




Stanford University Concept of Operations Plan Power Outage

Land, Buildings, & Real Estate
University Information Technology

University Communications
Office Of Emergency Management



2024

Photo Credit: WILLIAM MENG/The Stanford Daily

As an Annex to the Stanford University Emergency Operations Plan,
this document is subject to revision at any time.

Comments and suggestions should be directed to:

Stanford University
Land, Buildings, & Real Estate
University Information Technology
University Communications

or

Office of Emergency Management
650-723-0448
preparedness@stanford.edu
ehs.stanford.edu/about-us/emergency-management



Plan Maintenance and Distribution

The Stanford University Land, Buildings, and Real Estate (LBRE) department, University Information Technology (UIT) department, the University Communications (UComm) division of the Office of External Relations (OER), and the university's Office of Emergency Management (OEM) are responsible for developing, maintaining, and distributing this Power Outage Concept of Operations Plan (ConOps).

LBRE, UIT, OER, and OEM will make the ConOps available to university academic and business units and other partner organizations as necessary and upon request.



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Introduction

Purpose

This plan provides for unified coordination of Stanford University’s response to a potential or actual power outage (interruption in the supply of electricity) including among its operational, academic, research and business units as well as engagement with local and state public utilities and public safety agencies.

This plan is a supplement to the university Emergency Operations Plan (EOP) and is designed to:



- Outline key concepts and procedures
- Identify roles and responsibilities
- Provide direction regarding coordination and communications
- Facilitate development of supporting incident plans and procedures by university academic, research, and business units, and allied stakeholder agencies

Scope

This plan supplements — but does not alter - EOP policy and procedures, such as for activating and managing the Emergency Operations Center (EOC). It does provide additional guidance that supplements the EOP within the context of a Power Outage. This ConOps addresses a power outage incident occurring on the Stanford campus, Redwood City (SRWC) campus, Stanford Research Park (SRP), or on other university-owned and occupied properties.

The location, scale, and type of Power Outages that the university may face are often unpredictable but may also be the result of weather events such as winter storm, significant wildfire conditions, equipment failure, insufficient generation, or planned Public Safety Power Shutoff (PSPS).

This Concept of Operations provides a broader framework and potential courses of action that may guide overall response. It identifies specific areas of responsibility for tasks above and beyond normal business that may need to be addressed during a power outage.

This plan is primarily focused on response operations and communications. Elements related to broader emergency preparedness, long-term recovery, and mitigation efforts are addressed in the university’s EOP.

This plan does not alter existing university academic and business unit emergency response procedures, processes, or resources.

Overview and Planning Assumptions

Overview

Although still relatively uncommon, Stanford has experienced electrical power outages which have resulted in significant disruption to the university's academic, research, and business functions. Recent power outage incidents have occurred in 2018¹, 2019, and several times each in 2022 and 2023.² These events have required hours to multiple days to restore normal operations.

Stanford has a diverse and unique set of energy challenges reflective of the University's diverse and unique infrastructure and operations. Stanford campuses and facilities have been built over decades. Because of this, electrical systems can be a complex issue, placing a wide variety of processes at risk of power disruptions.

When the power goes out, critical equipment like elevators, cold storage freezers, sump pumps and air conditioners may be damaged and require repair, rendering them out of service for days or more. Damage may also occur in sensitive electronic equipment if power returns with a sudden surge.

Power outages also have the potential to impact critical data center and electronic communication hub (ECH) facilities. Outages may bring down wireless networks in buildings where the information technology infrastructure is not supported by emergency generator power — this may cause online and in-person classrooms that rely on the internet or digital programs to come to a standstill³.

University Electrical Systems Description

On average, the University requires 50 megawatts (MW) of electricity to fully function - the vast majority of this electricity originates at wholesale suppliers within the state. One such supplier is Stanford's Solar Generating Stations in Southern and Central California, which provide a 100% renewable supply.

This electricity is then purchased from the supplier through Direct Access contracts and fed through an on-site substation, which runs on two different transmission lines (Jefferson and Cooley Landing) from both the north and south. PG&E provides power for Redwood City campus and faculty housing (see map below) while Palo Alto provides power for the hospitals and the Stanford Research Park. Small "rooftop" systems on campus augment this supply.

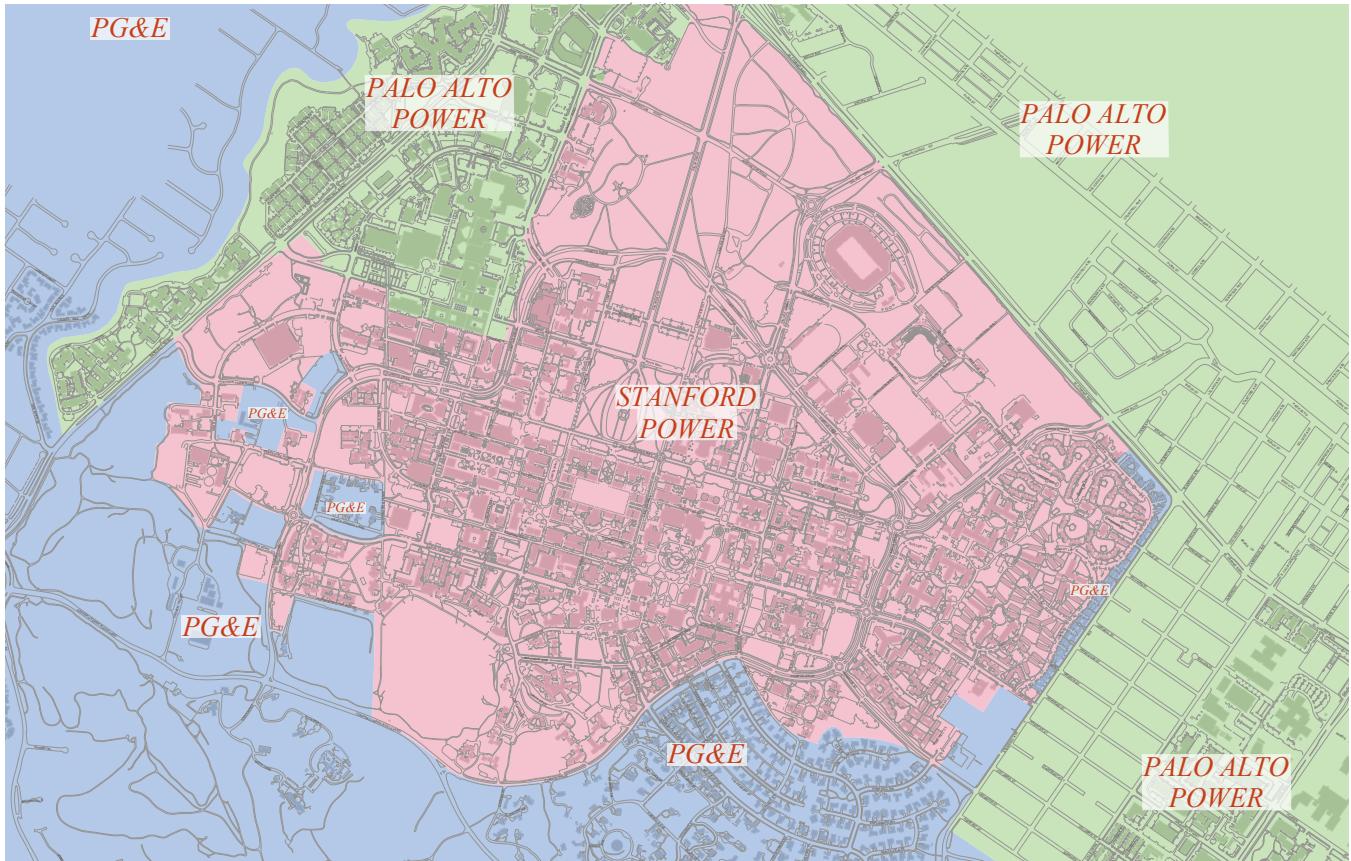
The university's Central Energy Facility (CEF)'s 100 megavolt-amperes (mVA) substation is capable of producing about twice the current campus load or enough to power about 100,000 homes. This is both for redundancy and to allow room for growth in the future.

After electricity arrives at the substation, it is transformed from 60 kilovolts (kV) down to 12 kV. This high-voltage electric power can then be shuttled around campus underground through a web of 12 kV and 4 kV feeder circuit cables and switches. Here the power from multiple sources is typically stepped down to 480 volts so it can be supplied to individual buildings. Load centers within the buildings then step the voltage down further so it can be supplied at normal service voltages.

1 <https://news.stanford.edu/2018/10/24/outage-turns-off-power-one-third-campus-buildings/>

2 <https://stanforddaily.com/tag/power-outage/>

3 <https://www.bloomenergy.com/blog/a-day-without-power-outage-costs-for-businesses/>



Types and Causes of Power Outages

There are several potential causes of power outages including:

Localized equipment failure

Power systems serving the campus, or at specific locations could fail due to equipment damage, fallen lines, winter storms, animals, or use of enhanced power safety settings. Additionally, power may be shut off to protect responders during structure fire responses.

Distribution and transmissions systems equipment failure

This could include actual damage to equipment, power lines, or control systems, the effects of extreme heat or wildfire smoke, as well as shutoffs during wildfire responses. This is the most common cause of large-scale power outages at the university. Per the State of California 2016 Bay Area Earthquake Response Plan⁴, following a magnitude 7.0 earthquake along the Hayward fault, “... over half of households in the affected area would be without power for 24 hours with over 14 percent still without power a week later.” Restoration efforts would be constrained by the availability of electrical system

⁴ https://emergencymanagement.sccgov.org/sites/g/files/exjcpb261/files/For%20Partners/bay-area-earthquake-plan_0.pdf

workers as well as shortages of repair parts due to high demand and manufacturing delays.

Public Safety Power Shutoffs (PSPS)⁵

Due to high fire hazard weather conditions, PG&E may elect to de-energize transmission and distribution lines that traverse high wildfire hazard areas in order to reduce the chance of accidental fire ignition.⁶ See PSPS section below.

Curtailement

Although rare, if a mechanical issue develops on one of the primary transmission lines serving the main campus, PG&E may request that the university partially or significantly reduce its use of power. At that point, LBRE will determine which circuits to de-energize and develop a timeframe for when power may be shut off. As time permits, LBRE will engage and communicate with schools, operating units, and University leadership using the procedures in this Annex.

Rotating Outages

Due to transmission system failure or insufficient power production during periods of high demand (ex. hot summer day), the California Independent System Operator (ISO) may direct utilities to reduce power consumption or implement rotating outages in order to maintain the stability of the grid — often with little advance notice.⁷ In turn, PG&E will identify which circuits it will turn off to meet the target set by the ISO - these could include those serving the

university. While Stanford Health Care (SHC) should remain exempt from any loss of power, the rest of the university, SRWC and SRP may be impacted.

Brownouts

Brownouts typically occur if there is a drop in electrical voltage or a drop in the overall electrical power supply. The term for these types of outages derives from the dimming that happens to lights when the voltage sags. While brownouts do not result in a complete loss of power, they can cause poor equipment performance and some devices may not operate with the lowered voltage during one of these outages.

Blackouts

A blackout is a complete loss of power to an area. This is the most severe type of power outage, typically affecting large numbers of people over sometimes incredibly large areas. Blackouts usually result from major damage to electrical generation facilities (such as structural damage from violent windstorms or lightning strikes) and are particularly difficult to repair and restore.⁸

Potential Impacts of Power Outages

Telephone and network connection⁹

In the event of a power outage, VOiP telephone and network connections in most locations on

5 <https://ehs.stanford.edu/news/information-on-pge-public-safety-power-shutoff-program>

6 https://www.pge.com/en_US/residential/outages/public-safety-power-shutoff/learn-about-psps.page?WT.mc_id=Vanity_pspresources?utm_source=spm-sem&utm_campaign=pge-afn&utm_medium=rch-hfrpge-zip-gs-a-en&utm_content=sem-SPM5EF93124&gclid=Cj0KQCjwhL6pBhDjARIsAGx8D5-q1rQQQVEFeFkfdVZ_fP4d3Lh5_dkoaLnFdN1Wz2GDEWwizDyVvccaAnavEALw_wcB

7 <https://www.caiso.com/Documents/Emergency-Notifications-Fact-Sheet.pdf>

8 <https://taraenergy.com/blog/power-outages-101-what-causes-them/>

9 <https://uit.stanford.edu/guide/power-outage>

the historic and Redwood City campuses and School of Medicine (SoM) facilities at SRP should be available for approximately 20 minutes via UPS (uninterruptible power source) batteries. Should the outage last longer than 20 minutes, telephone and network service will fail unless local networking systems are on emergency generator backup power. Centrally-supported printers (Cardinal Print) may also be affected. Students, faculty and staff can subscribe to UIT Service Outage notifications.¹⁰

Cellular networks

Depending upon the extent of the emergency, (ex. a major earthquake), power outages may result in degraded or unavailable cellular voice and data service. In buildings without emergency power for information technology (IT) infrastructure, battery systems will provide at least 20 minutes of wireless (Wi-Fi) service.

Remote Antenna Nodes (RANs) are neutral host antenna towers on campus maintained by a private contractor that provide coverage for AT&T, Verizon, T-Mobile. Most RANs can operate without power for about four hours - a few RANs are supported by building emergency generators. *Note: Poor cellular coverage inside some buildings may be due to the nature of construction, plated windows, or other facility features.* Also, limited cellular nodes and increased demand may result in system congestion resulting in dropped calls or unavailable service. Texts will eventually be transmitted but may be delayed.

Voice Radio

The Mototrbo voice radio system used by the Department of Public Safety (DPS) and Department Operations Centers (DOCs) and administered by DPS is supported by a tower site with five days of

emergency power. Individual portable radio devices can operate for 6 to 18 hours without recharging.

Facility safety systems

Building fire monitoring and alarm systems are required to have emergency power sufficient to power the monitoring system for at least 24-hours and to power the alarm signals at least once during that 24-hour period. Although not required, some alarm systems may continue to function beyond 24 hours if the building has emergency power. Fire doors may also be affected (i.e. close automatically but can be opened manually).

Loss or degradation of broadband wired or wireless networks serving cell phone, wireless data, and cable may impair the ability of individuals to access the 911 emergency services system and may also reduce the effectiveness of community alert and warning systems such as AlertsSU or the federal Wireless Emergency Alert (WEA) system.

Facility access control systems

In the vast majority of cases, when power first fails, wired access card readers and systems will continue to operate on battery backup - which may last up to four hours. When battery backup power fails, building doors will immediately lock and require a key for access. Wireless locks function on battery at all times and will function with the last set of commands that were in place when the power outage occurred. Doors will always allow individuals to exit.

Regardless of their state (locked/unlocked) when a power outage starts, facility exterior doors will return to their currently programmed state when power is restored. The only exception is that a decision may be made by University leadership to place the full campus in card-only access mode in

¹⁰ <https://itcommunity.stanford.edu/stay-informed-service-outages>

order to ensure buildings are properly staffed before being potentially unlocked.

Video and security systems will also cease to function unless the server is on emergency power.

Facility environmental systems

Unless on emergency generator power, an outage will result in the loss of a facility's heating, ventilation and cooling (HVAC) systems. Additionally, other specialized environmental control systems such as those protecting environmentally-sensitive collections will be affected.

Elevators

When elevators lose power, or the fire alarm is activated, the elevator immediately returns to the first floor. All elevator operations cease until the fire department clears them. All elevators are equipped with phones that ring to the Operator Services Center, a 24/7 UIT contact center. In the event an elevator malfunctions, even outside of a power outage, there is always someone available to coordinate emergency assistance response. All elevators with access control have free access to the first floor.

After power is restored, elevators will not return to service until the elevator maintenance company and fire department conducts an onsite inspection and approves their use.

Research laboratory equipment and systems

Specialized equipment and systems used by researchers to store and process materials and information may be impacted or even damaged due to unexpected power loss, degradation, or restart. Such equipment includes:

- -80° biological sample freezers and other freezers/refrigerators
- Hazardous chemical fume hoods

- Hazardous materials monitoring/alarm systems
- Air handling/monitoring systems
- Safety showers/emergency eye washes (if not freestanding, gravity fed models)
- Animal monitoring/care systems
- Biosafety cabinets
- Materials analysis and processing
- Data processing and storage

Additionally, disruption of research activities may impact research subjects/participants.

Chilled Water

The Central Energy Facility (CEF) chilled water (CHW) system relies on electricity from PG&E to run equipment for CHW services. Two chilled water pumps are equipped with emergency power capability. This will provide chilled water that is stored in the CHW thermal energy storage (TES) Tanks to be used throughout the campus distribution system. The duration of availability for this chilled water capacity will depend on TES Tank capacity at the time of the incident and CHW load demand. CHW TES during extended power outages should be preserved for Hospital services and CHW curtailment may be initiated.

Lighting

Emergency lighting systems may also be affected especially after battery back-up power supplies are exhausted. Traffic management systems (ex. signal lights) may also be compromised although some key intersections have limited battery backups. The absence of streetlights and traffic signals may impact pedestrian and traffic safety.

Access and Functional Needs (AFN)

Individuals with AFN may be especially impacted during large or prolonged outages including those who rely on durable medical equipment, refrigerated

medicines, temperature control systems, mobility equipment charging, and specialized communication devices.

Emergency generation and back-up power

Emergency back-up power may be provided by either battery storage or generation. Batteries are generally used only for individual devices (ex. emergency exit lighting) while generators may be used to power entire facilities or selected circuits in facilities.

The university has over 150 buildings that receive emergency power from more than 100 diesel generators. The generators are generally designed and resourced to supply approximately 48 hours of power without refueling. Generators are limited by the amount of power they can produce (i.e. the number of circuits supported) and by the amount of fuel in storage. LBRE manages a prioritized generator refueling plan. *Note: SoM and SHC maintain their own emergency generator programs.*

Alternate work locations

Depending on the location of the outage, it is possible that some portions of campus, Redwood City or Stanford Research Park may still have power. Staff may be able to use touchdown spaces in alternate locations that remain powered.

Other options:

- [Stanford Newark HUB](#), if it is not impacted by a power event. This alternative work site in the East Bay may have capacity for additional staff. During an emergency, staff could drop in (office hours are 7:30-4:30) without having to pre-register. *Note: this site does not have emergency power.*
- A friend's or family's home, coffee shops, or any local places that you know of, that have Wi-Fi. A last option would be your iPhone as a personal

hotspot, as long as you have power on your phone battery.

Planning Assumptions

A power outage is usually unpredictable and unexpected. However, several general assumptions can guide planning for any power outage. A power outage will usually:

- happen with very little or no notice
- start quickly and continue for hours or multiple days
- significantly impact university academic, research, and business operations including the potential suspension of activities
- result in immediate and significant demands for emergency public information.
- generate large amounts of misinformation and confusion
- be addressed primarily by LBRE and PG&E
- not be specific to the university but may also affect adjoining jurisdictions and even the Bay Area region
- take minutes to days to restore, depending on nature and scope of the outage.

Additionally, a power outage may:

- occur while other challenges are present (ex. extreme heat or winter storm)
- occur in a facility, an outside common space, or at a major special event
- happen simultaneously in multiple locations
- affect some parts of campus while not affecting others
- degrade the ability to respond to other concurrent emergencies
- trigger involvement of local public safety and government agencies

- result in the failure of some emergency power generation/back-up systems
- result in spikes or degraded quality of electrical power which can damage sensitive electronic equipment

Note: In a few circumstances, a power outage may occur with some advance notice including ISO Power Emergency, PG&E Curtailment, and PSPS.

Public Safety Power Shutoffs (PSPS)

The risk of wildfire increases when several factors combine including high winds, critically low humidity, and low vegetation fuel moisture. During these conditions, electrical transmission and distribution lines can ignite fires if they are downed by winds and/or trees.

In 2019, the California Public Utilities Commission (CPUC) gave local gas and electricity provider Pacific Gas & Electric (PG&E) full discretion for calling a preemptive de-energization of electrical transmission and distribution systems to protect public safety under California law. PG&E will de-energize only if it “reasonably believes that there is an ‘imminent and significant risk’ that strong winds may topple power lines or cause major vegetation-related damage to power lines, leading to increased risk of fire.”

PG&E is the utility that transmits power to the university main campus and directly distributes power to R&DE Upper Row Houses and SCRL neighborhoods. *Note: PG&E and Palo Alto Power distribute power to the Redwood City campus and Stanford Research Park, respectively (see Appendix C) - these may also be subject to PSPS events.*

Considerations for PG&E when determining whether to shut down power include:

- A Red Flag Warning declared by the National Weather Service (NWS)
- Low humidity levels, generally 30% and below
- Forecasted sustained winds above 20 miles per hour (mph) and wind gusts in 30-40 mph, depending on location and site-specific conditions
- Condition of dry fuel material on the ground and live vegetation near lines including the presence of trees that could potentially fall onto lines)
- On-the-ground, real-time wildfire related information from PG&E’s Wildfire Safety Operations Center and field observations from PG&E field crews

Once the decision is made to implement a PSPS, PG&E will notify local public safety agencies and governments. However, there may only be a few hours or minutes between notifications and implementation. As conditions and time permit, the university may be notified of an impending PSPS by a local public safety agency or directly by PG&E.

Concept of Operations

The EOP defines the university's general emergency response organization, authorities, policies, priorities, and procedures. A significant or extended duration power outage would likely be considered a Level 3 Emergency as defined in the EOP requiring an extraordinary response engaging a broad range of academic and business units. For incidents occurring adjacent to university property, the university's role may be one of support.

LBRE will serve as the lead university organization for the initial response. Additional university units (ex. UIT and OEM) and schools (ex. School of Medicine) may also work to address the immediate consequences of a large or long-duration outage.

Readiness

While power outages are unpredictable, this plan establishes two levels of readiness: baseline, for when there are no imminent threats or concerns; and heightened, for credible hazards that could affect electrical systems.

Baseline Readiness



Baseline Readiness consists of ongoing education, training, mitigation, measures and exercising for the larger Stanford community. Because a power

outage is usually unpredictable, the best way to prepare for an incident is to foster a culture of inter-agency cooperation and conduct regular incident management training & exercises.

Local conditions

With the wide range of facilities, uses of facilities, and types of occupancy, all units and schools are encouraged to identify and understand the power situation for each facility that they occupy. See also the Guidance below.

- Does the facility have emergency power?
- Is critical equipment connected to emergency power?
- How will equipment be affected by a transition from regular power to e-power?
- Does any sensitive equipment require UPS?
- How long will the local generator run without refueling? How long if refueled?

University Power Disruption Preparedness Guidance and Resources

Individuals

[Cardinal Ready Power Outage](#) and [PG&E Public Safety Power Shutoffs](#).

Research facilities and laboratories

[Preparing for a Power Outage in a Research Facility](#)

Organizational response

[EH&S Emergency Response Guidelines Power Outages](#)

How to Prepare for a Power Outage

[UIT Power Outage Impacts on IT Services](#)

Heightened Readiness

Heightened Readiness occurs when LBRE or other university leadership identify a potential hazard which could impact electrical power systems. For example, a California Independent System Operator (ISO) warning of potential blackouts, a PSPS event, or a weather forecast of high winds. This may trigger:

- Engagement with the university's Situation Triage Assessment Team (STAT)
- Placing selected emergency response elements at higher states of readiness, including activations of DOCs and/or the EOC as needed
- Information sharing and/or instructions for the university community
- Increased staffing to support critical university facilities and operations
- Implementation of Mission Continuity Plans (MCPs)
- Deployment and/or increased testing of critical equipment (ex. generators)
- Maximizing readiness of vehicle fleets including fueling/charging
- Preparation of facilities
- Protection or isolation of sensitive electronic equipment

Response

A power outage can be a short, relatively modest incident with limited impact or a larger, evolving, and complex event impacting large areas and lasting for days. It may take hours to fully understand what has occurred and the full extent of primary and secondary impacts. Impacts and response efforts may vary based upon a number of situational factors including time of day/night, workday vs weekend, academic year or summer, weather (rainy/dry), and/or major planned special events.

Note: university faculty, students, and staff seeking direct notification of when power goes out at specific facilities may elect to install their own power monitor/ alarm device.

Note: for outage incidents affecting only faculty (SCRL) residences or Upper Row houses, communications and direct response is led by PG&E.

Response Phases

While it is not possible to exactly predict how such an incident may unfold over time, we can think of response efforts occurring in time frames or phases for the purposes of planning. These phases intentionally overlap and do not always occur in a perfectly sequential fashion but, for organizational purposes, can be considered to be more discrete elements of the plan. During business hours, measuring from the time the outage started (E), these phases are:

Phase 1:
Initial Response and Initial Notification
E to E+20 minutes

Phase 2:
Leadership Notification & Organization Activation
E+30 to E+120 minutes

Phase 3:
Operational Coordination
E+60 minutes

Phase 4:
Restoration
E+TBD

Phase 1: Initial Response and Initial Notification



LBRE will receive notification of an actual or potential power outage from the CEF, PG&E or a university facility director/manager. LBRE will assess the situation, determine the best courses of action, allocate resources, and manage direct response operations if needed.

If the incident is significant in scope, LBRE will activate their DOC via LBRE Alert. LBRE will then alert the Facility Directors group, DOC Coordinators group and Electrical Power Outage Notification group via the Everbridge system.

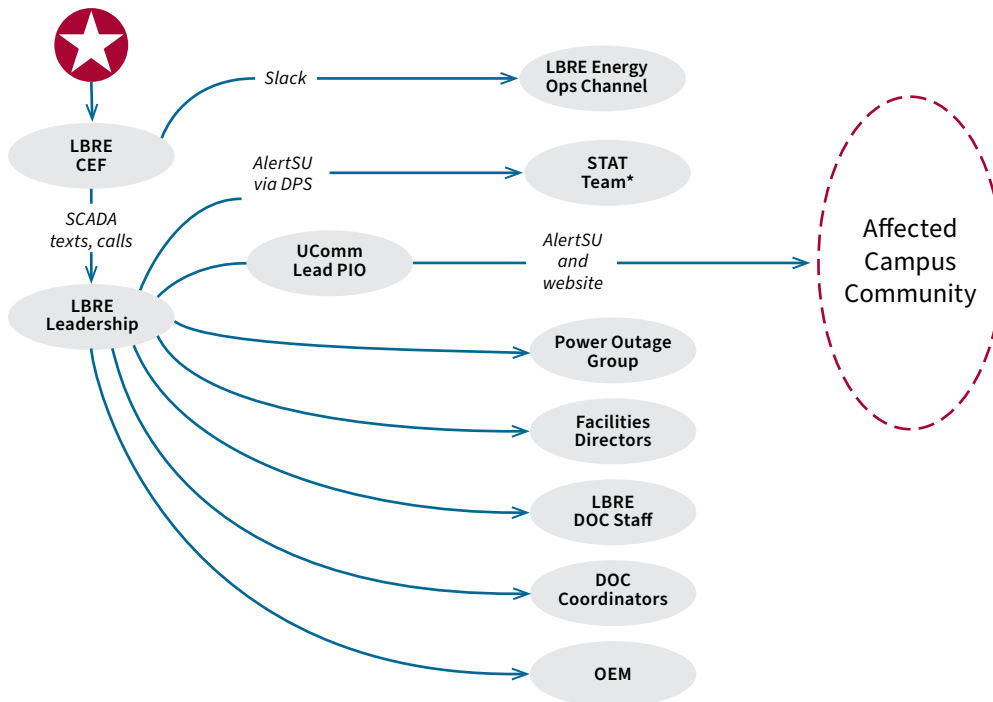
LBRE may request that a **Situation Triage and Assessment Team (STAT)** call be convened (via DPS, OEM, UComm, or the Operator Service Center) if the outage is campus-wide, on a feeder circuit, or impacts critical facilities. During the STAT call, LBRE will brief members on the current and potential incident impacts, actions to date, and

recommended next steps. STAT team members will address questions, identify essential elements of information, and determine the appropriate scope of response as needed.

UComm may issue an initial **AlertSU** to the portions of the Stanford community affected by the outage (see Appendix B: Sample Power Outage Messages). *Note: for incidents occurring during the hours of 6 am to 8 pm, AlertSU messages may be issued as email and/or text messages.* UComm may update the SU emergency website emergency.stanford.edu and use other outreach channels including social media. Also, as conditions may change rapidly, some messaging may not be applicable to all recipients.

Schools and business units may conduct additional internal notifications for faculty, staff and students. *Note: response will be proportional to the scope of the incident.*

Phase 1 Communications



Phase 2: Leadership Notification and Emergency Management Organization Activation

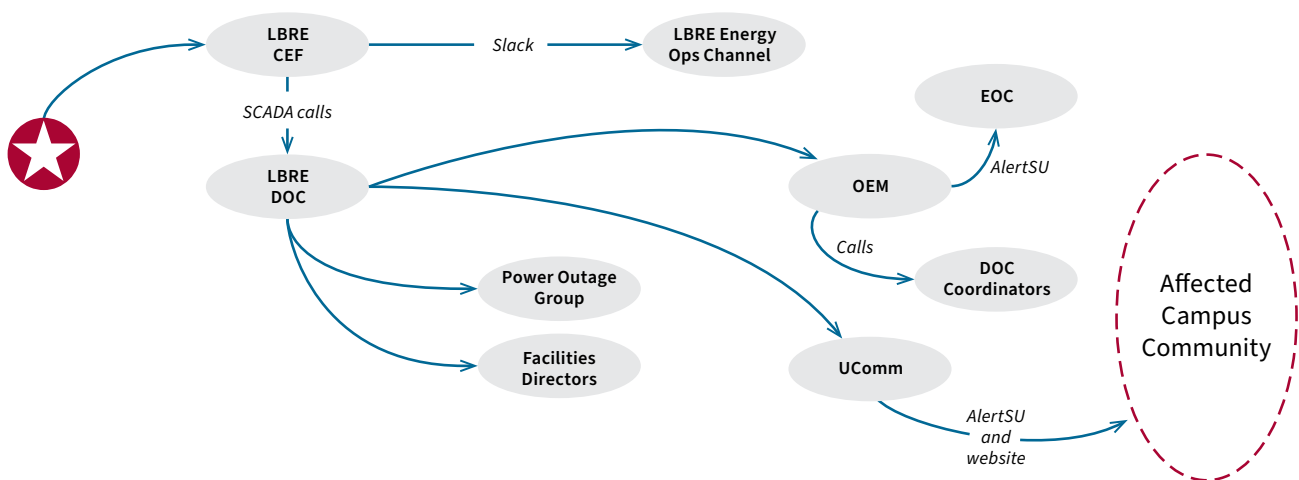
Following their call, STAT team members may then brief university leaders including the President and Provost. For major or extended duration incidents, **Department Operations Centers (DOCs)** may be activated. OEM will send a group AlertSU message to DOC Coordinators instructing them to convene for the initial DOC Coordinator briefing call via Zoom. SHC and SLAC will also be notified.

OEM may be directed to the university **Emergency Operations Center (EOC)** and request staff to respond to the EOC if safe to do so. Staff will focus

on situational awareness, communications, and planning for expanded services. See Appendix C (Sample Initial EOC Action Plan). If the EOC is activated, Public Information will be coordinated via the EOC.

At this phase of the response, UComm continues to issue updated information via AlertSU as well as instructions to students, faculty, staff, and visitors. Emergency alert information is posted and updated continually on emergency.stanford.edu and via social media.

Phase 2 Communications



Phase 3: Operational Coordination

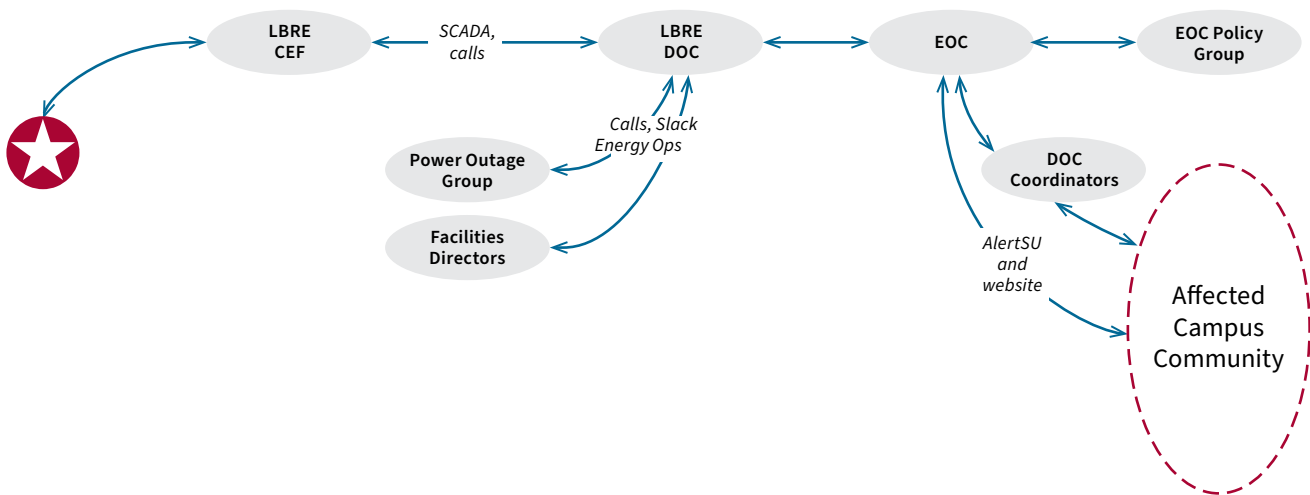
At this point, the **EOC** may be activated and provide support to operational units and coordinate situation status and resources with business and academic **DOCs**. LBRE may co-locate its **DOC** at the EOC. The EOC is actively communicating with university stakeholders as per this ConOps to address operational coordination issues and identify any support needed for public safety or critical mission continuity functions.

Senior Leadership, serving as the **EOC Policy Group**, continues to address major policy decisions

in coordination with other university leaders (ex. suspension of activities).

If the power outage is caused by a failure of PG&E equipment, the ability of University representatives to directly impact power restoration is limited. In such circumstances, University resources are dedicated to maintaining on campus emergency power to the fullest extent possible for the most critical functions until PG&E power is restored. If possible, the campus will work with PG&E to shift power sources to restore power as rapidly as possible.

Phase 3 Communications



Phase 4: Restoration



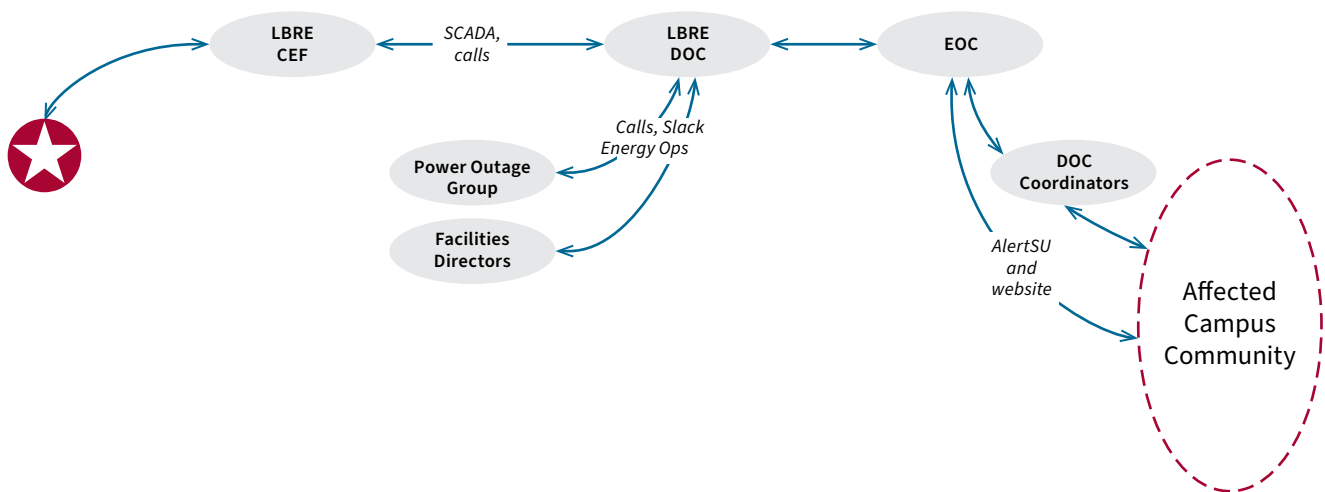
When power is lost or curtailed, LBRE may disconnect from PG&E to enable a safe and controlled partial or full restoration when electrical supply returns. LBRE will notify and work with facility directors and other stakeholders to identify when power will be restored. Some schools and operating units may need to prepare for the return of power by safeguarding equipment and monitoring systems. *Note: in some circumstances, not every school or operating unit may have power restored at the same time.*

The Stanford Power system is divided into eighteen 12kV feeders (aka distribution circuits) and the President and Provost Feeder Circuit Curtailment Priorities rubric will guide efforts when there is not enough power to restore the entire system. Conversely, if PG&E requires that Stanford Power reduce or curtail load during normal operations, the

prioritization rubric will guide which circuits to turn off first.

Once power has been restored, some distributed information network infrastructure may not reboot and recover on its own. UIT follows a detailed procedure to identify, prioritize, dispatch, and resolve network infrastructure issues that do not recover after re-energizing. UIT monitors this network infrastructure 24x7 and if devices do not recover, technicians are dispatched to restore services. The scope includes wired and wireless network switches, wireless access points, access control systems, and centrally-supported printers (Cardinal Print). *Note: end-user computers are out of scope of this centralized monitoring and restoration procedure. See also UIT How to Recover from a Power Outage.*

Phase 4 Communications



Other Services



Depending on the nature, scope, and severity of the power outage incident, the university may provide a range of services including public safety, mass care, student care, mission continuity.

night lighting and other facilities or services when student residences are impacted.

Mass Care Services

Mass Care services include shelter, feeding, and the distribution of emergency supplies. In most cases, power outages will end before most Mass Care services are required.

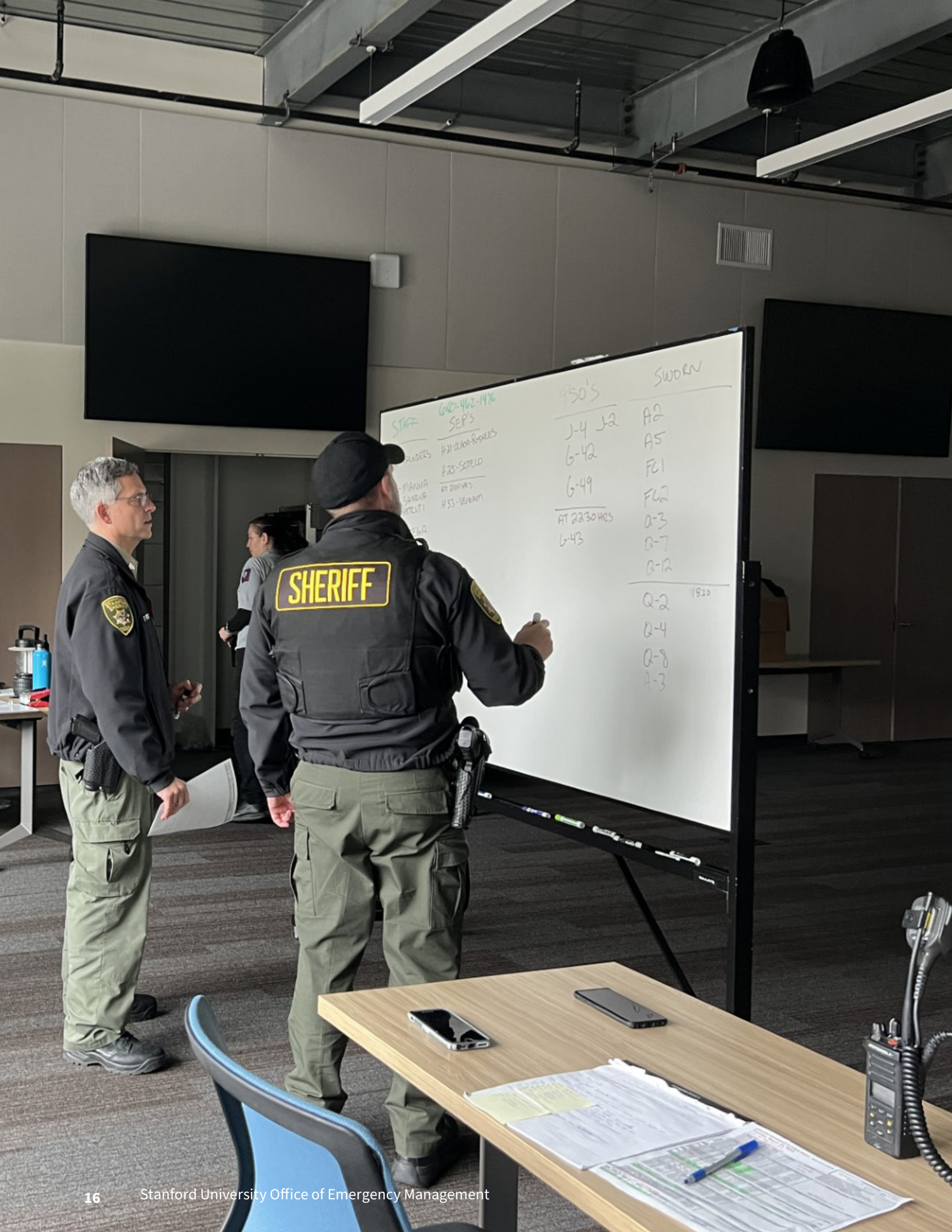
Mission Continuity

Schools and business units may need to implement elements of their mission continuity plans (MCPs) should the availability of facilities, staff, communications, access, or other resources be compromised.

Student Care Services

Student care services include providing for alternate dining, study areas, cooling centers, emergency





6-20-462-1976

STAFF

LEADERS

HAI-ROSALES

#25-SCITELD

AT 200405

#53-VERHAM

SWORN

J-4 J2

G-42

G-49

AT 2230405

G-43

A2

A5

F21

F22

Q-3

Q-7

Q-12

Q-2

Q-4

Q-8

A-3

1830

Roles and Responsibilities

Many university academic and business units will be involved in a comprehensive response. Key roles and responsibilities for these units are listed below. Duties listed here are largely in addition to those established in the university's EOP and normal business operations. Any school or unit not listed here is assumed to operate largely under the general guidance provided in the EOP and in their local Mission Continuity Plans.

University Departments/Units

Department of Public Safety (DPS)

- Coordinate Operational Area and state/federal law enforcement efforts and resources
- Assign DPS staff to the EOC to coordinate incident information and actions
- Increase security for critical functions and facilities (ex. childcare)
- Conduct traffic management as needed
- Assist in coordinating the procurement and set-up of emergency lighting in residential and high traffic areas

EH&S - Occupational Health and Fire Marshal's Office (SUFMO)

- Identify and address hazardous materials conditions in affected laboratories and facilities
- Provide technical support for fire alarm and building safety systems
- Provide support for worker entry into confined spaces or hazardous environments
- Report status of systems to EH&S DOC and/or EOC

Human Resources

- Support faculty and staff accountability efforts
- Establish/communicate policy regarding university staff reporting for assignments
- Provide guidance on use of leave time and early release from work if appropriate.

LBRE

- Provide initial notifications to Stanford facility and emergency response staff
- Assess scope and estimate duration of impacts to facilities, systems and operations
- Brief university leadership as needed
- Provide equipment and personnel as requested
- Maintain and refuel generators as needed
- Coordinate university operations with PG&E for shifting power sources if needed.
- Implement electrical curtailment when required
- Prepare for and manage university systems for power restoration

Facilities Managers

- Communicate status and updates with facility occupants/stakeholders
- Identify and address impacts including safety, HVAC, and access systems
- Coordinate with LBRE during restoration efforts

Office of External Relations: University Communications Team (UComm)

- Develop and maintain pre-scripted messages for a power outage for AlertSU, Emergency Website, and social media platforms
- Assist in developing and issuing ongoing information updates and warnings
- If directed, implement the university Emergency Communications Plan to share updates and manage media inquiries
- Provide accurate, timely and proactive information to students, faculty, and staff
- Support LBRE, DPS, EOC Policy Group, Student Affairs, R&DE and other units in developing messages for internal use
- Assess the need for establishing a Joint Information System (JIS)
- Develop and update talking points for use by university leadership and spokespersons
- Identify and directly address rumors and misinformation

Office of External Relations: Office of Government Affairs (OGA)

- Interface with City and County government elected officials and leadership
- Coordinate strategic messaging with UComm and university leadership
- Support engagement with the Stanford Parents Club

Office of Emergency Management (OEM)

- Activate and lead STAT calls, if needed
- Notify and ensure coordination with Department Operations Centers (DOCs)
- As needed, activate and coordinate EOC functions
- Prepare and publish EOC Action Plans
- Liaise with city/county emergency management agencies
- Assess performance of this ConOps and identify corrective actions as needed

Residential & Dining Enterprises (R&DE)

- Coordinate with LBRE regarding facilities assessment, closures, and restoration
- Support shelter-in-place efforts for students, R&DE staff and others in residences, dining facilities, cafes, etc.
- Ensure residents have access to their residence when card reader systems are affected
- Establish fire monitor program if fire alarm systems no longer function
- Distribute illumination supplies and place mobile lighting as appropriate in stairwells and bathrooms
- Potentially activate Student Rally Point(s)
- Coordinate with UComm and ResEd regarding messaging for students and parents
- Provide dining services for students, faculty, and staff. Provide alternate dining facilities if needed and alternate lodging for displaced students
- Provide alternate study areas and cooling centers (if outage occurs during periods of high heat)
- Adjust hours of operation as needed

Registrar's Office

- Assess the impact of the incident on ongoing and future class schedules
- Based on duration of interruption, implement Academic Continuity procedures
- Communicate with instructors in coordination with UComm and Stanford Center for Teaching and Learning

Senior Staff/EOC Policy Group

- Determine operational status and course of action for academic and research programs
- Initiate academic and research continuity plans
- Determine status and plan for other activities (arts, athletics, conferences, camps)
- Brief senior university leadership on situation status, major developments, and plans

Stanford Health Care & Stanford Children's Health (SMHC/SMCH)

- Provide status updates to university EOC
- Evaluate impact on ongoing health care operations
- Communicate updates and changes with internal staff and physicians
- Coordinate messaging and information with university EOC and UComm

University Information Technology (UIT)

- Assess current and potential impacts on systems and operations
- Activate DOC
- Track/support availability of University network resources (Internet, Wi-Fi, cell service)

- Implement Major Incident Communications process¹¹
- Monitor impact of incident on university web services; advise UComm as needed
- Manage Lenel card access system as appropriate

Vice-Provost for Student Affairs

- Coordinate with UComm and R&DE on messaging to students and parents
- Communicate with and provide instructions and resources to RAs and RFs
- Coordinate Residential Education, and Graduate Life Office to foster a safe and secure environment in residences and residential areas
- Activate call center procedures to handle incoming calls from parents and constituents seeking information
- Consider impacts to the academic mission and coordinate with the Provost to take actions, if necessary
- Coordinate activities and support for students as needed

Worklife/Childcare Centers

- Ensure safety and accountability of all children in childcare centers
- Communicate any changes to child pickup procedures/locations to parents
- Ensure all children are safely returned to parental custody
- Extend hours of care until all children are picked up and accounted for
- Communicate status of childcare centers to EOC if children remain after hours

¹¹ <https://uit.stanford.edu/it-resilience-toolkit/resilience-programs/service-criticality-tools>

Schools/DOCs

- Assess impact of the outage on staff, faculty, students, visitors, facilities, and systems in your organization
- Implement mission and research continuity plans based on local impact
- Reassign staff to alternate work locations as needed
- Communicate unresolved issues that require university intervention to the EOC
- Consult with HR on policies for staff and faculty affected by the incident
- Communicate with staff regarding status, actions, and additional information

Building Emergency Coordinators

Local Building Emergency Coordinators assist in the development, training and execution of building level life safety procedures. Building Coordinators ensure that building occupants are familiar with local plan specifics and the circumstances under which particular responses such as facility closure. Coordinators ensure that individuals with access and functional needs are accounted for in the local plan and are aware of their response options.

Other Potential Partners

Pacific Gas & Electric

- PG&E communicates with LBRE on status, impacts, and timing of restoration

Stanford Campus Residential Leaseholders

- SCRL is provided electricity directly from PG&E
- SCRL will inform LBRE and or OEM if they lose electrical service and if it is restored
- LBRE will communicate with SCRL and address issues as needed and as possible

LBRE Real Estate Operations (REO)

- Oversee the contracts and tenants at the Stanford Research Park (SRP)
- Activate SRP EOP as needed
- Coordinate directly from Palo Alto Power
- Communicate with LBRE/OEM about electrical service interruptions and restorations as needed

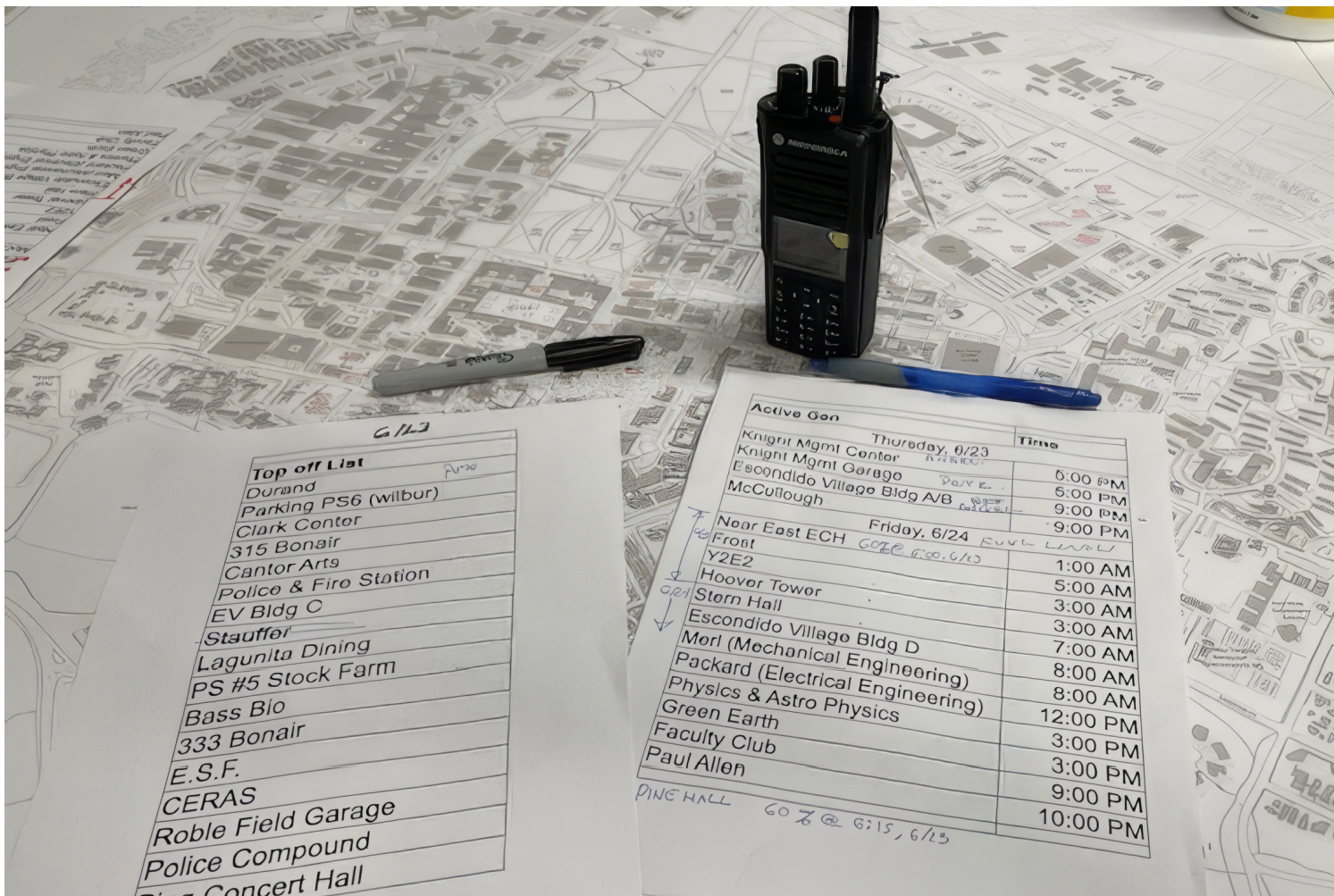
ConOps Maintenance, Training, and Exercises

Plan Maintenance

The ConOps will be reviewed and revised as necessary following an actual incident, exercise or major change in threat or resources. LBRE will lead responsible units and agencies in reviewing and updating their portions of the ConOps as required based on identified deficiencies.

Training and Exercises

LBRE, UIT, OER, UComm, and OEM coordinate regular incident management training to ensure staff are oriented and prepared to carry out roles and responsibilities. Regular exercises test the capabilities, resources, and working relationships of responding agencies. OEM will also coordinate the university's participation in local and regional power outage training and exercise opportunities.





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911

Appendix A:

Essential Elements of Information (EIs)

University staff and stakeholders responding to a power outage should prioritize seeking and collecting the following information.

- Nature of the incident (Power outage and cause) as well as potential duration
- Approximate geographic area of impact and the number of facilities and residents/students/faculty/staff affected
- Critical messages that need to be communicated to university students, faculty, staff, visitors, parents, and others
- Status of communication systems, critical facilities, emergency systems, and utilities
- Status (open, partial closure, or full closure) of roads, bridges, major surface streets, and public transportation systems
- Public safety concerns and incident management objectives
- Critical resource shortfalls impacting public safety or critical university functions
- Location and operational status of all Department Operations Centers and city/county EOCs

Appendix B: Sample Messages For Power Outage

Key Messages

Key Message #1:

Safety is the top priority.

- Our first priority is safety of the [students/faculty/staff] in the areas affected by the power outage.
- We have systems in place for this kind of situation (e.g., LBRE staff, mutual aid, incident management teams, and response plans).

Key Message #2:

The university is responding appropriately.

- University staff are investigating the cause and identifying the impacts.
- We will share more information as it becomes available.

Key Message #3:

Actions you should take include...

- Stay home; don't go to the scene.
- Turn to reliable sources for additional information. [Name some sources.]
- Help stop the spread of unverified rumors.

Sample Messages

The following messages are examples of the type of messages and distribution options for power outage updates, used as time and conditions permit. These messages may be augmented by schools and operating units.

Stanford University Campus – Power Outage

Date/Time

AlertSU: Power Outage affecting parts of Stanford Campus. Updates when available at <https://emergency.stanford.edu/>

Twitter: A power outage is affecting many parts of the Stanford campus near the Main Quad. One of the primary PG&E transmission lines feeding the campus is reportedly down. Efforts are under way to transfer power to an alternate line. No Estimated Time of Restoration at this point.

Email/Web update: Power delivery to the main campus has been restored through a secondary PG&E line and is expected to keep the campus fully powered until the PG&E transmission problem is resolved. The cause of the power interruption on PG&E's main line has not been determined.

Hospital operations were not affected by the outage.

As with any power outage, when returning to housing and work stations, please remember to ensure cooking and heating appliances are safely turned off, and check for any equipment that may not be functioning properly. Those in research spaces should similarly check for any heating or heat-producing equipment that may have been left in the on position and survey workspaces.

Additional information will be posted at <https://emergency.stanford.edu> as it becomes available.

Stanford Redwood City – Power Restored

Date/Time

Power and heat have been restored to the impacted buildings at SRWC. Please note:

1. Please ensure that you are parking in the SRWC surface parking lot and not in the SHC parking lot across the street.
2. Cardinal Brew and To-Go will open today, but the Cardinal Café will remain closed for today and plans to re-open tomorrow (Wed., 01/11)

Stanford Community Alert - Wind Event

Date/Time

High winds are impacting the Stanford and Stanford Redwood City campuses as well as the Stanford Research Park. Currently, a PG&E outage is affecting portions of the Stanford Redwood City campus and a separate outage is affecting the Upper Row neighborhood at the Stanford campus. There is no estimated time of restoration.

Those affected by the Stanford Campus outage may go to Arrillaga Family Dining Commons or Lagunita Dining for respite. Homes in the faculty residential area and other neighborhoods may also be affected by power outages. These areas are not part of the Stanford energy system but are directly served by PG&E. Those who are affected can consult PG&E's outage map at pge.com/outage for continuing updates. Sustained, gusty winds are expected to persist through Wednesday afternoon. Please use caution and watch for debris while outdoors. Updates will continue to be posted at emergency.stanford.edu as they become available.

R&DE: If a Power Outage Occurs in Your Building ¹²

- Call 725-1602 (emergency maintenance)
- Do not light candles if the power goes out; they are not permitted in residences
- Unplug personal computers
- Unplug non-essential appliances and equipment
- Make sure electric heaters and cooking appliances are turned off
- Open windows for additional light and ventilation
- Go to a building that hasn't been affected by the outage
- Seek information at the Housing Service Center or by AlertSU message or R&DE email. Follow all instructions provided.

Information Resources

- [LBRE electrical systems explanation](#)
- [Campus electrical owner map](#) (PG&E, City of Palo Alto, University distribution) (see Appendix C)
- [PG&E outage map](#)

Potential Outage Preparedness Messages

If there is a potential for an electrical outage in your area, here are some important things you can do now:

1. Make sure cell phones and backup batteries are fully charged. Check for batteries, battery-operated radio, and flashlights.
2. Fill up your car with gas and leave it outside of the garage. (You should also learn how to manually open the garage door!)
3. Fill some water bottles ($\frac{3}{4}$ full only) and place them in the freezer to help keep things cold. Remember, if you leave the doors of the refrigerator closed, it will retain the coldness for many hours. Throw out food if the temperature rises to 40 degrees or higher.
4. Make sure you have some cash on hand.
5. Contact your neighbors who may need help and help them get ready.

¹² <https://rde.stanford.edu/studenthousing/emergency>

Appendix C: Initial EOC Action Plan For Major Power Outage

The following Action Plan may be amended as needed to direct EOC functions during the initial first operational period.

Stanford University EOC Action Plan

DATE: _____ TIME: _____ NAME: _____ Power Outage

Overall Situation

At _____ (time) on _____ (date), the _____ (area /facility/location) experienced a loss/disruption of electrical power. This was due to _____ (explanation of cause). LBRE, facility directors and other related units responded. An AlertSU safety message was issued to the campus community and information. This initial AlertSU message advised _____ (SIP, stay away, etc.). Information has _____ (also/not) been posted on the [emergency.stanford.edu website](https://emergency.stanford.edu).

The STAT convened over Zoom and University leadership was briefed at _____ (time). The EOC was activated at _____ (time).

LBRE has determined _____.

(Insert University Emergency Management Organization Chart and list responding local, county, State and federal resources).

Event Manager/ Event Lead

LBRE

Operational Period

12 hours

Impacted Populations

- Students
- Faculty
- Childcare centers
- Residential and dining
- Athletics
- Events: # of scheduled events scheduled on campus per 25 Live
- Classrooms/classes: #of scheduled classes per the Registrar
- VIPs: # of VIP events per External Affairs and PPO
- Research laboratories
- Staff

Impacted Systems

- Communications
 - Safety/Security systems
 - Information Technology
 - Traffic management
 - Fueling
 - Points of sale
-

Operational Period Objectives

1. Provide for the safety and welfare of all students, staff, faculty and visitors. (Operations)
 2. Communicate with all stakeholders - implement crisis communication plan(s) including safety messages. (PIO)
 3. Distribute and review Power Outage ConOps (all)
 4. Develop and distribute Essential Elements of Information (Plans)
 5. Actively coordinate and communicate with all participating agencies/organizations and appoint/staff the EOC Liaison positions. (MGT)
 6. Implement emergency generator fueling schedule (LBRE)
 7. Prepare the EOC for a minimum of 3 days of operation. (OEM)
 8. Determine immediate status of classes and consider suspension of activities. If canceled, determine the time period and prepare an academic continuity plan. (MGT)
 9. Prepare to provide instructions to university faculty and staff (Human Resources)
 10. Prepare to engage with the media (press briefings, statements). (PIO)
-

EOC Location and Contact Information

The university EOC is located at 253 Bonair Siding Road. The LBRE DOC is located at _____.

Zoom calls are used for ongoing communication with DOCs and university leadership. The following Slack channels are used to coordinate operations:

- LBRE: #energy-operations-information
- UIT: #itoc
- DOCs: SU DOC Slack

EOC: _____ (phone#s) EOC Director: _____ (phone#s) OEM: _____ (phone#s)

UComm (phone #s): _____ (phone#s)

LBRE dispatch: 723-2281 (for reports of downed trees and other hazards)

A complete list of phone contact numbers will be published by the EOC within the operational period (12 hours).

General Safety Message

Power outages can create immediate hazards to the health and safety of the university community. These include loss of safety systems (ex. fire alarms), slips/trips/falls, work on electrical systems/equipment, traffic controls, loss of communications, or improper food preparation/storage.

Date and Time of Next Briefing _____ (date) _____ (time)

NAME: _____ DATE: _____ TIME: _____

