Emergency Backup Power Solutions for Fire Seasons

It begins with a faint orange haze on the horizon. Within hours, the air smells of smoke. News alerts flash about an approaching wildfire twenty kilometers away. Power flickers. Within minutes, the building hums to silence.

No ventilation. No alarms. No lights. No communications.

In that moment, leadership decisions made months earlier will determine whether the workplace stays safe – or becomes another statistic in Canada's increasingly dangerous fire seasons.

Across North America, climate-driven wildfires are changing how organizations must think about safety, continuity, and compliance. They're not just a seasonal inconvenience anymore. They are a business risk, a public health emergency, and a test of every employer's preparedness.

The lesson is clear: in the age of fire, power is safety.

And a robust backup power strategy is no longer optional – it's a legal, financial, and moral necessity.

The New Normal: Fire Season as a Safety Season

Wildfire season once meant a few smoky weeks in the summer.

Today, it’s a rolling crisis that stretches across spring, summer, and early autumn.

Canada’s 2023 fire season was the worst in recorded history, burning more than **18.5 million hectares** — nearly the size of North Dakota — and forcing evacuations in every province and territory. Air quality alerts blanketed much of North America, with major cities like Toronto, New York, and Calgary briefly ranking among the most polluted in the world.

Power outages followed. Transmission lines were shut down for safety. Distribution systems failed as flames advanced. BC Hydro reported **over 1,000 wildfire-related power interruptions** that year alone.

When the grid goes down during fire season, the impact isn’t just economic. It’s operational and personal. Ventilation fails, lighting disappears, alarms go silent, and communications break down — all of which directly affect occupational health and safety.

Why Power Reliability Is an OHS Issue

Most safety professionals think of fire as a hazard to control, not an event that can take down an entire safety system. But prolonged power loss during wildfire season exposes workers to cascading risks.

Without electricity, **emergency lighting and alarms stop functioning**. HVAC systems shut off, allowing **smoke and heat to accumulate indoors**. Electronic communication channels fail, leaving emergency responders struggling to coordinate evacuations.

Even workplaces far from the flames can experience health hazards as outdoor air quality deteriorates and air filters, dependent on power, stop operating.

The **OHS implications are profound**:

- Worker exposure to wildfire smoke without functioning ventilation.
- Inability to operate critical safety systems like fire alarms, sprinklers, and gas detection.
- Evacuation challenges when lighting and communications fail.
- Business continuity disruptions that increase stress and risk for remaining staff.

Under Canadian OHS law, employers have a **duty to foresee and control hazards** that may endanger workers. That includes environmental hazards like wildfire smoke and operational hazards caused by power failure.

Failing to plan for these risks is not just operationally negligent — it's potentially noncompliant.

When the Grid Fails, Due Diligence Begins

In 2022, a large food processing facility in the Interior of British Columbia lost power for 17 hours during a nearby wildfire. The blackout shut down refrigeration, emergency lighting, and smoke alarms. When an employee lit a candle for visibility, it triggered a small fire that filled the room with smoke. Two workers were hospitalized.

Investigators later found that the company had no backup power plan, no smoke filtration, and no documented evacuation procedure for power-loss events.

The Ministry of Labour cited the employer for failing to maintain "safe means of egress and adequate ventilation" under the **BC OHS Regulation**. The insurer classified the event as preventable.

The lesson from that incident is not about fire. It’s about leadership accountability. When infrastructure fails, regulators ask: *What did management do to anticipate this?*

In today’s climate, fire-season power instability is no longer unpredictable. It’s foreseeable — and that makes it part of the OHS equation.

The Strategic Case for Backup Power

Backup power systems aren’t just an engineering solution. They are a strategic investment in continuity and compliance.

When the lights stay on, emergency systems function, operations stabilize, and employees remain safe and confident. When they go out, panic sets in, and risk multiplies.

In recent years, several insurers have begun factoring **power resilience** into risk assessments. Companies with verified emergency power systems and maintenance records receive lower premiums or improved coverage terms. Those without face surcharges or exclusions for fire-related interruptions.

Executives often ask, “What’s the ROI on backup power?” The answer lies in what it prevents.

A 2023 study by the **Conference Board of Canada** estimated that a 24-hour power interruption can cost an average manufacturing facility more than **$500,000** in lost production, overtime, spoilage, and recovery. Add potential OHS penalties and workers’ compensation claims, and the financial exposure rises exponentially.

Backup systems pay for themselves the first time they avert a crisis.

How Fire Season Magnifies Power Risk

In high-heat, high-smoke conditions, the electrical grid itself becomes fragile. Transmission lines can be de-energized to prevent sparks. Transformers overheat. Crews can’t safely access infrastructure for repairs.

Utilities across North America are adopting “Public Safety Power Shutoffs” — preemptive blackouts designed to prevent wildfires. These can last from hours to days.

During such events, businesses without backup power lose not just productivity but the ability to fulfill their OHS obligations.

Consider the ripple effects:

- A hospital’s ventilators stop.
- A long-term care facility loses climate control during extreme heat.
- A mine’s gas monitoring system shuts down.
- A factory’s fire suppression pump fails.

Each of these failures can trigger a secondary emergency — often with higher consequences than the initial fire risk.

Case Example: The Town That Stayed Operational

In 2023, as wildfires raged through Northern Alberta, the small town of Fox Creek became a case study in resilience. While neighboring communities evacuated, Fox Creek kept its emergency coordination center running for 72 hours thanks to a preinstalled natural gas generator system capable of powering all critical infrastructure, including communications, ventilation, and refrigeration.

That single investment allowed firefighters, paramedics, and municipal staff to operate continuously. When the fire subsided, the province publicly recognized Fox Creek as a model for emergency readiness.

Their backup power system wasn’t purchased as an engineering upgrade. It was part of a **strategic emergency management plan** that integrated OHS, community safety, and continuity.

The Legal Framework: Emergency Preparedness Under OHS Law

Every OHS jurisdiction in Canada requires employers to maintain an emergency preparedness plan suitable for their workplace. That includes ensuring safe egress, alarm systems, and emergency lighting — all of which depend on power.

In Ontario, for example, **O. Reg. 213/91** (Construction Projects) and **Reg. 851** (Industrial Establishments) require that emergency lighting and fire protection systems remain operational in all conditions.

In British Columbia, **Part 4 of the OHS Regulation** mandates that employers assess potential emergencies and establish controls for “failures of essential services such as power.”

Federally regulated employers under the **Canada Labour Code, Part II** face similar expectations.

In all cases, regulators assess “reasonable foreseeability.” In wildfire-prone regions, extended outages are now clearly foreseeable. That means employers must plan for them — or risk enforcement action when they occur.

Backup Power Options: Beyond the

Generator

Executives often think backup power means buying a generator. In reality, it's a system — a coordinated network of technologies designed to maintain safety-critical functions during disruption.

The most common options include:

- **Stationary Diesel or Natural Gas Generators:** The traditional backbone of industrial resilience. They can run for days with proper fuel storage and maintenance but require ventilation and environmental controls to avoid fire hazards.
- **Battery Storage and Solar Integration:** Modern facilities increasingly pair solar panels with high-capacity battery banks to maintain clean, silent power during prolonged outages. These systems reduce fuel dependence and qualify for sustainability incentives.
- **Uninterruptible Power Supplies (UPS):** For data centers, hospitals, and emergency systems, UPS devices provide instant power until generators start or the grid returns.
- **Hybrid Microgrids:** Larger operations are adopting microgrid solutions that combine multiple sources — solar, battery, and generator — to optimize efficiency and redundancy.

Each option requires a risk-based assessment to determine capacity, duration, and coverage. The key question for leadership isn't "What can we afford?" but "What can we not afford to lose?"

Case Example: Powering Through Smoke in California

California's 2021 wildfire season brought rolling blackouts across the state. A beverage manufacturer in Sacramento

invested in a 400-kilowatt solar-plus-battery microgrid to power refrigeration and safety systems during outages.

When the grid failed for 48 hours, their operations continued safely, with temperature control maintained and workers sheltered indoors from extreme smoke conditions.

Nearby competitors without backup systems suffered spoiled inventory, heat-related illnesses, and full shutdowns.

Their resilience became a competitive advantage — and a testament to proactive leadership.

Designing a Fire-Season Power Continuity Plan

A strong emergency power plan begins with a hazard assessment.

Executives should ensure their safety teams identify all systems essential for life safety, environmental protection, and compliance. These include fire alarms, lighting, ventilation, communications, security, refrigeration, and hazardous materials containment.

Once critical systems are defined, determine the power load required to sustain them. Work with qualified engineers to design redundancy that balances cost, capacity, and risk exposure.

Fuel logistics, ventilation, and location also matter. Generators placed in wildfire zones must have clear air intake, defensible space, and secure fuel supply chains.

Every plan must include procedures for regular testing and documentation. Regulators expect written evidence that systems are inspected and functional.

A backup system that fails when needed is no defense in law — or in conscience.

The Human Element: Training and Communication

Backup power solutions mean little if workers don’t know how to use them.

During emergencies, confusion can be deadly. Clear roles, checklists, and drills are essential. Employees should know how systems operate, how to shut them down safely, and where to gather if power remains offline.

Communication is critical. Many organizations now include **redundant communication systems** — satellite phones, handheld radios, and battery-powered public-address systems — to maintain coordination when cellular networks fail.

Leaders should also prepare for the psychological dimension. Power outages combined with smoke and evacuation stress can create panic. Training that emphasizes calm, control, and clarity turns technology into true resilience.

Case Study: The Hospital That Never Went Dark

In the summer of 2023, as fires burned across Alberta, a regional hospital in the foothills lost grid power twice within a week. Each time, its dual-generator system activated automatically, maintaining full operation of critical care and air filtration systems.

Patients and staff continued working under normal conditions while other medical centers struggled with partial outages.

The hospital’s CEO credited their foresight: “We don’t invest in backup power for convenience. We do it because human lives depend on consistency.”

That sentence encapsulates the leadership mindset every

organization should adopt.

Balancing Sustainability and Safety

Modern executives face an added complexity – balancing sustainability goals with resilience.

Diesel generators, while reliable, raise emissions and noise concerns. Yet in fire season, they remain indispensable. The solution lies in hybrid systems that integrate renewable power for routine backup and fossil fuel for extended emergencies.

Organizations like **BC Hydro**, **Hydro-Québec**, and **Southern California Edison** are now funding pilot projects that use renewable microgrids in remote or fire-prone regions. These systems reduce environmental impact while ensuring resilience against grid instability.

For OHS directors, this is an opportunity: resilience investments can align with corporate sustainability targets, turning safety improvements into ESG wins.

Testing, Maintenance, and Verification

Many companies invest in generators but fail to maintain them properly. Then, when fire season arrives, the system fails at startup.

Routine testing – under load – is vital. Monthly or quarterly checks ensure readiness and extend lifespan. Documentation of each test should be part of the OHS management system, demonstrating diligence in both safety and compliance.

Fuel should be cycled to prevent contamination. Batteries should be inspected. Start-up drills should be timed.

When regulators investigate an emergency response, a well-

documented maintenance record can mean the difference between a citation and a commendation.

Integrating Backup Power into the OHS Management System

Backup power planning should not live in isolation from broader safety management. It should connect to:

- **Emergency Response Plans:** ensuring power continuity supports evacuation, alarm, and first-aid procedures.
- **Risk Assessments:** identifying critical systems whose failure could cause injury.
- **Training Programs:** building operational familiarity across departments.
- **Audits:** verifying the system's reliability and alignment with legal standards.

This integration creates a culture where resilience is routine, not reactive.

The Financial and Reputational Dividends

When executives view power resilience as an operational asset, the dividends extend beyond compliance.

Clients and investors increasingly reward companies that can demonstrate business continuity under stress. A reliable backup power strategy signals professionalism, foresight, and accountability.

After the 2021 California fire season, several manufacturers that maintained production during blackouts reported gaining new contracts from clients seeking "continuity assurance."

Insurance carriers also respond. Underwriters often grant rate

reductions or premium stability for companies that implement verified mitigation measures. In one case, a British Columbia sawmill received a 10 percent discount after documenting its generator testing program.

The message from insurers mirrors the message from regulators: preparedness pays.

When Failure to Plan Becomes a Legal Case

In Ontario, an industrial bakery faced charges after a blackout disabled its ventilation and workers suffered smoke inhalation during a nearby fire. The investigation found no alternate power supply or evacuation lighting.

The court imposed a $150,000 fine and described the failure to plan as “a systemic disregard for foreseeable hazard.”

That phrase — *foreseeable hazard* — now defines leadership accountability in the climate era.

Wildfire-related power outages are no longer rare. They are predictable, and what is predictable must be planned for.

Looking Ahead: Power, People, and Preparedness

Climate projections suggest that Canada’s wildfire activity could **double by 2050**. The southern United States faces similar trends.

Every industry — from healthcare to manufacturing to logistics — will need to adapt by hardening facilities against power loss and ensuring worker safety during environmental crises.

This adaptation isn’t just technological. It’s cultural.

Organizations that treat resilience as a leadership priority will emerge stronger, safer, and more trusted. Those that treat it as an afterthought will face disruption, liability, and loss.

The Leadership Mindset

Emergency preparedness is not about equipment. It’s about foresight.

A generator can’t make decisions. Batteries don’t coordinate evacuations. People do.

Executives who embed resilience into their corporate DNA send a message that transcends policy: *We take care of our people, no matter what happens outside.*

That promise builds loyalty inside the organization and confidence outside it.

When fire season returns — and it will — companies with that mindset won’t just survive. They’ll lead.

Closing Thoughts

Every summer, as flames climb the hills and smoke fills the valleys, thousands of workplaces are tested — not just for compliance, but for character.

The power grid may fail, but leadership cannot.

A well-designed backup power system is more than a generator or a battery bank. It’s a declaration of responsibility. It’s the infrastructure of trust.

Safety is not just about preventing injuries. It’s about protecting continuity, credibility, and human dignity.

And in fire season, those who plan for power keep the promise

of safety alive.