

6 Ways to Boost Power Plant Outage Efficiency

The right equipment partner can save plants time and money.



The energy landscape is changing fast, but power plants remain the backbone of America's electrical system. With many of these plants easing into old age, planned seasonal outages for maintenance and repair are more important than ever.

Because outages are costly, high-stakes events — every minute a plant is offline, it loses money — meticulous planning down to the last detail is critical. Maximizing operational efficiencies is key to success.

The right temporary equipment and solutions partner can help.

A provider with deep experience in planned outages can leverage the knowledge they've gained to benefit your project. Working with such a provider from the first planning meeting can help plant managers keep outages on time and under budget, increase safety and make workers more comfortable.

Read on to discover how you can improve your next planned seasonal outage by collaborating with your equipment partner and drawing on their expertise.

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1. Choose the Right Equipment Partner

During the entire outage cycle, from planning to wrap-up, your temporary equipment provider should function as a collaborative partner who helps drive operational efficiency and productivity while keeping safety top of mind. Look for a partner who:

- **Has outage experience.** A provider who understands outages and the obstacles plants often encounter can anticipate problems, offer solutions and identify ways to save you time and money.
- **Knows your plant.** Knowing your processes and your plant — the layout, equipment weight and height limitations in work areas, etc. — can speed project planning and implementation. Plant familiarity also means knowing where on site the equipment should be delivered and where it should be positioned during the outage to maximize efficiency and help keep workers safe.
- **Has the equipment you need.** Look for a provider who has well-maintained equipment with the latest safety technology. Location counts: The company should have branches nearby so you get the equipment you need fast when and if the unexpected happens.

- **Can help with compliance.** Stringent and evolving environmental regulations can add unexpected costs to your outage. A partner who is up to date on current regulations and is ready with assets such as spill-proof containment berms and equipment with Tier-4-compliant engines can help you meet them.
- **Can meet special fleet requirements.** If your plant has specific equipment maintenance or appearance needs, discuss them in advance. Also identify any specialty equipment needs, such as modular aluminum shoring boxes (plus guard rails, ladders and ramps) if your project will include open excavations. Pipe testing and bypass work requires even more specialized equipment. The right partner will be able to provide what you need.
- **Offers real-time delivery alerts.** With these alerts, you can put workers in place to receive and install equipment so deliveries run like clockwork.

Custom solutions

An experienced partner can help plants react faster to the unexpected with custom solutions. Take humidity, for example. If moisture is building up on boilers, turbine or transformer components or other electromechanical equipment, a knowledgeable partner can identify an effective temporary dehumidification solution that can not only prolong the life of the equipment but also improve the plant's efficiency after the outage.

The right temporary equipment partner **goes beyond providing equipment** to helping your outage run more smoothly.

Consolidate vendors when possible

Outages typically involve hundreds of pieces of temporary equipment moving on and off site. One smart way to reduce the chaos and ensure you have a piece of equipment you need when you need it is to consolidate equipment vendors.

Dealing with a single point of contact at one company can save countless hours of equipment planning and delivery coordination. And if there's a problem, help is one phone call away.

Pro tip

Ask potential equipment vendors how many power plant outage projects they've worked on.

Choosing a vendor who has everything you need, from aerials lifts and generators to pumps to porta-potties, as well as specialty equipment such as temporary transformers and storage tanks, allows you to deal with fewer contracts and potentially save money by leveraging your spend with one company.

There's a powerful safety benefit as well. One vendor means fewer people entering and exiting the plant, and fewer delivery vehicles on site, which reduces the risk of safety incidents. You can further reduce the risk by choosing a vendor with a strong safety record and the experience and training needed to operate safely in a power plant environment.



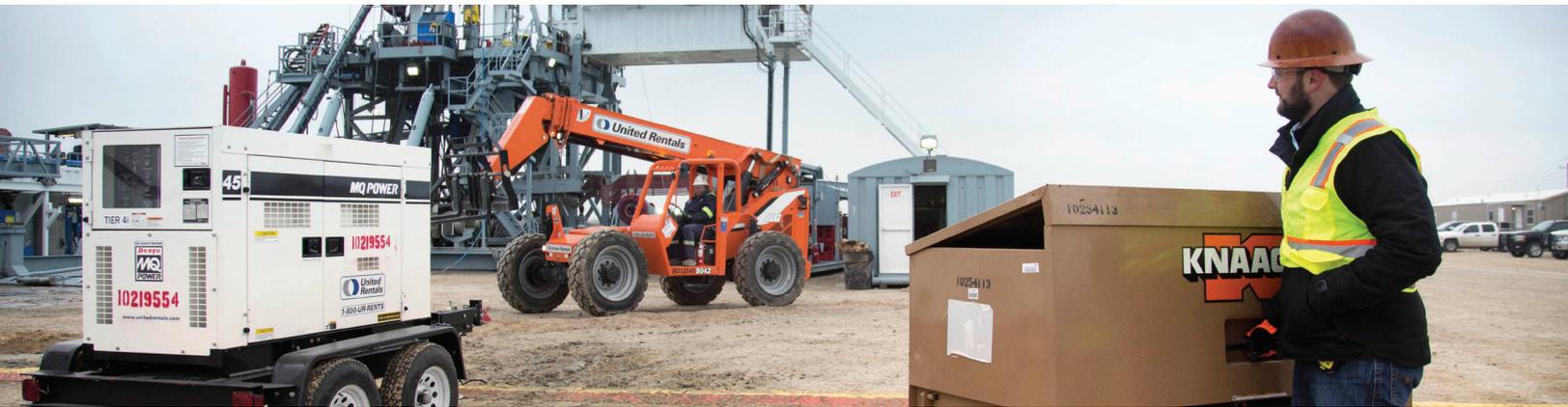
The value of one-stop shops

If your outage includes fluid storage, transfer or treatment, boiler flushes or cooling tower cleanouts, you'll need equipment such as tanks, pumps and hoses, and potentially, engineered filtration, pump or cooling solutions. Will the outage call for validation of the primary electrical equipment? If so, load bank and circuit tests become essential as well. If the plant's air compressors will be shut down, you may need temporary air compressors.

Working with a one-stop shop that has the equipment, engineering and expertise to do it all can help ensure that no needs are overlooked.



- General construction and industrial equipment
- Aerial work platforms
- Tools and light equipment
- Power and HVAC equipment
- Pumps and tanks
- Trench safety equipment
- In-house engineering
- Custom power, filtration, cooling and dehumidification solutions



Pro tip

If you need a filtration solution, a one-stop partner should be able to provide one based on your specifications or a product sample.



2. Collaborate Early

You've planned outages before and you know the drill. Perhaps you think you've left no stone unturned when it comes to finding ways to boost efficiency and safety. But your equipment partner might surprise you.

For example, temporary power generation is a must and is most likely already baked into your planning, but are there alternative solutions that could save you time, money or effort, such as using temporary transformers in place of generators?

Your partner can suggest other temporary assets and solutions you may not have considered, such as dehumidification equipment, comfort cooling and a custom-stocked tool trailer or gang boxes to maximize worker productivity during the outage.

Bring in the partner from the start and make them part of your team. The sooner your needs are determined, the sooner a site visit can be scheduled and delivery timing and installation can be planned. Seamless and timely delivery, setup and installation translate to less downtime when every minute counts.

Maximize the site visit

A site visit can help you and your temporary equipment partner head off countless problems if you use it well.

Walk through areas where maintenance and repair work will take place with an eye toward identifying:

- Job hazards
- Lockout/tagout requirements
- Permit requirements
- Barricade requirements
- Optimal locations for temporary equipment
- Optimal locations for porta potties, storage containers, mobile offices, generators and heating and cooling units

Seeing the physical location helps you focus on details that are easy to overlook on an electronic plan or schematic and gives a better feel for how the work will be done and the challenges it will pose. For instance, a location for temporary equipment that looks good on a plan may not work well in reality because it blocks a route used frequently by workers.





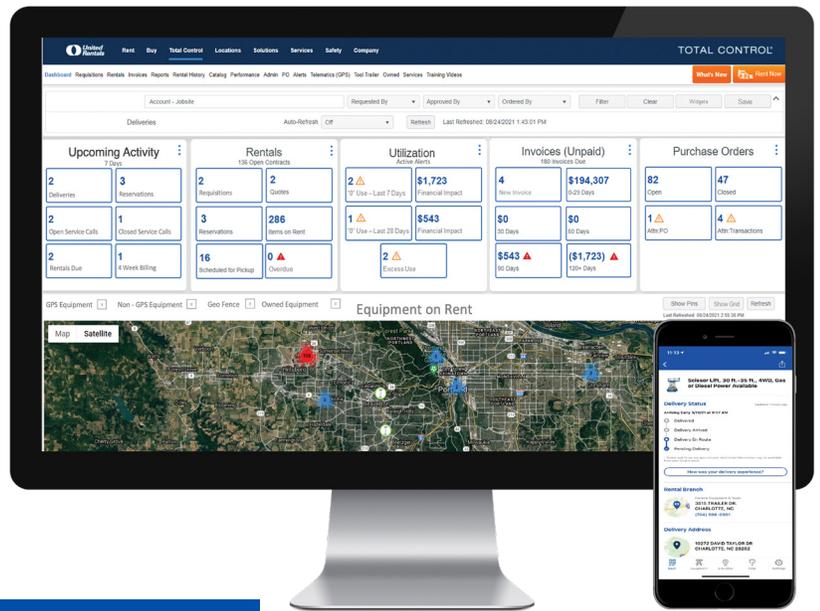
3. Optimize Temporary Equipment Utilization

Planned outages are expensive undertakings. Labor and materials make up a significant portion of the costs, but if you're not careful, temporary equipment can also play a part in driving overruns. Costs add up if:

- Job hazards
- You have 15 generators on site and you're only using 10
- You order more boom lifts because you can't find the ones you have or don't realize they're not in use
- You need a certain piece of equipment for two hours during an outage but it sits onsite for the duration of the project
- Subcontractors keep equipment longer than planned

Tracking the location of telematics-enabled rented and owned equipment and tools in real time using an equipment tracking solution reduces or eliminates time-consuming hunts for gear. It also helps solve the problem of equipment duplication.

Monitoring fleet utilization during the outage is a smart way reduce costs and avoid the unwelcome surprise of blown rental budgets after the fact.



Monitoring fleet utilization during the outage is a smart way keep costs down and avoid the unwelcome surprise of blown rental budgets after the fact.

United Rentals Total Control®

An equipment management platform such as United Rentals' Total Control® makes it easier to develop an equipment budget, see all your owned and rented equipment and monitor equipment utilization to keep rental costs down.

With Total Control, at any point in the project managers can obtain the actual equipment spend to date and run a forecast of projected equipment costs over the course of the project. They can view delays (exceptions) in planned equipment return dates and quickly identify which subcontractors are responsible for overruns. Configurable alerts notify managers when a rental has gone past its anticipated return date or will soon.



4. Consider Worker Comfort and Convenience

Outage teams work hard. They can be even more productive if outage managers plan in advance for their personal comfort and convenience.

Climate control

Comfort cooling helps maintain a safe and healthy environment for workers. Climate control also allows equipment to remain in optimal operating condition.

Confined spaces such as tanks, boiler drums and economizers are prone to elevated temperatures, which can pose a safety hazard. Portable cooling solutions such as dehumidifiers, air conditioners and blowers can help curb the heat and keep the crew working inside these spaces safe and comfortable.

Portable restrooms

Outages involve swarms of contractors who aren't normally onsite. Anticipate the needs of those contractors, including their need for bio breaks.

Renting portable restrooms is one of those tasks that seem minor until something goes wrong. Rely on a trusted equipment partner to help you accurately estimate the number of units you require and service them as needed. Time and money are wasted if craft workers have to stand in line to answer nature's call.

Pro tip

Don't forget hand-washing stations.



Temporary office and meeting spaces

With hundreds of extra workers on site, space is at a premium during an outage. It can be hard to find so much as an empty area for meetings, let alone offices for some of the additional personnel. Mobile offices and office trailers configured to your specifications create functional spaces designed to help you get work done.

Storage containers

Outages require bringing in extra materials that could easily clutter the plant floor, not only creating a safety hazard but slowing down workers on their way from point A to point B. Well-placed conex boxes in the exact sizes you need offer a simple solution. When materials are stored in dedicated spaces, plant floors are tidier and crews know where to find what they need. The result: improved tool time.



5. Factor in Safety Training

Plant safety is always critical, and when it comes to outages, there's even more to consider. During an outage, the plant can become crowded, and workers may use less-familiar equipment and perform tasks that fall outside their daily routine.

Identify any new potential hazards and determine if workers will need additional training prior to the start of the outage. Confirm in advance that workers have any certifications they need to operate equipment.

If you don't include training in your outage plan, it could end up adding time and dollars to your bottom line.

Ensuring that workers are properly trained can help you not only maximize their productivity during the outage but also avoid safety incidents and fines.

Meet the latest requirements

Training isn't one-and-done. Crews that will be working inside a tank or other confined space might need training on OSHA's newest confined space regulations. Workers operating a fork lift, scissor lift or boom lift should have current certifications and be up to date on ANSI A92, the standard for operating a mobile elevating work platform (MEWP). Supervisors on the ground who are in charge of the lift crews also need specific MEWP training.



6. Learn from Each Outage

Even the most carefully planned projects will have some hiccups during implementation. Once your plant is back online, make time to meet with your managers, your equipment provider and subcontractors for a post-outage analysis.

Assess the project from start to finish:



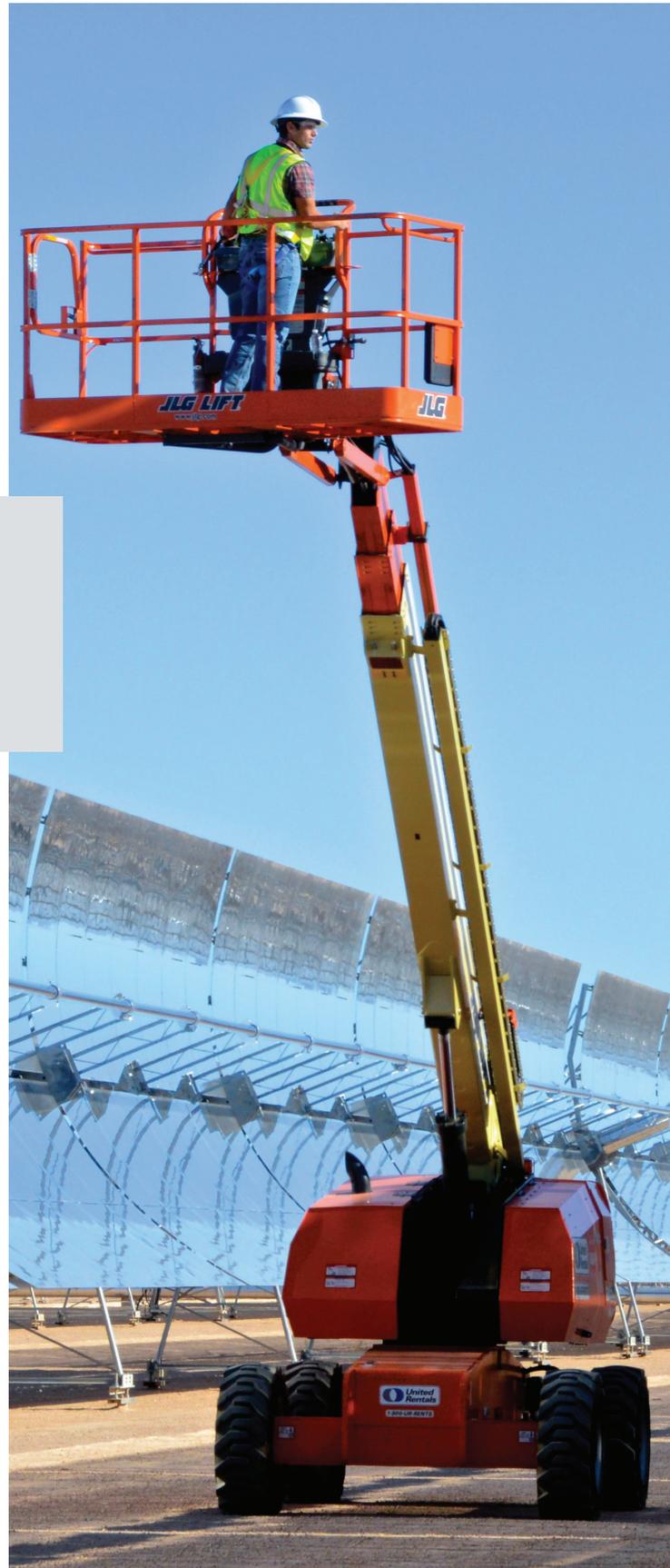
- What worked well?
- What unexpected problems were encountered?
- Where did cost overruns occur?
- Where were you able to save money?
- What if any safety incidents occurred?
- What could be done differently?

Together with your equipment partner, assess whether you had the equipment you needed, how well deliveries and pickups went and any equipment problems that slowed down the schedule. What kind of equipment or custom solutions could make the next outage go more smoothly? Open up the topic for two-way discussion.

Pro tip

Knowing the utilization of each piece of rental equipment during the outage can help you right-size your temporary equipment fleet for the next outage.

In this era of ever-tightening budgets, when it comes to seasonal outages, continuous improvement is the name of the game. Use your post-outage analysis, including input from all team members, to evolve your plans for the next outage season.





United Rentals specializes in providing customized solutions to boost productivity and optimize performance for all aspects of an outage – planned and unplanned. With decades of experience working with some of the largest Power providers in North America, our Power team stands ready to help.