FACT SHEET

Berkeley Environment, Health & Safety

Power Outages: Preparation and Response

General

Electrical power, like any other part of the infrastructure on campus, can fail either in an isolated incident (tripped circuit breakers or blown fuses), or as part of a larger event (campus power grid failure, regional power outage or earthquake). Health and safety issues that require attention may arise when power failures occur. This fact sheet provides building coordinators, department safety coordinators, principal investigators, managers, and others with basic guidance and resources to prepare for power failure emergencies and how to respond.

If an electrical outage occurs over a wide area, the Emergency Operations Center (EOC) may activate to manage the campus response. In support of the EOC, Emergency Support Function (ESF) operations centers may also activate, either independently or under the direction of the EOC as needed, to support essential operations and response activities.

For general information about a widespread power failure, listen to the campus radio station: KALX—90.7 FM. For additional information and updates, contact your Building Coordinator. Also, sign up for WarnMe alerts to receive text messages about campus emergencies.

If there is a power failure in your building, Building Coordinator should immediately contact UC Berkeley Facilities Services dispatch at (510) 642-1032 and let them know of the problem. Do not continue to report once dispatch has been informed, because they may be taking emergency calls from other buildings. During a power outage, the elevators may not work, and removing persons from elevators is a high priority for Facilities Services crews.

For emergency procedures for a power failure, see your Building Emergency Plan (BEP) or contact your building coordinator.

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Before a Power Outage

Facility-Specific Emergency Power

Contact Facilities Services or your Building Coordinator to find out what emergency power is available in your building, and connect all essential equipment (e.g., incubators, gnotobiotic chambers, deep freezers) to these emergency power circuits. Some buildings have permanently installed emergency backup generators. These generators typically serve critical functions such as emergency lighting, and may have additional service capacity. Facilities Services manages and maintains these generators, along with a small number of portable units that may be available to keep critical operations going during power interruptions.

Important: Never plug your own emergency generator into a building. Adding a separate, additional power source can overload the circuit and create a risk of fire and other injury.

Equipment Considerations

Make a list of equipment that must be reset or restarted once power returns, and keep instructions for doing so in a nearby place or affixed to the equipment. Equipment that operates while unattended should be programmed to shut down safely during a power failure and not to restart automatically when power returns.

Laboratory Buildings

Emergency Contact

Each laboratory should designate an emergency contact person who can be reached 24 hours a day. This person should be knowledgeable about all major operations in the laboratory. This person's name and contact information should be given to the appropriate Department Safety Coordinator and Building Coordinator and posted on all entrances to the laboratory. Alternate contacts should also be listed. (Call EH&S to find out who the Department Safety Coordinator is for your building. Contact the Office of Emergency Management to find out who the Building Coordinator is for your building.) See Fume Hood Flow Meter Information and Instructions.

Fume Hoods

Ensure that all fume hoods have a physical, non-electrical indicator that demonstrates whether they are running. A simple solution is to hang a strip of tissue paper that will flutter when the hood is in operation. The Magnehelic hood airflow monitors are also non-electrical. Know how to check your Magnehelic to tell if your hood is operating properly.

Biosafety Cabinets

Consider installing an Uninterrupted Power Supply (UPS) for cabinets with critical operations.

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Cold Storage

If your building has items that must be kept cold, identify an emergency source of dry ice.

Note: Refrigerators and freezers will maintain their temperature for several hours if they are not opened. Do not use dry ice in walk-in refrigerators or other confined areas because hazardous concentrations of carbon dioxide gas will accumulate and displace oxygen

Consider adding a maximum registering thermometer to refrigerators and freezers that can record the warmest temperature reached in the unit during the power outage. This will determine when it is safe to open a refrigerator or a freezer that fails during a power outage.

Hazardous Equipment

Some equipment, such as shop machinery, may cause injury if it recommences operation automatically when power resumes after an outage. Identify such potentially hazardous equipment before a power outage occurs. If power fails, assign an employee to disconnect such equipment from its power source, unless an immediate evacuation order has been issued.

Data Backup

Back up your computer files regularly, so as not to lose data when the power goes off suddenly. Use an Uninterruptible Power Supply (UPS) for critical machines such as servers.

Other Emergency Planning Tips

Planning ahead makes any emergency easier to handle. Take this opportunity to review your laboratory and building emergency procedures, before power failure strikes. In particular, read your Building Emergency Plan, which provides building-specific emergency response and evacuation information. Contact your Building Coordinator for a copy of the Building Emergency Plan.

Call the Office of Emergency Management at (510) 642-9076 to find the name of your Building Coordinator. You may also want to print out this fact sheet and store it now, because it may not be accessible from the internet when the power is out.

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During a Power Outage

Best Practices

Check equipment connected to emergency power sources. In some cases, it may take as long as 60 seconds for the emergency power to activate after a power failure. Do not connect additional items to emergency outlets during a power failure.

Disconnect all equipment that runs while unattended, and turn off unnecessary lights and equipment. This will reduce the risk of power surges and other potential damage or injury that could result when the power comes on unexpectedly.

Never plug your own emergency generator into a building. Adding a separate, additional power source can overload the circuit and create a risk of fire and other injury.

Laboratory Buildings

If hazardous materials are used in your building, and the mechanical ventilation system has failed, it is important to cease hazardous operations. Contact your department office or Building Coordinator for additional information about the outage, and to find out if evacuation is called for (EH&S can help make this determination).

- **Experiments -** Shut down experiments that involve hazardous materials or equipment which automatically restarts when power resumes.

Make sure that experiments are stable and do not create uncontrolled hazards, such as dangerous vapors in a nonfunctioning fume hood.

- **Fume Hoods -** Check all fume hoods. Stop any operations that may emit hazardous vapors. Cap all chemical containers that are safe to cap, and then close the fume hood sashes. Warmer interior air may cause a chimney effect, which can help to contain and exhaust contaminated air in the hood. Leave and post “closure” signs outside the room(s). Contact EH&S if you notice any odors or physical symptoms.

Contact	How to Reach
EH&S Designated Urgent Response Team	(510) 642-3073 [M-F, 8am-12pm, 1-5pm]
UCPD (Non-emergency)	(510) 642-6760 [anytime]

- **Biosafety Cabinets** - Check biosafety cabinets (BSCs). Stop operations, cap all containers, and close the sash. Leave and post "closure" signs outside the room(s). Avoid resuming working until the outage has been resolved. Contact EH&S if the outage affects containment of pathogens:

Contact	How to Reach
EH&S Designated Urgent Response Team	(510) 642-3073 [M-F, 8am-12pm, 1-5pm]
UCPD (Non-emergency)	(510) 642-6760 [anytime]

- **Cold Storage -** Check items stored in cold rooms, refrigerators, and incubators (shakers, baths, CO_2 incubators, nitrogen tanks). You may need to transfer vulnerable items to equipment that is served by emergency power.

Emergency Procedures

Evacuation

Evacuate immediately if the building fire alarm sounds, when requested to by the fire department or other emergency responders, or in the event of a life threatening emergency or hazardous spill Building Coordinators and department managers may authorize evacuation as they are familiar with building-specific operations, potential hazards, and staff needs. Please consult your supervisor if you think it is appropriate to evacuate your building, but an evacuation has not yet been ordered.

If emergency lights activate or if there is enough natural light to see, it is safe to continue non-hazardous work inside the building, so long as emergency egress (exit) signs are still functioning. If natural or emergency lighting diminishes to unsafe levels, then the building needs to be evacuated.

- **Life-Threatening Emergencies** - In the case of any life-threatening situation, including fires, earthquakes, dangerous chemical releases, or serious injuries or illnesses, evacuate the building immediately by following your Building Emergency Plan procedures.

  If any injuries or illnesses require care beyond first aid, contact UCPD immediately to coordinate the appropriate emergency medical service.

Contact	How to Reach
UCPD (Berkeley Fire Dept., Emergency Medical Service)	(510) 642-3333

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Hazardous Material Spills - If hazardous material has been spilled, or radioactive material has been released, evacuate and isolate the area, and contact the Office of Environment, Health & Safety (EH&S). After business hours, EH&S can be reached through the UCPD dispatch by calling the non-emergency phone number.

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EH&S Designated Urgent Response Team	(510) 642-3073 [M-F, 8am-12pm, 1-5pm]
UCPD (Non-emergency)*	(510) 642-6760 [anytime]

*After business hours, EH&S can be reached through the UCPD dispatch by calling the non-emergency phone number.

Fire Alarm Systems

Fire alarm systems have backup batteries that will last approximately 24 hours. If power has not returned within this time, EH&S should be contacted to evaluate the system using the information above. If the building is deemed safe for occupation by EH&S after the battery has failed, the Campus Fire Prevention Staff will prescribe fire watch procedures to the building manager.

Backup Power Failure

If emergency power generators fail, contact Facilities Services. Repair calls will be prioritized based on their impact to life safety.

Contact	How to Reach
Facilities Services (510) 642-1032	(510) 642-3073 [M-F, 8-12, 1-5]

Emergency Lighting

Emergency lighting provides enough light for a safe exit. Batteries in these lights may last up to 90 minutes, but could fail sooner than that. It is important that lighting in hallways, stairwells, and corridors is monitored during a power outage to ensure that occupants can exit safely. If natural or emergency lighting in these areas diminishes to unsafe levels, then the building needs to be evacuated. Occupants working in areas located below ground level, without natural lighting, should be made aware that the emergency lights may only last 90 minutes, and should be prepared to evacuate before those lights fail.

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After a Power Outage

Re-occupancy: If a building was asked to evacuate

For buildings without hazardous materials, approval from EH&S is not required for reoccupation; Once power is restored, occupants should conduct a sweep to verify that everything is okay. If the building does not have mechanical ventilation during a power outage, natural ventilation can be facilitated by opening outside windows.

Laboratory Buildings

If hazardous materials had been in use in fume hoods, permission to re-occupy must be granted by EH&S in consultation with building management. In most cases, it is recommended that a building remain unoccupied at least 60 minutes after the mechanical ventilation systems have resumed function. This time frame will allow for approximately three cycles of air exchange in each room that is equipped with mechanical ventilation.

Reset/restart/check equipment after EH&S allows re-entry into the building.

Fume Hoods - Check that the air flow of your fume hood has been restored. Check the hood airflow monitor. If the hood does not have proper airflow, post a warning and do not use hazardous materials in that hood until maintenance crews reset the system.

In many cases, fume hood exhaust fans on the roof will not restart automatically. Keep fume hood sashes closed, and contact your Building Coordinator or Facilities Services for a manual restart. The hood fan number may be listed on the hood, such as “HF#1.” During a widespread power outage, it can take up to a day for Facilities Services to get all of the exhaust fans on campus turned back on. Occasionally some hood fans are missed or do not restart, so it is important to confirm that air is flowing before using any hood.

- **Biosafety Cabinets** - If biosafety cabinets are connected to emergency building power, it may take up to 60 seconds for the cabinets to resume operation. Once the BSC resumes operations, let it run for at least 10 minutes before continuing your work.

Cold Storage - If a refrigerator or freezer failed during the outage, keep the door closed until it returns to a safe working temperature. If applicable, refer to a maximum registering thermometer of refrigerators and freezers for the warmest recorded temperature reached in the unit during the power outage.

Contact EH&S at (510) 642-3073 for guidance on biological or chemical hazards stored in failed refrigerators or freezers.