The Resilience Report
Measuring the business impact of energy-related failures and creating an energy resilient future
Contents

Chapter 1
The importance of energy continuity 3

Chapter 2
The impact, prevalence and causes of power failures 5

Chapter 3
How to address the problem 9

Contact us 15
Chapter 1
The importance of energy continuity

We live in an era of increased business risk and, whilst news headlines focus on threats to business such as cyber-crime and global terrorism, there is a more pervasive and immediate issue in the form of security and continuity of the energy supply of every business.

Energy is vitally important to every business, but it is only when an energy-related failure occurs that the operational vulnerabilities of a business become exposed and the need for a secure energy source becomes essential.

No business can have fully mitigated its business risks without ensuring that there is a secure and reliable energy supply in place. This is why true business resilience needs Energy Resilience.

- 32% of organisations do not have any form of Energy Resilience strategy in place
- 52% of energy decision-makers believe they will experience an energy-related failure within the next year
- 33% of energy decision-makers say their organisation is not prepared for a disruption to their energy supply from a temporary grid failure

Why has Centrica Business Solutions conducted this research?

There is currently a disparity between the threat posed by energy-related failures and the priority that businesses give to having a strategy for response in place.

Centrica Business Solutions has surveyed energy decision-makers across multiple sectors to understand the true scale of the challenges posed by lack of energy continuity, and what steps businesses are taking to address them.

Whilst many acknowledge the reality of the threats to their energy supply, a phenomenon of ‘unrealistic optimism’ has taken hold, whereby they think it will either never happen to their business, or someone else will take care of the problem for them.

This report provides insight into the poor state of resilience today and practical guidance for businesses to implement a more energy resilient future.

The research study

The research surveyed 301 decision-makers across a range of industries in the UK and Ireland. Every individual surveyed had a responsibility for energy and/or operational effectiveness within their business.

The research was conducted by B2B specialist Circle Research using an online methodology.

Respondents by sector

- Hospitals and care homes: 23%
- Schools, colleges and universities: 21%
- Manufacturing: 18%
- Construction and real estate: 14%
- Retail, hotels, leisure and sports: 24%
What is resilience?

The ability to prepare for and adapt to changing conditions and withstand and recover rapidly from disruption and other outside factors. Resilience includes the ability to withstand and recover from deliberate attacks, accidents, or naturally occurring threats or incidents.

Source: USGov PPD-21: Critical Infrastructure Security and Resilience

Our viewpoint:

Whatever the line of business, energy means more than just keeping the lights on. It means keeping production lines running, keeping customers happy, and even keeping people safe.

The implications of a power cut somewhere like a hospital could literally be life threatening and there are numerous examples where outages have occurred. In the case of a manufacturer, even a brief interruption can trip systems which take hours to get back online, which can cause entire batches to be lost and lead to serious damage to equipment.

Centrica Business Solutions is working with an increasing number of businesses that are looking for help in strengthening the resilience of their operations and ensuring that their business is on 24/7. Without a clear plan for how to guarantee that, all other plans are put at risk.
Chapter 2
The impact, prevalence and causes of power failures

The impact of power failure is huge

An interruption in supply doesn’t need to be long for it to have a long-lasting impact: 18% of energy decision-makers that we surveyed said that an outage of only one day would be catastrophic for their business, and the amount of damage caused rises steeply the longer the outage lasts.

The cost of an energy-related failure is significant. Businesses estimate that, when both direct and indirect costs are taken into consideration, the cost of an energy-related failure can total as much as 17% of their annual revenues.

It is interesting to note that businesses which have not experienced an energy-related failure in the last 12 months estimate the cost of having one to be much lower than businesses which have.

We have a back-up generator for the labs. You have to imagine, if we have a power cut we need to completely restart the labs, it takes 3 hours to get them up and running again. You’re happy when that does not happen.”

Healthcare, Green IT Manager

The catastrophic impact of energy-related failure over time

Estimated cost as % of revenue; actual vs predicted

Base: all respondents who answered ‘catastrophic’ impact for 1 hour, 1 day and 1 week (10–167)

Q: If your business was left without power to service your customers, power machinery and equipment and/or to support your working environment for the following periods of times, how significant an impact would it have on your business?

Base: all respondents experiencing an energy failure in the past year (144)

Q: Thinking about the last time your business experienced an energy failure, roughly how much did this cost the business as a percentage of your annual revenues?

Base: all respondents experiencing an energy failure in the past year (48)

Q: If your business did experience an energy failure for one day, approximately how much do you think this would cost the business as a percentage of your annual revenues? Please consider direct costs (e.g. costs to restore power supply/conducting necessary repairs) and indirect costs (from lost revenue/downtime)
Power failures affect all aspects of a business

Operational downtime is a major issue – 39% of businesses experienced unscheduled downtime as a result of an energy-related failure. Consequently, 23% of businesses suffered equipment damage whilst 14% report having lost inventory. All of these things impacted on their bottom line, with almost 1 in 3 businesses surveyed attributing lost revenue to power outages.

The damage caused by an unplanned power outage goes beyond inventory and equipment – 18% of businesses say that outages have damaged their overall brand, while 19% feel that relationships with individual customers have soured as a consequence. The alarming truth here is that the value of a business is being eroded in ways that are not directly attributable to their causes, and that the already significant cost of energy-related failures may still be underestimated.

Then there is the human cost. 11% of businesses say that their employees have been put in dangerous or life-threatening situations as the result of energy-related failures. That figure is already too high to be considered acceptable on any level.

“We’re running a hotel and if we have any interruptions of power, it creates a massive interruption of our business. Reducing reliance on the grid would be great.”

Hotels, Director of Facilities and Security

The impact of energy-related failures

Base: all respondents experiencing an energy failure (244)
Q: Which of the following problems has your business experienced as a result of an energy-related failure?
The frequency of failure is set to increase

Energy-related failures are not a selective issue. Regardless of the business type, or the scale of operation, every business is dependent on having a consistent energy supply. Unfortunately, almost every business that we surveyed has suffered the consequences of an energy-related failure.

81% of businesses have experienced at least one energy-related failure in the last 12 months – putting businesses that had no failures very much in the minority.

51% of businesses think it likely that they will experience an energy-related failure within the next year.

27% of businesses expect energy-related failures to become more frequent over the next five years – 4% believe that the number of failures will increase significantly.

12 Energy-related failures

Businesses that experienced an energy-related failure in the past 12 months reported an average of 12 failures in total.

Our viewpoint:

The changing socio-economic landscape is forcing businesses to reconsider the way that they think about the reliability of their energy supply. The replacement of steady “base-load” generation methods, like coal-fueled power stations, with renewable energy sources, like wind and solar, represents a considerable challenge to local and national systems and network operators in terms of keeping the grid live and delivering consistent quality of power.

- There are more frequent and increasingly destructive natural disasters due to climate change
- Local and national electrical systems – even individual buildings – are an increasingly prominent target for terrorist organisations and cybercriminals
- Human error remains an unavoidable cause of power outages, regardless of whether a business is using modern or outdated systems
- The impact of legislative change – such as restrictions on the use of diesel generators to improve air quality – is a constant concern when planning for the future
Internal and external causes

There are power failure issues that are perhaps more easily remedied internally – 67% of businesses have experienced power supply problems due to poor maintenance of equipment. Other threats may not come from within the business but the risk can be reduced.

Extreme weather is a good example of a threat to energy supply that is hard to predict with specificity in terms of how and when it will occur, but it is a near certainty that it will.

We are also worried about reliability; for example we have patients whose lives depend on specific machinery. We need to be able to assure the smooth running of this machinery, or else the patient might die. It is a very sensitive issue. That is why we have a back-up generator.”

Healthcare, Operations Manager

Generating huge savings for the NHS

Birmingham Heartlands Hospital needed a viable replacement for their ageing coal-fired boilers to help reduce its carbon emissions.

The Centrica Business solution

We upgraded the hospital lighting with 1,800 high efficiency, low energy fittings, and we installed a Combined Heat and Power System (CHP) which we connected to the hospital’s main heating system to minimise the use of their electricity-powered chillers during the summer and provide air conditioning to new areas of the hospital.

Results

The CHP system enables the hospital to generate its own electricity in a purpose-designed Energy Centre, and is cutting CO₂ emissions by 5,600 tonnes per year – the equivalent of a forest of 560,000 trees. CHP savings and performance are guaranteed for 15 years.

Why it works

• Avoids Climate Change Levy
• Primary energy savings deliver lower energy bills
• Greater security of supply and plentiful hot water

“We were attracted to this new system as not only will it save money and conserve resources, it also complies with government targets to cut down carbon emissions and damaging greenhouse gases.”

Facilities Manager of Estates, NHS Foundation Trust
Chapter 3
How to address the problem

What every business needs is an Energy Resilience strategy

The frequency of energy-related failures is broadly expected to increase and the impact that they will have on businesses is expected to be costly and far-reaching. It is clear, therefore, that businesses need to have an Energy Resilience strategy in place to address the risks and protect themselves.

Our research shows that there is a clear correlation between businesses that have a mature Energy Resilience strategy and positive business outcomes.

A business with an Energy Resilience strategy is:

- 34 percentage points more likely to report a strong financial performance
- 13 percentage points more likely to report a good brand reputation
- 19 percentage points more likely to consider themselves in a good position for future success

Relationship between energy strategies and business performance

52% of businesses agree that the cost of building an Energy Resilience strategy is far less than the cost of an energy-related failure.

We have solar panels on four buildings, but are considering expanding this. We have to start generating our own energy and reduce dependency on the grid.”

Education, Campus Manager

Our viewpoint:

A comprehensive Energy Resilience plan can protect businesses from outages and market fluctuations but our survey respondents could not easily articulate what Energy Resilience is. Perceptions need to align so that energy managers looking for ways to safeguard business continuity can transform their concerns into a strategy.

What every business needs is an Energy Resilience strategy

The frequency of energy-related failures is broadly expected to increase and the impact that they will have on businesses is expected to be costly and far-reaching. It is clear, therefore, that businesses need to have an Energy Resilience strategy in place to address the risks and protect themselves.

Our research shows that there is a clear correlation between businesses that have a mature Energy Resilience strategy and positive business outcomes.

A business with an Energy Resilience strategy is:

- 34 percentage points more likely to report a strong financial performance
- 13 percentage points more likely to report a good brand reputation
- 19 percentage points more likely to consider themselves in a good position for future success

Relationship between energy strategies and business performance

52% of businesses agree that the cost of building an Energy Resilience strategy is far less than the cost of an energy-related failure.

We have solar panels on four buildings, but are considering expanding this. We have to start generating our own energy and reduce dependency on the grid.”

Education, Campus Manager

Our viewpoint:

A comprehensive Energy Resilience plan can protect businesses from outages and market fluctuations but our survey respondents could not easily articulate what Energy Resilience is. Perceptions need to align so that energy managers looking for ways to safeguard business continuity can transform their concerns into a strategy.
Gateshead Energy Centre:
Energy Resilience for demand spikes

The Gateshead Energy Centre includes a pair of 2MW combined heat and power (CHP) units. To help them cope with fluctuations in demand – and allow the Gateshead Council to sell energy into the National Grid – they wanted to supplement CHP with battery storage.

The Centrica Business solution
Centrica Business Solutions will install one of the country’s largest commercial battery storage schemes, with a total capacity of 3MW – the equivalent of one million AA batteries. Centrica will manage the project under a 10 year contract, providing various flexibility services for the grid which help keep the national electricity network in balance. In time, it will also be used to help meet peaks in local demand.

Results
The Centrica solution ensures the local area benefits from consistent, sustainable power – with no fluctuations. The battery storage scheme builds on a long-term energy partnership between Gateshead Council and Centrica who have installed 2MW of solar panels on 34 public buildings in the town.

Why it works
• The battery facility consists of six battery units and has a minimum response time of 140ms
• Equivalent of one million AA battery cells
• It can absorb or discharge power depending on local demand
• 3MW battery capacity

“...This is a bold, imaginative scheme that means we can also store and release power when we choose, as well as supporting the National Grid, which helps raise more income to support Council services.”

Cllr John McElroy, Gateshead Council’s Cabinet Member for Environment and Transport
Key components of an Energy Resilience strategy

The results of our research clearly outline a strong need for Energy Resilience to become an integral part of every business. Putting it into practice requires some groundwork to ensure that its implementation has lasting benefits.

Understand the energy usage environment

- A resilience strategy containing processes, fail-safes and redundancy is only effective where there is an intimate understanding of the building. A detailed engineering study of every site is imperative as a first step.
- A real-time view of building systems enables resilience strategies to remain up-to-date and effective.
- A detailed understanding of building systems and their inherent vulnerabilities ensures backup generators and other resilience-serving equipment is perfectly effective.

Assess how the business reacts to power loss

- Disruption of power to a single component may only cause a brief outage, but result in a lengthy restart, taking hours to return to optimal levels.
- Identifying critical and noncritical systems is extremely important for ensuring that backup solutions are strategically implemented and operationally effective.
- Duration of an outage and its effect on operations is a factor in resilience prioritisation. Some equipment can cope with short-term loss of power (for example climate control systems) whilst other equipment cannot take any outage (IT systems).

Design your Energy Resilience strategy accordingly

- A detailed understanding of every building informs the design of resilience equipment. For example, as a minimum, back-up power technologies must be sized to meet critical loads. Priorities for keeping specific systems energised must also be built into operating strategies.
- The speed at which systems react must also be considered and – where possible – automated. For example, a backup generator must meet load requirement automatically upon detection of grid failure. Waiting for human intervention would take too long.
- Existing on-site generation equipment, such as CHP, typically shuts down upon loss of grid power. Instead, it could be reconfigured to run in ‘island mode’ and improve overall resilience.

Our viewpoint:

The key to increased operational resilience is predicting interruptions and taking preventative action. Our self-powered, wireless sensors transmit real-time energy data from equipment to a cloud-based analytics platform. The intelligence driven by this data helps to optimise performance and deal with potential equipment failures before they happen.

We use cloud analytics. It is really helping us understand where we use more energy and where we should focus our efforts.”

Manufacturing, Manager of Facilities for Europe
Business concerns and the benefits of an Energy Resilience strategy

Our viewpoint:
It is hard to overestimate the importance of Energy Resilience. It supports future-proofing strategies to reduce dependency on single-source energy supplies. It encourages revised maintenance approaches to effectively reduce downtime. It minimises commercial risk by adding cost-effective onsite energy-producing capabilities. Energy Resilience empowers businesses to endure potentially catastrophic energy-related failures and help them to succeed within a rapidly-changing energy landscape.

“Our viewpoint
The first opportunity is cost savings thanks to the fiscal deductions on solar and then independence from the grid reducing risk, and increasing autonomy.”

Manufacturing, Operations Manager
Next steps

Our research clearly demonstrates that the rationale for creating and implementing a robust Energy Resilience strategy is both present and compelling.

Businesses need support in evaluating their best options and to develop the business case for change within their organisation.

To take the next vital step in protecting the energy supply to your business, we recommend that you:

- **Benchmark your resilience**
  We have created an online benchmarking tool so you can quickly see how your Energy Resilience measures up against industry standards.

- **Read the Practical Guide**
  Our friends at edie have created an easy-to-follow guide that lays out the processes involved in achieving Energy Resilience.

- **Talk to Centrica Business Solutions**
  We can help you to keep your business ‘always-on’ today and protect against future energy uncertainty tomorrow.

- **Let us help you Build the Business Case**
  We’ve created a helpful guide to making the business case for Energy Resilience to the key decision-makers within your organisation.

All of these resources can be found at centricabusinesssolutions.com/resilience

---

**Our viewpoint:**

By forming a comprehensive Energy Resilience plan, businesses can protect themselves from outages, market fluctuations and equipment failure. As an energy solutions provider, our role at Centrica Business Solutions is to first understand your business and your objectives. We’ll map your site(s) and analyse the performance, efficiency and resilience of your energy systems.

Then we’ll identify options to help improve your systems and meet your business objectives. We will develop an action plan based on the whole life-cycle, including build, maintenance, measurement and financial planning. Finally, we’ll partner with you to implement the solution, helping you with every aspect of the build, from commissioning and permissions to financing and communication.
Why Centrica Business Solutions for Resilience?

Energy Resilience is not just about keeping the lights on. It’s about protecting your business systems and precious information resources. It’s about managing continuity and managing risk. We can help you keep your business ‘always-on’ today and protect against future energy uncertainty for tomorrow.

Breadth of portfolio

Our broad portfolio and end-to-end capabilities mean we can protect businesses from the unpredictable, whether in the form of volatile markets or extreme weather. And by providing a single, continuous point of contact, we make dealing with complex issues simple.

- Our on-site generation and battery storage solutions can reduce reliance on the grid and add flexibility to energy use.
- Our monitoring solutions and management teams work proactively to avoid issues developing across energy assets.

Global player in the energy markets

We’re always looking ahead. Our investment in innovative businesses and deployment of the latest breakthroughs in energy technology are geared to ensuring our customers know that, whatever their vision for the future, they’ll be able to fuel it. It’s why we hold leading positions in many national markets across the US and Europe.

- Our market-leading trading platform, paired with our expertise, minimises exposure to market volatility.
- Our range of commercial contracts, funding options and resilience-as-a-service offering are designed to help manage cost with a future-facing commercial strategy.
Industry and technical expertise

Compliance can be a complex issue, but it’s one no business can afford to ignore. We deploy and manage solutions across 3,700 sites for over 1,000 enterprise and public sector customers. The depth of knowledge and experience across our expert global workforce helps us ensure all our customers are operating within global and local regulations and meeting health and safety requirements.

Our long-standing relationships with regulators inform our compliance expertise.

Our energy insight capability helps monitor compliance requirements.

Financial stability and de-risked financial proposition

Centrica Business Solutions is an established, leading player in the global energy industry. As a FTSE 100 company with £28 billion in annual revenue, our enduring stability means that we are in no danger of disappearing when times get tough. We can help businesses to improve the resilience of their energy assets, while minimising commercial risk and providing financial confidence.

We use our experienced, proven and respected company-wide resources to build Energy Resilience strategies that ensure ongoing business continuity.

Our committed investment in emerging technologies globally keeps our customers at the forefront of innovation.

Want to know more?

Manage risk and maintain continuity. Find out how we can help you power new levels of resilience today.

centricabusinesssolutions.com