

Ensure the resilience of critical health services to protect patient care

Powering a sustainable future for the healthcare market



The percentage of healthcare respondents who stated that “ensuring uninterrupted operation of critical healthcare/care facilities” is one of the biggest challenges facing their organization in the next 12 months¹

The need for resilience

Few industries rely on the continuity of their energy supply quite as critically as healthcare. Clearly, a power outage, caused by severe weather events or grid failure, can have catastrophic consequences.

However, not all healthcare sites have robust plans to ensure their energy infrastructures are well maintained, resilient and compliant. This can have fatal consequences, as seen in Florida, where Hurricane Irma resulted in a prolonged outage of an air conditioning system at a nursing home, leading to the death of twelve residents. Limited budgets and conflicting priorities often restrict spending that does not immediately impact frontline services.

But to protect patient care, we believe it is essential that healthcare providers implement an energy strategy that ensures the resilience of critical services.

The high costs of failure

Many healthcare providers are operating within very tight financial constraints and cannot afford the lost revenues that result from downtime. Rising input costs and changes in funding mechanisms are squeezing margins for the provision of healthcare services. Cancelled procedures or failures of vital equipment not only threaten cost control, but – more importantly – seriously impact patient care and satisfaction.

For patients, the physical and psychological costs of cancelled or delayed procedures can compound already stressful situations. They can even threaten life expectancy.

For clinicians, nurses and other healthcare professionals, stress levels are increased by growing wait lists, further difficulties in meeting targets, patient distress and frustrations at being prevented from doing their jobs as the way they want.

Operational issues

An increased regulatory burden is also putting greater pressure on operational functions. Operating rooms, for example, must adhere to strict regulations on ventilation (minimum 20 air changes per hour), temperature (68–75°F) and humidity (30–60%).²

Today’s greater reliance on digital technology across all aspects of healthcare further increases the importance of a reliable power supply. A case in point is digital patient records: frontline staff need to be able to refer to digital patient records in a secure, timely and reliable manner. Access to this critical information enables effective decision making and improved patient outcomes. Without it, the impact on patient care and time to treatment can be serious.

The growing frequency of extreme weather events – leading to greater risks of grid failures – add to the challenges facing healthcare providers. In Florida, following the catastrophic consequences of Hurricane Irma mentioned earlier, law has been passed that sets climate requirements for elder care facilities. From June 1, the state’s nursing homes and assisted-living facilities must ensure the temperature stays at or below 81°F for at least 96 hours after a power outage.

Loss of power is not the only threat. Even when the energy supply is operational, if the quality of that supply is variable, it can cause damage to sensitive equipment. The stability of healthcare providers’ supply varies according to their geographic location in relation to the grid, with some areas more vulnerable to unstable supply. Providers in those areas are more exposed to the potential risk of power interruption.



The estimated cost of running an operating room, making loss of revenue from downtime – such as cancelled procedures – extremely damaging to cost control³



The percentage of healthcare respondents who stated that their organization had suffered an interruption of energy supply due to external factors in the last 12 months⁴



The cost of the destruction caused by the 16 large natural disasters – including storms, fires, floods and heat – suffered by the US in 2017⁵

Safeguarding supply and patients: the role of energy

From wasted resources and missed targets to the ultimate risk of endangering patients' lives, the impacts of power dips or outages are potentially catastrophic. We believe the duty of care to patients and staff makes it essential that resilience is at the heart of healthcare energy strategies. Energy infrastructure must be treated as critical within every healthcare facility.

In research by Centrica Business Solutions, 77% of healthcare respondents agreed that the cost of being energy resilient is far less than the impact of an energy failure.⁶

Yet power interruptions that impact service provision are all too common. In the same research, 46% of healthcare respondents stated that their organization had suffered an interruption of energy supply due to external factors in the last 12 months.⁷

Even more alarming is that, despite the risks, 71% of healthcare respondents do not have comprehensive energy continuity plans in place, with backup generation or standby power, at most of their sites.⁸ Clearly, this leaves a huge number of patients at risk of exposure to the impact of an interrupted power supply.

Variable quality increases risks

Exposure to power outages is not the only vulnerability. Even with an operational energy supply, if the quality is variable due to poorly functioning energy systems, sensitive medical equipment can be damaged and the life of expensive assets shortened.

For many healthcare facilities, outdated energy systems are not just increasingly prone to failure, but also pose the risk of compliance breaches. If an operating room cannot maintain the correct ventilation, temperature and humidity range, it has to be closed, with significant implications for costs and patient care.

These risks are increased by the lack of routine maintenance that results from staff shortages and skills gaps.

The new solutions for improving resilience

To reduce exposure to power outages and significantly improve operational resilience, healthcare providers must take advantage of newer energy technologies and new approaches to managing energy. In doing so, they can take ownership of their energy supply by balancing grid supply with on-site generation, significantly improving operational resilience.

Reducing exposure to grid failures or natural disasters, for example, can be relatively easily achieved with modern technologies that increase supply security:

- **Using combined heat and power (CHP) systems, backup generators and renewables such as solar for on-site energy production** is not only efficient, but also provides a crucially stable and resilient supply while reducing dependency on the grid.
- **Today's high-powered battery storage systems** provide sufficient long-lasting energy to power buildings for an extended period in the event of a supply failure.
- **Outsourcing energy management to a specialist provider**, such as Centrica Business Solutions, can help ensure that energy infrastructures are effectively managed and maintained, including routine upgrading or replacement of outdated infrastructure.

Operating through the storm

New Jersey's Overlook Hospital's 2MW CHP system allows the facility to operate throughout weather storms, for example superstorm Sandy in 2012.

Improving operational efficiency

As well as ensuring a reliable energy supply, newer energy technologies can play a wider role in improving operational resilience within healthcare facilities. For example, energy sensors – which monitor energy usage at device level – can help provide early warning of potential equipment failures by detecting anomalies in energy consumption patterns. This enables preventative maintenance to be carried out on important healthcare equipment before failures occur.

66%

The percentage of healthcare respondents who thought that sources of backup supply in the event of a power outage were very important⁹

71%

The percentage of healthcare respondents who do not have backup/standby capability implemented at most of their sites¹⁰

¹ Energy Advantage Research, Centrica Business Solutions. Statistics based on a six country survey of more than 1,000 energy decision-makers in large organizations

² Operating Room Ventilation Systems Best Practices Guide, Greening Healthcare, 2017

³ "Understanding Costs of Care in the Operating Room" April 2018 Christopher P. Childers MD; Melinda Maggard-Gibbons, MD, MSHS

⁴ Energy Advantage Research, Centrica Business Solutions. Statistics based on a six country survey of more than 1,000 energy decision-makers in large organizations

⁵ The National Oceanic and Atmospheric Administration

⁶ Energy Advantage Research, Centrica Business Solutions. Statistics based on a six country survey of more than 1,000 energy decision-makers in large organizations

⁷ Energy Advantage Research, Centrica Business Solutions. Statistics based on a six country survey of more than 1,000 energy decision-makers in large organizations

⁸ Energy Advantage Research, Centrica Business Solutions. Statistics based on a six country survey of more than 1,000 energy decision-makers in large organizations

⁹ Energy Advantage Research, Centrica Business Solutions. Statistics based on a six country survey of more than 1,000 energy decision-makers in large organizations

¹⁰ Energy Advantage Research, Centrica Business Solutions. Statistics based on a six country survey of more than 1,000 energy decision-makers in large organizations



60%

We helped a hospital in New Jersey to generate 60% of its energy on-site by installing a trigeneration system, in addition to delivering 35% energy bill reduction and 20% carbon reduction.



Your priorities

Our experience of working with healthcare providers has highlighted the energy strategies that we believe should be prioritized, enabling facilities to ensure the resilience of critical health services:

- **Ensure a robust back-up solution is in place** – including on-site generation, standby power and storage – that covers interruptions to power supply.
- **Establish clear equipment monitoring, management and maintenance procedures** to ensure constant visibility, reporting and regulatory compliance.
- **Explore options for reducing reliance on over-stretched in-house maintenance teams** so that monitoring and compliance does not detract from day-to-day responsibilities.
- **Implement procedures to ensure that outdated infrastructure is routinely upgraded or replaced** – either in-house or via a third-party management contract.

Our solutions

Working with leading healthcare providers and running critical infrastructures, we are ideally placed to help healthcare providers achieve the resilience that protects patient care. We do this through our:

- **On-site generation (CHP and backup power generation) and storage solutions** that ensure a secure and scalable supply while reducing exposure to grid failures.
- **Insights and sensor solutions** that enable early detection of potential equipment failures and inform preventative maintenance programs.
- **Full operations and maintenance support** of energy assets that ensure the reliability of on-site infrastructure.
- **Expert advice and advanced energy management platforms** that help provide a safe, secure and compliant environment.
- **As-a-Service options** that ensure a secure energy supply, while overcoming internal capital expenditure and resource constraints.

centrica
Business Solutions

centricabusinesssolutions.com