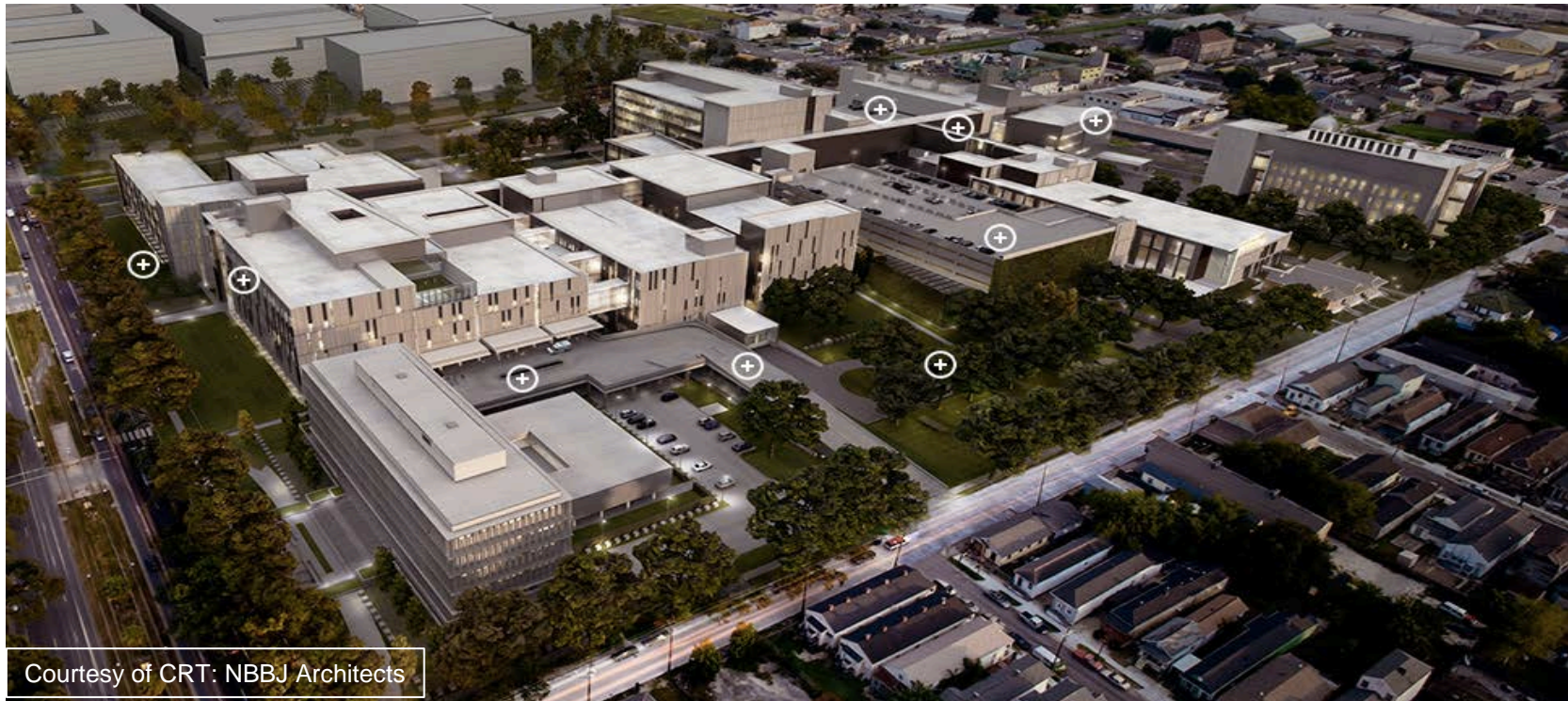


Texas Medical Center, Houston, Texas (SOM Site Master Planning)



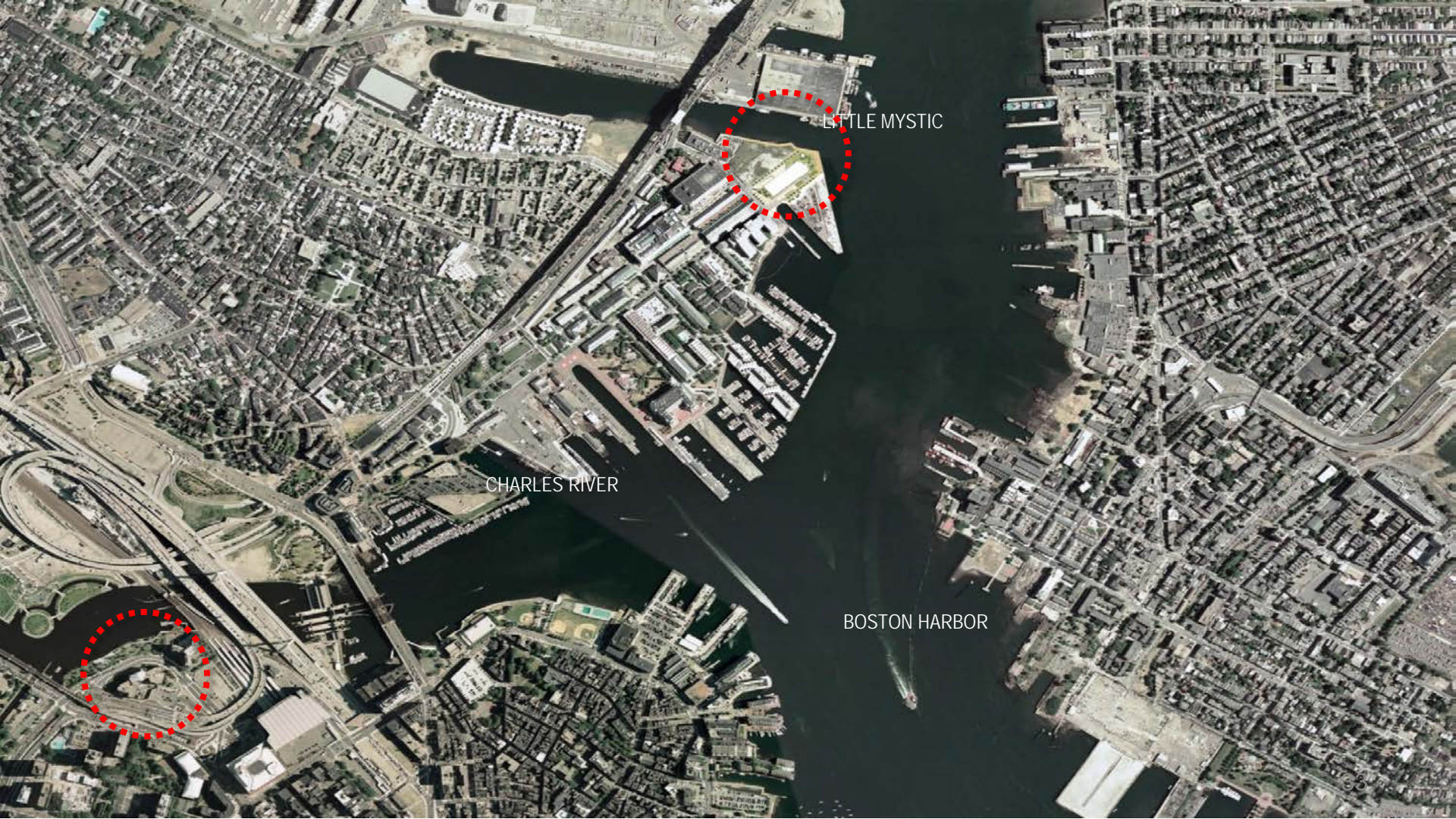
Completed early in 2006, Brays Bayou Marsh at Mason Park is near the mouth of Brays Bayou. The marsh is an award-winning partnership project.

Texas Medical Center
Houston, TX
Since Tropical Storm Allison, 2001



Courtesy of CRT: NBBJ Architects

VAMC
New Orleans, LA
(Hurricane Katrina, 2005)



LITTLE MYSTIC

CHARLES RIVER

BOSTON HARBOR

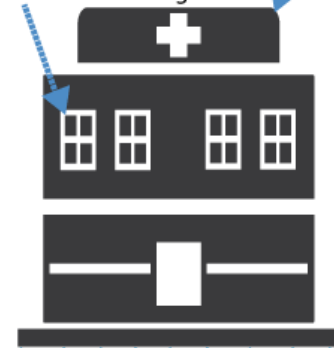


Boston's Spaulding Rehabilitation Hospital

Was climate-proofed for about a half-percent of total building costs.

Electrical equipment is on the roof in case of flooding.

Windows open, so patients don't overheat if air conditioning fails.



The ground floor is raised 30 inches above the current 500-year flood level and 42 inches above the 100-year flood level.



LEED Gold certified building includes sustainable/resilience features such as:

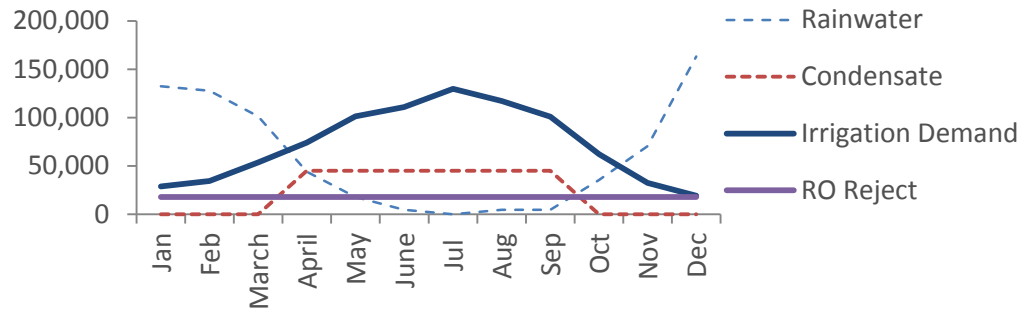
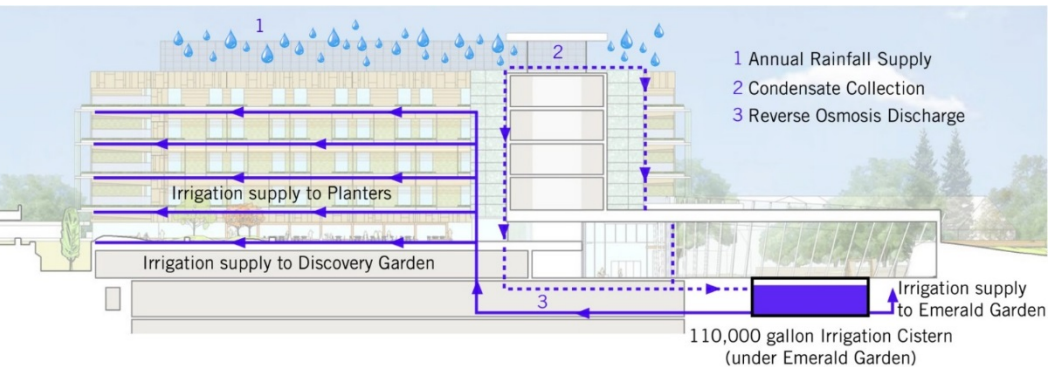
- Elevated ground floor; all infrastructure above flood elevations;
- Gardens utilizing native, drought and salt-tolerant vegetation
- Low energy design; at 150 kBTU/sf, 48% below average hospital energy demand. Maximization of daylight and views balanced with a high-performance building envelope
- On-site CHP plant for local electrical generation
- Operable windows for both natural ventilation and passive survivability in an emergency situation
- Green roofs to mitigate stormwater runoff, reduce cooling loads and heat-island effect





- Low-energy design
- Passive design strategies – operable windows
- On-site power generation
- On-site renewable energy
- Low water use design
- Recycled and reclaimed water reuse
- Independent water source

Kiowa Memorial Hospital
Greensburg, KN
(EF-5 tornado, 2008)



Lucile Packard Children's Hospital at Stanford

Palo Alto, California

IRS Sustainable and Climate Resilient Health Care Facility Initiative

ELEMENT 1 CHECKLIST

CLIMATE RISKS AND COMMUNITY VULNERABILITIES ASSESSMENT

☐ Yes - Action completed
 ☐ Somewhat - Action in progress or incomplete
 ☐ No - No action planned or taken
 ☐ Unknown - Status or action unknown
 ☐ N/A - Does not apply

GENERAL	Value	Rank
1.0.1 Does your health care facility receive notifications of weather warnings, alerts, and advisories for the following hazard conditions?		
• Extreme heat	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Extreme cold	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Extreme weather - freezing rain, blizzard, ice storm, hail, snow	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Drought	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Wildfires	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Tornado	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Flash Floods and/or Coastal Floods	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Hurricanes or Severe Storms	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Avalanche or Landslide	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Poor air quality and smog	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Waterborne contamination and/or diseases	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Vector-borne diseases	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	

IRS Sustainable and Climate Resilient Health Care Facility Initiative

ELEMENT 2 CHECKLIST

LAND USE, BUILDING DESIGN AND REGULATORY CONTEXT

☐ Yes - Action completed
 ☐ Somewhat - Action in progress or incomplete
 ☐ No - No action planned or taken
 ☐ Unknown - Status or action unknown
 ☐ N/A - Does not apply

GENERAL	Value	Rank
2.0.1 Understand Critical Risks "Climate vulnerability assessment" is the analysis of the expected impacts, risks and adaptive capacity and gradual effects of climate change. A vulnerability assessment is more than simple measurement of weather events resulting from climate change includes an assessment of the ability to adapt.		
2.0.1.1 Is local or regional government conducting climate risk and vulnerability assessments for the healthcare sector?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• If "yes," are these assessments regularly updated with emerging data and climate science?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
2.0.1.2 Does local government communicate to your organization and the community information on local weather hazard trends, including likely future impacts?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
2.0.1.3 Does your organization have partnerships with universities or other climate and health-focused organizations to inform your understanding of climate and health risks?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
2.0.1.4 Does disaster risk assessment inform local development policies? (Are local and municipal government agencies acting on climate change information in community development policies?)	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
2.0.1.5 If the answers above are "no," has your organization conducted an independent climate risk assessment?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• If the answer is "yes," does your organization utilize the resultant information as a basis of planning?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
2.0.1.6 Based on your response to the questions above, rank your level of climate risk understanding.	<input type="checkbox"/> Excellent <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> Very Poor	

IRS Sustainable and Climate Resilient Health Care Facility Initiative

ELEMENT 3 CHECKLIST

INFRASTRUCTURE PROTECTION AND RESILIENCE PLANNING

☐ Yes - Action completed
 ☐ Somewhat - Action in progress or incomplete
 ☐ No - No action planned or taken
 ☐ Unknown - Status or action unknown
 ☐ N/A - Does not apply

GENERAL	Value	Rank
3.0.1 Information about the vulnerability of your facility's infrastructure and systems to current and future climate variability and changing weather patterns critically included in hospital facility risk assessment?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
3.0.2 Does your health care facility collect best practices and lessons learned regarding infrastructure and related systems resilience from other health care facilities that have experienced extreme weather disasters?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
3.0.3 Are the individuals responsible for maintenance of your health care facilities, systems and infrastructure adequately trained to manage an extreme weather-related emergency or disaster? (For examples of climate-related hazards, please refer to the hazards listed in Element 1.)	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Are front-line workers engaged in the development of plans and responses?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Do maintenance procedures of your health care facilities' systems and infrastructure ensure continued functioning of critical systems and equipment?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Are redundancy measures in place to ensure critical systems and equipment continue to function in the event of a disaster?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Are principles that inform disaster recovery and business continuity planning incorporated into P-361 for Safe and Sound?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	

IRS Sustainable and Climate Resilient Health Care Facility Initiative

ELEMENT 4 CHECKLIST

ESSENTIAL CLINICAL CARE SERVICE DELIVERY PLANNING

☐ Yes - Action completed
 ☐ Somewhat - Action in progress or incomplete
 ☐ No - No action planned or taken
 ☐ Unknown - Status or action unknown
 ☐ N/A - Does not apply

GENERAL	Value	Rank
4.0.1 Determine Critical Care Needs 4.0.1.1 Have you developed planning metrics for extreme weather-related events?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
4.0.1.2 Determine the appropriate length of time for self-sustaining care within the facility without the necessity of equipment, supplies and staff. (If none is a common staff.)	<input type="checkbox"/> Excellent <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> Very Poor	
4.0.1.3 Determine the appropriate length of time with no mutual aid from the local community that will be used for patient care purposes (if none is a common staff.)	<input type="checkbox"/> Excellent <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> Very Poor	
4.0.1.4 Determine Average Daily Occupancy (sum of average daily number of inpatient beds and the average daily number of outpatients seen in the emergency department).	<input type="checkbox"/> Excellent <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> Very Poor	
4.0.1.5 Determine average number of patients that qualify for early discharge check (number per day).	<input type="checkbox"/> Excellent <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> Very Poor	
4.0.1.6 Determine factors for community surge: • Is this facility the place of refuge for community long-term care, assisted living, or other medical residents for care needs? • Are there particular health vulnerabilities in the community that will likely increase admissions during an extreme event?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
4.0.1.7 Set target for surge capacity (percentage of beds, 25% of bed total).	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
4.0.1.8 Do you have a plan for Mass Fatality management and accommodation associated with extreme weather events? • Manage Casualties • Portable refrigerated trailers • Space capable of additional storage	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
4.0.1.9 Assess your overall understanding of critical care needs and patient surge in an extreme weather event.	<input type="checkbox"/> Excellent <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> Very Poor	

IRS Sustainable and Climate Resilient Health Care Facility Initiative

ELEMENT 5 CHECKLIST

ENVIRONMENTAL PROTECTION AND ECOSYSTEM ADAPTATIONS

☐ Yes - Action completed
 ☐ Somewhat - Action in progress or incomplete
 ☐ No - No action planned or taken
 ☐ Unknown - Status or action unknown
 ☐ N/A - Does not apply

GENERAL	Value	Rank
5.0.1 A climate resilient health care facility recognizes and commits to sustainable practices that benefit the hospital and broader community. Does your health care facility undertake any of the following measures to be more sustainable?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Develop sustainability goals and action plans	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Track sustainability performance against targets, identifying indicators	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Implement strategies and activities to continuously improve sustainable management	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Build community partnerships with organizations or agencies to contribute to a resilient community	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Learn about new and emerging programs and technologies to be more sustainable (assessing sustainable practices of suppliers, for example)	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
5.0.2 Many states and municipalities have begun to develop climate change adaptation plans by developing and adopting policies that encourage or require local government to contribute to your area's resilience. Does your health care facility contribute to your area's resilience?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Through standards, codes, long building	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Through building codes	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Through other means	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	

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LAND USE, BUILDING DESIGN AND REGULATORY CONTEXT

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GENERAL	Value	Rank
2.0.1 Understand the physical characteristics of each site or campus, facilities or campuses located in areas most likely to be subjected to larger events or hazards.		
• Is the site located in low-lying terrain subject to coastal erosion?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Is the site located on or near 100-year or 500-year floodplains or wetlands?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Is the site located in close proximity to major water or dam?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Is the site located in close proximity to other sites subject to erosion?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Is it located in close proximity to an area subject to fire risk?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• If you answered "yes" or "somewhat" to the questions above, have you developed comprehensive hazard mitigation plans (including but not limited to)?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Are you participating in local community and/or regional initiatives around mitigation and adaptation to these hazards?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
In recent years, U.S. health facilities have been impacted by extreme weather events and will continue to be impacted by climate-related hazards. Health care facilities can learn from each other for sharing lessons learned and best practices.	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
2.0.2 Does your health care facility collect best practices and lessons learned regarding building systems and healthcare-related resilience from other health care facilities that have experienced extreme weather disasters?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
2.0.3 Are the individuals responsible for maintenance of your health care campuses and building envelopes adequately trained to manage an extreme weather-related emergency or disaster? (For examples of climate-related hazards, please refer to the hazards listed in Element 1.)	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Are front-line workers engaged in the development of plans and responses?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Do site and building maintenance procedures include specifications on how weather may affect the facility and continued functioning of your facility?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	

IRS Sustainable and Climate Resilient Health Care Facility Initiative

ELEMENT 3 CHECKLIST

INFRASTRUCTURE PROTECTION AND RESILIENCE PLANNING

☐ Yes - Action completed
 ☐ Somewhat - Action in progress or incomplete
 ☐ No - No action planned or taken
 ☐ Unknown - Status or action unknown
 ☐ N/A - Does not apply

GENERAL	Value	Rank
3.0.1 Information about the vulnerability of your facility's infrastructure and systems to current and future climate variability and changing weather patterns critically included in hospital facility risk assessment?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
3.0.2 Does your health care facility collect best practices and lessons learned regarding infrastructure and related systems resilience from other health care facilities that have experienced extreme weather disasters?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
3.0.3 Are the individuals responsible for maintenance of your health care facilities, systems and infrastructure adequately trained to manage an extreme weather-related emergency or disaster? (For examples of climate-related hazards, please refer to the hazards listed in Element 1.)	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Are front-line workers engaged in the development of plans and responses?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Do maintenance procedures of your health care facilities' systems and infrastructure ensure continued functioning of critical systems and equipment?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Are redundancy measures in place to ensure critical systems and equipment continue to function in the event of a disaster?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Are principles that inform disaster recovery and business continuity planning incorporated into P-361 for Safe and Sound?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	

IRS Sustainable and Climate Resilient Health Care Facility Initiative

ELEMENT 4 CHECKLIST

ESSENTIAL CLINICAL CARE SERVICE DELIVERY PLANNING

☐ Yes - Action completed
 ☐ Somewhat - Action in progress or incomplete
 ☐ No - No action planned or taken
 ☐ Unknown - Status or action unknown
 ☐ N/A - Does not apply

GENERAL	Value	Rank
4.0.1 Determine Critical Care Needs 4.0.1.1 Have you developed planning metrics for extreme weather-related events?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
4.0.1.2 Determine the appropriate length of time for self-sustaining care within the facility without the necessity of equipment, supplies and staff. (If none is a common staff.)	<input type="checkbox"/> Excellent <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> Very Poor	
4.0.1.3 Determine the appropriate length of time with no mutual aid from the local community that will be used for patient care purposes (if none is a common staff.)	<input type="checkbox"/> Excellent <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> Very Poor	
4.0.1.4 Determine Average Daily Occupancy (sum of average daily number of inpatient beds and the average daily number of outpatients seen in the emergency department).	<input type="checkbox"/> Excellent <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> Very Poor	
4.0.1.5 Determine average number of patients that qualify for early discharge check (number per day).	<input type="checkbox"/> Excellent <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> Very Poor	
4.0.1.6 Determine factors for community surge: • Is this facility the place of refuge for community long-term care, assisted living, or other medical residents for care needs? • Are there particular health vulnerabilities in the community that will likely increase admissions during an extreme event?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
4.0.1.7 Set target for surge capacity (percentage of beds, 25% of bed total).	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
4.0.1.8 Do you have a plan for Mass Fatality management and accommodation associated with extreme weather events? • Manage Casualties • Portable refrigerated trailers • Space capable of additional storage	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
4.0.1.9 Assess your overall understanding of critical care needs and patient surge in an extreme weather event.	<input type="checkbox"/> Excellent <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> Very Poor	

IRS Sustainable and Climate Resilient Health Care Facility Initiative

ELEMENT 5 CHECKLIST

ENVIRONMENTAL PROTECTION AND ECOSYSTEM ADAPTATIONS

☐ Yes - Action completed
 ☐ Somewhat - Action in progress or incomplete
 ☐ No - No action planned or taken
 ☐ Unknown - Status or action unknown
 ☐ N/A - Does not apply

GENERAL	Value	Rank
5.0.1 A climate resilient health care facility recognizes and commits to sustainable practices that benefit the hospital and broader community. Does your health care facility undertake any of the following measures to be more sustainable?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Develop sustainability goals and action plans	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Track sustainability performance against targets, identifying indicators	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Implement strategies and activities to continuously improve sustainable management	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Build community partnerships with organizations or agencies to contribute to a resilient community	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Learn about new and emerging programs and technologies to be more sustainable (assessing sustainable practices of suppliers, for example)	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
5.0.2 Many states and municipalities have begun to develop climate change adaptation plans by developing and adopting policies that encourage or require local government to contribute to your area's resilience. Does your health care facility contribute to your area's resilience?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Through standards, codes, long building	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Through building codes	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Through other means	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	

IRS Sustainable and Climate Resilient Health Care Facility Initiative

ELEMENT 5 CHECKLIST

ENVIRONMENTAL PROTECTION AND ECOSYSTEM ADAPTATIONS

☐ Yes - Action completed
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GENERAL	Value	Rank
5.0.1 A climate resilient health care facility recognizes and commits to sustainable practices that benefit the hospital and broader community. Does your health care facility undertake any of the following measures to be more sustainable?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Develop sustainability goals and action plans	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Track sustainability performance against targets, identifying indicators	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Implement strategies and activities to continuously improve sustainable management	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Build community partnerships with organizations or agencies to contribute to a resilient community	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Learn about new and emerging programs and technologies to be more sustainable (assessing sustainable practices of suppliers, for example)	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
5.0.2 Many states and municipalities have begun to develop climate change adaptation plans by developing and adopting policies that encourage or require local government to contribute to your area's resilience. Does your health care facility contribute to your area's resilience?	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Through standards, codes, long building	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Through building codes	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	
• Through other means	<input type="checkbox"/> Yes <input type="checkbox"/> Somewhat <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	

Resources and Case Studies

INFRASTRUCTURE PROTECTION AND RESILIENCE PLANNING

ELEMENT 3 RESOURCES

STEP 1: Energy and Utility Installations

CHP Deployment

U.S. Department of Energy

Combined heat and power (CHP) provides a cost-effective, near-term opportunity to improve our nation's energy, environmental, and economic future. CHP is an efficient and clean approach to generating on-site electric power and useful thermal energy from a single fuel source. The CHP Deployment Program provides stakeholders with the resources necessary to identify CHP market opportunities and support implementation of CHP systems.

Combined Heat and Power: Enabling Resilient Energy Infrastructure for Critical Facilities

ICF International (2013)

This report provides information on the design and use of combined heat and power (CHP) for reliability purposes, as well as state and local policies designed to promote CHP in critical infrastructure applications.

Distributed Energy Resources: Whole Building Design Guide

Whole Building Design Guide, a program of the National Institute of Building Sciences

This section of the Whole Building Design Guide focuses on distributed energy system and renewable energy options. Increased demands on the nation's electrical power systems and incidences of electricity shortages, power quality problems, rolling blackouts, and electricity price spikes have caused many utility customers to seek other sources of high-quality, reliable electricity. Distributed Energy Resources (DER), small-scale power generation sources located close to where electricity is used (e.g., a home or business), provide an alternative to or an enhancement of the traditional electric power grid.

INFRASTRUCTURE PROTECTION AND RESILIENCE PLANNING

ELEMENT 5 RESOURCES

STEP 1: Water as a Resource

Stormwater Management Best Practices

U.S. Environmental Protection Agency (EPA)

These web-based resources are based upon Integrated Management Practices for design, construction, and management of stormwater systems. EPA's stormwater management efforts continue in accordance with the new paradigms and requirements set out in *Executive Order EO 13816* signed in October 2009, the *Energy Independence and Security Act of 2007 (EISA)*, and *EO 13423*.

Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act.

U.S. Environmental Protection Agency (EPA)

EPA's Office of Water coordinated the development of these federal guidelines and issued *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act* on December 4, 2009.

STEPS 2 & 3: Value Soils, Preserve Vegetative Cover and Open Spaces

Climate Resiliency Infographic

U.S. Environmental Protection Agency (EPA)

Climate change is impacting urban areas in many ways, from exacerbating the urban heat island effect to elevating flood risk. This EPA website provides information about building green infrastructure to help improve community resilience.

Green Infrastructure for Climate Resiliency

U.S. Environmental Protection Agency (EPA)

This website has a range of tools and resources to assist property owners in managing floodwaters, preparing for drought, reducing urban heat island impacts, reducing energy and potable water demands, and protecting the coastlines. It also features case studies organized by region, and material on the cost/benefit or low impact development (LID) approaches.

ENVIRONMENTAL PROTECTION AND ECOSYSTEM ADAPTATIONS

Wet Weather Flow Management Guidelines

City of Toronto (2006)

The Wet Weather Flow Management Policy provides direction on how to manage wet weather flow on a watershed basis and in a manner that recognizes rainwater and snowmelt as a resource. The primary goal of the Wet Weather Flow Management Policy is to reduce the quantity, and to improve the quality of stormwater runoff, consistent with overall objectives and principles of Toronto's Wet Weather Flow Master Plan.

Green Infrastructure for Climate Resiliency

U.S. Environmental Protection Agency (EPA)

EPA's graphic and informative fact sheet can assist healthcare organizations in educating staff about the importance of green infrastructure approaches. It addresses: 1) climate change effects on cities, 2) manage local flooding, 3) build resilience to drought, 4) protect the coast, 5) use less energy managing water, and 6) reduce urban heat island effect.

Healthy Food in Health Care: A Menu of Options

Health Care Without Harm

A variety of health care institutions across the U.S. have begun to adopt programs, practices, and policies to support a healthy food system. Following their model, your facility can choose one, a few, or all of the recommendations in this menu to improve the quality of your food choices.

[Get Started](#)
[Taking Action](#)
[Tools](#)
[Topics](#)
[Expertise](#)

[About](#)
[Contact](#)
[Funding Opportunities](#)
[FAQ](#)

[Taking Action](#) > Following a Devastating Tornado, Town and Hospital Rebuild to Harness Wind Energy

Following a Devastating Tornado, Town and Hospital Rebuild to Harness Wind Energy

After 90 percent of the town was damaged or destroyed by a tornado, Greensburg, Kansas, and its hospital—Kiowa County Memorial Hospital developed a Long-Term Community Recovery plan to rebuild for resilience.

Climate stressors and impacts

Because climate change is projected to increase the frequency of severe weather, communities located in regions that have traditionally experienced severe storms need to be particularly well prepared for extreme events. The city of Greensburg, Kansas, and its hospital—Kiowa County Memorial—have been rebuilding for precisely this sort of resilience after experiencing a catastrophic tornado. On May 4, 2007, an EF-5 tornado estimated to be 1.7 miles wide with 205 mph winds struck Greensburg. Damage to the city was immense: over 90 percent of the structures in the community were severely damaged or destroyed.

The power of wind

In the aftermath of the tornado, the Federal Emergency Management Agency (FEMA) activated the Long-Term Community Recovery (LTCR) program, which integrated assistance from the State of Kansas and federal agencies to support the community's long-term recovery goals. The program enabled the coordination of resources and planning services supporting the recovery effort. A key element of the effort was a planning process that produced a Long-Term Community Recovery Plan, supporting more resilient and climate-adapted redevelopment.

The 50 kW on-site wind turbine at Kiowa County Memorial Hospital provides approximately 40 percent of the hospital's total electrical load, or 100 percent of its base load.

Steps to Resilience:

- Step 1: Identify the Problem
- Step 2: Determine Vulnerabilities
- Step 3: Investigate Options
- Step 4: Evaluate Risks & Costs
- Step 5: Take Action

Tools:

Sustainable and Climate-Resilient Health Care Facilities Toolkit

Topic:

Energy Supply and Use > Energy Production > Energy Supply and Use > Building Resilience in Energy Supply and Use > Human Health > Extreme Events > Building Health Care Sector Resilience > Human Health > Building Health Care Sector Resilience > Element 3: Infrastructure Protection and Resilience

Additional Resources:

Long-Term Community Recovery Plan: Greensburg • Kiowa County, Kansas (PDF) > Rebuilding It Better: Greensburg, Kansas (PDF) > Advanced Energy Design Guide for Small Hospitals and Healthcare Facilities (PDF) > Partners: Kiowa County Memorial Hospital >

MY



NEIGHBORHOOD



IS



KILLING



ME



Symptoms of Community Trauma

- Intergenerational poverty
 - Long-term unemployment
 - Relocation of businesses & jobs
 - Limited employment
 - Disinvestment
- Deteriorated environments and unhealthy, often dangerous public spaces with a crumbling built environment
 - Unhealthy products
- Disconnected/damaged social relations and social networks
 - The elevation of destructive, dislocating social norms
 - A low sense of collective political and social efficacy



Adverse Community Experiences and Resilience

A FRAMEWORK FOR ADDRESSING AND PREVENTING COMMUNITY TRAUMA



KAISER PERMANENTE

This paper was supported by a grant from Kaiser Permanente Northern California Community Benefit Program.

Prevention
Institute
at the center of community well-being



Seattle Children's Hospital

Washington





Gundersen Health System

LaCrosse, Wisconsin

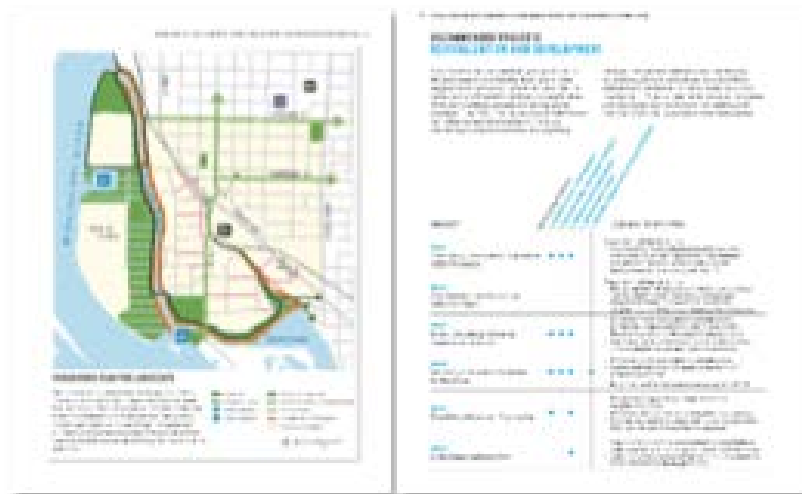
Powell-Poage-Hamilton
Historic Neighborhood

Gundersen Medical Center

250,000+
PATIENT VISITS / YEAR

LARGEST EMPLOYER
IN LA CROSSE, WI

RESIDENTS EARNING
58% LESS THAN
THE CITY AVERAGE
USDA FOOD
DESERT



JOINT CAMPUS / NEIGHBORHOOD PLAN March 2013



ReNEW CAMPAIGN April 2013

Cleveland Clinic

Cleveland, Ohio

Forbes

New Posts

+12 posts this hour

Most Popular

America's Next Decade

Lists

Top-Earning Tennis Stars

FORBES | 9/04/2013 @ 7:30AM | 41,680 views

City Surgeon: Can The Cleveland Clinic Save Its Hometown?

This story appears in the September 23, 2013 issue of Forbes.

[+ Comment Now](#) [+ Follow Comments](#)

Delos M. "Toby" Cosgrove arrived at the Cleveland Clinic in 1975 as an "incredibly poor" 34-year-old dreaming of a life as a cardiac surgeon. "Heart surgery was the astronaut corps of health care," he says. He had \$3,000 in his bank account, left over from running an Air Force hospital in Vietnam, where he had won the Bronze Star. All his earthly belongings, including a Chevy Vega that was too flimsy to tow, fit in the back of a U-Haul.

During his first year someone was shot dead at the clinic's front door. The bank in the basement was robbed. To avoid crime, patients were told to take a shuttle bus the half-block back to the hotel where they stayed. The executive offices



Delos M. "Toby" Cosgrove



Image courtesy of Shutterstock



*Cleveland Clinic, University Hospitals
and Case Western University using
purchasing power to drive local green
economic development*





Fresh Locally Grown Lettuce

Green City Growers Cooperative

Green City Growers Cooperative, Inc. is a 3.25-acre leafy greens, hydroponic greenhouse in the Central neighborhood of Cleveland, OH. The greenhouse, which officially opened on February 25th, 2013, has 15,000 square feet of packinghouse and office space, and is currently producing Bibb lettuce, green leaf lettuce, gourmet lettuces and basil.



Fresh + Local Products



Our Mission



Image courtesy of Evergreen Cooperatives



Image courtesy of Shutterstock

Henry Ford Health System

Detroit, Michigan



[Home](#) [Incentives](#) [Midtown at a Glance](#) [Sample Properties](#) [Information](#) [Boundaries](#) [Contact](#)

It pays to live in Midtown!

That is...if you work at the Detroit Medical Center (DMC), Henry Ford Health System (HFHS) or Wayne State University (WSU). As if being a moment's walk from one of 10 theaters, nine museums, over 40 restaurants, 12 galleries, charming boutique retail, and more, wasn't enough! Now, there are financial incentives to live here for employees of these three major anchor institutions.

Yes, Live Midtown is a residential living program aimed to entice you, as a DMC, HFHS or WSU employee, to live and invest in a Midtown home. There are four [incentive options](#) to accommodate those looking to purchase or rent a home, and current homeowners interested in exterior improvements.

Your housing choices are endless – own or rent; condo or rowhouse; low-rise or mid-rise; historic or new construction – so dive into this Web site and learn more about the incentives and how to take advantage of them.

Most importantly, make sure to Live Midtown, where life is art!





LEAD

Educate and advocate locally and globally for climate policies



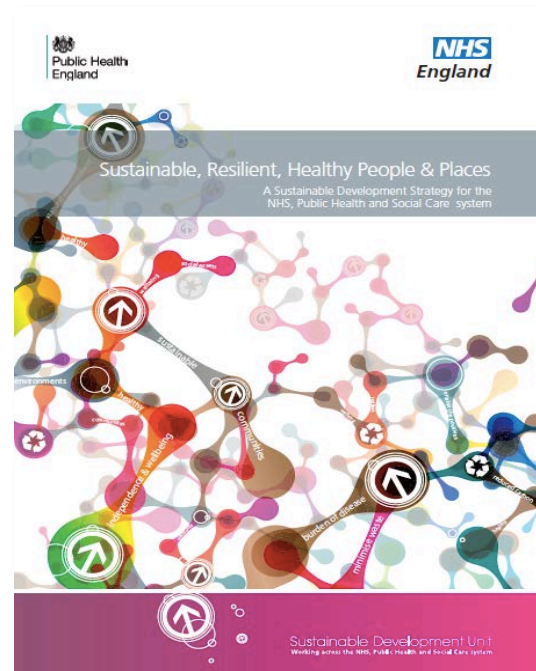
Enable the positives

By valuing our physical and social environment, we can restore our natural environment and strengthen our social assets, whilst enhancing our independence and wellbeing at both a personal and community level. By doing so, we improve the quality of care, build strong communities and generate conditions where life is valued in ways that current generations can be proud to pass on.



Reduce the negatives

By radically reducing the harmful impacts of how we currently live we can stop wasting finite resources, reduce the burdens of preventable mental and physical ill health, reduce social inequalities and reduce risks from a changing climate. In addition, many interventions that reduce harmful impacts also promote positive co-benefits and reduce the burden of disease.





Mitigation

Reducing health care's own carbon footprint

Adaptation

Preparing for the impacts of extreme weather and the shifting burden of disease

Leadership

Educating staff and the public while promoting policies to protect public health from climate change



Kaiser Permanente, USA:

30% target by 2020, achieved by 2017!

Dignity Health, USA: 40% target by 2020

Gundersen Health, USA: 100% energy independent, 60% clean, renewables

Partial List

- Albert Einstein Hospital (Brazil)
- Catalan Institute of Oncology (Spain)
- Dignity Health (USA)
- Fraser Health (Canada)
- Health Department Xativa-Ontinyent (Spain)
- Hospital León Becerra (Ecuador)
- Hospital Sirio Libanes (Brazil)
- Hospital “Dr. Enrique F. Enril” (Argentina)
- Kaiser Permanente (USA)
- Partners Health Care (USA)
- National Health Service (England)
- Stockholm County Council (Sweden)
- TzuChi Medical Foundation (Taiwan)
- University Health Network (Canada)
- Virginia Mason Health System (USA)
- Western Cape Government Health (South Africa)
- Yonsei University Health System (South Korea)



To Date
51
Participants
8,200
Hospitals
and health
centers

THE RESTORATIVE HOSPITAL

The background of the slide is a lush green forest scene. On the right side, there is a close-up of a tree branch with several serrated green leaves. The rest of the background is a soft-focus view of many green leaves, creating a bokeh effect. A semi-transparent grey rectangular box is positioned on the left side, containing the text.

...prioritizes health and prevention

...understands and takes responsibility for
its environmental impacts

...engages the community in a new civic architecture

...operates with near-zero or positive environmental impacts

...is resilient, flexible and responsive to the climate and health challenges of our
time

.