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GUIDELINES:

Planned and Emergency Utility Outage Guidelines

PURPOSE:

The purpose of these guidelines is to define roles and responsibilities in requesting, coordinating scheduling, and executing utility outages and restoration procedures for outages related to emergencies, daily operations and construction projects.

STRATEGIC VISION:

Strategic Goal: Resources and Business Continuity
Safeguard resources by proactively managing all outages to minimize operational impacts.

DEFINITIONS:

1. **EMERGENCY UTILITY OUTAGE:** An interruption in utility services that cannot be foreseen. Emergency outages are required when repairs must be accomplished immediately to safeguard property, research and occupant health.
2. **EMERGENCY OUTAGE NOTIFICATION (ATTACHMENT 4):** A document that is sent by Facilities Management to all Stakeholders, notifying them of the details of the Emergency Utility Outage.
3. **OUTAGE PLANNING FORM (ATTACHMENT 2):** A document that provides full details of a Planned Utility Outage – timing, areas impacted, contact information, etc. This form is initiated by the Primary Contact, and is filled out by either the Primary Contact or the General Contractor, as applicable.
4. **PLANNED OUTAGE NOTIFICATION (ATTACHMENT 3):** A document that is sent by Facilities Management to all Stakeholders, (at least five business days before the Outage), notifying them of the details of the Planned Utility Outage.
5. **PLANNED UTILITY OUTAGE:** An interruption in utility services, which can be foreseen. Planned outages include all repair projects with enough lead time to allow them to be accomplished on a non-emergency basis and all capital and renovation projects which require outages during construction.
6. **POST-OUTAGE ASSESSMENT (ATTACHMENT 5):** A document sent by the Primary Contact to the Building Coordinator for signature after the Outage, in which the Building Coordinator confirms that there are no post-Outage problems reported by building occupants.
7. **PRIMARY CONTACT:** The person with overall stewardship and accountability for a utility outage.
8. **STAKEHOLDER:** Individuals and groups who are involved in, and/or are impacted by, an Outage. Examples including building occupants, department chairs, Building Coordinators, Fire Marshal, Facilities Maintenance personnel, UHIT, UH Police, UH Parking and Transportation, Project Managers, etc.

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9. **UTILITY:** Any service provided by an outside source, or manufactured in house (gas, water, electricity, fire suppression water, chilled water, steam, DI water, vacuum, etc.), which facilitates building operations.

SCOPE:

This outage procedure covers the operation of building systems under the Facilities Management (FM) and Facilities Planning and Construction (FP&C) groups of Plant Operations.

Building system outages are typically required for the purposes of construction, renovation, isolation, maintenance, replacement, or repairs to existing systems, subsystems or component parts thereof.

Systems included in these guidelines include but are not limited to:

- Steam and condensate
- Domestic Cold Water
- Domestic Hot Water Supply and return
- Chilled Water Supply and return
- Compressed air produced centrally or locally
- Electrical High Voltage (12.470 kV)
- Electrical Low Voltage (480/277/240/208/120V)
- Natural Gas
- Vacuum systems
- DI water systems
- Elevator systems
- I.T. systems
- Fire Suppression (pump, sprinkler, standpipe)

These guidelines do not apply to isolation valves, switches or other such devices that isolate a point of service device that shall result in only the loss of service of the specific piece of equipment, fixture or other device. In these cases, the PRIMARY CONTACT must still notify all affected STAKEHOLDERS of the impact of the outage.

Examples of such situations would include but not be limited to:

- a. Plumbing fixtures (sinks, toilets, showers, drinking fountains, etc.)
- b. Redundant devices such as pumps, fans or other equipment that are being appropriately backed-up by operational duplicate devices.
- c. Individual VAV boxes, air terminals, reheat valves, coils, radiators, fan coils, unit heaters or other HVAC devices controlling a single space.
- d. Lighting and power circuits serving a single space or device including discrete electrical devices such as occupancy sensors, light fixtures, light switches and receptacles.
- e. Irrigation water services, which may be operated by the Central Services group under Facility Management or their designees.
- f. Fire protection water services, which may be operated by the Fire Department or their designees.

All utility or building system outages shall have one of two classifications, a "PLANNED OUTAGE" or an "EMERGENCY OUTAGE". The "PRIMARY CONTACT" is the person who shall remain as the single, primary point of contact throughout the outage.

Issued: July 12, 2010

Revised: May 1, 2011

Revised: December 17, 2012

PLANNED OUTAGES: Planned outages shall include all repair projects with enough lead time to allow them to be accomplished on a non-emergency basis, and all capital and renovation projects which require outages during construction.

All building system outages that will result in an interruption of normal system service shall be reviewed, approved, and implemented with the full knowledge and involvement of the appropriate STAKEHOLDERS including FM personnel, Building Coordinator, other UH personnel (Fire Marshal, etc.) as necessary. The appropriate Technical Services supervisors shall be contacted for approval for operations that affect the delivery of services to facilities. In particular all actions affecting building HVAC operations must occur with the prior knowledge and approval of the applicable Technical Services Group. SEE ATTACHMENT 6 for supervisor contact list and areas of responsibilities.

All isolation operations shall comply with proper Lockout – Tag out procedures of the University and as stipulated by OSHA regulations. Lockouts shall be of the group type including a lock from the Utilities Department and one from the party performing the work. No system may be restarted or returned to service without the knowledge, approval or involvement of the appropriate Technical Services personnel. (SEE ATTACHMENT 6)

Valves associated with these guidelines also include drains, vents, bypasses and any other auxiliary devices associated with the various systems. Switches associated with these guidelines shall also include circuit breakers, knife switches, safety switches, disconnects, motor circuit protectors, and toggle switches.

When work activities conclude, a review of all affected equipment, valves, switches and other such devices shall be undertaken either by visual inspection or by operation in such a manner to determine that these devices have been left in the proper position for the respective system to operate normally.

Should there be a system failure or emergency situation during the outage, necessary actions shall be taken to control the situation without the need to explicitly follow the requirements of these guidelines and its procedures. Subsequent to the event, the system configuration and these guidelines shall be followed. In the event of electrical overload or similar occurrence, the building electrical loads shall be managed by Facilities Management, in accordance with the Building Priority List.

PROCESS:

Refer to ATTACHMENT 1 for a flowchart summary of the process.

PLANNED OUTAGE

1.0 Evaluate Outage

- 1.1 Evaluate the potential outage to determine if it would more appropriately be an Emergency Outage, or if it qualifies as an exception due to its minor nature.

2.0 Plan Outage

- 2.1 The PRIMARY CONTACT shall complete the Outage Planning Form (See ATTACHMENT 2) and meet with appropriate STAKEHOLDERS to discuss:
 - A. Impacts
 - B. Preferred Scheduling

Issued: July 12, 2010

Revised: May 1, 2011

Revised: December 17, 2012

- C. Outage Duration
- D. Contingency plans to minimize disruption and protect the building systems and program operations.
- E. Special logistics such as room access, etc.
- F. Contact information for the designated person and their availability during outage.

3.0 Communicate Outage

- 3.1 The PRIMARY CONTACT shall complete the PLANNED OUTAGE NOTIFICATION and submit to Facilities Maintenance for final approval and publication. See ATTACHMENT 3.
- 3.2 Outage notifications using the PLANNED OUTAGE NOTIFICATION shall be issued seven (7) business days prior to the scheduled outage to the Facilities Service Center (FSC) designee. FSC designee shall forward to the appropriate STAKEHOLDERS. When outages have widespread impact an additional correspondence shall be sent to the campus community by the Communications Coordinator.
- 3.3 Any outage or impact to fire alarm, fire pump, sprinkler system, or life safety system shall require completion of a FIRE PROTECTION SYSTEM SHUTDOWN PERMIT with the Fire Marshal's office.

The Permit must be completed by the company or UH group doing the actual work, and delivered in person (no faxed or e-mailed Permits are accepted) at least 24 hours prior to the scheduled work.

If the outage affects ten or more sprinklers and exceeds eight or more hours, the Fire Marshal's office shall notify the UH Risk Manager. The Risk Manager shall in turn notify the University insurance company prior to the outage and also after all the work has been completed.

- 3.4 Notifications shall be distributed through various outlets depending on the level of impact. Outlets may include:
 - A. Faculty/Staff Listserv
 - B. Department Business Administrators Listserv
 - C. Student Listserv
 - D. Administration & Finance Website
 - E. Plant Operations Website
 - F. PIER System
 - G. UH Today
 - H. Daily Cougar

4.0 Execute Outage

- 4.1 The PRIMARY CONTACT shall coordinate all aspects of the outage. Depending on the extent and complexity of the outage, this may include a constant or a periodic presence on site, and/or coordinating and texting updates to key STAKEHOLDERS as appropriate.
- 4.2 If the outage is unsuccessful (i.e. the intended scope of work could not be accomplished) the PRIMARY CONTACT shall notify and/or meet the appropriate STAKEHOLDERS to correct problems and propose a rescheduled date.

Issued: July 12, 2010

Revised: May 1, 2011

Revised: December 17, 2012

5.1 Follow-through

- 5.1 The PRIMARY CONTACT shall notify STAKEHOLDERS, including the Facilities Service Center, that the shutdown was successful. FM shall check out equipment, valves, etc. as necessary.
- 5.2 The PRIMARY CONTACT shall ensure that the Building Coordinator completes and signs the POST-OUTAGE ASSESSMENT (ATTACHMENT 5)

EMERGENCY OUTAGE

Emergency outages are required for repairs that must be accomplished immediately to safeguard property and health. The Facilities Service Center has a record of departmental personnel, Facilities Management and Facilities Planning & Construction personnel and security personnel telephone numbers and names, who they contact as standard procedure.

The PRIMARY CONTACT handling an emergency outage shall call the Facilities Service Center (3-4948) if outage occurs during normal working hours, and call the Central Plant operator (3-5791) if outage occurs during non-working hours. The PRIMARY CONTACT shall relay as much information as is possible at that time. The Central Plant operator or the Facilities Service Center shall contact the appropriate STAKEHOLDERS at that time, using the Emergency Outage Notification form if circumstances permit.

RESTORATION OF SERVICE:

Every attempt shall be made to restore services as fast as possible. Services shall be restored in the general priority below:

- 1. Building Life Safety**
- 2. Utility Life Safety**
- 3. Research Buildings**
- 4. Residential Life and Hilton Hotel**
- 5. Auxiliary Areas**
- 6. Classrooms and Offices**

After restoration of services, technicians representing each technical area of Facilities Management shall survey the affected buildings/areas and ensure that systems in their respective areas are operational and that equipment is set in its normal operating position. This includes (but is not limited to): building HVAC and controls, elevators, fire alarm, building electric and emergency power systems, and building plumbing systems, etc. The following is a brief outline of the post-event check out by different areas of Facilities Management:

- Fire Alarm:** All fire alarm panels are on battery backup. If the power outage is less than 24 hours and there are no fire alarm events, all the systems shall continue to stay online. In the extended outage scenario, fire alarm batteries shall start recharging after power is restored.

After the outage event, fire alarm technicians shall log on to their True Site workstation and verify that the campus fire alarm system is fully operational. Buildings with a failed fire alarm system

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will show up as a break in network. These areas shall be targeted and addressed accordingly by the fire alarm technicians.

- **HVAC and Controls:** After restoration of services, the lead mechanical technician shall confirm that all equipment and systems (chillers, boilers, air-handlers, pumps, exhaust fans, fume hoods, and domestic water system, etc.) that were locked down and tagged out during the outage are ready for startup. Upon confirmation, these systems shall be brought on-line and the services in the building restored to the pre-event operating conditions.

Simultaneously, the controls technician shall start the equipment and building checkups via controls workstation interface (onsite or remotely). For buildings without direct digital control (DDC) systems, the controls technician shall physically visit each area of the building and confirm the operations of heating, ventilation and cooling systems.

- **Elevators:** For all planned power outages, prior to the outage all building elevators shall be brought to the lower level and locked in place to prevent entrapments (except for weather-related planning when the elevator may be locked in place at a higher level). After restoration of services, all elevators would go back in their normal service mode. Technicians in the elevator shop shall confirm operations of elevators in affected buildings, after the outage event.
- **Electrical:** For high voltage (12.47kV and greater) system outages, prior to de-energizing feeders, electricians shall take the amperage readings on primary and secondary campus feeders. Electricians shall de-energize the electrical feeders involved in the outage and rack out breakers and ground when necessary. After work is completed, the steps above shall be followed in a reverse order prior to re-energizing the feeders. After re-energizing the feeders amperage readings shall be taken again and compared with the pre-event readings to confirm that all systems are back in operation. Critical systems such as domestic pumps, chillers, pumps, and air handlers shall be physically checked by the electricians.

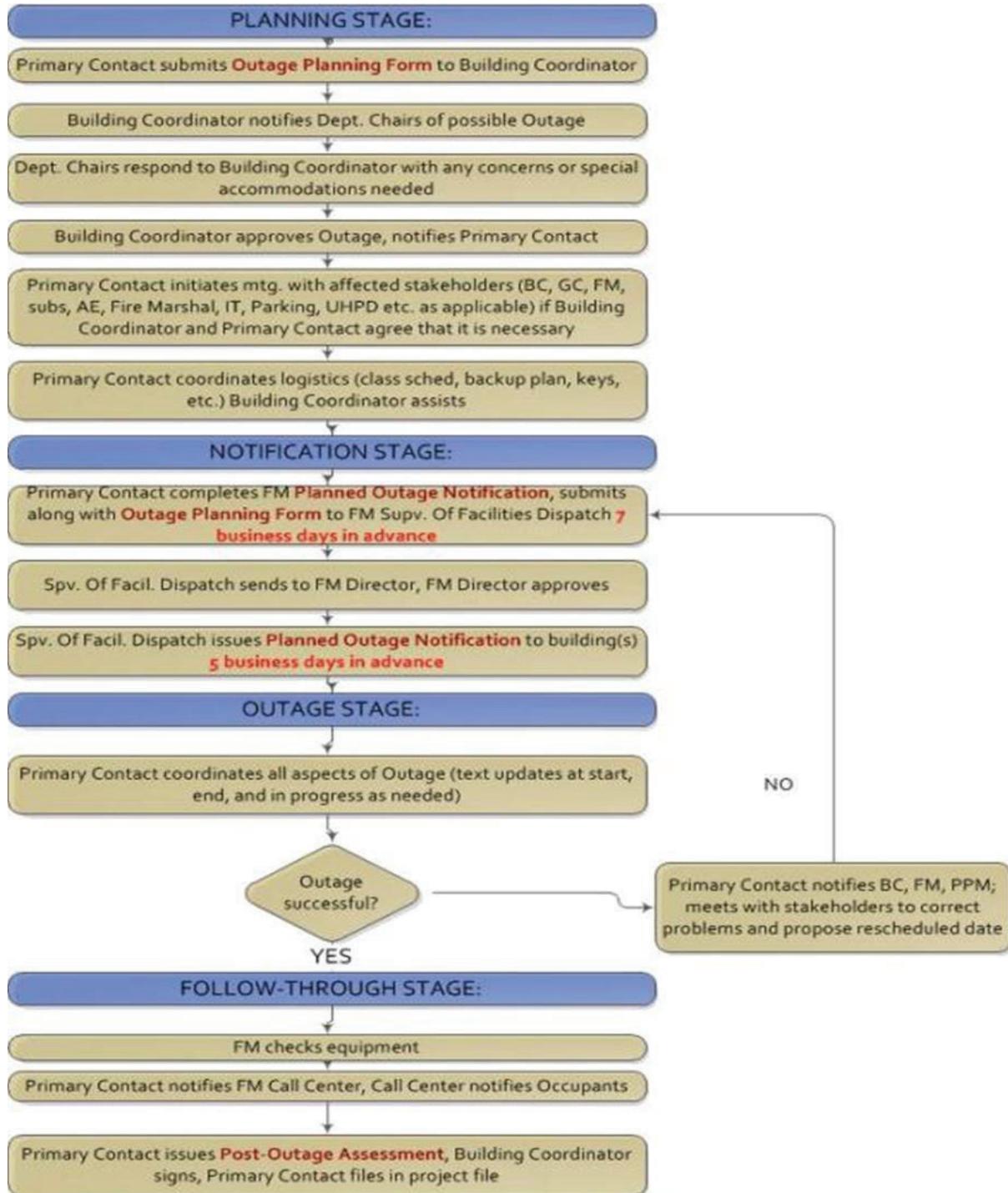
For outages involving building voltage systems, the building 480V main switch shall be de-energized, locked out, and tagged out by the electricians prior to any work or repairs. After the outage event, the electricians shall confirm that the electrical systems are ready to be put back in. After confirmation, the electricians shall remove the locks and tags and re-energize the system. Critical building systems shall be physically checked by the electricians in the affected buildings.

- **Plumbing:** After services are restored, Facility Management plumbers shall walk the affected buildings to confirm all the fixtures and systems are operational and set back to the normal operating conditions.

After technicians have completed their post-event checkout as described above, the Primary Contact shall notify the Building Coordinator and confirm that there are no outstanding issues with any of the building occupants.

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ATTACHMENT 1: PLANNED OUTAGE FLOWCHART



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ATTACHMENT 2: OUTAGE PLANNING FORM

INSTRUCTIONS: This form is to be initiated by the Primary Contact, and completed by the Primary Contact and General Contractor.

PROJECT:
 DATE OF THIS PLANNING FORM:
 DATE OF PLANNING MEETING:
 THIS PLANNING FORM SUBMITTED BY: *[name of Primary Contact]*

BUILDINGS AFFECTED BY OUTAGE:
 SERVICES AFFECTED BY OUTAGE:
 REASON FOR OUTAGE (work to be done):
 OUTAGE START DATE AND TIME:
 OUTAGE END DATE AND TIME:
 FOLLOW UP SYSTEMS CHECK BY FM (date, time, personnel involved):

LOGISTICS CONSIDERATIONS: Which of these will be provided? Provide explanations as necessary:

- Emergency generators:
- Temporary lighting:
- Spot coolers:
- Fire watch:
- Notification signage:
- Building access control (personnel at entries):
- Elevator shutdown
- Building PA announcements to occupants:
- OTHER CONSIDERATIONS:

CONTACT INFORMATION (company name, individual name, cell phone number and email address):

	Company name	Individual	Cell #	E-mail	Dates/times on site
Primary Contact	UH				
FP&C Inspector	UH				
Bldg. Coord.	UH				
FM Contact:	UH				
Facilities Management Center	UH	NA	(713) 743-4948	NA	NA

APPROVAL OF ABOVE PLAN:

 Signature of Building Coordinator

 Date

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Revised: May 1, 2011
Revised: December 17, 2012

ATTACHMENT 3: PLANNED OUTAGE NOTIFICATION

<p>UNIVERSITY of HOUSTON FACILITIES MANAGEMENT</p> <p style="text-align: center;">Planned Outage Notification</p> <p>NOTIFICATION MESSAGE:</p>			
Outage Schedule / Building			
Outage Start Date:		Outage End Date:	
Start Time:		End Time:	
Building(s) Affected:		Building No:	
Building(s) Affected:		Building No:	
Building(s) Affected:		Building No:	
Building(s) Affected:		Building No:	
Type of Outage			
<input type="checkbox"/> Electric	<input type="checkbox"/> Gas	<input type="checkbox"/> Domestic Cold Water	
<input type="checkbox"/> DI Water	<input type="checkbox"/> Condensate	<input type="checkbox"/> Domestic Hot Water	
<input type="checkbox"/> Steam	<input type="checkbox"/> Compressed Air	<input type="checkbox"/> Chilled Water	
<input type="checkbox"/> Vacuum	<input type="checkbox"/> Air Handling Unit	<input type="checkbox"/> OTHER	
Impact:			
Responsible Party			
Primary Contact:			
Secondary Contact:			
Onsite Contractor Contact			
Primary Contact:		Position:	
Telephone:		Email:	
Secondary Contact:		Position:	
Telephone:		Email:	
Outage Approved by:		Approval Date:	
Outage Notice Issued by:		Issue Date:	
Form Updated: 03-13-2011			

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ATTACHMENT 4: EMERGENCY OUTAGE NOTIFICATION

UNIVERSITY of HOUSTON FACILITIES MANAGEMENT			
<h3>Emergency Outage Notification</h3>			
NOTIFICATION MESSAGE:			
Outage Schedule / Building			
Outage Start Date:		Outage End Date:	
Start Time:		End Time:	
Building(s) Affected:		Building No:	
Building(s) Affected:		Building No:	
Building(s) Affected:		Building No:	
Building(s) Affected:		Building No:	
Type of Outage			
<input type="checkbox"/>	Electric	<input type="checkbox"/>	Gas
<input type="checkbox"/>	DI Water	<input type="checkbox"/>	Condensate
<input type="checkbox"/>	Steam	<input type="checkbox"/>	Compressed Air
<input type="checkbox"/>	Vacuum	<input type="checkbox"/>	Air Handling Unit
<input type="checkbox"/>		<input type="checkbox"/>	Domestic Cold Water
<input type="checkbox"/>		<input type="checkbox"/>	Domestic Hot Water
<input type="checkbox"/>		<input type="checkbox"/>	Chilled Water
<input type="checkbox"/>		<input type="checkbox"/>	OTHER
Impact:			
Responsible Party			
Primary Contact:			
Secondary Contact:			
Onsite Contractor Contact			
Primary Contact:		Position:	
Telephone:		Email:	
Secondary Contact:		Position:	
Telephone:		Email:	
Outage Approved by:		Approval Date:	
Outage Notice Issued by:		Issue Date:	
Form Updated: 03-13-2011			

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Revised: December 17, 2012

ATTACHMENT 5: POST-OUTAGE ASSESSMENT

INSTRUCTIONS: The primary contact is to submit this form to the Building Coordinator when the outage is complete.

PROJECT:
DATE(S) OF OUTAGE:
BUILDINGS AFFECTED BY OUTAGE:

To be completed by the Building Coordinator:

1. Was the outage planned sufficiently?
2. Was it communicated sufficiently and in a timely manner?
3. Did the project team follow the plan?
4. Were there any issues reported by building occupants?
5. Have all services been fully restored?
6. Overall, was the outage successful?
7. What could be improved/lessons learned?

Acknowledged:

Building Coordinator Name

Building Coordinator Signature

Thank you for your cooperation during the outage and for your assistance in helping us improve this process.