A MULTI-DAY BLACKOUT: WHY DO WE PREPARE SO POORLY?

By Kees Kappetijn, Kappetijn Safety Specialists

Not that long ago, the electricity grid was simple and predictable. Power stations produced electricity, households and companies consumed it, and the whole system ticked along smoothly. Peaks and troughs were known in advance; producers could ramp up or scale down with confidence.

Those days are gone. The grid we rely on today looks completely different and combines complex functions. Solar panels, wind farms, local batteries, backup generators, and even electric cars are all part of an intricate web of connections. Electricity doesn't just flow one way anymore — it moves in all directions, constantly adjusting to weather, demand and capacity.

With increasing complexity comes increasing vulnerability: the grid is a system that operates within very narrow technical margins. A lot or little sunlight, strong or weak winds — all have a direct effect on what central power plants need to produce. Failures in connected components can quickly trigger power cuts, often spreading in domino fashion. Add to that an increasingly unstable environment, where outages could result from deliberate criminal or sabotage actions, and you begin to see the current fragility of the grid and the potential for (prolonged) blackouts.

The grid itself remains of high quality; in a country like the Netherlands, reliability is 99.99%. In 2023, households were without electricity for an average of only 20 minutes per year. But the way we now use the grid also makes it more vulnerable to short- and long-term outages in both small and large areas. It is precisely those scenarios that are prolonged and geographically widespread (the so-called blackout scenarios) that we rarely evaluate and for which we are poorly prepared.

A BLACKOUT SCENARIO CONSISTS OF THREE ELEMENTS:

- **A complete loss of electricity**
- **Affecting a large geographical region**
- **For an extended period of time**

Think of a large metropolitan region — dense with residential, work, retail, industrial, transport, and leisure activities and over a million inhabitants and workers daily — where all electricity fails for 72 hours. This affects everything: transport and public transit stop, all lighting and traffic systems fail, stores, shopping centres, and parking garages shut down, and climate control, heating, and water purification systems stop functioning. Hospitals, care facilities, and emergency services quickly shift from providing help to needing help. Security and safety systems fail; communications and cameras go dark. The bustling, dynamic society that a metropolitan region normally is, can descend into chaos within hours.

What would such a scenario mean, for example, for a care or nursing facility — an organisation where people with specific needs are cared for collectively: people with disabilities, age-related

conditions, mental illness or diseases like dementia? People who cannot take care of themselves and depend on caregivers. What if the power outage occurs in the middle of winter, during bad weather and low temperatures, in a holiday period — when staff levels are already minimal? When electricity fails, all climate systems, heaters, and sanitation stop working, as do medical devices and electronic systems used to manage and dispense medication. Evacuation to safety is not an option — the city is in chaos.

What would it mean for a Comah-class industrial site, operating around the clock in a 24/7 shift-system with large volumes of chemicals? Systems shut down to a 'safe state' for a short period supported by emergency power. Semi-finished products are diverted into storage tanks or containment basins. Shift workers follow standard operating procedures (SOPs) to stabilise processes and materials. New shifts may not arrive; people stay home with their families, where the power (and heater) is also out. Activities requiring external contractors cease, security cameras and automatic access systems stop working, and on-site security falls to minimal levels. The site, normally monitored by technology, depends suddenly on people with flashlights walking perimeter rounds.

And what about emergency services like the fire department, often (partly) staffed by volunteers? Alert systems and communication networks quickly fail, and access to the fire station must be done manually. The station is dark; gates and doors must be opened by hand. Fire trucks with combustion engines will continue to function for a while, allowing the fire department to provide assistance for a few hours—but everything requiring power quickly stops. Refilling SCBA becomes impossible, cleaning contaminated gear and hazardous materials equipment stops, and communication with the control centre ceases. Battery-powered tools can't be recharged. Just as demand for help surges, dispatching and coordination must happen in person, one-on-one.

What is often overlooked in the blackout scenario is that power doesn't just fail at one company or household — it fails across an entire region. And the outage isn't brief: it lasts for several days. What makes it even harder is that you don't know in advance how long it will last — you don't plan for '72 hours without power'; you manage an outage that continues day after day with no clear end in sight, only realising afterwards that it lasted three long, cold days.

This scenario is not unimaginable — and its likelihood is not so low that it can be dismissed as unrealistic. Businesses, households, and public organisations must be willing to prepare for it. Depending on the potential severity — casualties, financial losses, environmental impact, operational disruption — preparedness can range from 'solid emergency procedures' to 'installing large generators and fuel reserves'. Experience shows that while most people recognise this scenario as realistic, actual preparedness is often minimal. Availability of emergency power is low, and when available, it only provides for part of the activities on site and only for a limited time span because of small petrol reserves. Combine this with often little awareness at the management level, and you feel the perfect storm we fear.

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I encourage you to find a good crisis trainer who can take your management team through those three long, dark days — through failing lights, dwindling batteries, frayed nerves and a city in chaos. It might be an unsettling experience. But when the outage comes, you'll be better prepared to face the dark—and organise as much continuity of light as possible. And let the scenario run in bad weather conditions, starting in the evening. You'll get the sharpest overview of your priorities.

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