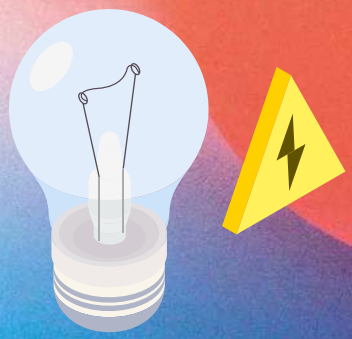

Tensions in the energy sector

Anticipating and preparing for potential load shedding and power cuts

April 2025 update

Over the last few years, tensions linked to the geopolitical context and the constant increase in global consumption have had an impact on energy costs, but the very availability of energy could also be at risk in the event of a harsh winter, for example, or a malicious attack on production and distribution equipment. Electricity, gas, and, through a domino effect, other infrastructures such as communication systems could experience outages of varying duration and/or geographical scope.

Even if recent experience on the Iberian Peninsula shows that the risk of a national blackout cannot be completely ruled out, it's more realistic to prepare for localized outages triggered by energy distributors to safeguard the availability and integrity of the power system.

The consequences of this type of load shedding vary according to the nature of the power loss (total cuts or reductions, and duration), but also according to the industrial processes affected. In particular, the sensitivity of equipment, the operating pressure and/or temperature, and the hazardous nature of the materials being used, will be key factors in the potential damage caused. The aim of this briefing note is to provide some food for thought to help you prepare for these outages, reduce their knock-on effects, and optimize the restart process, as restarts are also a time of increased risk.

Know your exposure

First, identify the company's critical equipment and functions. A disruption in gas and/or electricity supplies can have a number of different effects:

- Direct
- Indirect: loss of compressed air, steam, telecommunications, etc.
- Deferred: equipment safety, system restarts, etc.

Identify the various consequences, particularly in the following areas:

- Personal safety: especially in public buildings where certain points of access can't be unlocked,
- Direct damage to equipment: thermal shock, sudden changes in pressure or rotation speed, loss of data, etc.,
- Production losses: don't overlook the loss of ongoing production in certain processes, such as those in the semiconductor or pharmaceutical industries,
- Loss of goods: cold rooms and premises with controlled temperature or humidity,
- Environmental damage: loss of containment, smoke treatment shutdown, etc.
- Site security (museums, data centers, etc.): automatic door opening in the event of a power failure, access control, etc.

Making a site energy self-sufficient is seldom possible. Choices will therefore have to be made based on the criticalities identified, the potential impacts envisaged, and the functions to be «saved». A number of scenarios should be envisaged:

- Outage lasting several hours: the most plausible scenario to date,
- Outage of one day or more: unlikely scenario at present, but not impossible,
- Sudden unforeseen outage: plausible scenario in the event of load shedding without warning or a blackout.

Additional considerations:

This initial analysis also makes it possible to respond to prolonged outages resulting from major climatic events, except that in the case of a storm, for example, the network infrastructure may be severely damaged, leading to outages lasting several days and affecting a wider area, increasing the demand for contingency measures which could themselves also become unavailable.

Implement contingency and/or safety measures

The measures to be deployed are identified during the exposure assessment and depend on the objectives selected, prioritized according to criticality, the resources that can be made available, feasibility, and so on. The following is a non-exhaustive list of these measures:

- **Site and equipment safety:**
  - Secure access to the site,
  - Shutting down equipment correctly requires energy so do this in advance (before the outage) or ensure you have autonomous back-up sources such as UPS batteries or generators with a sufficient amount of installed power and autonomy,
  - Check that technical, intrusion and fire safety equipment remains operational,
  - Utilize all other protective measures specific to the activity to prevent, for example: thermal shocks, the solidification of molten material, irreversible damage to goods in production, the degradation of the safety level of a chemical reaction, the deterioration of food or pharmaceutical materials, etc.
- **Load shedding plan:**
  Maintain only vital functions, those that are necessary to keep the units safe, or the site's most profitable processes..
- **Changing production schedules:**
  With peak electricity demand in the morning, and none at weekends, there is less risk of power outages at these times.
- **Setting up emergency systems:**
  Depending on requirements, these systems can be permanent or temporary. A number of parameters need to be taken into account when considering such equipment, and not just their size.

Take into account the risks and constraints generated by these measures

Back-up measures bring additional risks which must be taken into account, particularly in relation to the fuels being used:

- Fire/explosion: LPG tank, batteries,
- Machinery breakdown: turbo-alternators, generators, battery banks, etc.,
- Pollution: oil spills.

The location of facilities and stock must be carefully chosen and, if necessary, supplemented by a fire protection system.

The following are ways of controlling the risks associated with the use of emergency equipment:

- **Availability of the equipment:**
  For permanent systems, appropriate maintenance and regular testing are required to ensure the equipment is available on the day. For temporary systems, check with partners to confirm its availability, with priority access contracts in place if necessary.
- **Fuel autonomy:**
  Stocks of gas, fuel, wood etc. must be sufficient for the defined objective. In the scenario of a prolonged power outage, stock levels must be monitored and there should be a means of replenishment in place.
- **Staff training:**
  Technical teams need to be trained in the use of these new systems (including manual start-up if they don't start automatically), monitoring them when they're in use, and properly maintaining them.

Restarts

System restarts should be carried out taking into account, in particular, the following measures:

- Reduce the electrical load to a minimum before restoring power. Also ensure that large motors are insulated to prevent damage from undervoltage start-ups,
- Assess the extent of checks to be carried out before the restart to ensure the integrity of the equipment and its safety systems. If necessary, plan functional tests,
- Formalize procedures for restarting different types of equipment,
- Follow the processes defined by manufacturers for «warm» or «cold» restarts of sensitive equipment (rotating machines, high-temperature and/or high-pressure processes, etc.).

Monitor alert levels to ensure you are well prepared

Some of the measures you identify may take time to implement. That's why, as with a flood emergency plan, it's advisable to have a monitoring system in place as the risk of outages increases. .

Dedicated teams can then rely on defined alert thresholds to implement the necessary processes.

In France, two simple and effective systems have been created to provide an energy forecast of the risk of high demand events for electricity and gas over the following 4-5 days. They also provide an initial assessment with free SMS/email alerts. The two systems are:

www.myecogaz.com
www.monecowatt.fr

Some countries have comparable systems. Another recommended solution is to contact your suppliers directly as they may be able to offer more sophisticated alert systems better suited to your risks.

Additional considerations:

As with any emergency plan, it's important to:

- *Set up a dedicated response unit that can be activated based on defined alert levels;*
- *Carry out periodic drills.*

The Diot-Siaci prevention team would be pleased to provide you with any further support and advice you may require

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