



STRATEGIC RISK MITIGATION



THE THREAT LANDSCAPE

Healthcare facilities are critical infrastructures that require uninterrupted operations to ensure patient safety and care. However, these facilities face numerous threats that can disrupt their operations, compromise safety, and lead to significant financial losses. Understanding these threats is the first step in developing effective risk mitigation strategies.

CYBERSECURITY THREATS

- **RANSOMWARE ATTACKS:** Healthcare facilities are prime targets for ransomware due to the sensitive nature of patient data. The frequency and sophistication of these attacks are increasing, with new strains and AI-integrated ransomware posing significant risks.
- **DATA BREACHES:** Protecting patient data from breaches is critical. Ensuring robust cybersecurity measures and regular audits can help mitigate this risk.

PHYSICAL SECURITY THREATS

- **BAD ACTORS:** Possible threats to facilities range from simple vandalism to gun violence and even more harmful situations meant to harm, incite fear and showcase vulnerabilities on mass media.
- **OTHER MAJOR EVENTS:** Critical facilities need to be able to withstand the demand on infrastructure and support staff for major events in the local communities.

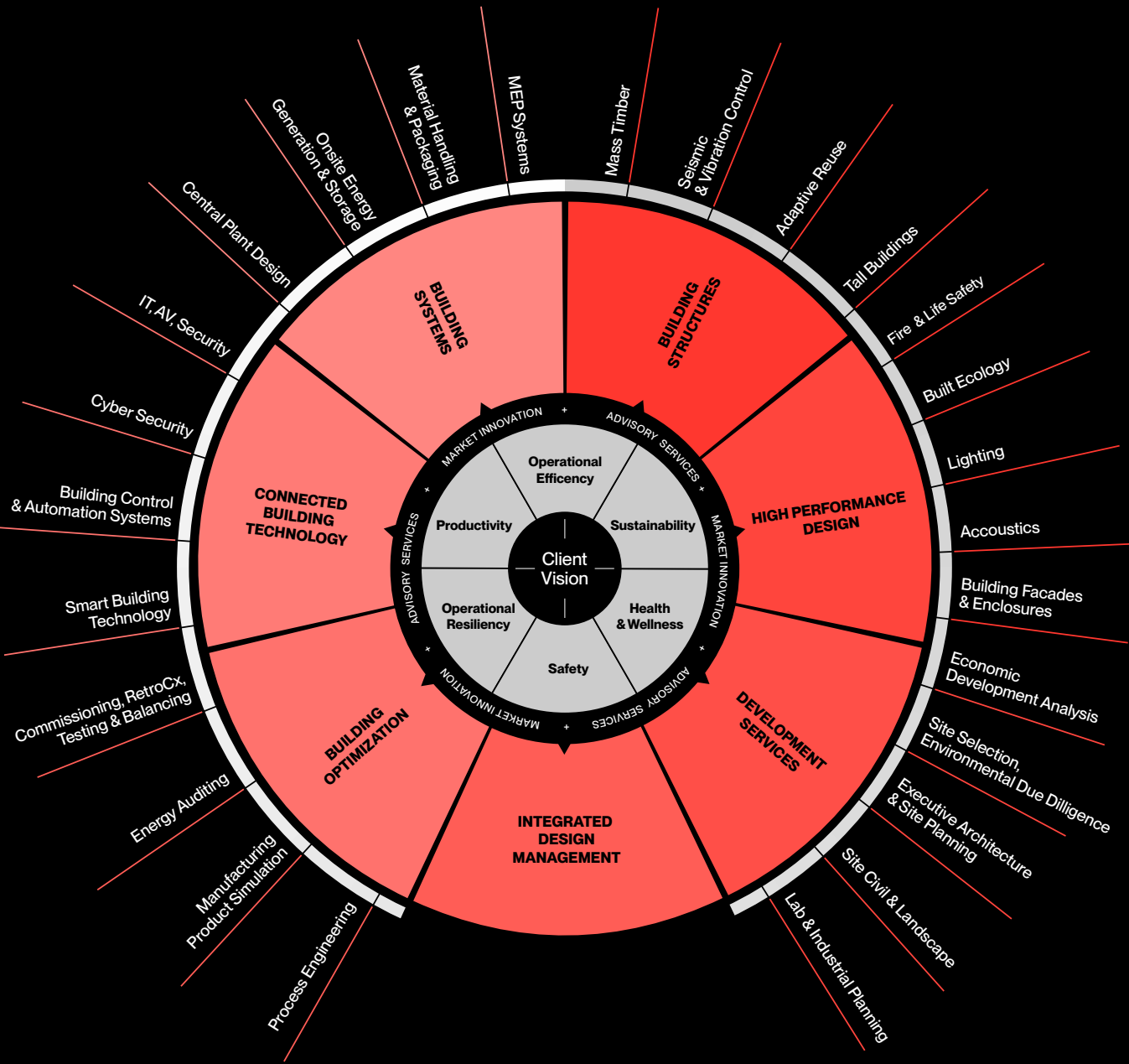
OPERATIONAL & MAINTENANCE CHALLENGES

- **AGING INFRASTRUCTURE:** Many healthcare facilities in the U.S. are aging and require significant investment to maintain and upgrade. Regular maintenance and modernization are essential to ensure safety and efficiency. Risks include age and neglect, obsolescence and loss of skilled workforce.
- **NATURAL DISASTERS:** Climate change is leading to more frequent and severe weather events. These can cause significant damage to healthcare infrastructure. Threats include: storms, floods, wildfires, seismic events and droughts.
- **SUPPLY CHAIN PRESSURES:** Risk in supply chain due to pandemics, tariffs, geopolitical forces, etc. can stretch hospital operations.

OUR MULTI-DISCIPLINARY METHODOLOGY

CONNECTING OUR SERVICE OFFERINGS WITH OUR CLIENTS' NEEDS

WSP is committed to helping our clients protect their staff, patients, and assets. Our unique approach revolves around understanding and addressing our clients' challenges, connecting our comprehensive range of services and engaging our MI + AS team to unlock the potential of engineering as the foundation for achieving their goals and vision.



We leverage our technical expertise across a broad and complimentary set of skills to deliver exceptional results for our clients. Our experts understand the challenges facing healthcare systems and work collaboratively to help you manage risk, safeguard operations, and achieve your strategic objectives.

MARKET INNOVATION AND ADVISORY SERVICES

Our team of innovators develop a comprehensive framework to understand client needs, identify trends, and create effective engineered solutions, enabling clients to protect their capital assets against a multitude of threats.

INTEGRATED DESIGN MANAGEMENT

At the heart of our methodology lies Integrated Design Management (IDM), enabling us to efficiently deliver complex, multi-disciplinary solutions. Our approach centers around collaboration, bringing together all design disciplines and stakeholders to form a cohesive and unified team.

DEVELOPMENT SERVICES

Our suite of services—encompassing economic development, design and planning, environmental, civil and geotechnical engineering—empowers our clients to make well-informed decisions that align with their development objectives and project requirements.

BUILDING SYSTEMS

Beyond the essential building systems for day-to-day operation, such as HVAC, water and power, we also specialize in designing systems, including building and protection hardening. Our expertise prioritizes safety and comfort, contributing to the creation of a healthy environment.

BUILDING STRUCTURES

We assume responsibility for the entire structural design from concept through construction. Our team of experienced engineers applies their technical knowledge to deliver structurally sound and innovative designs tailored to meet the unique demands of your facility.

HIGH PERFORMANCE DESIGN

Through interdisciplinary connections and a comprehensive approach spanning the building lifecycle, we drive projects toward performance metrics, efficiency and sustainability goals while continually integrating new tools, techniques, research and technologies to push the boundaries of what can be achieved.

CONNECTED BUILDING TECHNOLOGY

Using a data-driven design approach, we create intelligent systems for advanced and connected buildings, leading the way in developing efficient, sustainable, and resilient smart buildings that optimize performance, reduce energy consumption, enhance occupant comfort and keep staff members safe.

BUILDING OPTIMIZATION

Our comprehensive services enhance performance, efficiency and functionality by analyzing systems, implementing energy-saving strategies, and providing thorough testing and documentation. This creates safe, reliable and sustainable built environments.



OUR APPROACH TO

EMERGENCY MANAGEMENT

Collaboration among state, federal and private entities working together to facilitate a multidisciplinary approach to respond to requests for support and technical expertise within each of the critical response and recovery components will maximize efforts to:

- **SAVE** lives and protect the health and safety of the public, responders and recovery workers
- **PROTECT** property and mitigate damages and overall impact to individuals, communities and the environment
- **PROTECT** and restore critical infrastructure and key state resources
- **EXPEDITE** recovery of individuals, businesses, communities, governments and the environment
- **PROVIDE** overall costs savings

States previously impacted by severe disasters have accepted the need for measures to protect and preserve the lives and property of their citizens from natural and man-made threats. To accomplish this level of protection and preservation, there must be an effective arrangement for coordination activities of the state and private sector companies. Emergency management professionals recognize that working together with state and all key stakeholders is essential to a cooperative and supportive approach to implementing emergency management programs.

Working with WSP means rethinking business as usual.



PRE-RECOVERY PLANNING

Planning to respond to natural disasters and emergencies has become second nature. Planning for the recovery from those same disasters has not found the same emphasis over the same period. Pre- and post-disaster planning is a prerequisite for the implementation of a well-orchestrated, well-led, and inclusive recovery process at the local, regional/metropolitan, state, tribal, territorial, insular area and Federal levels. These efforts prepare for the reconstitution of services and restoration of a community in a way that is more sustainable and resilient. Organizations should complete the following planning efforts:

PRE-DISASTER RECOVERY PLANNING

- **IDENTIFY** vulnerabilities and future impacts on community and infrastructure.
- **ESTABLISH** baseline condition assessment of assets, resources, and capacity.
- **EMPOWER** local, regional/metropolitan, state, tribal, territorial, insular area and Federal governments to identify roles and effectively direct activities that increase resilience.
- **CREATE** a common platform to guide recovery decisions and activities and expedite a unified recovery effort that incorporates mitigation and resilience strategies into recovery.
- **BUILD** resilience through identifying needs and capabilities for recovery and resilience strategies.

COMMUNITY-BASED PLANNING

- **CENTER** recovery around the individual and integrate with the larger responsibility of the community and local government.
- **REFLECT** and involve the whole community and its diverse needs.
- **ADDRESS** equity concerns in the community's recovery for all stakeholders through public meetings and participation.
- **UTILIZE** volunteer, faith-based community organizations; businesses in larger planning efforts.

POST-DISASTER RECOVERY PLANNING

- **SUPPORT** a post event decision-making process to adapt and implement pre-disaster priorities and policies.
- **ALLOW** local leaders and community stakeholders to make complex, community-wide decisions.
- **GUIDE** decisions based on community vision, goals, initiatives, programs, strategies, and projects.
- **INTEGRATE** multiple plans and strategies into a post-disaster environment.
- **SET** recovery goals and priorities at the community level, and deploy local management of recovery and allocation of resources.
- **SET** benchmarks to measure progress toward a community defined successful outcome.



OUR APPROACH TO

CLIMATE RESILIENCY AND ADAPTATION PLANNING

Our climate is changing and will significantly impact businesses, governments and economies in the near-term and for the foreseeable future. Now is the time for organizations to adapt and prepare for climate-related impacts.

WSP assesses organizations' climate change readiness and helps select the most cost-effective adaptation strategies that enhance resiliency and align with broader organization goals and culture. We provide these services to the private and public sectors, recognizing that each faces unique constraints, missions, stakeholders and opportunities. The holistic perspective of the WSP team includes experience in multiple sectors—buildings, energy and industrial activities, transportation and environmental compliance, and allows for coordination among the public and private sectors. Our services include:

- **CLIMATE SCIENCE REVIEW AND SYNTHESIS:** Identifying and interpreting recent scientific data at the global, regional and local level to provide actionable guidance on those assets at risk and the likely hazards they face.
- **HOTSPOT ANALYSIS:** Overlaying climate stressors with critical facilities and functions to ensure that finite resources are directed at mitigating risks of highest value.
- **VULNERABILITY ASSESSMENT:** Combining top-down scientific data with a bottom-up review of individual assets, dependence on vulnerable infrastructure and readiness for current and future hazards.
- **GIS MAPPING:** Providing visualization tools for capturing critical infrastructure, impacts of climate stressors and assessment of mitigation measures.
- **HYDROLOGIC ASSESSMENTS:** Determining the water related impacts from individual and combined changes in future precipitation levels, wind and sea-level rise on critical infrastructure.

- **COASTAL FLOOD PROTECTION AND MITIGATION:** Characterizing and evaluating mitigation options for individual assets based on location, function and criticality.
- **STRATEGIC PLANNING, INCLUDING BENEFIT-COST ANALYSIS:** Assessing the likelihood and consequence of asset compromise due to climate stressors, comparing costs of various mitigation options including self-insurance, and developing resilience plans based on ranking of individual benefit-cost ratios.



CLIMATE CHANGE EVALUATION

Regional Healthcare Organization Western US

WSP evaluated climate change risks across the hospital network and developed reporting aligned with the U.S. Health and Human Services Climate Pledge. Through engagement with regional leadership and hospital staff, WSP assessed how current and future extreme weather events could impact operations. Together, we identified key vulnerabilities and co-developed resilience measures. As a result, the network now has greater visibility into future climate risks and is better equipped to respond proactively.

Our vulnerability assessments and resiliency planning are complemented by related services in emission inventory management, mitigation strategies, public disclosure and supply chain engagement. We are well positioned to address issues across the evolving sustainability landscape.



CLIMATE CHANGE ASSESSMENT

Outsourced Healthcare Services Provider Multiple US Metropolitan Areas

WSP conducted a climate risk and resilience assessment to understand the potential impacts of extreme weather on healthcare staff and operations. The assessment evaluated future weather risks at the metropolitan scale and included recommendations to minimize operational disruptions. Key outcomes included guidance on enhancing systems for tracking staff incidents and weather-related disruptions, as well as capturing the associated financial impacts. These measures help the provider proactively manage climate-related challenges across its network.

HEALTHCARE ADVISORY SERVICES



1

FACILITIES STRATEGY

We support healthcare organizations in developing their campus strategies in accordance with good practice and statutory requirements. We conduct property analyses and facility reviews to provide a clear understanding of the current campus context and to identify future development opportunities, including expansion plans and service or facility improvements, while prioritizing long-term planning needs.

2

HEALTHCARE PLANNING

In this specialized role, we help clients improve healthcare delivery by developing new service models and planning facilities needed to provide effective healthcare services.

Our services include service model development, capacity planning, preparing schedules of accommodation, developing operational policies and support with design interpretation and development.

3

BUSINESS CASE DEVELOPMENT

We support healthcare organizations in the preparing business cases to secure capital funding and approval for investments in improved services. We work closely with our clients and their professional advisors to develop comprehensive, robust business cases enabling timely approvals and the progression of projects. We develop the solutions and associated documentation from early outline strategy stages, through options identification and appraisal to a preferred option.

4

MOVE MANAGEMENT

Moving into a new healthcare building or facility is an extremely complex operation. We offer a comprehensive range of services to help a hospital coordinate the efficient and seamless handover of the facility by preparing the new building, planning systematically for how services will work, relocating patients, staff and equipment safely and with minimum disruption to service levels and, if required, supporting removals procurement.

5

OPERATIONAL COMMISSIONING

We understand the complex timelines involved in hospital commissioning projects, including when activities should begin, their expected duration and their completion deadlines to support related tasks. Our planning includes contingency measures to minimize operational disruptions, control costs and effectively manage risk.

6

POST PROJECT EVALUATION

We conduct Post Project Evaluations to help clients identify lessons learned and assess how to maximize the return on their investment. We review the processes used and identify lessons – both positive and negative – for future projects in a positive, blame-free environment. We also analyze the extent to which project objectives have been achieved by analyzing and evaluating the full operation benefits data.



BUILDING CYBERSECURITY

Connected building systems are increasingly common. Rapid advancements in technology and sophisticated cyber crime expose these systems to potential attacks that may lead to operational downtime, economic losses, reputational damage and data breaches. WSP's day-zero cybersecurity readiness approach can help protect your building from the outset.

All modern buildings are susceptible to data breaches, given the number of even basic systems that are now inter-connected and exposed to the internet. Everything from your building's electrical distribution system to your security system is at risk of a breach. Smart building systems and internet of things devices bring additional risks, not to mention parking management systems, video surveillance, intruder alarms, and more.

We begin in the design phase, determining engineering specifications, performing audits and sharing best practice guidance to enhance your facility's control system cybersecurity. Throughout the project, we collaborate with all disciplines and integrators to develop the most resilient design possible. This integrated approach ensures cybersecurity is woven throughout the entire design of the building, before it even opens.

We work closely with the entire development team to find weak spots and vulnerabilities in facility-related control systems, electronic security systems, fire life safety systems, utility monitoring and control systems, and Internet of Things or IOT and cloud-based systems. Our facility control system cybersecurity advisory services can help identify the overall strategy and approach for cybersecurity, while risk and vulnerability assessments may identify issues with connections between different systems.

IS YOUR FACILITY SECURE?

- Is your PACS (Picture Archiving & Communication System) environment NIST SP 1800-24 compliant? Your digital patient data could be impacted by ransomware leading to encryption with catastrophic business impact.
- Visitor Management Systems through their internet, app and in-building network connections provide the perfect grounds for cyberattacks.
- Patient-owned tablets to control the lighting, temperature and blinds in the patient room may assist with raising HCAHPS scores but introduces unmanaged devices onto your network which may lead to HIS (Hospital Information System) data breaches.
- Is your WiFi signal limited to the physical boundaries of your facility or are you providing a platform for agents to disguise themselves as your patients when they hack other facilities?
- Water sensors for leak detection or other IoT sensors connected through the hospital corporate network places the entire facility at cyber risk.
- Outdated software on network connected telemedicine workstations offer an entry point for cyber attackers to extort medical records.
- Several mechanical and electrical systems maintain the perfect environment for operating theaters. Through an Operational Technology network breach (e.g. through the Access Control System), human life is placed at risk.



WATER UTILITIES CLIMATE RISK ASSESSMENT AND ADAPTATION



FUNDING OPPORTUNITIES

CLIMATE CHANGE IMPACTS ALMOST EVERY CRITICAL SYSTEM UPON WHICH WE DEPEND

It puts security at risk, damages infrastructure, adversely impacts human health and biodiversity, and influences regional and global economies.

For utilities, governments and corporations to effectively enhance their overall resilience to climate change, they can no longer look to the past for solutions. Organizations need to prepare and plan for all risks — including risks that may impact organizational ability to maintain business continuity and remain true stewards in a changing climate — and integrate consideration of those risks into decision-making.

Due to the cascading nature of climate-related risks and their ability to affect multiple systems concurrently, decision-making must take a systems approach.

Strategies to adapt and enhance resilience to climate change should be robust, flexible and able to respond to a wide range of futures. They should be crafted in a holistic, transparent and inclusive way. Organizations must develop adaptive frameworks and processes to address climate change. Climate resilience efforts require ongoing monitoring, evaluation, and action to ensure

effectiveness and fairness.WSP collaborated with forward-looking water utilities to test, update and refine a model framework to integrate climate change risks and adaptation strategies into key business practices.

Climate change and other stresses exacerbate existing underlying water conditions and can present new water security issues. These challenges are particularly evident in the western U.S. where some water supplies are being stressed by reduced snowfall, droughts, wildfires and rapid population growth.

As these and other risks increase, the need for a more systemic approach to watershed management has become increasingly apparent. A trusted and tested framework is essential to help water utilities and their key function leads understand how to incorporate future climate-related risks and opportunities into long-range water planning and mainstream climate risks, adaptation and resilience through critical business functions.

SINCE 2009, WSP HAS HELPED CLIENTS SECURE OVER **\$31 BILLION** IN FEDERAL AND STATE GRANTS AND LOANS.

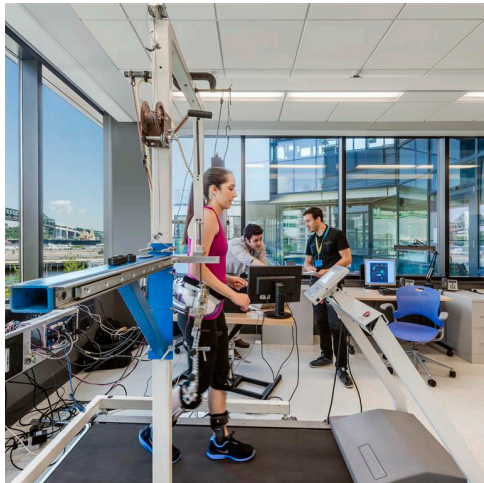
ALIGNMENT TO RESILIENCE	KEY SERVICES	
RESPONSE AND LOGISTICS	- Temporary Power - Sheltering and Housing - Debris Removal Monitoring	- EOC Staffing - Distribution Warehouse Management
GRANT MANAGEMENT	- Intergovernmental Coordination - Site Inspections - Grant Development - Cost and Reimbursement Management	- Compliance - Grant Administration - Audit Controls
PROGRAM MANAGEMENT	- Capital Recover and Improvement Program Management - Recovery Housing - Guidelines and Technical Resources	- Scheduling - Budget and Cost Management - Reporting - Public Involvement
ENGINEERING	- Damage Assessment - Pre-Construction Services - Design - Design Management	- Procurement / Bid Management - Construction Management
MITIGATION AND PLANNING	- Hazard Mitigation Proposal Development - Vulnerability Analysis - Long Term Recovery Planning - Priority Project Fund Mapping	- Equity and Diversity Planning - Hazard Event Modeling and Feasibility Studies



CONTINUOUS OPERATIONS THROUGHOUT A HURRICANE

Tampa General Hospital
Tampa, Florida

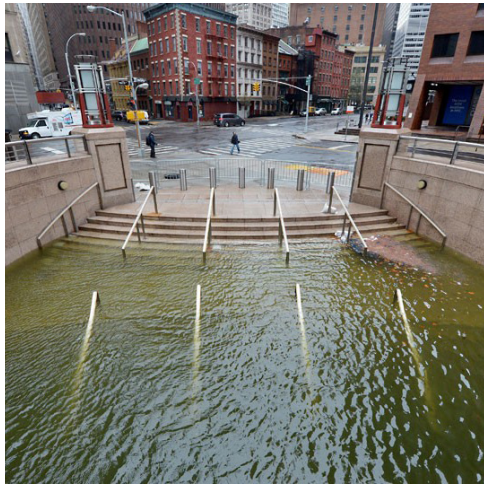
Tampa General Hospital, a 1,000-bed facility located at sea level near the ocean, is the region’s only Level 1 trauma center. During Hurricane Milton, the hospital was in a mandatory evacuation zone. To protect the facility, it deployed a reusable mobile flood barrier system anchored to the ground. Despite a storm surge of over four feet, Tampa General did not flood and remained fully operational, continuing to provide patient care throughout the storm.



PROTECTING ASSETS, PRIORITIZING RESILIENCE

Confidential Rehabilitation Hospital
Canada

To evaluate climate-related risks across its portfolio, the asset manager engaged WSP to assess exposure to extreme weather under multiple future scenarios. This included hospitals and other assets, with resilience measures, both existing and planned, factored into the analysis. WSP conducted a parallel review of commercial and contractual vulnerabilities to estimate potential financial impacts. The results enabled the asset manager to take a portfolio-wide view of weather risks and strategically phase resilience investments to address the most vulnerable assets first.



DISASTER RECOVERY INFRASTRUCTURE RESTORATION

125 Broad Street
New York, New York

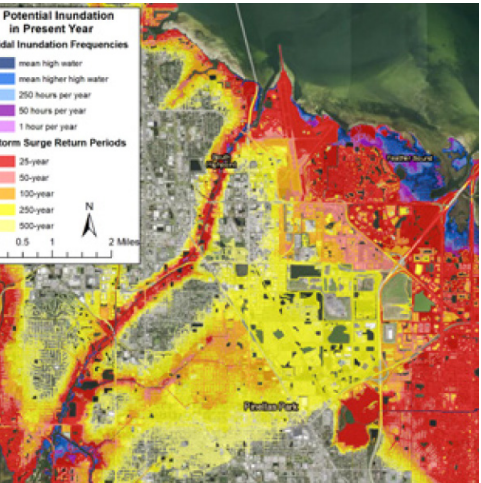
Following catastrophic flooding from Hurricane Sandy, WSP provided immediate disaster recovery services at 125 Broad Street, where critical electrical systems were submerged. To mitigate future risk, WSP identified key electrical components for relocation above the flood plain and hardened the system to maintain both normal and emergency power during extreme weather events. New switchgear and service feeders were installed on an upper floor, with concrete-encased conduits to meet code and enhance protection. Emergency systems were upgraded to support temporary generators alongside permanent ones. WSP coordinated closely with Con Edison, the local energy provider, to ensure uninterrupted power throughout the service replacement process.



ADVANCING CLIMATE READINESS FOR WATER UTILITIES

Denver Water and San Francisco Public Utilities Commission
Denver, Colorado and San Francisco, California

WSP collaborated with Denver Water and San Francisco Public Utilities Commission to test, update, and refine the existing Business Function Mapping Framework. WSP worked with seven U.S.-based water utilities to create a comprehensive, enterprise-level water utility climate-related risks and opportunities framework. Once published, it was pilot tested and further refined and detailed through a series of tabletop exercises (TTX) with Denver Water and SFPUC. The team brought diverse perspectives to multiple potential climate scenarios and worked together with WSP to co-author an expanded and updated framework that is becoming a new standard in the field.



COMMUNITY RISK MODEL

Pinellas County
Florida

For Pinellas County Florida, WSP built a custom probabilistic risk model that reflected impacts to county assets/infrastructure from sea level rise, tidal and storm surge concerns to 2100. The effort included an extensive coordination effort to identify critical elevations for infrastructure; a cost/risk assessment that identified potential costs facing the county; and the introduction of a design model that incorporates a scenarios assessment, technical determination of damage/user consequences, and a cost-effectiveness framework to a recommended design that is both adaptive to future conditions and cost-effective.

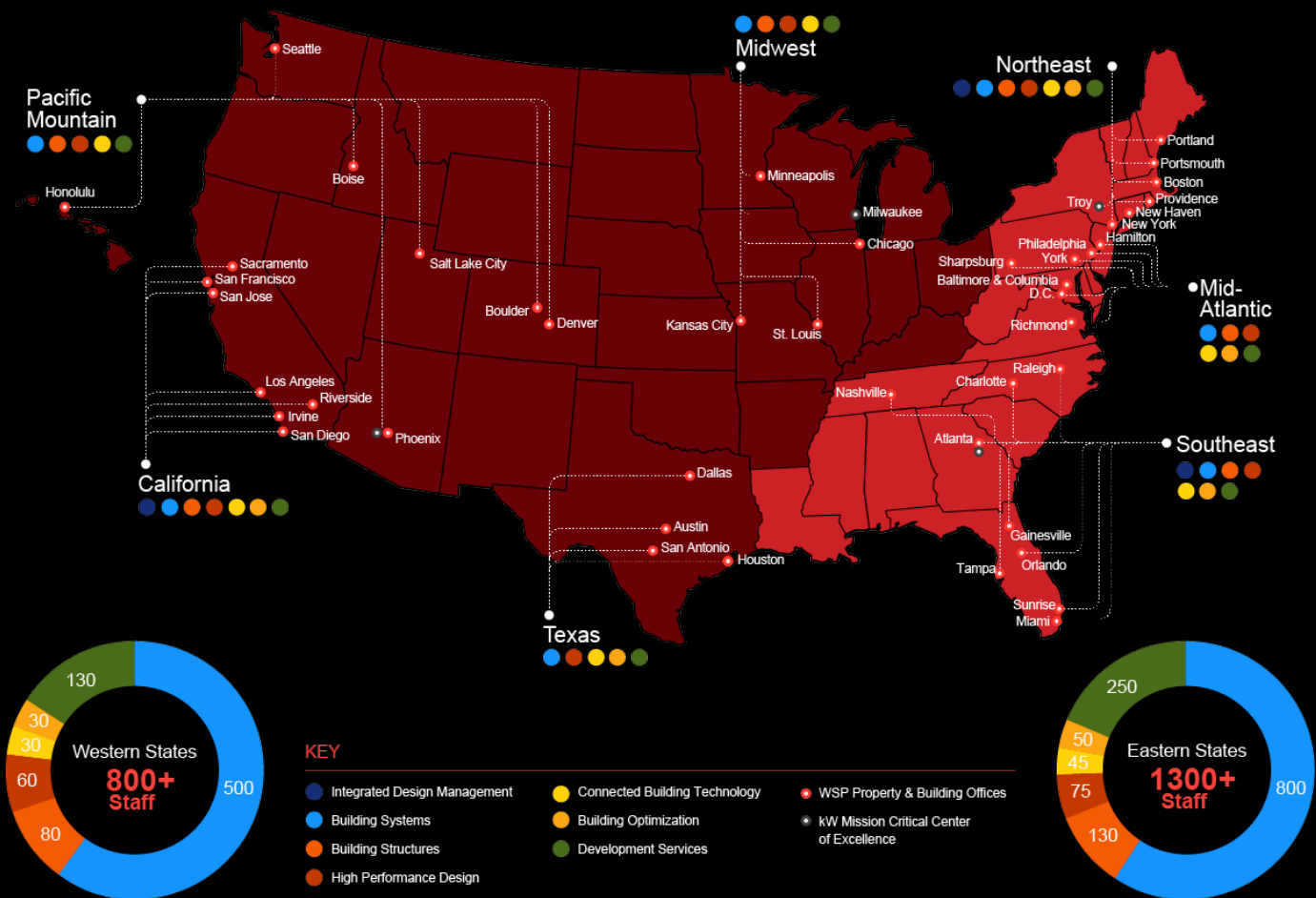


BUILDING RELIABLE CLINICAL NETWORKS

Penn Medicine, Chester County Hospital
West Chester, Pennsylvania

WSP provided engineering services for a new 290,000 SF hospital building. In collaboration with the owner, WSP led the design of a new, resilient fiber optic infrastructure to replace outdated systems and enable a seamless migration to Penn Medicine standards, including VoIP, access control, and video surveillance. A new MDF/Demarc and 11 IDF rooms ensure robust, redundant connectivity for clinical and operational networks. To support advanced surgical protocols, WSP established a surgical command center for real-time monitoring, collaboration, and training. This project significantly enhances risk mitigation by ensuring infrastructure reliability, communication redundancy, and clinical continuity during future expansion or disruption.

MEETING COMPLEX ENGINEERING CHALLENGES ACROSS THE U.S.



WSP PROPERTY AND BUILDINGS BY THE NUMBERS:

2,100+
EMPLOYEES

40
OFFICES

HEALTHCARE BY THE NUMBERS

#1

International
Design Firm
(ENR 2024 Top 225 International Design Firms)

#2

Top 75 Healthcare
Engineering Firms
(BD+C Giants, 2024)

#12

100 Most Sustainable
Corporations in the
World
Corporate Knights', 2024

1st All Electric
Hospital in the US
UCI Health, Irvine Campus Medical Center

60M+SF

of Healthcare
Design in the last
10 years

1st LEED Platinum
Hospital in the World
Dell Seton Medical Center of Central Texas

1st LEED v4 Gold
Hospital World-wide
Medical City Plano, Sarah Cannon Cancer
Center

20M+SF

of Integrated
Project Delivery
Method Projects
leading to successful construction in the
last 10 years

