COMMUNITY
MEDICAL CENTERS

Community Regional Medical Center

10-Story and 5-Story Complex Operational Plan

HCAI Facility #10127

2823 Fresno Street, Fresno, CA 93721

November 6, 2024

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Executive Summary

The Community Regional Medical Center (CRMC) 10-Story and 5-Story Complex Operational Plan is dedicated to ensuring the continuity of patient care and staff safety in the face of seismic events. By focusing on rapid response, efficient evacuation procedures, and leveraging compliant facilities, CRMC is committed to maintaining the highest standards of care even in challenging circumstances.

Key elements of the plan include:

1. **Focus on Critical Infrastructure:** The plan prioritizes the repair and restoration of vital utilities and systems within the 10-story and 5-story Complex, such as power, medical gases and HVAC that are essential for patient care delivery.
2. **Identification of Critical Care Areas:** Critical care areas, including the surgery department and NICU/C-Section delivery room, are identified within the Aa East Wing Building (BLD-02536). These areas are equipped with redundant care spaces, ensuring continuity of critical services even in the event of internal utility disruptions. Both of these critical care areas are “redundant” care spaces as these same services are also provided in the compliant Trauma and Critical Care Center (BLD-02951) and the West/East Wing (10-story building, BLD-00003). The 10-story critical care areas will be upgraded to NPC 4D level 2.
3. **Internal and External Evacuation Procedures:** The plan outlines procedures for both internal and potential external evacuation of affected patients within the 10-story and the 5-story Complex, emphasizing patient safety and efficient evacuation processes.
4. **Limited Scope:** While the plan addresses evacuation procedures for the 10-story and 5-story Complex, it does not extend to adjacent facilities such as the Trauma and Critical Care Center (BLD-02951), which are NPC 4 compliant and would remain operational.
5. **Coordinated Response:** The Operational Plan emphasizes a coordinated and efficient response to safeguard patient care and staff safety during seismic events, mitigating risks associated with compromised infrastructure.
6. **Utilization of Compliant Facilities:** Leveraging the operational capabilities of compliant facilities, such as the Trauma and Critical Care Center which is located on the same campus. Also available are the Fresno Heart and Surgical Hospital and Clovis Community Medical Center which are NPC 4 compliant facilities and both are located less than 13 miles away ensuring uninterrupted healthcare services following a seismic event.

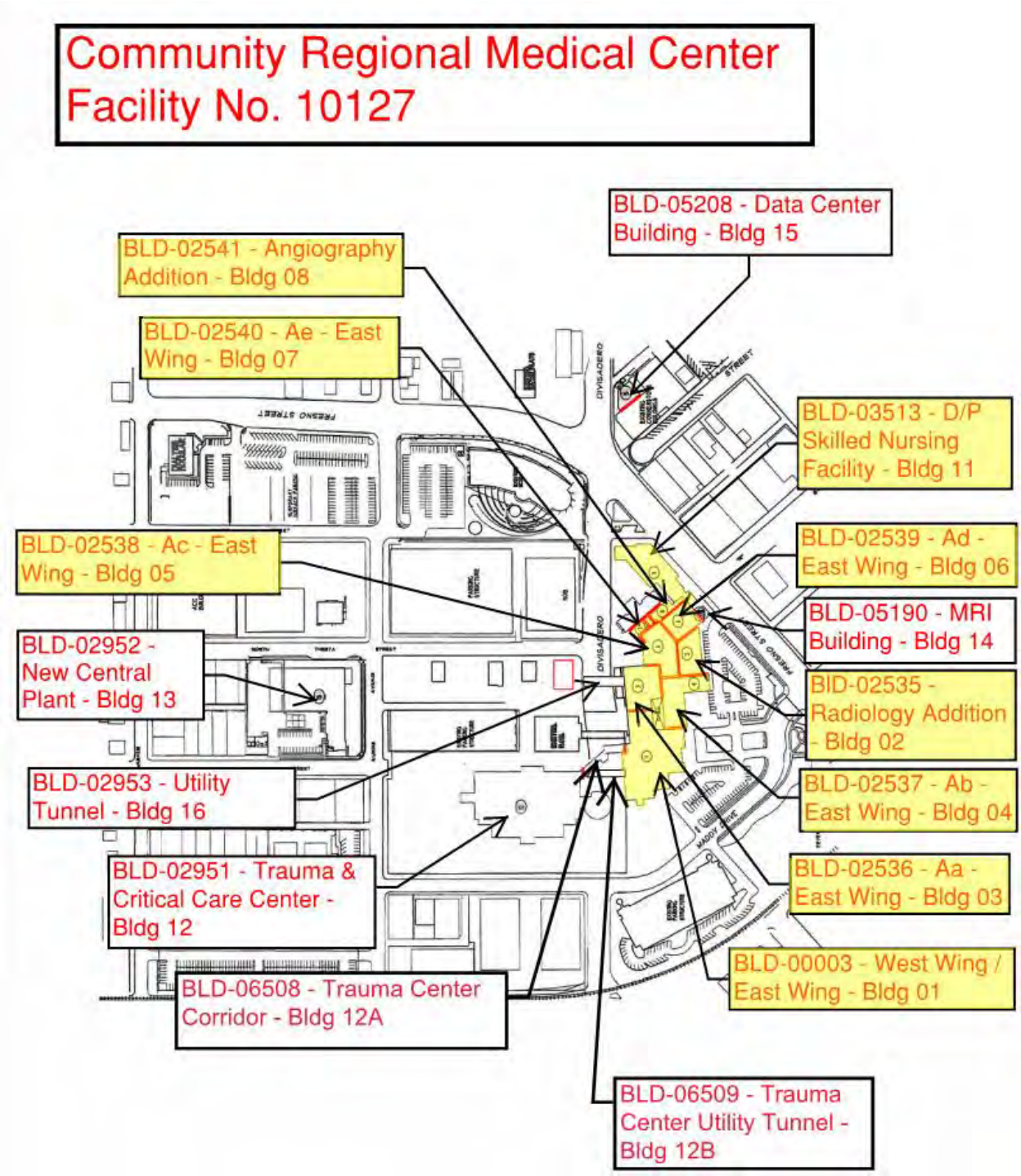
In summary, CRMC’s 10-Story and 5-Story Complex Operational Plan is a comprehensive strategy tailored to address seismic compliance and potential operational disruptions within the CRMC campus, specifically targeting the 10-Story and 5-Story Complex. This plan outlines procedures to restore critical systems and services or provide alternatives to ensure the continuation of essential care operations following seismic events.

Building List

This operational plan is for the following nine buildings which are highlighted in yellow on the campus map on the following page.

HCAi Building Number	HCAi Building Name	Operational Name and Name Used in This Plan/Document	HCAi Current NPC Rating	HCAi Proposed NPC Rating
BLD-00003	West Wing / East Wing	10-Story	2	NPC 4D Level 2
BLD-02535	Radiology Addition - Bldg. 02	5-Story or 5-Story Complex	2	NPC 4D Level 1
BLD-02536	Aa – East Wing – Bldg. 03	5-Story or 5-Story Complex	2	NPC 4D Level 1
BLD-02537	Ab - East Wing - Bldg. 04	5-Story or 5-Story Complex	2	NPC 4D Level 1
BLD-02538	Ac - East Wing – Bldg. 05	5-Story or 5-Story Complex	2	NPC 4D Level 1
BLD-02539	Ad - East Wing - Bldg. 06	5-Story or 5-Story Complex	2	NPC 4D Level 1
BLD-02540	Ae - East Wing - Bldg. 07	5-Story or 5-Story Complex	2	NPC 4D Level 1
BLD-02541	Angiography Addition - Bldg. 08	5-Story or 5-Story Complex	2	NPC 4D Level 1
BLD-03513	D/P Skilled Nursing Facility - Bldg. 11	5-Story or 5-Story Complex	2	NPC 4D Level 1

Facility Map



Code Requirements

As the Code describes (CAC 2022, Chapter 6, Article 11, Section 11.2.3f). *"The Nonstructural Performance Category 4D Operational Plan (Operational Plan) for areas described above are required for continuous operations. For minimum compliance with NPC 4D the facility must prepare an owner-approved Operational Plan specifying how it will repair nonstructural damage and bring systems and services back online or provide them in an alternative manner to accommodate continuation of critical care operations. This plan may include any other units or departments that hospitals may wish to keep operational for a minimum of 72 hours after a seismic event or other natural or human-made disaster. The Operational Plan shall be filed with the Office and shall include an executive summary, a detailed narrative of management of utilities, provisions, sustainability, and alternate means. The Operational Plan shall include, but is not limited to, the following topics for each unit or service that is not in compliance with NPC 4."*

Per 2022 CAC Chapter 6 11.2.3 item f, provide a narrative of current critical or non-critical services in each building and alternate location and means of these services for NPC 4D Level 1:

Within the eight buildings that we are proposing the NPC 4D Level 1 rating (see building list on page 3 of this Operational Plan) there are only two critical care spaces as defined by the code (CAC Ch. 6). The two critical care areas are the surgery department (8 OR rooms) located on level 2 and the NICU (19 beds) including one C-section delivery room located on level 3 are located within the Aa East Wing Building (BLD-02536). Although we have a detailed plan to restore any potentially lost utility system as soon as possible to these critical care areas within the NPC 4D Level 1 designated area these critical care areas are "redundant" areas as the same service is also provided on the campus within a fully compliant building. The "redundant" services are provided in the following locations; on level 2 of the West Wing/East Wing 10-Story BLD-00003 (Proposed NPC 4D Level 2) there are 3 OR rooms, on level 2 of the Trauma and Critical Care Center BLD-02951 (NPC 4) there are 12 OR rooms and within the same Trauma and Critical Care Center building on level 5 there is one additional OR room. Within the West Wing/East Wing 10-Story BLD-00003 (Proposed NPC 4D Level 2) on level 4 there are 65 NICU beds and on level 3 there are 2 C-section delivery rooms.

The following table shows the code requirement in the left hand column and in the right hand column shows how CRMC has already addressed or plans to address the code requirement in an emergency.

Code Reference CAC 2022, Chapter 6, Article 11, Section 11.2.3.f	CRMC's Current Operations/Plan of Action
Section 11.2.3.f.1 Level 1 Areas	

Section 11.2.3.f.1.i. As-built plans, schematic, or other means showing the routing for all utilities serving the areas from their source to the areas they serve.	As-builts showing utilities routing from source to the serving areas are available and can be provided if needed.
Section 11.2.3. f.1. ii. Materials on hand to make necessary repairs to these systems in the event of failure, breakage, or other causes of nonoperational status.	CRMC Engineering and Maintenance Department maintains a stock of spare parts such as motors, fuses, breakers, belts, conduits, valves, bearings, BMS modules, variable speed drives, etc., essential for repairing and up keeping utility systems. Additionally, the department nurtures service partnerships with prominent electrical and mechanical contractors to promptly address urgent and emergent repair needs for these systems.
Section 11.2.3.f.1.iii. Prioritize the restoration of the essential electrical system.	Restoration of essential electrical systems at the 5 & 10-Story buildings is prioritized by connectivity of emergency, critical, and equipment loads to the campus emergency backup generator system which resides in the Central Energy Plant. The Central Energy Plant is an NPC4 compliant building. The 12KV distribution of emergency power is via (5) 2000KW generators and associated paralleling switchgear. The generator system is controlled via a generator control system sequence of operations. The 5 & 10-Story Buildings have both normal and emergency feeders distributed from the Central Energy Plant through the campus via underground duct and manhole systems at 12KV and terminates at the 12KV main switchgear 'MSG' in the 10-Story basement electrical room. Upon a utility power outage, the 12KV feeder is transferred to backup generator power via a transfer scheme in the 12KV main switchgear 'MSG'. The 5 & 10-Story buildings for the majority are on the essential electrical system. CRMC is provided with 12KV utility power by PG&E via demarcation load interrupter Trayer switches from 2 circuits originating from opposite ends of the campus and terminates at the electrical service 12KV Switchgear (MHV) located in the Central Energy Plant. These Trayer switches are located at the intersection of E. Kashian Ln. & N. Thesta St. on the east side and at the intersection of Divisadero & N. Clark Streets on the west side. In the event of a loss of utility power from one source, the Campus can be manually switched to the alternative source of utility power at the load interrupter Trayer switches.
Section 11.2.3. f.1. iv. Facility has a plan to maintain the areas in operation, including all necessary utilities and equipment for functionality.	CRMC has developed a “System Failure Response” (see page 13-15), “CRMC 10-Story & 5-Story Complex Evacuation Plan” (pages 16-25), and the “Plumbing Emergency Measures & Downtime Procedure” (pages 26-34) to document the plans for maintaining utility systems operational and functional.

	In addition to addressing how we will repair nonstructural damage and bring systems online which we do through our "System Failure Response" (see page 13-15), "CRMC 10-Story & 5-Story Complex Evacuation Plan" (pages 16-25), and the "Plumbing Emergency Measures & Downtime Procedure" (pages 26-34) which are a apart of this Operational Plan, regarding NPC 4D Level 1 there are only two critical care areas within the proposed NPC 4D Level 1 areas. The two critical care areas are both located in the Aa East Wing/West Wing Building (BLD-02536) and the two areas are the surgery department on level 2 (8 OR Rooms), and the NICU (19 beds) and one C-Section delivery room on level 3. These critical care services are provided in an alternative manner as the same services are provided within compliant buildings. These same services are provided in the following compliant locations; on level 2 of the West Wing/East Wing 10-Story BLD-00003 (Proposed NPC 4D Level 2) there are 3 OR rooms, on level 2 of the Trauma and Critical Care Center BLD-02951 (NPC 4) there are 12 OR rooms and within the same Trauma and Critical Care Center building on level 5 there is one additional OR room. Within the West Wing/East Wing 10-Story BLD-00003 (Proposed NPC 4D Level 2) on level 4 there are 65 NICU beds and on level 3 there are 2 C-section delivery rooms.
Section 11.2.3.f.1.v. An arrangement is in place to transfer the services in the event the hospital's services are not operational or cannot be made operational immediately.	It is CRMC's intent to be self-sufficient for 72 Hours. If the systems cannot be restored/sustained to provide continuous safe care to patients, CRMC has developed the "CRMC 10-Story & 5-Story Complex Evacuation Plan" (pages 16-25) that identifies the details in which patients can be moved within the facility or outside the facility if required. As noted in that plan depending on the critical infrastructure/utility that is impacted, patients may be able to shelter-in-place by implementing mitigating factors to continue patient care. Mitigating strategies will depend on the type of critical infrastructure/utility impacted. Any patient that depends on a critical infrastructure/utility must be evacuated from their affected department to an unaffected department or facility. For patients who cannot be sustained within their current department, a decision will need to be made to evacuate them to a safer area that supports their care needs. A specific plan will be needed for each of these patients based on their needs. Before any patient is to be relocated from their current affected department, the hospital will coordinate the following: 1. Discharge a. Medical providers shall evaluate all patients for potential discharge from the hospital, including all available medically stable patients. 2. Downgrade/Discontinued a. Medical providers shall evaluate their patients for potential downgrade orders from the utility or infrastructure that encourages their evacuation decision.

	i. For example, if a patient is requiring to be moved due to telemetry orders, but the patient has been relatively cardiac stable, a downgrade or discontinue order should be placed by the physician. **NOTE**: For planning purposes, we assume that approximately 20% of patients can be downgraded from tele-monitoring orders or low-flow oxygen orders. 3. Transfer (Internal) a. All patients who are not able to be discharged or downgraded and require a critical utility or infrastructure to support their care shall be transferred to an unaffected department within the CRMC facility. i. These departments may include traditional licensed or unlicensed bed space that can support the level of care required. b. All "closed" beds within the 10 & 5-story buildings and Trauma and Critical Care Center shall be utilized with priority given to patients requiring infrastructure from the 10 & 5-story buildings. i. For example, if a patient on 2Central Med Surg requires oxygen, they should be transferred to a 5West bed that can support their patient care needs. The nurse from 2Central may be transferred to 5West as well for continuity of care. c. Surgical volumes and schedules will need to be evaluated and prioritized 4. Transfer – Evacuate (External) a. As a last resort, if there is no available space within the facility to support the level of care required by a patient, the patient shall be transferred to another CMC or external facility for continued care. These transfers must be coordinated by the Hospital Command Center, Transfer Center and the sending Nursing Department.
Section 11.2.3.f.2. Central and Sterile Supplies	
Facility has a means to obtain additional medical equipment and supplies for the areas in the event in-house central or sterile supplies storage is damaged or unusable.	CRMC anticipates that the Sterile Processing Department will be fully functional in a seismic event because it's location is within the Trauma & Critical Care Center, which is SPC 5 and NPC 4 compliant.
Section 11.2.3.f.3. Dietary	

Facility has a means to obtain food service for the areas in the event in-house dietary is damaged or unusable.	CRMC anticipates that the Nutrition and Dinning Department will be fully functional in a seismic event because its location is within the Trauma & Critical Care Center, which is SPC 5 and NPC 4 compliant.
Section 11.2.3.f.4. Pharmaceutical Services	
Facility has means to obtain pharmaceutical services for the areas in the event in-house pharmaceutical services are damaged or unusable.	CRMC anticipates that the Pharmacy Department will be fully functional in a seismic event because it's location is within the 10-story basement, which has been updated under a recent HCAi project (SS022519-10) and it is anticipated it will have an NPC 4D level 2 rating.
Section 11.2.3.f.5. Emergency Power	
Section 11.2.3.f.5.i. Reliable emergency power generating capacity for the areas is provided.	CRMC has reliable emergency power, CRMC has (5) 2MW generators and paralleling switch gear distributed from the Central Energy Plant. The Central Energy Plant is an SPC and NPC 4 compliant building. The generator's combined capacity is 12500KVA, and current calculated load demand is 5000KVA. Refer to the narrative outlined under item 5(iv) for further explanation of the means to providing essential electrical power in the event of a failure.
Section 11.2.3.f.5.ii. Emergency power is adequate to provide for all essential services for 72 hours of continuous, full-load demand before replenishment is needed.	The emergency power supply system and supporting underground (2) 20,000-gallon diesel storage tanks (40,000 gallons total) are sized to provide essential services for 72 hours of continuous operation at calculated load. The emergency system demand is calculated at 40% of the overall generator's capacity. At 40% load (generator performance data indicates 60.9GPH fuel consumption rate at this percentage), the generator system consumes 304.5 GPH, totaling 21,924G (calculated actual demand) for a 72-hour run time duration.
Section 11.2.3.f.5.iii. Facility has a means for emergency fuel replenishment.	CRMC has (2) 20,000 underground tanks (40,000 gallons total) the tanks are sized to provide essential services for (72 hours) of continuous supply at calculated load. At the same time, CRMC's Facilities Team has an established service relationship with Silva Oil Company for diesel fuel replenishment, both routine and emergency. The standing agreement with Silva Oil Company is to provide Community Medical Centers with priority delivery of diesel fuel so that the hospital may maintain critical life support systems in the event of a disaster or other emergency.
Section 11.2.3.f.5.iv. Facility has a means of providing essential electrical power in the event of its generator(s) failure.	The Central Energy Plant distributes emergency power at 12KV via (5) generators and associated paralleling switchgear. The Central Energy Plant is an NPC4 compliant building. In the event of a failure at the 10 & 5 Story building, the building uses no more than 6MW of total power amounting to no more than three (3) generators fully operational at any time. A generator transfer scheme could in fact be established to ensure that 3 of the 5 generators would be operational at any time, subsequently, load shedding of non-critical loads could be enacted to further reduce the power consumption to ensure that the critical areas within the building are maintained.

	Alternatively, trailer mounted generators may be set up at the exterior of the Central Energy Plant adjacent to the permanent generators as redundant backup in the event of a catastrophic failure of all generators. At a maximum, three (3) 2MW generators would be needed. Temporary 12KV cabling shall be installed to connect the temporary generators to the terminals of the failed permanent generators.
Section 11.2.3.f.5.v. Stat Lab and Blood Bank have been identified as essential services.	CRMC anticipates that the Stat Lab and Blood Bank will be fully functional in a seismic event because it's location is within the Trauma & Critical Center, which is compliant with the NPC and SPC seismic requirements.
Section 11.2.3.f.6. Water Supply	
Facility has a means to obtain water service for the areas in the event normal water service is not available.	CRMC anticipates that water will be available to the facility as there currently is a well located on the campus that has enough capacity to meet the supply needs. CRMC also plans on upgrading the entire campus to meet the 2030 NPC 5 requirements as outlined in the Water Rationing Plan which has been submitted to HCAi. Similar to other systems, anticipated failure would be in the piping distribution system in the utility tunnel or the building itself. CRMC Engineering and Maintenance Department maintains a stock of spare parts such as an assortment of "Press-Connect" style fittings, couplings, valves, and saddle-tap fittings in common piping system sizes to make emergency connections and repairs. In the event of disruption, the facility will deploy portable 5-gallon water tanks with hand pumps while the disruption is investigated and repaired. An alternate plan will be to provide 250-gallon portable water tanks with small single-phase pumps for temporary connection to the water system. Floor plans are available indicating water riser locations and proposed possible points of connection. CRMC Policy #22816 Water Disruption Plan is available upon request for additional details.
Section 11.2.3.f.7. Medical Gases	
Facility has a means to obtain medical gases for areas in the event normal medical gas systems and supplies are not available.	CRMC anticipates that medical gases will be fully functional in a seismic event because their primary location is within the NPC 4 compliant Central Plant. Anticipated failure would be in the piping distribution system in the utility tunnel or the building itself. CRMC Engineering and Maintenance Department maintains a stock of spare parts such as an assortment of "Press-Connect" style fittings, couplings, and valves in common piping system sizes to make emergency connections and repairs. Tie-ins can be made to back-feed the O2 and MA systems.

	In the event of disruption, the facility will deploy sufficient Oxygen and Medical Air cylinders to temporary supply systems while breakage is investigated and repaired. Portable vacuum pumps can also be deployed as required to provide temporary vacuum service. Floor plans indicating med-gas riser locations and proposed possible points of connection are available. CRMC Policy #27494 Med-Gas Disruption Plan is available upon request for additional details.
Section 11.2.3.f.8. Ventilation	
Section 11.2.3.f.8.i. Facility can isolate and shut down Heating, Ventilation, and Air Conditioning (HVAC) system zones in an emergency.	The CRMC facilities team possesses as-built documentation to aid in servicing all air handler systems. These systems can be remotely isolated or shut down via the hospital Building Management System (BMS), or manually at each air handler by engineering staff. Additionally, manual isolation valves are present for basement chilled and heating water pumps, with redundancy provided for chilled water pumps.
Section 11.2.3.f.8.ii. Guidelines are in place for emergency shutdown.	Refer to Pages 11-13. The CRMC Emergency Operations System Failure Response table shows who to contact for an emergency regarding the ventilation system.
Section 11.2.3.f.8.iii. Sections of the facility can be isolated.	The CRMC Facilities Team possesses as-built documentation to aid in servicing all air handler systems. These systems can be remotely isolated or shut down via the hospital Building Management System (BMS), or manually at each air handler by engineering staff. Additionally, manual isolation valves are present for basement chilled and heating water pumps, with redundancy provided for chilled water pumps.
Section 11.2.3.f.8.iv. Individuals are identified who have authority for ordering HVAC shutdown 24/7.	Refer to Pages 11-13, the CRMC Emergency Operations System Failure Response table shows who to contact for an emergency and who has the authority to order an HVAC system shutdown should an emergency occur.
Section 11.2.3.f.8.v. Air intakes are protected from tampering.	All air intakes are secured.
Section 11.2.3.f.8.vi. Facilities and Engineering staff have knowledge of HVAC zones and shutdown procedures.	CRMC Engineering and Maintenance Department is trained~~,~~ and understands how the system works and where the valves are located.
Section 11.2.3.f.8.vii. Facility maintains adequate emergency supplies of filters for HVAC systems.	CRMC Engineering and Maintenance Department has adequate HVAC emergency supplies and spare parts.

Section 11.2.3.f.9. Waste Disposal	
Section 11.2.3.f.9.i. Procedures for management and disposal of an increased volume of contaminated wastes, goods, and fluids for 72 hours are in place.	CRMC plans on upgrading the entire campus to meet the 2030 NPC 5 requirements which will require sewage waste storage tanks to be installed around the campus to hold all sewage waste from the facility for up to 72 hours. Anticipated failure would be in the piping distribution system or the building itself. Because cast iron pipe, fittings, couplings, etc. are so readily available, stockpiling of materials is not required. In the event of disruption, the facility will utilize bio-hazard “red-bag” waste with toilets or portable toilets while breakage is investigated and repaired. CRMC Engineering and Maintenance has as-builts indicating waste and vent riser locations.
Section 11.2.3.g Operational Plan update/change notification.	
The hospital shall document any changes and file the revised plan with the office.	CRMC will update the Operational Plan as necessary and file the revised plan with HCAi.

CRMC Emergency Operations System Failure Response

The following table represents the potential system failure and how CRMC will address it.

Systems Failure Response			
System Failure:	**What to Expect:**	**Who to Contact:**	**Responsibility of User:**
Deionized Water System	No deionized water to lab or dialysis units	Aqua Mech Water Systems, HSC, Engineering, Unit Manager	Implement interim care plan for patients until full water system operation is resumed.
Electrical Power; Emergency Generators Running	Power at RED outlets only, emergency lighting only.	CRMC Engineering Manager, HSC, PG&E	Ensure life support and critical equipment are plugged into EMERGENCY RECEPTACLES- RED OUTLETS. Disconnect any non-essential equipment from red outlets.
Emergency Electrical Power	Power available at RED outlets only. Most lighting should still be available.	CRMC Engineering Manager, HSC, Holt of California	Ensure life support and critical equipment are plugged into RED OUTLETS. Disconnect any non-essential equipment from RED outlets.
Elevator Entrapment	Entrapped person activates elevator intercom to security	CRMC Engineering Manager, Valley Elevator	Keep verbal contact with people entrapped, remind them that there are two-way communications in the car and ensure them help is on the way.
Elevators	All vertical movement must be via stairwells.	CRMC Engineering & Valley Elevator	Use elevators in adjacent buildings if floors are contiguous.
Fire Alarm System	Partial or complete failure of the fire alarm system monitoring and/or alarm notification.	HSC, Fire Life Safety Officer, Engineering Supervisor, Facility Manager, Fresno Fire Department, Integrated Electronics	Assist with implementation of Interim Life Safety Measures (ILSM)

Fire Sprinkler System	No fire sprinkler system protection for the building	Fire System Solutions, Engineering, HSC, Fire Life Safety Officer, City of Fresno Fire Marshal Office	Implement Interim Life Safety Measures (ILSM) until system is fully operational.
System Failure	**What to Expect:**	**Who to Contact:**	**Responsibility of User:**
Medical Gasses	Alarm sounds; High or Low pressure for Oxygen, Medical Air, or Vacuum	CRMC Engineering Department, Certified Medical Testing	Ensure portable tanks of oxygen and medical air and portable vacuum pump are available.
Network (Computers)	Loss of e-mail, Internet and/or intranet connection	CRMC Help Desk	Use alternative means of communication (phone, runner, etc.) during outage.
Nurse Call System	No patient contact	Central California Electronics, Integrated Electronics - Ascomm Nurse Call 5W/7W & 1E	Assign staff to check on patients. Distribute alternative signaling devices.
Pneumatic Tube System	Visual Alarm- Red LED. Unable to send/receive	Swisslog	Send Stat lab samples by runner.
Security Systems	Doors fail to lock or release, alarms don't activate, Video cameras fail to monitor	CRMC Security Dispatch	Be extra vigilant of unsecured areas. Take necessary action to monitor or secure areas until systems are corrected.
Sewer System	Drains (sinks/tubs/ showers/toilets) backing up.	Fresno Plumbing or ETS	Do not flush toilets and bedpan washers. Do not use water at sinks, tubs and showers affected by stoppage.
Telephone System (cell phones)	No incoming or outgoing dialing capability on cell phones.	CRMC Help Desk	Monitor email for messages concerning the outage. Use land line phones. Watch for messages on the announcement boards located in the main lobby.
Telephone system (land lines)	No incoming or outgoing dialing capability. No internal station-to-station dialing capability.	E-mail Help Desk	Monitor email for messages concerning the outage. Use land line phones. Watch for messages on the announcement boards located in the main lobby.

Ventilation, Heating, & Cooling (Building)	No ventilation; no heating and/or cooling	CRMC Engineering Manager, HSC, Patton Air Conditioning, New England Sheet Metal	Restrict the use of odorous/hazardous material.
Water Leak	Water on floors or coming from ceilings or walls	HSC, CRMC Engineering Manager	Try to cover or move supplies, equipment, or furniture away from leak. Try to contain leak with buckets or pails.
Water Loss Building	Sinks, Showers, Tubs, Toilets, and Bedpan Washers inoperative.	City of Fresno, CRMC Engineering Manager, HSC	Use bottled water for drinking. Institute Fire Watch. Use waterless cleaners for hand washing.

CRMC 10-Story & 5-Story Complex Evacuation Plan

Purpose and Scope

The purpose of the Community Regional Medical Center (CRMC) 10-Story and 5-Story Complex Evacuation Plan is to guide staff and leadership in the event of a seismic event that requires the evacuation of patients due to the inability to provide critical infrastructure (power, medical gasses, vacuum suction, etc.).

The hospital is made up of three distinct, yet connected, sections that represent expansion and growth over the decades of service. These three parts are represented as the 5-story, eastern section of hospital structure, the 10-story centrally located bed tower section of the main hospital building, and the newest section, which contains the Emergency Department and trauma/critical care units, known as the Trauma Critical Care Center (TCCC).

The scope of this plan is limited only to the 10 and 5-story buildings on the CRMC campus. In the planning scenario, the 5-story complex or the 10-story would be affected by a seismic event that would leave the building structurally intact and remain standing; however, the infrastructure/utilities within the building (power, medical gasses, etc.) that supports patient care may be damaged or inoperable. This damage would force a partial internal evacuation, as well as the potential for an external evacuation of patients for whom we are not able to provide certain utilities within the 10 and 5-story building.

This plan assumes that the TCCC along with its critical infrastructure/utilities would remain operational including the 10-Story buildings critical care areas and its critical infrastructure/utilities.

Critical patient supporting infrastructure/utilities include:

- Power/Electricity
- Lighting
- Vacuum (Suction)
- Water
- HVAC/Chillers
- Boiler
- Central and Sterile Supplies
- Dietary
- Pharmaceutical Services
- Waste Disposal

Building Profile

Critical Infrastructure/Utilities

Power/Electricity

The hospital, including the 5-story complex and 10-story draw power from the public utility Pacific Gas and Electric (PG&E). In the event of a disruption, the hospital has five 2,000kW generators at the Central Energy Plant across the street from the main hospital. This electrical power is routed underground to the main hospital. Only three generators are needed to carry the load of the facility, the extra two are redundant.

Our electrical utility provider, PG&E provides power and electricity to all electrical outlets, systems, and machinery throughout the hospital through commercial transmission lines. When this commercial source of electricity is disrupted, the hospital electrical load is switched to emergency generator power. As with the design, non-critical items are shed from the building loads. Life and Safety equipment (i.e., fire detection, alarm systems, etc.) are tied directly into emergency generator power.

There are a significant number of patient care devices (bedside monitors, ventilators, etc.) and non-patient care devices or utilities (emergency lighting, Workstations-On-Wheels (WOWs), etc.) that have an internal battery that can sustain the power for that device for a limited time.

Medical Gasses

The hospital has medical gas systems that use oxygen, nitrous oxide, nitrogen, and carbon dioxide. Oxygen and nitrous oxide are stored in tanks combined at a manifold outside the hospital, within the Central Energy Plant (CEP). Nitrogen and carbon dioxide tanks are stored within the hospital building. These medical gases are then distributed throughout the facility and segmented using zone valves.

Vacuum

The vacuum system is available from wall inlets (pipelines) in patient rooms and treatment areas. The vacuum pump system in the 10 & 5-story buildings are served by two pumps located in the engineering space near clinical engineering (5-story basement pump room). The two-pump configurations phase the system's duty cycles and also provide redundancy.

Water

The City of Fresno provides the hospital's primary domestic water supply. In addition, the CRMC campus utilizes a well located in front of the East Medical Plaza for water supply. The well can provide enough water to supplant the water provided by the city's domestic water supply. This well provides water daily to the facility under normal conditions and can be utilized if city water is disrupted.

HVAC/Chillers

The facility utilizes cooling towers paired with chillers to cool the air within the facility. All cooling towers operate by removing heat from water by evaporating a small portion of water recirculated through the unit. The chillers provide comfortable cooling for the bulk of the hospital building. This form of HVAC system provides appropriate air temperatures and quality air for patients, staff, and visitors to the hospital. Appropriate air quality is generally determined by temperature, humidity, filtration, and air speed. The hospital facility is maintained by 4 chillers in the CEP, with all plumbing running underground.

Boilers

Located within the CEP are four boilers that provide steam to the facility. Boilers are an essential part of the hospital. The steam these boilers provide is utilized in various applications, including equipment sterilization, hot water heating, cooking food, and heating hospital buildings, which includes reheating and temping cold air from the chillers.

Central and Sterile Supplies

The Supply Chain Management (SCM) Department orders, inventories and distributes all medical supplies for the CRMC main campus. All inventory is delivered and sorted at the TCCC

loading dock, which is approximately 100 yards away from the SCM Department. Once inventoried, it is then delivered to the multiple stock rooms on each patient care department floor.

The Sterile Processing Department (SPD) cleans and sterilizes all devices used in medical procedures. It is located in the Trauma and Critical Care basement, which services the Trauma and Critical Care Center, 5-story and 10-story operating rooms. The Trauma and Critical Care Center is a SPC 5 and NPC 4 compliant building.

Dietary

The CRMC Nutrition and Dining (N&D) Department prepares and serves food for patients, staff, and visitors. The department utilizes two separate kitchens to prepare all the food for the day. The first kitchen is located on the ground floor of the 5-story building, preparing food for staff and visitors. The second kitchen is located in the basement of the Trauma Critical Care Center, preparing all the patient food for the entire facility.

Pharmaceutical Services

The main CRMC pharmacy orders, inventories and distributes all medications for the CRMC main campus. It is located in the basement of the 10-story building. Medications are delivered either directly to the main patient care department Pyxis via a pharmacy tech or sent to the floors via the tube system.

Waste Disposal

All solid waste (Bio-Hazard, Municipal, Hazardous, etc.) within the CRMC facility ends up within their appropriate waste collection area of the loading dock at the Trauma and Critical Care Center basement, which a certified waste hauler eventually picks up. Appropriate liquid waste (human waste, etc.) is disposed of via the building's sewer and wastewater lines.

Patient Profile

Multiple departments are located within the 5 & 10-story buildings, ranging from general adult Medical/Surgical (Med/Surg) to the Intensive Care Units (ICU). The general department patient profiles are listed below.

Building	Department	Total # of Licensed Beds	Avg. Daily Census	Avg. Daily Census – Tele Monitors	Avg. Daily Census – Oxygen	Avg. Daily Census – Other Medical Gases	Avg. In Room Dialysis
5-Story	1E Med Surg	36	34	0	3 (Low-Flow)	0	0
5-Story	2C/E Med Surge	61	53	12 (Remote)	10 (Low-Flow)	0	0
5-Story	3 Perinatal Unit	49	23	0	0	0	0
5-Story	4C/E CPCU	64	42	42 (Remote)	3 (High-Flow) 32 (Low-Flow)	0	0
5-Story	5C/E Med Surg	30	27	10 (Remote)	8 (Low-Flow)	0	2

5-Story	5E Antepartum	13	12	1	0	0	0
5-Story	5C Pediatrics	11	8	0	3	0	0
10-Story	3W LND	22	15	1	1 (High-Flow) 3 (Low-Flow)	0	0
10-Story	4W NICU	65	46	46	25 (High-flow) 1 (Low-Flow)	46 (Blend of Medical Air)	0
10-Story	5W Med Surg	52	35	20 (Remote)	17 (Low-Flow)	0	0
10-Story	6W Rehab	32	30	0	1 (High-Flow) 10 (Low-Flow)	0	1
10-Story	7W PCU/Oncology	45	38	33 (Remote)	10 (High-Flow) 16 (Low-Flow)	0	3
10-Story	8W PCU	47	34	34	23 (High-Flow) 7 (Low-Flow)	0	1
10-Story	9W Neuro	52	37	18 (Bedside) 4 (Remote)	19 (Low-Flow)	0	0
10-Story	10W Neuro ICU	20	16	16	10 (High-Flow) 6 (Low-Flow)	0	0
10-Story	10W SDU	12	12	12	8 (High-Flow) 4 (Low-Flow)	0	5

Shelter-in-Place

After any seismic event, there are two response paths that may be taken to ensure the safety of patients, staff, and visitors. The first path is a "**shelter-in-place**" response for those patients who don't require critical infrastructure or utility to support their care. These patients are typically the lowest acuity patients and not dependent on critical life sustaining systems such as oxygen, suction, or electrical equipment needs.

NOTE: The planning assumption is that the physical building will still be able to be safely occupied after a structural assessment has been completed, but there will be an impact on one or more critical infrastructure/utilities.

Depending on the critical infrastructure/utility that is impacted, patients may be able to shelter-in-place by implementing mitigating factors to continue patient care. Mitigating strategies will depend on the type of critical infrastructure/utility impacted. Any patient that depends on a critical infrastructure/utility must be evacuated from their affected department to an unaffected department or facility.

NOTE: Any Critical Infrastructure or Utility Outage mitigation strategy would be focused on restoration by the facilities team.

Critical Infrastructure/Utility	Mitigating Strategies	Additional Comments

Power/Electricity	• Priority Restoration	• This infrastructure would be the first to be repaired by the facilities team to sustain operations, in the event that both normal and backup generator power were to fail
Lighting	• Portable Light Systems	• There are multiple portable light systems, ranging from small handheld lights to area lighting • These systems would eventually require to be recharged due to them being battery-operated
	• Chemical Light Sticks	• There is a supply of non-hazardous chemical light sticks at the facility • These are one-time use only
Water (Potable)	• Drinking Water (5-Gallon Jugs)	• A sustainment schedule would need to be developed for water delivery throughout the day • There is a small supply of small water bottles on the units every day
	• Portable Hand Washing Stations	• A sustainment schedule would need to be developed for water delivery and waste pickup throughout the day
	• Hand Sanitizer	• Deploy additional hand sanitizer bottles throughout the department • This wouldn't replace hand-washing situations (i.e., isolations, surgeries, etc.)
Water (Non-Potable)	• Bucket Brigade (Toilet)	• This would require multiple resources (personnel, buckets, water, etc.) to enact this plan
	• Bagged Toilets	• This plan would cause an increase in the bio-hazard waste stream
Cooling	• Ice Water	• A replacement schedule will need to be developed for ice and water delivery throughout the day
	• Portable HVAC/Cooling Machines	• This will require power and a potential water source
	• Evacuation	• The System AOD may consider an evacuation
	NOTE: An internal temperature of 82.4°F or higher is considered unacceptable for indoor environment conditions for patients and staff.	
Heating	• Protective Coverings	• Hats, beanies, etc., prevent body heat from escaping from the head, face, and neck
	• Layers	• Loose-fitting, layered, lightweight clothing will help retain body heat
	• Portable HVAC/Space Heater	• This will require a power source

	• Heat Packs	• A replenishment schedule would need to be developed • Not suitable for long-term use
Boilers	• Hot Water	• Hot water would be utilized from other areas as needed • Not critical for patient care

Medical Gases	• Oxygen (Low Flow Devices)
	  ○ O2 Concentrators
	  ○ E-Tanks
		• O2 Concentrators – Requires a power source; limited supply-on-hand (approximately 40 on-hand)
		• E-Tanks – Requires a sustainment plan; limited supply-on-hand

	• Oxygen (High Flow) ○ Tank Farm	• Requires several tanks and specialized equipment to complete • Not sustainable for long-term use
Vacuum (Suction)	• Portable Suction Units	• The nursing departments maintain a small number of emergency supply in their units • There are 40+ suction devices available at our disaster storage

Evacuation

For patients who cannot be sustained within their current department, a decision will need to be made to evacuate them to a safer area that supports their care needs. A specific plan will be needed for each of these patients based on their needs.

Before any patient is to be relocated from their current affected department, the hospital will coordinate the following:

1. Discharge
    a. Medical providers shall evaluate all patients for potential discharge from the hospital, including all available medically stable patients.
2. Downgrade/Discontinued
    a. Medical providers shall evaluate their patients for potential downgrade orders from the utility or infrastructure that encourages their evacuation decision.
        i. For example, if a patient is requiring to be moved due to telemetry orders, but the patient has been relatively cardiac stable, a downgrade or discontinue order should be placed by the physician.

    NOTE: For planning purposes, we assume that approximately 20% of patients can be downgraded from tele-monitoring orders or low-flow oxygen orders.

3. Transfer (Internal)
    a. All patients who are not able to be discharged or downgraded and require a critical utility or infrastructure to support their care shall be transferred to an unaffected department within the CRMC facility.
        i. These departments may include traditional licensed or unlicensed bed space that can support the level of care required.

   b. All "closed" beds within the 5 &10-story buildings and Trauma and Critical Care Center shall be utilized with priority given to patients requiring infrastructure from the 5 & 10-story buildings.
      i. For example, if a patient on 2Central Med Surg requires oxygen, they should be transferred to a 5West bed that can support their patient care needs. The nurse from 2Central may be transferred to 5West as well for continuity of care.
   c. Surgical volumes and schedules will need to be evaluated and prioritized
4. Transfer – Evacuate (External)
   a. As a last resort, if there is no available space within the facility to support the level of care required by a patient, the patient shall be transferred to another CMC or external facility for continued care.
   b. These transfers must be coordinated by the Hospital Command Center, Transfer Center and the sending Nursing Department.

Structural Damage Assessment Team

In the event of a seismic event or any event that causes damage to the building, the VP or Director of Facilities may convene a Structural Damage Assessment Team. The Structural Damage Assessment Team will help survey and evaluate the building for safety. This team would be a multi-disciplinary group of individuals that will physically walk and evaluate all buildings directly or indirectly affected by the event. They will forward their findings to the VP and/or Director of Facilities, or if activated, the Infrastructure Branch Director within the Hospital Command Center.

The makeup of a Structural Damage Assessment Team will depend on the event experienced, as several different individuals may be required for a full building assessment. The VP or Director of Facilities will determine the team's final makeup. A sample Structural Damage Assessment Team may consist of the following individuals:

- CMC Facilities Representative
- CMC Engineering Representative
- CMC Construction Representative
- Architect of Record
- External Professional Engineer(s) (Structural, Mechanical, Electrical, etc.)

NOTE: If the Hospital Command Center is activated to support hospital operations, the Infrastructure Branch Director designee may supersede the VP or Director of Facilities role.

Evacuation Authority

In order to commence an evacuation at CMC facility, it must be authorized by one of the following entities:

- Public Safety Officer (Fire Chief or Police Officer in charge)
- CMC Highest ranking administrative official or designee
- Incident Commander
- House Supervisor

Horizontal Evacuation

For those patients requiring to be transferred from their department to another internal department, they shall attempt to conduct all transfers internally via the same floor, and/or to another building that has a working elevator that has been evaluated safe to use. All floors within the 5-story building connect directly to the 10-story building. However, not all floors of the 10-story connect directly to the Trauma Critical Care Center (TCCC). Listed down below are the connecting floors.

- 10-story 1st Floor → TCCC 1st Floor
- 10-story 2nd Floor → TCCC 2nd Floor
- 10-story 3rd Floor (Does not directly connect to the TCCC)
- 10-story 4th Floor → TCCC 3rd Floor
- 10-story 5th Floor → TCCC 4th Floor
- 10-story 6th Floor (Does not directly connect to the TCCC)
- 10-story 7th Floor → TCCC 5th Floor

NOTE: All attempts should be made to conduct a horizontal evacuation or transfer before a vertical evacuation is considered via the stairs.

Vertical Evacuation

For those patients who need to be transferred from their department to another internal department, they shall attempt to conduct all transfers internally via the same floor and/or to another building that has a working elevator that has been evaluated for safe use. If they need to transfer/evacuate via the stairwells, patient evacuation devices (Med Sleds, Evacu-B, etc.) will be required.

Strategic Alternate Care Sites (Onsite)

As mentioned above, the planning assumption for this plan is that approximately 20% of affected inpatient department patients can be downgraded or discontinued from certain tele-monitoring or low-flow oxygen orders. Down below are the adjusted patient volumes (in red) from the department average census:

Building	Department	Avg. Daily Census – Tele Monitors	Avg. Daily Census – Oxygen	Avg. Daily Census – Other Medical Gases	Avg. In Room Dialysis	Potential Patients Needing Further Evaluation
5-Story	1E Med Surg	0	3 (Low-Flow)	0	0	3
5-Story	2C/E Med Surge	10 (Remote)*	8 (Low-Flow)*	0	0	10
5-Story	3 Perinatal Unit	0	0	0	0	0
5-Story	4C/E CPCU	34 (Remote)*	3 (High-Flow) 26 (Low-Flow)*	0	0	34
5-Story	5C/E Med Surg	8 (Remote)*	7 (Low-Flow)*	0	2	10

5-Story	5E Antepartum	1	0	0	0	12
5-Story	5C Pediatrics	0	3 (Low-Flow)	0	0	8
10-Story	3W LND	1	1 (High-Flow) 2 (Low-Flow)	0	0	2
10-Story	5W Med Surg	16 (Remote)	13 (Low-Flow)	0	0	16
10-Story	6W Rehab	0	1 (High-Flow) 8 (Low-Flow)	0	1	1
10-Story	7W PCU/Oncology	26 (Remote)	10 (High-Flow) 13 (Low-Flow)	0	3	26
10-Story	8W PCU	27	23 (High-Flow) 5 (Low-Flow)	0	1	27
10-Story	9W Neuro	14 (Bedside) 3 (Remote)	15 (Low-Flow)	0	0	17

NOTE: The 10th floor ICU and NICU departments have been removed due to their planned and proposed NPC 4D Level 2 rating.

After the 20% reduction, there are approximately **166 patients** that will require further evaluation for the potential to be moved from their departments due to another unit with like-capabilities. Down below are strategies to move patients from the 5-/10-story building to the Trauma Critical Care Center (TCCC) or another floor or building that has an intact infrastructure to support their need.

Building		Department	# of Beds	Medical Gases Capability	Vacuum (Suction) Capability	Tele-Monitor Capability	Strategy
10-Story Building/TCCC		Multiple Departments	70 Beds	X	X	X	• Transfer all patients requiring a critical infrastructure or utility into unoccupied beds that are closed due to staffing or isolation within the 5-/10-story or Trauma Critical Care Center (TCCC) that still has supported infrastructure
5-Story Building		Surgery	14 Beds	X	X	X	• Requires the closure of OR Rooms 1-7 • OR Rooms 8-11 remain for surgical patients • Requires adjustment to the OR schedule
TCCC		Radiology (3rd Floor)	40 Beds	X	X	X	• Each radiology exam room has suction, medical air and oxygen that can be daisy-chained out into the hallways for patients • The inpatient holding area does have local cardiac monitor capability
TCCC		Cath Lab PICA (4th Floor)	8 Beds	X	X	X	• Requires adjustment to the OR schedule
TCCC		Peds PACU (2nd Floor)	8 Beds	X	X	X	• Requires adjustment to the OR schedule
		Staffing	• Staffing from the affected department may have to be shifted from the affected department to the unaffected department for continuity of patient care.				
		SCM/SPD	• Due to the elevators being down within the 5-/10-story building, all resources (supplies, food, and medications) will need to be brought up via the Trauma Critical Care Building elevators and cross-walked over to the 5-/10-story building corresponding floors. • Pharmacy/Dietary: It is anticipated that temperature controlled medications and food would be affected by a complete power loss. These medications/food would either need to be recovered or thrown away.				
		Dietary					
		Pharmacy					

Supporting Policies/Plans

Attachment A - Plumbing Emergency Measures & Downtime Procedure

Community Regional Medical Center
Plumbing Systems Emergency Measures

Summary: The central plant is the source of all domestic water, steam and medical gases for this facility. The plant is rated as an SPC-5 and is currently being upgraded to an NPC-5, after current planned upgrades are completed. The failure in any of the following services is expected to be due to a failure in the routing to this building or within this building.

Failures within this building would be due to breakage or damage to the supply piping from the central plant, or to site waste disposal lines. Waste piping will have waste storage tanks located on the site for all waste products to be stored.

Systems:	Medical Gas Systems	Failure:	Emergency Measures:	Emergency Supplies Required:	Areas to be Served:	Responsibility:	Owner Responsibility:
	Oxygen	1. Loss of supply from source at plant due to broken pipes in the facility. 2. Loss of source feed to a failure in the oxygen yard.	1. Find the break and fix the problem if possible. 2. If not readily repairable, shut off valves at the central plant, or the closest valve location that will stop loss of gas, and begin with back feed to critical areas with bottled Oxygen through other oxygen outlets. 3. Install an isolation valve in the system both before and after a failed pipe, if existing valves are not adequate to isolate the leak. 4. Discontinue non-	1. Bottles of Oxygen with a regulator and manifold. **Quantity of Bottles on Hand: (24 H cylinders)** 2. Press fit and/or axially swaged medical gas fittings in 1/2", 3/4", 1", 1-1/4", 1-1/2" and 2" sizes for emergency repairs.	1. 2nd Floor Surgical Area 2. 3rd Floor OB Area	1. New England Sheet Metal and Mechanical to make all repairs and connections and manage the work. 2. Certified Medical Testing to arrange for additional emergency bottles and testing. 3. Owner to stockpile various medical gas rated axially swaged and press fit fitting to use for repairs in an emergency. 4. New England Sheet Metal and	1. (24 H) Oxygen bottles on hand in reserve yard. 2. Assortment of fittings and tools to install them.

			critical surgeries and other procedures until system is restored. 5. Make repairs that are needed. 6. If the failure is at the oxygen plant, arrange for a portable system(s) and back feed at the Emergency Oxygen Supply Connection (ESOC), valve at the building points of entry.			Mechanical along with Certified Medical Testing, to assist in arranging for portable systems.	
	Medical Air	1. Loss of supply from source at plant due to broken pipes in the facility. 2. Loss of supply from the plant due to a failure of the equipment in the plant.	1. Find the break and fix the problem if possible. 2. If not readily repairable, shut off valves at the central plant, or the closest valve location that will stop loss of medical air, and begin with back feed to critical areas with bottled medical air through other medical air outlets. begin with back feed to critical areas with bottled medical air through other medical air outlets. 3. Install an isolation valve in the system both before and after	1. Bottles of medical air with a regulator and manifold. **Quantity of Bottles on Hand: (15 H cylinders)** 2. Press fit and/or axially swaged medical gas fittings in 1/2", 3/4", 1", 1-1/4", 1-1/2" and 2" sizes for emergency repairs.	1. 2nd Floor Surgical Area 2. 3rd Floor OB Area	1. New England Sheet Metal and Mechanical to make all repairs and connections and manage the work. 2. Certified Medical Testing to arrange for additional emergency bottles and testing. 3. Owner to stockpile various medical gas rated axially swaged and press fit fitting to use for repairs in an emergency. 4. New England Sheet Metal and Mechanical along	1. (15 H) Medical Air bottles on hand in reserve yard. 2. Quantity of spare fittings and tools to install them.

			a failed pipe, if existing valves are not adequate to isolate the leak. 4. Discontinue non-critical surgeries and other procedures until system is restored. 5. Make repairs that are needed. 6. If the failure is at the source in the plant, arrange for temporary rental medical air compressor skid(s) to provide some medical air until repairs can be made.			with Certified Medical Testing, to assist in arranging for portable systems.	
	Vacuum	1. Loss of evacuation from source at plant due to broken pipes in the facility. 2. Loss of source in the plant due to a failure in the plant.	1. If not readily repairable, shut off valves at the central plant, or the closest valve location that will stop loss of vacuum flow. 2. Install shutoff valves at the point of failure to preserve system capacity for other areas. 3. Put point of use portable vacuum units into service where needed. 4. Discontinue critical procedures until	1. Portable Vacuum units. 2. Press fit and/or axially swaged medical gas fittings in 1/2", 3/4", 1", 1-1/4", 1-1/2" and 2" sizes for emergency repairs.	1. 2nd Floor Surgical Area 2. 3rd Floor OB Area	1. New England Sheet Metal and Mechanical to make all repairs and connections and manage the repair work. 2. Owner is responsible to provide portable vacuum units. 3. New England Sheet Metal and Mechanical along with Certified Medical Testing, to assist in	1. (30) Portable vacuum units on hand in reserve yard. 2. Quantity of fittings and tools to install them.

			restored. 5. Make repairs that are needed. 6. If the failure is at the source in the plant, arrange for temporary rental vacuum pump skid(s) to provide some vacuum until repairs can be made.			arranging for portable systems.	
Systems:	**Water**	**Failure:**	**Emergency Measures:**	**Emergency Supplies Required:**	**Areas to be Served:**	**Responsibility:**	**Owner Responsibility:**
	Domestic Water	Source of water is currently being upgraded to NPC-5 at the central plant. 1. Loss of supply from source at plant due to broken pipe(s) in the facility.	1. Facility will deploy portable 5-Gallon water tanks with hand pumps while breakage is investigated and repaired. 2. Option: Back feed critical areas with water from a portable 250-gallon storage tank, that is filled at the central plant emergency water storage system. A small 120-volt 10-amp water booster pump at approximately 5-8 gpm, will draw water out of the portable tank and be connected to the cold-water pipes after the line break with a new	1. Facility will deploy portable 5-Gallon water tanks with hand pumps while breakage is investigated and repaired. 2. Option: Portable water storage tanks (4 min), that can be transported to the central plant, or nearest viable source, filled and delivered to the location where needed. Two to feed the 2nd floor surgical area and two for the 3rd floor OB department.3.	1. 2nd Floor Surgical Area2. 3rd Floor OB Area	1. New England Sheet Metal and Mechanical responsible to connect storage tanks, valves, small booster pumps to back feed the system. New England Sheet Metal and Mechanical responsible to determine where pipes have failed and isolate failed sections for repair as soon as possible.Valves are in stock at New England Sheet Metal and Mechanical as well as at several	1. Owner to purchase storage tanks, an assortment of valves, small booster pumps and maintain sealed for use in an emergency.2. Maintain a quantity of bottled water for drinking during shutdown periods.3. Hand sanitizer.

			feed valve and a valve installed in the line after the failed location. This will provide water for all fixtures downstream of the back fill location.3. Provide bottled water until the temporary system is operational.4. Hand sanitizer for hands until water is restored.	Facility should stockpile an assortment of "Press-Connect" style fittings, couplings, and valves, plus saddle-tap fittings in common piping system sizes to make emergency connections and repairs.4. Small water booster pumps, 5-8 GPM, 120-volt, 10-amp maximum. (2)5. Domestic water rated hoses6. Valves to feed and provide emergency shutoff of the failed pipes.7. Bottled Water.8. Hand sanitizer.		plumbing supply houses in the area.2. Owner to stockpile an assortment of 1/2", 3/4", 1", 1-1/4", 1- 1/2"and 2" press fittings for emergency repairs.3. Owner to provide bottled water for drinking during shutdowns.3. Owner to furnish hand sanitizer as needed.	
	Domestic Hot Water	Source of water is currently being upgraded to NPC-5 at the central plant. 1. Loss of supply from source at plant due to broken pipe(s) in the facility.	1. New England Sheet Metal and Mechanical is available on short notice to provide repair or replacement of broken water piping. 2. If the source of steam is lost, hot water will not be	1. Various pipes and fittings needed is wide and varied. Most valves, pipe and fittings are available in several plumbing supply houses in the local area. 2. Hand sanitizer.	1. 2nd Floor Surgical Area 2. 3rd Floor OB Area	1. New England Sheet Metal and Mechanical is a trusted partner and available 24 hours per day. 2. Owner to supply hand sanitizer as needed.	1. Hand sanitizer.

			available until steam flow is restored.				
Systems:	**Waste Disposal**	**Failure:**	**Emergency Measures:**	**Emergency Supplies Required:**	**Areas to be Served:**	**Responsibility:**	**Owner Responsibility:**
	Waste and vent Lines.	Campus is currently being upgraded to NPC-5 by providing waste storage tanks on the sewer discharge lines from the facility. 1. Failure within the facility due to broken pipes. 2. Blockage of pipes within the facility.	1. Cast Iron pipe and fittings are readily available from several local plumbing supply houses to enable emergency repairs of broken lines. 2. Blockages can be removed by jetting the lines. This can be done by New England Sheet Metal and Mechanical on an emergency basis. 3. Temporary loss of toilet facilities and re-direction to functioning areas. 4. Bagging fixtures that are non-functioning and out of order signage for all areas that are not accepting waste flow.	1. Cast Iron pipe and fittings. 2. Pipe cleaning equipment available by New England Sheet Metal and Mechanical. 3. Bags to cover non-functioning fixtures and out of order signage. 4. Red bags for hazardous waste bagging.	1. 2nd Floor Surgical Area 2. 3rd Floor OB Area	1. New England Sheet Metal and Mechanical has relationships with several plumbing supply houses in the local area to procure repair pipe and fittings in short order and initiate repairs within the facility to restore sewage drainage. 2. New England Sheet metal has pipe cleaners available. 3. Temporary measures may include waste bagging and closing restroom facilities, redirecting use to other areas, in the affected area until repaired.	1. Stop use of waste systems in the affected area until system is repaired. 2. Provide temporary toilet facilities or re-direct to functioning facilities. 3. Bagging and signage for areas that are not functioning.

						4. Redirection to other facilities by signage by owner.	
Systems:	**Steam**	**Failure:**	**Emergency Measures:**	**Emergency Supplies Required:**	**Areas to be Served:**	**Responsibility:**	**Owner Responsibility:**
	Building Hot Water Heating	All steam is fed from the CUP, which is SPC-5 and being upgraded to NPC-5. 1. Failure would be local steam pipe in this building. All heating is from the plant steam source.	1. New England Sheet Metal and Mechanical is available on short notice to provide repair or replacement of broken steam piping. 2. Patients may require additional blankets if heating is not adequate.	Various pipe and fittings needed is wide and varied. Most valves, pipe and fittings are available in several plumbing supply houses in the local area.	1. 2nd Floor Surgical Area 2. 3rd Floor OB Area	New England Sheet Metal and Mechanical is a trusted partner and available 24 hours per day to make repairs.	

	Building Domestic Hot Water	All steam is fed from the CUP, which is SPC-5 and being upgraded to NPC-5. 1. Failure would be local steam pipe in this building. All heating is from the plant steam source.	1. New England Sheet Metal and Mechanical is available on short notice to provide repair or replacement of broken steam piping.	Various pipe and fittings needed is wide and varied. Most valves, pipe and fittings are available in several plumbing supply houses in the local area.	1. 2nd Floor Surgical Area 2. 3rd Floor OB Area	New England Sheet Metal and Mechanical is a trusted partner and available 24 hours per day to make repairs.	
	Sterilizers	All steam is fed from the CUP, which is SPC-5 and being upgraded to NPC-5.1. Failure would be local steam pipe in this building. All sterilization is from the plant steam source.	1. New England Sheet Metal and Mechanical is available on short notice to provide repair or replacement of broken steam piping.2. Critical procedures may need to be re-directed or canceled if adequate sterile supplies are not available.3. Arrange for instruments to be sterilized at another facility, in an emergency.	Various pipe and fittings needed is wide and varied. Most valves, pipe and fittings are available in several plumbing supply houses in the local area.	1. 2nd Floor Surgical Area2. 3rd Floor OB Area	New England Sheet Metal and Mechanical is a trusted partner and available 24 hours per day to make repairs.	
	Humidification	All steam is fed from the CUP, which is SPC-5 and being upgraded to NPC-5. 1. Failure would	1. New England Sheet Metal and Mechanical is available on short notice to provide repair or replacement of broken steam	1. Various pipe and fittings needed is wide and varied. Most valves, pipe and fittings are available in	1. 2nd Floor Surgical Area 2. 3rd Floor OB Area	New England Sheet Metal and Mechanical is a trusted partner and available 24 hours per day.	1. Portable humidifiers in NICU is necessary.

		be local steam pipe in this building. All humidification is from the plant steam source.	piping. 2. Portable humidifiers may be required in NICU, if humidity is too low.	several plumbing supply houses in the local area. 2. Portable humidifiers.			

Facility sign-off on Operational Plan

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-End of Operational Plan-