

Contingency Planning for Equipment Failures

Contingency planning is important to help minimize the business interruption or unnecessary downtime that can result from equipment breakdowns or utility outages. Without an effective contingency plan, outage time and business interruption can be significantly extended from factors such as service availability, access to rental equipment or equipment replacement lead time.

The following information can be used as a guide to develop a formal contingency plan.

Identifying Key Equipment

It is important to consider the following when identifying key equipment:

- **High value equipment:** Breakdown of this equipment may result in significant financial costs. Proper planning may assist with anticipating associated expenses for repair or replacement.
- **Equipment critical to business operations:** This includes equipment, large and small, that would result in a significant business interruption in the event of breakdown. Consider production bottleneck processes, computer servers and other equipment control and data collection equipment.
- **Specialty manufactured equipment:** Equipment that is proprietary, has high tolerance specifications, requires custom fabrication, and/or is manufactured overseas may take six months to a year to replace.
- **Obsolete equipment:** This includes equipment manufactured by companies that are no longer in business or no longer support parts and service for that equipment.
- **Long lead times:** Some equipment may seem readily available but may have limited market availability and require lengthy replacement times. Availability of certain equipment, such as transformers, switchgear and HVAC equipment, may fluctuate with the general economy.
- **Support systems:** This includes ancillary equipment required for continued operations, such as to maintain temperature, humidity, air purification and ventilation. Some may require jurisdictional permitting or upgrades of mechanical systems to support newer technology.
- **Equipment location and size:** Some equipment may have accessibility concerns and may require heavy machinery or special rigging for repair or replacement.

Contingency Planning

After identifying key equipment, it is important to establish a detailed plan with specific recovery actions. By maintaining an inclusive and accurate plan, business interruption may be minimized, and outage times reduced. The specific actions of the plan should be tested to verify that the premise of the action remains valid. An annual review of the plan can help prevent key components of the plan from becoming outdated and inaccurate. Contingency plans should address, at minimum, the following:

- **Equipment redundancy:** Equipment that is critical for continued operations with no redundancy in place could pose a significant business interruption. Consider adding additional equipment with equivalent capabilities to mitigate effects of single-point failures.
- **Spare parts and materials inventory:** Maintaining an inventory of spare parts and materials can assist with expediting the restoration process. Evaluate the following items when determining appropriate spare parts and materials:
 - > Review equipment preventative and corrective maintenance history to help identify high loss frequency and long lead-time components.
 - > Identify critical spare parts. Critical spares are equipment components with high value, limited market availability, or custom fabrications that pose significant business interruption, and/or have long lead times. Maintaining a critical spare inventory onsite may reduce downtime and business interruptions from an outage by reducing restoration time

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- > Critical spares kept on site should be maintained and tested, where applicable, to ensure proper operations when required for service.
- > Critical spares not maintained on site should be addressed with annually updated quotes from suppliers to include prices and lead times.
- **Rental equipment:** To minimize downtime, rental equipment should be considered for maintaining business continuity in the event that an equipment failure or utility interruption occurs. Consider the following when establishing rental equipment options:
 - > Quotes from companies that rent identified key equipment should be updated annually. Quotes include the cost for rental, set-up, breakdown, shipping both ways, and estimated time from placement of order to start-up.
 - > Identify and dedicate locations to place rental equipment and install necessary services to connect the equipment.
 - > Installation of mechanical and/or electrical quick connection points for rental equipment should be considered for key equipment.
 - > A maintenance and operation plan should be in place to ensure that rental equipment is maintained in good working order while in the care, custody, and control of the renter.
 - > Plan with jurisdictional authorities for any permits required to install and operate rental equipment, if applicable.
 - > Contractual guarantee of rental equipment availability.
- **Contractors:** Available contractors qualified to service key equipment should be identified for emergency situations. Documentation that describes the contractor's capabilities and availability should be on file.
 - > Update contractor information annually
 - > Consult with equipment manufacturers and authorized representatives for referrals.
- **Alternate operation methods:** In the event of an equipment failure or utility interruption, a prolonged business interruption may occur, and could result in losing existing or new customers. Alternative methods of conducting business during these situations should be determined by exploring the following options:
 - > Availability of adding additional shifts or overtime to meet production.
 - > Availability of sister facilities with similar capabilities to maintain production.
 - > Establishing backlogs of finished goods.
 - > Availability to outsource production with competitors. Making reciprocal agreements may be mutually beneficial to maintain goods for customers during severe interruptions.
- **Rigging and crane services:** Determine the equipment that requires special handling for repairs or replacement due to location, size, or weight. Consult with qualified contractors and document the results.
 - > Dedicated space for cranes, lifting and moving equipment, and landing areas.
 - > Potential traffic/road closure and permits that may be required. Confirm with local governmental entities that the shipping route is credible due to size, weight, and material restrictions

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Spoilage

Spoilage may result in substantial product loss and a significant financial burden. Annually update and identify products that are susceptible to spoilage or would have a reduced value if not maintained in a specific environment. Consider the following to help reduce the risk of spoilage:

- **Alternative storage availability:** Identify a designated storage facility in the event that product needs to be relocated.
- **Logistics:** Plan for transportation needs to quickly relocate product while maintaining the necessary environmental controls such as temperature.
- **Back-out procedures:** If applicable, establish procedures to safely remove product from production in the event of an equipment failure or out-of-specification environment.

Emergency Backup Services

Most business operations require continuous utility services, such as water, gas and electricity. A utility service interruption can jeopardize continued operations or the ability to safely shutdown production. Having alternate sources is strongly recommended.

- **Alternative power supply:** Provide an emergency generator on site or coordinate with the utility to provide an alternate feed to support continued operations. Where appropriate, provide an uninterruptable power supply or battery bank to allow for a safe, systematic shutdown of systems and equipment.
- **Alternative fuel supply:** Determine the applicability and availability of alternate fuels for critical equipment, such as fuel oil or propane. A change in fuel may introduce additional risks beyond the scope of this discussion. A hazard analysis and management of change process should be used to address any increased risk of loss.
- **Alternate water supply:** If water supply is a critical, consider an onsite storage tank, bulk water delivery or a well water capability, if possible.

Other Considerations

Our focus here is on an equipment breakdown or utility interruption event, however, you may wish to consider contingency planning for other types of risks, for example, natural disasters, raw material shortages, etc. Depending on the type of facility and location, consider identifying additional risks and developing contingency plans as necessary.



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