HCAi
Department of Health Care Access and Information

NPC 5 Water Rationing Plan

August 22, 2023

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Hazards

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Northridge Earthquake (6.7 Magnitude Earthquake)

Performance of all Buildings at 23 Hospital Sites with One or More Yellow or Red Tagged Buildings		
Type of Damage	Number (%) of Buildings	
	Pre Act	Post Act
Structural Damage		
Red tagged	12 (24%)	0 (0%)
Yellow tagged	17 (33%)	1 (3%)
Green tagged	22 (43%)	30 (97%)
Nonstructural Damage		
Major	31 (61%)	7 (23%)
Minor	20 (39%)	24 (77%)
Total Buildings	51	31

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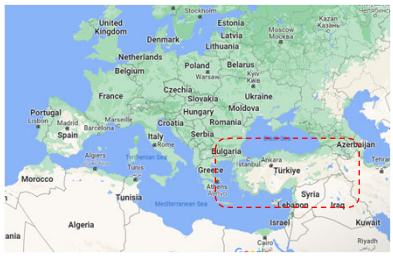
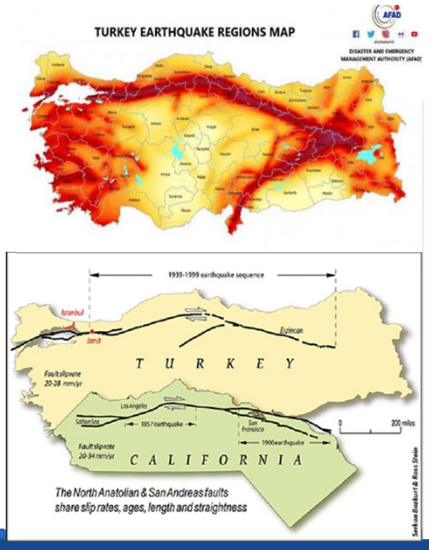
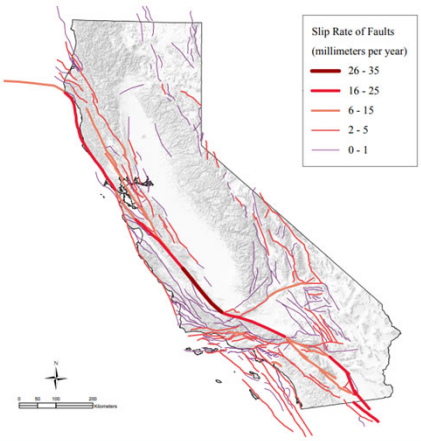
Seismicity in Türkiye is Similar to California







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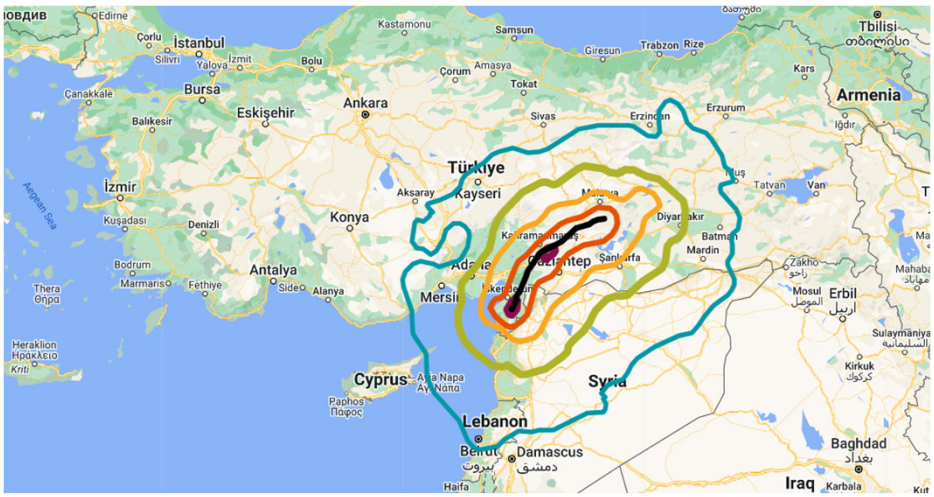
7.8 Magnitude Event - 4:17am Feb 6, 2023

Legend
0.02g
0.05g
0.10g
0.20g
0.50g



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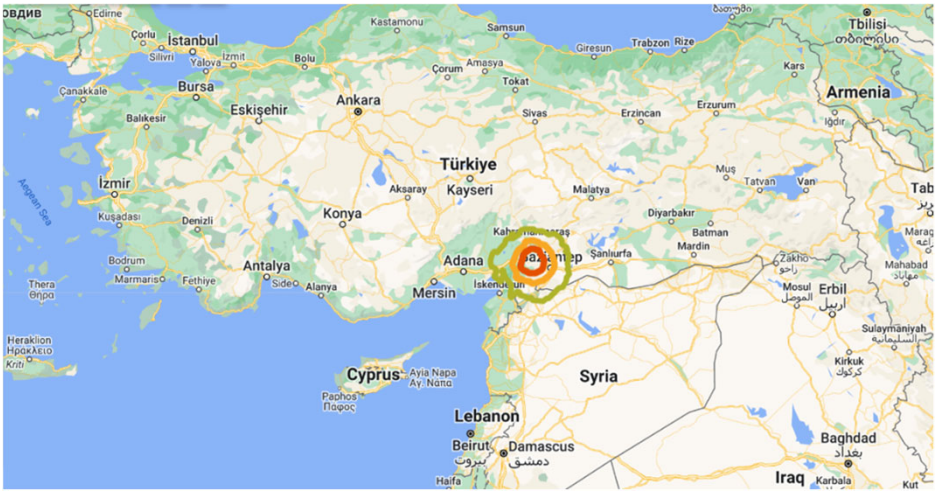
11 minutes later - 6.7 event, aftershock

Legend
0.02g
0.05g
0.10g
0.20g
0.50g



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9 hours later – 7.7 magnitude event (the 2nd EQ)

Legend
0.02g
0.05g
0.10g
0.20g
0.50g

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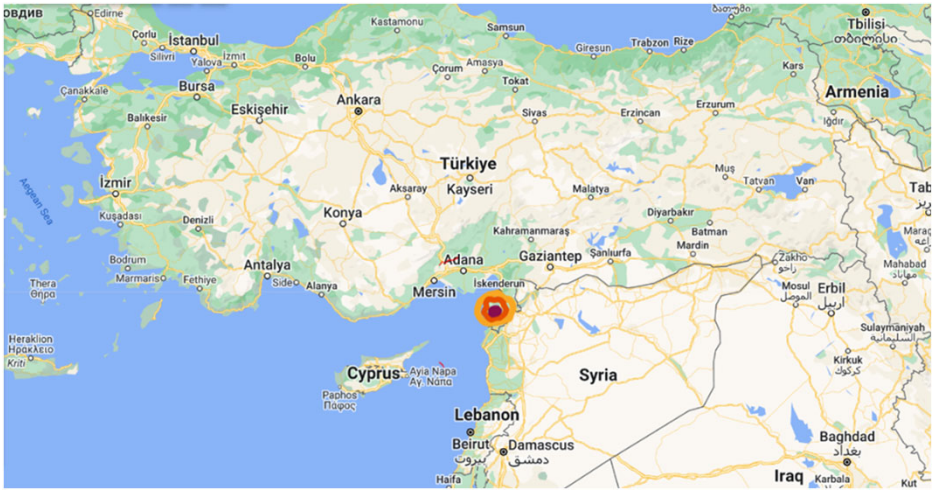
2 weeks later – 6.3 magnitude event

Legend
—
0.02g
—
0.05g
—
0.10g
—
0.20g
—
0.50g



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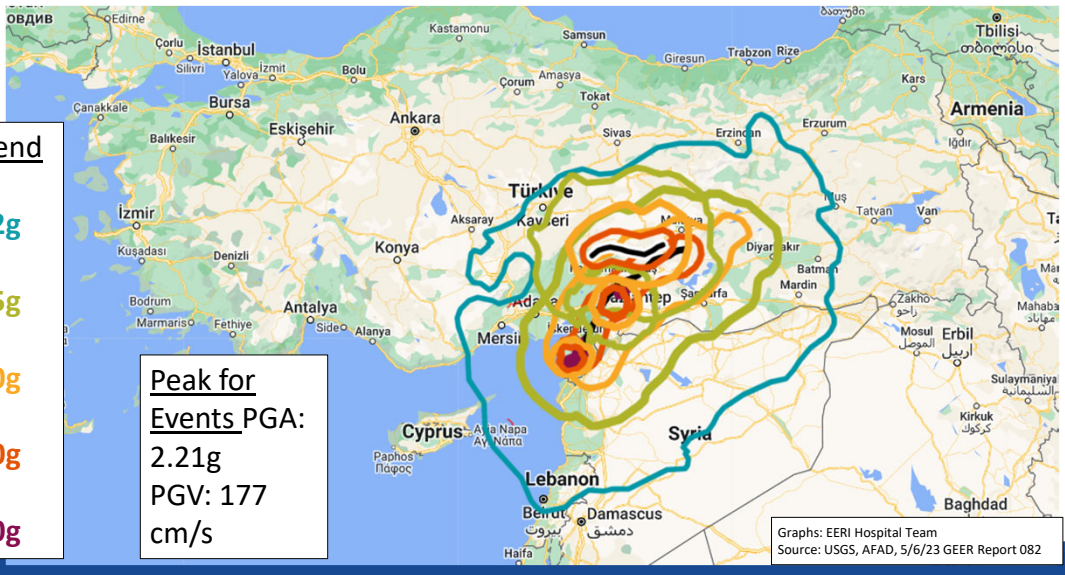
All Four Events Combined

Legend
—
0.02g
—
0.05g
—
0.10g
—
0.20g
—
0.50g

Peak for Events PGA: 2.21g
PGV: 177 cm/s



Graphs: EERI Hospital Team
Source: USGS, AFAD, 5/6/23 GEER Report 082

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If Turkiye earthquake happens at Southern CA

Turkiye Earthquake contour plot directly copied along San Andreas fault near Los Angeles.

Within the red contour (highly affected area):

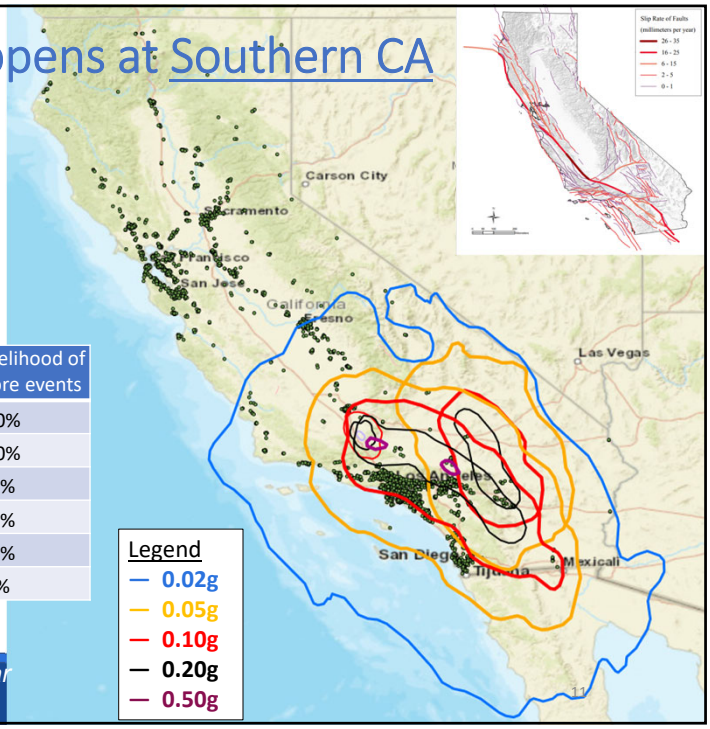
- **230 out of 414** General Acute Care Facilities
- **620 out of 1132** Skilled Nursing Facilities

Southern California Region

Magnitude (greater than or equal to)	Average repeat time (years)	30-year likelihood of one or more events
5	0.24	100%
6	2.3	100%
6.7	12	93%
7	25	75%
7.5	87	36%
8	522	7%

Table Reference: USGS, Fact Sheet 2015–3009, March 2015

[Northern CA has similar no. of facilities, with similar probabilities of risk]



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Definitions

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The Hospital Facilities Seismic Safety Act (HFSSA) § 129680 requires that hospitals "shall be designed and constructed to resist, **insofar as practical**, the forces generated by earthquakes, gravity, and winds."

HFSSA § 130005 (f) states, "The office, in consultation with the Hospital Building Safety Board (HBSB), shall develop regulations to identify the **most critical nonstructural systems** and to **prioritize timeframes for upgrading those systems that represent the greatest risk of failure during an earthquake**."

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Hospital Functionality

STRUCTURAL

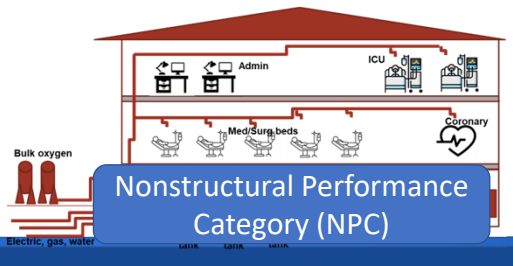
Beams, Columns, Shear Walls, Slabs, Foundations

NONSTRUCTURAL

Cladding, Partitions, Ceilings, Equipment, Pipes, Furnishings, Contents, Elevators, Stairs, etc

STAFF

Structural Performance Category (SPC)



Nonstructural Performance Category (NPC)

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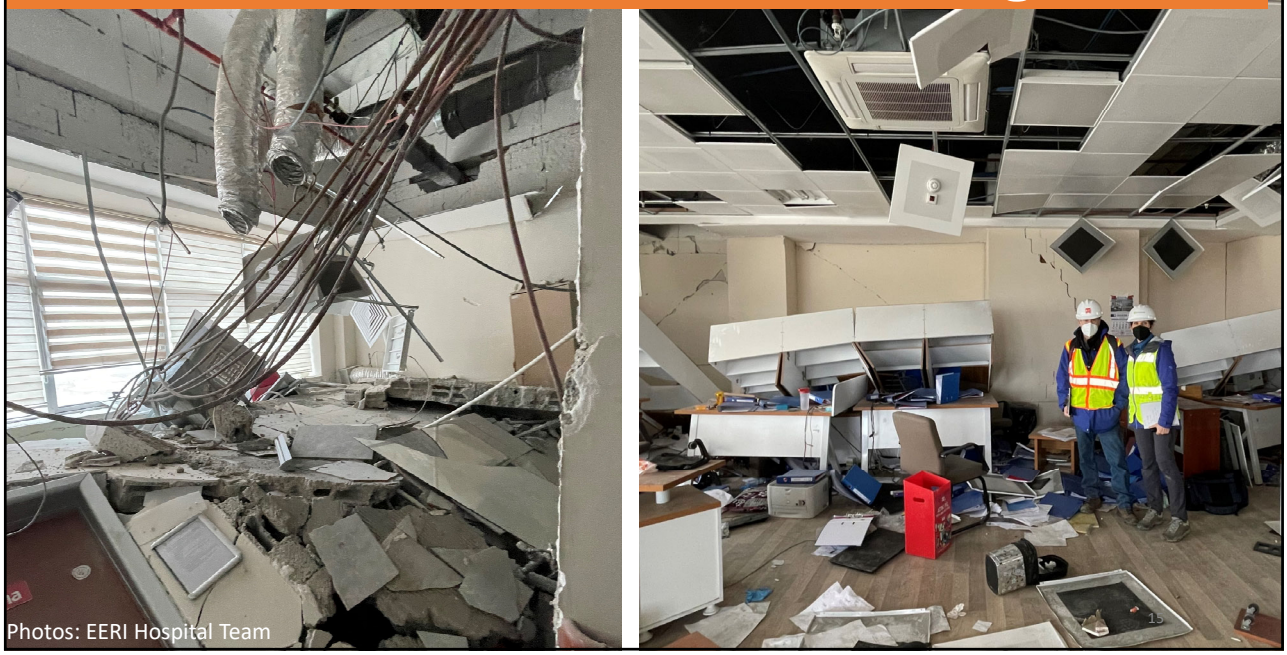
Nonstructural Performance Categories



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Rating	Brief / Simplified Description (See 2022 CAC Chapter 6 Table 11.1 for full description and requirements)
NPC - 1	Buildings with equipment and systems not meeting the bracing and anchorage requirements of any other NPC.
NPC - 2	Buildings in which essential systems vital to the safe evacuation of the building are anchored and braced to minimum code requirements. Essential systems vital to the save evacuation of the building include communications, emergency power supply, bulk medical gas, fire alarms and emergency lighting equipment and signs in means of egress.
NPC - 3	The building meets the criteria for NPC "2" and in critical care areas, clinical laboratory service spaces, pharmaceutical service spaces, radiological service spaces, and central and sterile supply areas, and certain components meet the bracing and anchorage requirements of Part 2, Title 24
NPC – 4D	Building meets the criteria for NPC - "3" + Operational Plan. There are 3 levels.
NPC - 4	Building meets the criteria for NPC - "3" and all architectural, mechanical, electrical systems, components and equipment, and hospital equipment meet the bracing and anchorage requirements of Part 2, Title 24.
NPC - 5	Building meets the criteria for NPC - "4" or 4D and has onsite supplies of water and holding tanks for sewage and liquid waste sufficient for 72 hours of emergency operations, and provides radiological service and onsite fuel supply for 72 hours of acute care service.

(See 2022 CAC Chapter 6 Table 11.1 for details)

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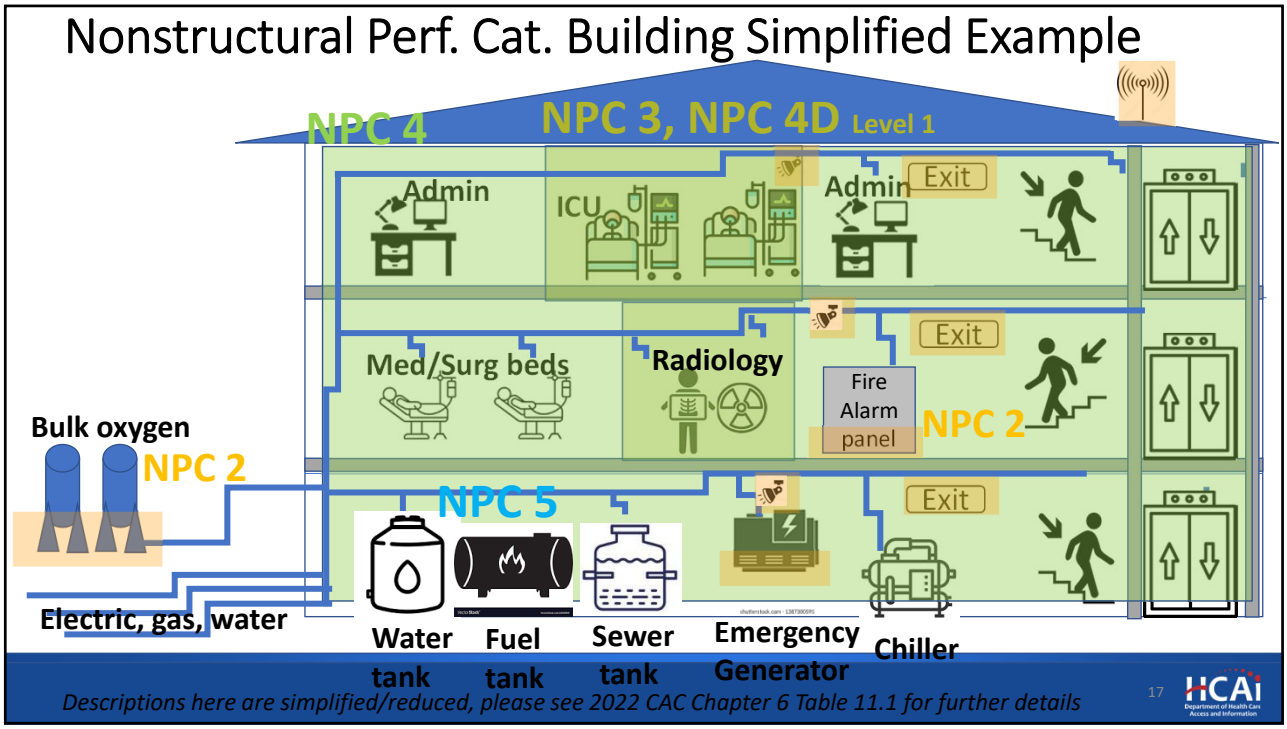
Nonstructural Perf. Cat. Building Simplified Example
NPC 4
NPC 3, NPC 4D Level 1
Admin
ICU
Admin
Exit
Med/Surg beds
Radiology
Fire Alarm panel
Exit
NPC 2
Bulk oxygen
NPC 2
NPC 5
Exit
Electric, gas, water
Water tank
Fuel tank
Sewer tank
Emergency Generator
Chiller
Descriptions here are simplified/reduced, please see 2022 CAC Chapter 6 Table 11.1 for further details
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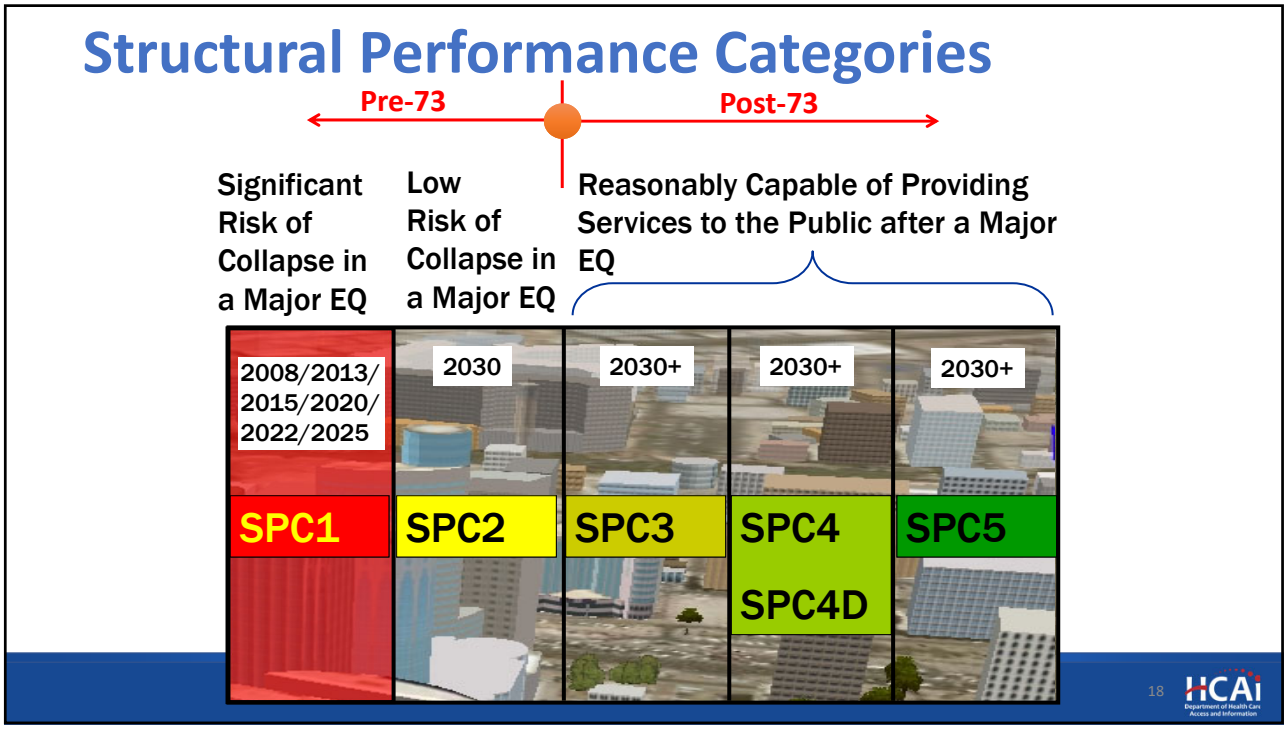
Structural Performance Categories
Pre-73
Post-73
Significant Risk of Collapse in a Major EQ
Low Risk of Collapse in a Major EQ
Reasonably Capable of Providing Services to the Public after a Major EQ
2008/2013/2015/2020/2022/2025
2030
2030+
2030+
2030+
SPC1
SPC2
SPC3
SPC4
SPC4D
SPC5
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Hospital Building Inventory

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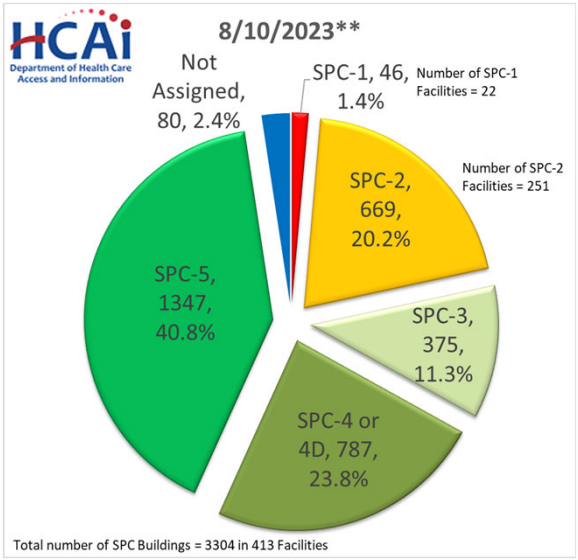
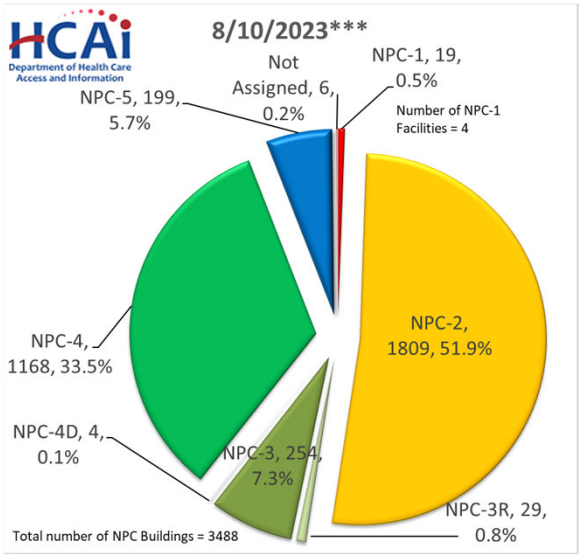
SPC / NPC ratings of 3300 General Acute Care Buildings





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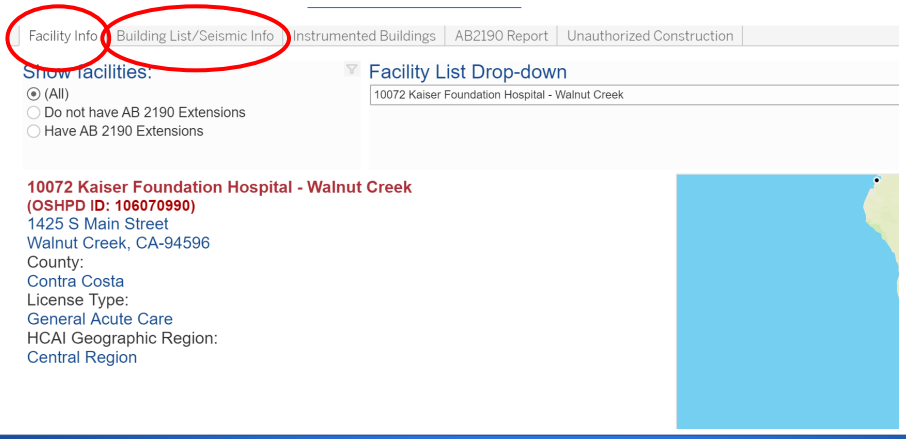
How to find NPC Status and more…

https://hcai.ca.gov/construction-finance/facility-detail/



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Building SPC / NPC

For accessible copies of facility site plans email Seismic Compliance Unit.

Facility Info | Building List/Seismic Info | Instrumented Buildings | AB2190 Report | Unauthorized Construction

Back to Main

10072 Kaiser Foundation Hospital - Walnut Creek

Bldg Num	Bldg Name	Classification & Status	RACs Date	CO/CF Received	NPC Extension Date	Building Code	Year Built	Stories	Height in Feet	Hazus Score	Instrumented	Construction Type	Sprinklered	
BLD-02447	Central Plant	OSHPD 1, In Service			1/1/2030	1979 California Building Code (CBC)	1985	1	Unknown		No			SPC: 4 NPC: 2
BLD-02448	North Addition (Hospital Tower)	OSHPD 1, In Service			1/1/2030	1979 California Building Code (CBC)	1985	3	Unknown		No			SPC: 3 NPC: 2

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NPC Deadlines

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NPC Compliance Timeframe

- For any general acute care hospital be use as a GAC hospital building after January 1, 2030:
  - **By January 1, 2024**, submit to the Office a complete nonstructural evaluation for each building up to NPC-4 / NPC-4D and NPC 5.
  - **By January 1, 2026**, submit to the Office construction documents ready for review by the Office.

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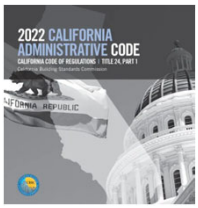
NPC Compliance Timeframe



- For any general acute care hospital be use as a GAC hospital building after January 1, 2030:
  - **By January 1, 2028**, obtain a building permit to begin construction.
    Hospitals not meeting this deadline shall not be issued a building permit except for:
    - Seismic compliance
    - Maintenance
    - Emergency repairs

    See exceptions in 2022 CAC Chapter 6 Section 1.5.2.
  - **By January 1, 2030**, the GAC building shall achieve NPC-5 rating

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What about buildings that will no longer provide acute care services beyond 2030?

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Removing GAC Post-2030

NPC permitted to remain at NPC-2 if:

- By **January 1, 2024**, the hospital owner shall submit to the Office an updated **seismic compliance plan** for each building to be removed from acute care service beyond January 1, 2030
- By **January 1, 2028**, the hospital owner shall submit to the Office a **RACS project** which includes **construction documents** deemed ready for review by the Office for remaining work required to meet conditions indicated in Part 10, Chapter 3A for Removal of Acute Care Services.

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NPC 5

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NPC 5 Compliance by 2030

- **An NPC-5-compliant Hospital Facility is capable to support 72 hours of emergency operations during widespread damage caused by a Major EQ.**
- What does being reasonably capable of providing services to the public after a disaster mean?
  - Water storage/water conservation plan
  - Waste water storage
  - Fuel storage for emergency generator(s)
  - Utilities and systems anchored and braced

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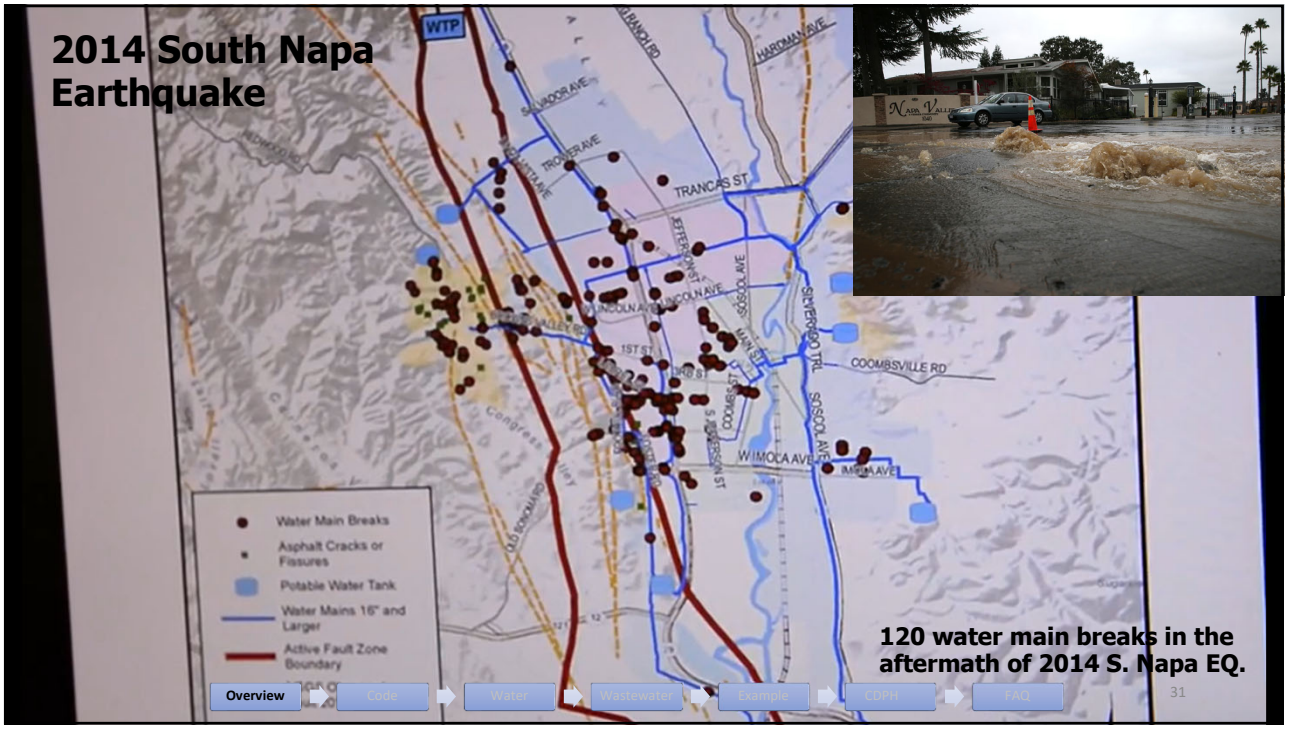

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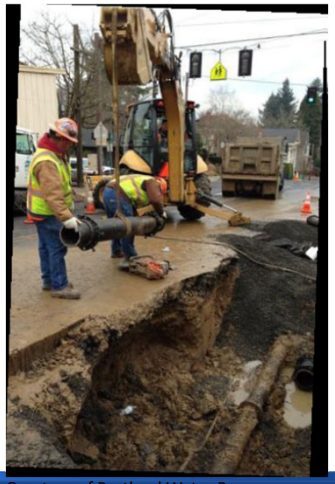
Earthquakes Cause Extensive Damage to Critical Infrastructure

- Widespread damage to water and wastewater systems, resulting in loss of service for extended periods
- Extensive damage to other critical infrastructure, including transportation networks
- Hospitals are required to have enough emergency water to remain functional during lengthy outages caused by natural disasters



Courtesy of Portland Water Bureau

Overview Code Water Wastewater Example CDPH FAQ 32

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Consequences of Loss of Water in Hospitals After an EQ

- Patient care (e.g., hemodialysis, hemofiltration, extracorporeal membrane oxygenation, hydrotherapy);
- Loss of access to water for use in disinfection, sterilization, and water-based patient treatments
- Loss of HVAC systems that rely on water for heating, cooling, and ventilation
- Laundry and other services provided by central services (e.g., cleaning and sterilization of surgical instruments)
- Loss of fire suppression capabilities
- Loss of drinking water and sanitation services
- Inability to provide an effective hazmat-decontamination response
- Potential lack of water for field medical triage centers during an emergency response
- Potential loss of access to other hospitals and healthcare facilities on the same affected water system
- Etc.

Courtesy of Yumei Wang

Overview → Code → Water → Wastewater → Example → CDPH → FAQ

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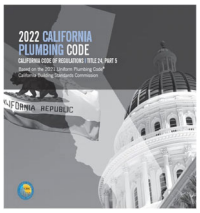
NPC-5 Code Requirements

- *CAC Chapter 6, Article 11, Table 11.1*
- *CAC Chapter 6, Article 1, §1.5.2*
- *CBC §1617.1.40*
- *CPC §615.4 (since 2001)*
- *CPC §727.1*



Overview → Code → Water → Wastewater → Example → CDPH → FAQ

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NPC-5 Emergency Water Requirements

CAC Part 1, Chapter 11, Table 11.1

- The building meets the criteria for NPC "4" or NPC "4D" and **onsite supplies of water and holding tanks for sewage and liquid waste, sufficient to support 72 hours emergency operations, are integrated into the building plumbing systems in accordance with the California Plumbing Code.** An onsite emergency system as defined in the California Electrical Code is incorporated into the building electrical system for critical care areas. Additionally, the system shall provide for radiological service and an onsite fuel supply for 72 hours of acute care operation.

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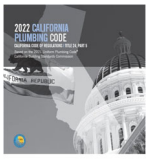
NPC-5 Post-Earthquake Emergency Water



- NPC-5 requirements include potable water as well as industrial/process water to operate hospital utilities and equipment **to support 72 hours of emergency operations**
- *CPC, Section 615.4*
  - ". . . For acute care hospital facilities or buildings required to meet NPC-5, on-site water supply of not less than 150 gallons [based on 50 gallons/day/bed for 72 hours] of potable water per licensed bed shall be provided."

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NPC 5 for Existing Hospital Buildings

CPC, Section 615.4

- All existing buildings remaining in the acute care inventory on January 1, 2030
  - Required to comply with the NPC-5 requirements by January 1, 2030

NPC 5 for New Hospital Buildings

CPC, Section 615.4

- New seismically separate hospital buildings :
  - 2022 California Plumbing Code, Section 615.4
  - A minimum of 150 gallons of potable water per licensed bed shall be provided with additional industrial/process water to support 72 hours of emergency operation of the subject building

NPC 5 for New Central Plants

CPC, Section 615.4

- New Central Utility Plant
  - 2022 California Plumbing Code, Section 615.4
  - Required to provide water for 72 hours min emergency operations for itself and any other new buildings
    - Not required to support the existing buildings on the facility campus,
    - Nothing prohibits installation of larger tanks at the time of construction.

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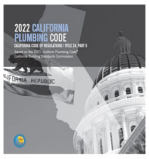
NPC-5 Post-Earthquake Emergency Water



- The 2022 California Plumbing Code (CPC) exceptions:
  - Section 615.4 allows smaller tanks where alternate arrangements have been made for delivery of water (minimum to support 24 hours of operation with no less than 5,000 gallons or 50 gal/bed); and,
  - Section 727.0 allows alternate arrangements to be made for transportable means for sewage and liquid waste disposal.
- Where such exceptions are used, the arrangements require approval by HCAI and CDPH.

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NPC 5 for New Hospital Buildings

CBC, Section 1617A.1.40

- Exception permitted for general acute care hospital with building area less than 4,000 sq. ft.
- Emergency and standby generators shall not be located below the higher of (Design Flood Elevation or Base Flood Elevation) + 2ft or 500-year flood elevation.

Overview → Code → Water → Wastewater → Example → CDPH → FAQ

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How Much Water Does Your Hospital Need in an Emergency?

- The amount of water required to provide for 72 hours of operation is determined from:
  - The Facility's emergency operations plan; and,
  - The associated **Water Conservation/Water Rationing plan**
- Approvals req'd by CDPH, Licensing Division
- **The min. volume of potable water required per licensed bed is defined**
- **The min. volume for industrial/process water is not defined in the California Plumbing Code**
  - Which utilities and systems the hospital facility intends to operate during an emergency? and,
  - Losses in the process water for closed loop heating and cooling systems?

Overview → Code → Water → Wastewater → Example → CDPH → FAQ

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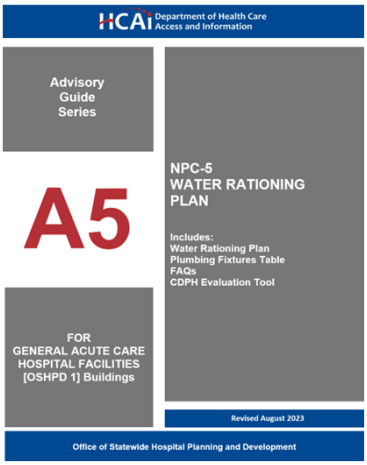
NPC-5 Water Rationing Plan Guide

- *"The emergency water storage capacity shall be computed based on an approved Water Conservation/Water Rationing Plan to provide for 72 hours of operation, accepted by the licensing agency"* ***T-24, Part 5 CPC, Section 615.4***
- The Water Rationing Plan shall be based on the following:
  - Water Usage under Normal Operating Conditions
  - Source(s) of Emergency Water Supply
  - Identification of Water Uses in the Building(s)
  - Water Quality
  - Water Replenishment / Tanker Trucks
  - Temperature (Heating /Cooling)
  - Impacted Services in the Building(s)
- HCAI initially reviews the Water Rationing Plan. Once HCAI major comments are resolved; the submittal is then sent by HCAI to CDPH for their review and approval.



Overview → Code → **Water** → Wastewater → Example → CDPH → FAQ

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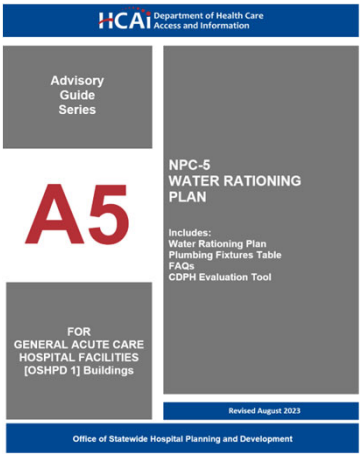
NPC-5 Water Rationing Plan Guide - Update



- *Updated Guide August 2023 now available.*
  - *<u>NO NEW REQUIREMENTS</u>*
  - *FAQ is added*
  - *CDPH internal checklist is added*
  - *Industrial water for temperature control*
  - *Summary tables improved*
  - *Minor editorial*

Overview → Code → **Water** → Wastewater → Example → CDPH → FAQ

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Helpful Tools & Resources

Contents

STEP 1
ASSEMBLE
the facility's EWSP team and the necessary background documents

STEP 2
UNDERSTAND
water usage through a water use audit

STEP 3
ANALYZE
your emergency water supply alternatives

STEP 4
DEVELOP
EWSP test/exercise

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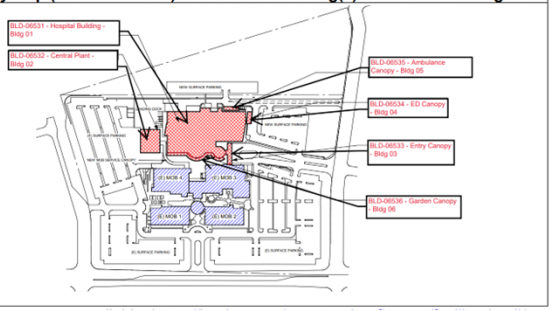
NPC-5 Water Rationing Plan

Date:	
Facility ID:	
Facility Name:	
Building Number(s):	BLD-xxxxx
Licensed Beds:	Per BLD-xxxxx
Building Area(s) (SF):	
HCAI Construction Project Number(s) (if any):	
HCAI SCU Project Number(s) (if any):	

Facility Key Map (From HCAI site) Indicate the Building(s) in Water Rationing Plan



Facility key maps are available:
https://hcai.ca.gov/construction-finance/facility-detail/

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NPC-5 Water Rationing Plan

Documents Required:

- Executive Summary Indicating:
  - Existing water and wastewater storage (gallons),
  - Additional proposed water and wastewater storage (gallons),
  - Anticipated emergency usage (gallons); and,
  - Services that are affected
  - Water replenishment/tanker truck arrangements
- Diagram showing the shutoff / redirection valve locations
- Architectural Floor Plans showing services (optional)
- Supporting capacity calculations
- Onsite fuel supply calculations

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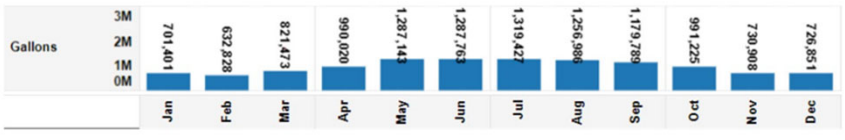
Water Usage under Normal Operating Conditions

For New Buildings in design		Gallons per day
	Anticipated normal water usage (extrapolating from other similar existing buildings is acceptable.)	
For Existing Buildings		
	Wintertime minimum normal water usage	
	Summertime maximum normal water usage	

Example - Facility-wide XYZ year long water bill:

Feb: 632,472 gallons / 28 days = 22,588 gallons per day
July: 1,319,427 gallons / 31 days = 42,562 gallons per day



(Irrigation related usage can be excluded from the calculation if emergency water tank(s) are not connected to the irrigation network.)

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Source(s) of Emergency Water Supply

- Required:
  - Clear descriptions of facility's water source(s)/supplier(s) (including utility and other source/supplier contact information); and,
  - Supply main(s) and corresponding meter(s) for water entering the facility

Source(s) of Emergency Water Supply
Provide clear descriptions of facility's water source(s)/supplier(s) (including utility and other source/supplier contact information) and supply main(s) and corresponding meter(s) for water entering the facility.

Primary Emergency Water Supply[1, 4]	***Capacity (Gallons)***	***Notes***
Existing Water Tank(s)		
New Water Tank(s)		
Well(s) if any (daily average)[2]		
Other		
Secondary Emergency Water Supply (if any)[3]	***Capacity (Gallons)***	***Notes (indicate location)***
Bottled Water		
Other Stored Water		

Footnotes:
1. Primary water supply— Provide capacity, location(s) and building numbers served.
2. Well(s) including tanks, pumps, etc.: Provide well study showing anticipated average output on a daily basis. Provide a statement documenting that water quality (and/or treatment) satisfies public health standards.
3. Secondary water supply—This may include bottled water suppliers or bulk water tanker services.
4. The building that houses pump, tanks, filtering equipment must be in HCAI/OSHPD jurisdiction.

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On-Site Water Wells…

- Average gal/min may be used for design
- Water quality - filtration system
- Pumps / filters on emergency power
- Holding tanks
- The out flow can be considered similar to tanker trucks for replenishment

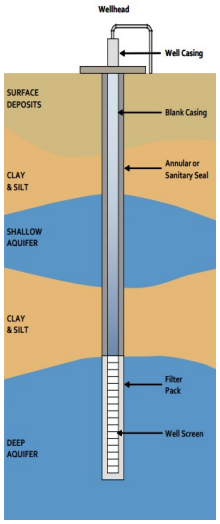

Image from California Department of Water Resources

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Identify Water Uses in the Building(s)

- Consider all equipment, processes, and materials that use water. (e.g., HVAC, water cooled compressors, etc.

Water Uses	Minimum Gallons per day
Plumbing Fixtures[1]	
Physical Plant	
Humidification	
Laundry, if outsourced, are there adequate supplies on hand?	
Housekeeping / Infection Control	
Fire & Life Safety Systems	
Sterilization equipment	
Clinical Lab	
Hemodialysis	
Kitchen / Dietary	
Pharmacy	
Drinking Water	
Others (please list)	

[OSHPD 1]
General Acute Care Hospital (GACH)
PLUMBING FIXTURES TABLE

Plumbing Fixture Calculation							
Fixture Type	Quantity	Water use		Duration	Use per day[1]	Daily total	72 hr total
Water closet	(#)	1.28	flush	n/a	(#)	(#)	(#)
Urinal	(#)	(#)	flush	n/a	(#)	(#)	(#)
Handwash	(#)	(#)	minute	20 sec	(#)	(#)	(#)
Lavatory	(#)	(#)	minute	20 sec	(#)	(#)	(#)
Scrub Sink	(#)	(#)	minute	2 min	(#)	(#)	(#)
Process Sink	(#)	(#)	minute	tbd	(#)	(#)	(#)
Shower	(#)	1.5	minute	5 min	(#)	(#)	(#)
Clinical Sink	(#)	6.5	flush	n/a	(#)	(#)	(#)
Mop Sink	(#)	(#)	minute	tbd	(#)	(#)	(#)
Drinking Fountain	(#)	.25	minute	(30 sec)	(#)	(#)	(#)
Other							

1 – Use per day factored on occupant load in building

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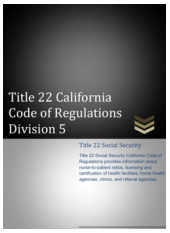
Water Quality



- **TITLE 22 § 70863. Water Supply and Plumbing.**

(a) Water for human consumption from an independent source shall be subjected to bacteriological analysis by the local health department, State Department of Health or a licensed commercial laboratory at least every three (3) months. A copy of the most recent laboratory report shall be available for inspection.

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Water Quality

- For new and/or existing tanks, indicate how water quality will be maintained.
- Provide a plan that addresses treatment processes and water quality testing (if applicable)

Overview → Code → Water → Wastewater → Example → CDPH → FAQ

Water Replenishment / Tanker Trucks

1. Identify the connection locations that will allow for placement of the tanker truck.
   - Indicate which connections are for potable water and which are for non-potable / industrial water, if broken out separately
   - Indicate water tank(s) refill time (24, 48, 72 hours).
2. Name the company(s) that have been contracted to provide tanker trucks to replenish water.
   - Specify the date range for which the contract/agreement is valid.
3. Indicate how the contract will be monitored.
4. Provide information regarding the water use from
   1. The state drinking water authority,
   2. The public water utility; and,
   3. The local emergency management agency (if possible)

Overview → Code → Water → Wastewater → Example → CDPH → FAQ

Water Pressure During Loss of Power

CPC Section 615.4.2

- The emergency supply of water shall be delivered to the end point of usage at sufficient pressure from the storage tank
- Sufficient pressure may be obtained by:
  - Use of gravity; or,
  - Pressure tanks; or,
  - Booster pumps
- Booster pumps are required to be connected to the emergency power supply system

Getty Images/iStockphoto

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Temperature (Heating /Cooling)

INDUSTRIAL WATER

- If the facility is planning on limiting heating/cooling, what services will be affected/restricted?
- How will the facility monitor and maintain adequate humidity, temperature, and air pressure?

List of services to be affected by heating/cooling modifications from normal day to day operations	Building Number(s)

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Temperature (Heating /Cooling)

INDUSTRIAL WATER

Based on CDPH discussion, CDPH recommends at a minimum, the facility should provide industrial water to heat/cool/humidify:

1. Operating Rooms
2. Temperature sensitive drugs and medical supplies.

Indicate how cooling can be isolated to these regions.

Water rationing plan shall also include **infection control measures** for CDPH licensing and certification review.

Overview → Code → Water → Wastewater → Example → CDPH → FAQ

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Temperature (Heating /Cooling)

INDUSTRIAL WATER

For cooling/humidification units serving these spaces not connected to essential power, HCAI recommends (not requires) having alternate power source arrangements to maintain design temperatures per 2022 CMC Table 4A.

Overview → Code → Water → Wastewater → Example → CDPH → FAQ

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Identify Impacted Services in the Building(s)

- List the functional status of the services in the event of a water supply interruption and/or by the implementation of facility's water rationing plan?
- List of services and details on:
  1. Impacts by the implementation of the Water Rationing Plan (by service).
  2. Reduction in capacity or services
  3. Applicable modifications to staff procedures

List of Services	Functional Status[1]	Temperature Control[2]	Notes[3]	N/A
Basic				
Medical & Nursing				
Surgical & Anesthesia				
Clinical Laboratory				
Radiological				
Pharmaceutical				
Dietetic				
Supplemental				
Emergency				
Intensive Care				
Outpatient				
Dialysis				
Therapy/Rehab				
Support Services				
Storage				
Morgue				
Administrative Space				
Central Sterile Supply and Infection Control				
Employee Dressing Rooms & Lockers				
Housekeeping				
Laundry				
Others: (please list)				

[1] List if the service is fully functional (FF), partially functional (PF) or not functional (NF).
[2] List if service spaces are maintaining temperature/humidity range per 2022 CMC Table 4A.
[3] Provide additional information in notes for services partially functional or not maintaining temperature/humidity control.

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Further Considerations

- Pharmacy
  - Are there any impacts to compounding oral and IV clean rooms (cleaning, handwashing, and eyewash)?
  - . . . .
- Dietetic
  - Has normal dietetic service water usage been determined? If there is a plan to reduce water usage in dietetic service, describe what the plan is and how the reduction is calculated.
  - . . .
- Life Safety Code
  - Does the Water Rationing Plan reflect the same Emergency Preparedness requirements as their Emergency Preparedness Program?
  - . . .

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Emergency Wastewater Storage

- Hospitals discharge considerable amounts of chemicals and microbial agents in their wastewaters.
  - …. Pathogens & harmful bacteria, cytostatic agents, anesthetics , antibiotics, disinfectants iodinated contrasted media radioactive substances, toxic chemical, heavy metals. . .
- **CPC, Section 727.0 - Emergency Sanitary Drainage to support 72 hours of continuing operation in the event of an emergency**

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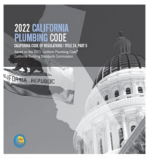
Emergency Wastewater Storage



- New acute care hospital buildings shall have:
  - On-site holding tank[s] to store sewage and liquid waste sufficient to operate essential hospital utilities and equipment in the acute care hospital building
- Existing general acute care hospital in operation after January 1, 2030, shall have:
  - On-site holding tank[s] to store sewage and liquid waste sufficient to operate essential hospital utilities and equipment in the acute care hospital buildings on the campus
- The emergency waste holding capacity shall be **<u>based on the Water Conservation/Water Rationing Plan</u>** required in CPC, Section 615.4.1

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Emergency Wastewater Storage

- *CPC, Section 727.0, Exception:*
  - Hospital has a plan for leak-proof bags for on-site storage for sewage and liquid waste if adequate storage facility(s) are provided
  - Hook-ups that allow for the use of transportable means of sewage and liquid waste disposal

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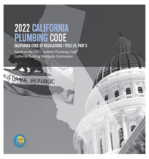
Emergency Wastewater Storage



- *CPC, Section 727.0, Exception:*
  - Facilities for waste collection and storage :
    - Lockable room[s] or lockable screened enclosure[s] of adequate capacity to store the quantity of waste anticipated for the washing and cleaning of containers and for the storage of sewage and waste water.
      - Floor and curb. A sealed concrete floor or other approved impervious flooring with a curb and with a drain connected to the sewer.
      - Water. Steam or hot water and cold water supplies in accordance with the California Plumbing Code.
    - Comply with:
      - Local health and environmental authorities' requirements; and,
      - California Department of Public Health requirements for medical waste management

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Emergency Wastewater Storage

Primary Emergency Wastewater Storage[1]	Capacity (Gallons)	Notes
Existing Wastewater Tank(s)		
New Wastewater Tank(s)		
Secondary Emergency Wastewater (if any)		
Leak-proof bags [2]		
Location of leak-proof bags[2]		

Footnotes:

1. There is no minimum size for the holding tank provided in Section 727.1, 2022 California Plumbing Code. The capacity shall be based on the Water Conservation/Water Rationing Plan required in Section 615.4.1. A minimum size of 24 hour for holding tank is recommended. The purpose of the holding tank is to permit 72 hours of continuing operation if the external sewer connection is severed. Thus, HCAI/OSHPD does not have any requirements for connection of the holding tank to the existing sewer line; however, such connections should be made with sufficient valves to isolate the external sewer lines.

2. The exception to Section 727.1, 2022 California Plumbing Code permits use of leak-proof bags where adequate storage for such bags is provided and where storage facilities comply with the appropriate local health and environmental authorities' requirements, with the California Department of Public Health requirements for medical waste management, AND with requirements for location as well as enclosure. HCAI/OSHPD takes no objection for use of the parking lot or any other location for storing these bags if the storage location complies with the requirements of a lockable screen enclosure, floor, curb, drain connected to a sewer and supply of water as enumerated in this exception.

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Emergency Wastewater Storage

- There is no minimum size for the holding tank(s) provided in the California Plumbing Code.
  - The capacity shall be based on the Water Conservation/Water Rationing Plan required in CPC, Section 615.4.1. A minimum size of 24 hours for holding tank is recommended.
- The purpose of the holding tank is to permit 72 hours of continuing operation if the external sewer connection is severed.
  - No HCAI requirements for connection of the holding tank to the existing sewer line;
  - Connections should be made with sufficient valves to isolate the external sewer lines.
- Use of leak-proof bags requirements:
  - Adequate storage
  - CDPH and local health and environmental authorities' approvals
  - Location for storage complies with the requirements of a lockable screen enclosure, floor, curb, drain connected to a sewer and supply of water.

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Southern California Facility - Example

1. Overall Consumption = 225,000 gal/day/facility
2. Per bed Consumption = 465 gal/day/bed
3. GSF Consumption = 0.28 gal/day/sf
4. Summer water consumption is nearly twice as winter water consumption
5. Water usage include irrigation demands. These ranges vary a lot from 2% to 30% in some cases.

TIP:
On average, there is 500 gal/day/bed consumption across California.

Overview → Code → Water → Wastewater → **Example** → CDPH → FAQ

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Executive Summary Table - Example

	0-24 hours	24-48 hours [3]	48-72 hours [3]
Code minimum for 75 beds – 11,250 gallons for 3 days.			
Existing water usage – 500,000 gallons for 3 days. [1]			
Water Rationing Plan water requirement - 60,000 gallons for 3 days.			
Existing water storage capacity	10,000 [5]		
Additional proposed water storage capacity/wells	10,000 [5]		
Water replenishment/tanker truck arrangements		20,000 [5]	20,000 [5]
Water Rationing Plan wastewater requirement - 45,000 gallons for 3 days			
Existing wastewater storage capacity	NA	NA	NA
Additional proposed wastewater storage capacity/leak proof bags	15,000 [2,5]		
Wastewater removal tanker truck arrangements		15,000 [5]	15,000 [5]
Service(s) affected under water rationing plan include _____ [4]			

Footnotes:

[1] It is acceptable to include the quantity if information available includes all facilities including non-acute care facilities. This quantity is used just as reference.
[2] Leak proof bags included to provide minimum 24 hours on site wastewater holding capacity as recommended under this guide.
[3] 48 hours and 72 hours are provided to indicate the prior arrangements made to meet 72 hours of continued operation per water rationing plan.
[4] Provide a brief list or reference the section within the report where affected service(s) are listed.
[5] Volume is listed in gallons and represents the usable capacity (not total).

Overview → Code → Water → Wastewater → **Example** → CDPH → FAQ

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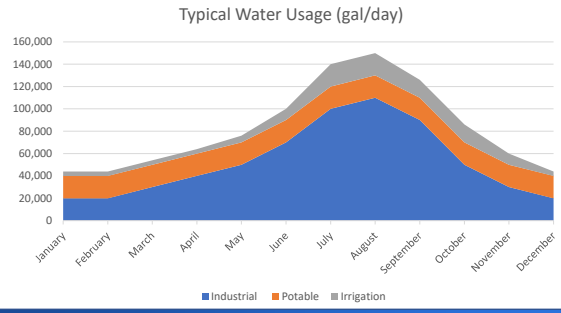
Water Rationing Plan – Example

A 300-bed acute care hospital building example

Step 1 - Look at the existing water bills
Average is approx. 82,334 gal/day and maximum is approx. 150,000 gal/day



For new buildings in design, extrapolating from other similar existing buildings is acceptable.

Overview Code Water Wastewater **Example** CDPH FAQ 69

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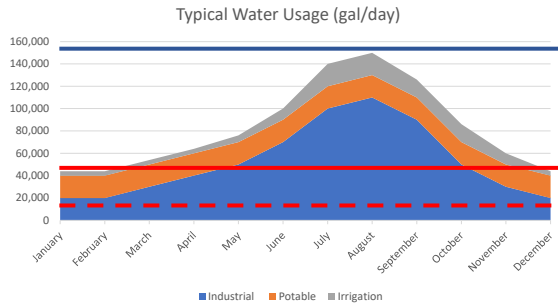
Water Rationing Plan – Example

Step 2 – Need water rationing plan?

For a 300-bed hospital 50 gal/bed/day for 72 hours demand would be 45,000 gallons minimum per code requirements



Tank size > 72-hour demand
No water rationing plan required

Tank size < 72-hour demand
Water rationing plan required

Minimum 50 gal/bed/day for 72 hours demand

Minimum 50 gal/bed/day for 24 hours demand (no less than 5,000 gallons) if alternate arrangement are made and approved by HCAI and CDPH

Overview Code Water Wastewater **Example** CDPH FAQ 70

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Water Rationing Plan – Example

Step 3 – Water Rationing Plan

- Potable water usage in emergency
- Industrial water usage in emergency
- Possibility to limit services, stop irrigation and provide fire watch
- Infection control, temperature control etc.

List of Services	Functional Status[1]	Temperature Control[2]	Notes[3]	N/A
Basic				
Medical & Nursing				
Surgical & Anesthesia				
Clinical Laboratory				
Radiological				
Pharmaceutical				
Dietetic				
Supplemental				
Emergency				

	0-24 hours	24-48 hours [3]	48-72 hours [3]
Code minimum for 75 beds – 11,250 gallons for 3 days.			
Existing water usage – 500,000 gallons for 3 days. [1]			
Water Rationing Plan water requirement - 60,000 gallons for 3 days.			
Existing water storage capacity	10,000 [5]		
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Water replenishment/tanker truck arrangements		20,000 [5]	20,000 [5]
Water Rationing Plan wastewater requirement - 45,000 gallons for 3 days			
Existing wastewater storage capacity	NA	NA	NA
Additional proposed wastewater storage capacity/leak proof bags	15,000 [2,5]		
Wastewater removal tanker truck arrangements		15,000 [5]	15,000 [5]
Service(s) affected under water rationing plan include		[4]	

Overview → Code → Water → Wastewater → **Example** → CDPH → FAQ

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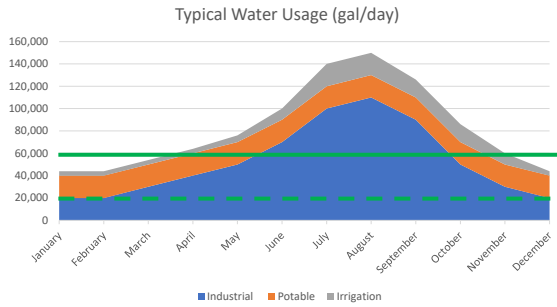
Water Rationing Plan – Example

Step 4 – Water tank(s) sizes

- Example - 60,000 gallons (45,000 potable and 15,000 industrial) for 72 hours continued operations



Larger than minimum code requirement

Tank(s) size per water rationing plan 60,000 gallons (>45,000 minimum requirement)

Onsite tank(s) size minimum for 24 hour continued operation 20,000 gallons (>15,000 minimum requirement)

Overview → Code → Water → Wastewater → **Example** → CDPH → FAQ

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Water Rationing Plan – Example

Step 5 – Wastewater tank(s)

- 45,000-gallon requirement based on 72-hour water rationing plan with majority coming from potable water
- A minimum of 24 hours (16,667-gallons) holding tank is recommended
- For 24-72 hours time frame, combination of leak-proof bags and/or sewer trucks can be utilized.

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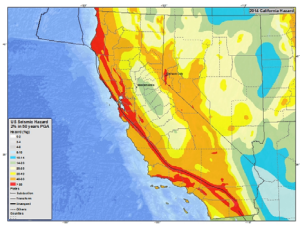
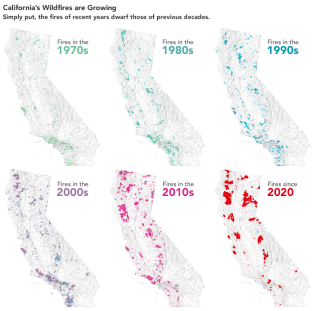
Bigger Picture – Disaster Preparedness

- Pandemic
- Wildfires
- Weather event
- Terrorist
- Chemical attack/spill
- Earthquake





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NPC-5 Water Rationing Plan – HCAI/CDPH Review & Approval

- Water Rationing Plan
  - Submit to HCAI
  - HCAI to triage, give comments/feedback to the DPOR
  - After resolution of any major comments, HCAI will route the document to CDPH for approval.
  - If CDPH has comments, HCAI will forward to the DPOR


DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
OFFICE OF STATEWIDE HOSPITAL PLANNING AND DEVELOPMENT
Project Application

- New buildings→ HCAI region projects (H, I type projects..)
- Existing buildings, campus wide plan → HCAI Seismic Compliance Unit (SER, SRU type projects) - https://hcai.ca.gov/construction-finance/seismic-compliance-and-safety/seismic-application-process/

Overview → Code → Water → Wastewater → **Example** → CDPH → FAQ

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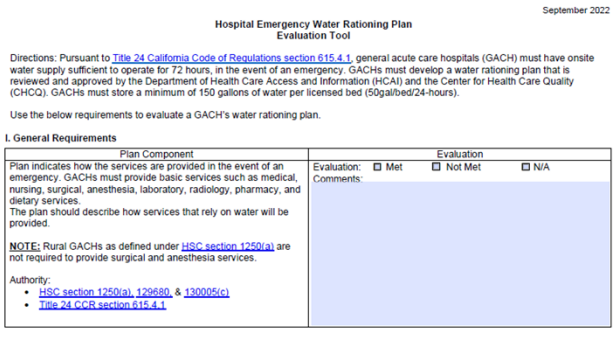
CDPH – Evaluation tool (For Reference only)

- The CDPH checklist is included in the revised A5 Guide as a reference.
- There is no need to submit this checklist to HCAI or CDPH
- Checklist covers the following items:
  - General Requirements
  - Facility Equipment
  - Infection Prevention Measures
  - Medical Services
  - Nutrition Services
  - Pharmaceutical Services


September 2022

Hospital Emergency Water Rationing Plan Evaluation Tool

Directions: Pursuant to Title 24 California Code of Regulations section 615.4.1, general acute care hospitals (GACH) must have onsite water supply sufficient to operate for 72 hours, in the event of an emergency. GACHs must develop a water rationing plan that is reviewed and approved by the Department of Health Care Access and Information (HCAI) and the Center for Health Care Quality (CHCQ). GACHs must store a minimum of 150 gallons of water per licensed bed (50gal/bed/24-hours).

Use the below requirements to evaluate a GACH's water rationing plan.

I. General Requirements

Plan Component	Evaluation
Plan indicates how the services are provided in the event of an emergency. GACHs must provide basic services such as medical, nursing, surgical, anesthesia, laboratory, radiology, pharmacy, and dietary services. The plan should describe how services that rely on water will be provided. **NOTE:** Rural GACHs as defined under HSC section 1250(a) are not required to provide surgical and anesthesia services. Authority: • HSC section 1250(a), 129680, & 130005(c) • Title 24 CCR section 615.4.1	Evaluation: ☐ Met ☐ Not Met ☐ N/A Comments:

Overview → Code → Water → Wastewater → Example → **CDPH** → FAQ

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CDPH – AFL 23-21

https://www.cdph.ca.gov/Programs/CHCQ/LCP/Pages/AFL-23-21.aspx

State of California—Health and Human Services Agency
California Department of Public Health

June 30, 2023

AFL 23-21

TO: General Acute Care Hospitals

SUBJECT: General Acute Care Hospital (GACH) Water Rationing Plan and Storage Requirements

AUTHORITY: Title 24, Part 5 California Plumbing Code (CPC) section 615.4.1 and section 727.1

All Facilities Letter (AFL) Summary

This AFL announces GACH emergency water supply and planning requirements. GACHs must develop and submit a water rationing plan to the California Department of Health Care Access and Information's (HCAI) Facilities Development Division (FDD) Seismic Compliance Unit (SCU) by January 1, 2024.

Background

Pursuant to Title 24, Part 5 CPC section 615.4.1, GACHs are required to have on-site water supply sufficient to operate essential hospital utilities and equipment for 72 hours. GACHs water storage quantity is to be based on the water rationing plan, but must store no less than 50 gallons of water per licensed bed, per 24-hours (e.g., 150 gallons per bed for 72-hours) and must also have no less than a 5,000-gallon water storage tank. The emergency water tank must have fittings to allow for replenishment of the water supply from transportable water sources and a means to dispense water to portable containers if normal water supply becomes unavailable. The emergency water supply must be provided at adequate pressure.

GACHs are required to develop and submit a water rationing plan to HCAI. The water rationing plan will be used to compute a GACH's water storage capacity and is jointly approved by HCAI and the California Department of Public Health (CDPH).

Pursuant to Title 24 CPC section 727.1, GACHs are required to have on-site wastewater storage capacity sufficient for essential hospital utilities and equipment for 72 hours for water introduced into the sewer system. See the exception regarding hook-ups that allow for the use of transportable means of sewage and liquid waste disposal in lieu of on-site storage.

Water Rationing Plan Considerations

Overview → Code → Water → Wastewater → Example → **CDPH** → FAQ

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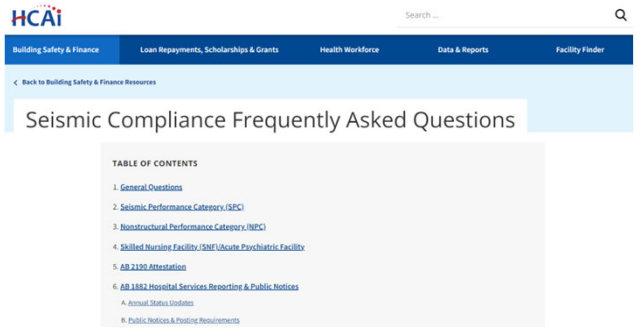
NPC frequently asked questions (FAQs):

https://hcai.ca.gov/construction-finance/resources/seismic-faqs/#NPC



Building Safety & Finance | Loan Repayments, Scholarships & Grants | Health Workforce | Data & Reports | Facility Finder

Back to Building Safety & Finance Resources

Seismic Compliance Frequently Asked Questions

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3. Nonstructural Performance Category (NPC)
4. Skilled Nursing Facility (SNF)/Acute Psychiatric Facility
5. AB 2190 Attestation
6. AB 1882 Hospital Services Reporting & Public Notices
   - A. Annual Status Updates
   - B. Public Notices & Posting Requirements

Overview → Code → Water → Wastewater → Example → CDPH → **FAQ**

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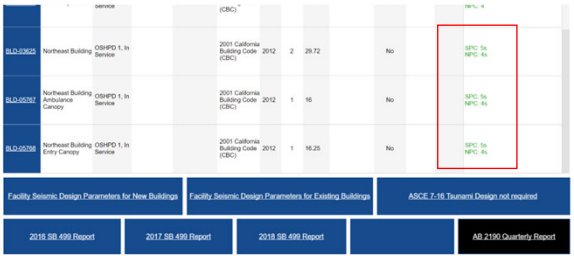
FAQs

- **Some buildings under the HCAI facility website have NPC / SPC ratings have “s” letters, such as SPC-5s, NPC-4s?**

  “s” designation is a reported SPC/NPC rating to OSHPD, not an approved rating. This “s” designation typically indicates that there is some missing documentation that is required to be provided. Please contact SCU with steps to clear “s” designation.



Overview → Code → Water → Wastewater → Example → CDPH → FAQ 79

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FAQs

- **Do hospital facilities need to meet the requirements of NPC-5 now?**

  For existing buildings, the milestone date for NPC-5 compliance is January 1, 2030, per the 2022 California Administrative Code, Chapter 6, Table 11.

  However, if a new seismically separate general acute care hospital building greater than 4,000 square feet is constructed, it is required to be NPC-5 compliant per Section 1617A.1.40 of the 2022 California Building Code.

  Only the new building is required to be NPC-5 compliant and not the entire facility.

Overview → Code → Water → Wastewater → Example → CDPH → FAQ 80

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FAQs

- **Is NPC-5 a campus-wide designation (like NPC-2) or a seismically separate building designation?**

  NPC-5 is a building specific designation with facility wide compliance expected in 2030, but new seismically separate buildings constructed to the 2010 or later California Building Codes are required to be NPC-5 compliant at the time of occupancy. HCAI/OSHPD recommends planning to comply on a campus-wide basis with a phased approach to obtain NPC-5 compliance for a new building before its occupancy.

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FAQs

- **Is a hospital facility required to have storage tanks for 72 hours of water and sewage and liquid waste? The required tanks are too big, and our site does not have the room for placement of such tanks.**

  NPC-5 refers to the ability of a hospital facility to support 72 hours of emergency operations. The California Plumbing Code has exceptions (see Sections 615.4 and 727.0 of the 2022 California Plumbing Code) that allow smaller tanks where alternate arrangements have been made for delivery of water or transportable means for sewage and liquid waste disposal. Where such exceptions are used, the arrangements require approval by HCAI/OSHPD and the California Department of Public Health.

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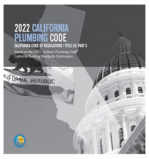
FAQs

- **Does the NPC-5 requirement of 72 hours of water refer to potable water only? Is industrial water or (process) water to operate hospital utilities included in this storage requirement?**

  NPC-5 requirement refers to both potable water as well as industrial/process water to operate hospital utilities to support 72 hours of emergency operations:



See next page

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FAQs

Continued

- **Does the NPC-5 requirement of 72 hours of water refer to potable water only? Is industrial water or (process) water to operate hospital utilities included in this storage requirement?**

  For a seismically separate building that has licensed patient beds, a minimum of 150 gallons of potable water per licensed bed shall be provided (Section 615.4, 2022 California Plumbing Code) with additional industrial/process water to support 72 hours of emergency operation of the subject building. Also see exception in California Plumbing Code Section 615.4.1. For a seismic separate building that has no licensed patient beds, potable water and industrial/process water to support 72 hours of emergency operation of the subject building. A new Central Utility Plant must provide water for 72 hours of emergency operation for itself, any other new buildings but not for the existing buildings on the campus (The existing buildings will need to comply by 2030).

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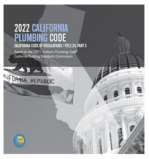
FAQs



Continued

- **Does the NPC-5 requirement of 72 hours of water refer to potable water only? Is industrial water or (process) water to operate hospital utilities included in this storage requirement?**

  The amount of water required is determined from the facility's emergency operations plan and an associated Water Conservation/Water Rationing Plan to provide for 72 hours of operation. The water conservation/water rationing plan must also be accepted by the California Department of Public Health Licensing and Certification. Whereas there is a minimum volume of potable water per licensed bed, there is no minimum volume for industrial/process water in the California Plumbing Code. This volume is dependent on which utilities and systems the hospital facility intends to operate during an emergency. The Water Conservation/Water Rationing Plan must account for losses in the process water for closed loop heating and cooling systems.

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FAQs

Continued

- **Does the NPC-5 requirement of 72 hours of water refer to potable water only? Is industrial water or (process) water to operate hospital utilities included in this storage requirement?**

  Refer to planning guide, "Emergency Water Supply Planning Guide for Hospitals and Health Care Facilities" by the Centers for Disease Control and Prevention (CDC) and American Water Works Association (AWWA). Atlanta: U.S. Department of Health and Human Services (DHHS); 2012, Updated 2019.

  HCAI/OSHPD review of NPC-5 will be based on the volume of water required by the facility's Water Conservation/Water Rationing Plan (as part of the facility's emergency operations plan) as required by the California Plumbing Code.

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FAQs

- **Does the facility have to comply with Section 615.4.2 of the 2022 California Plumbing Code even when using the exception in Section 615.4.1?**

  Section 615.4.2 of the 2022 California Plumbing Code requires the emergency supply of water be provided with sufficient pressure using gravity, pressure tanks or booster pumps. If booster pumps are provided, they are required to be connected to the emergency power supply system.

  Section 615.4.2 applies even when the exception of Section 615.4.1 of the California Plumbing Code is used, to ensure that the emergency supply of water is delivered to the end point of usage at sufficient pressure from the storage tank. The ability to dispense water to portable containers from the storage tank required in the exception of Section 615.4.1 of the California Plumbing Code is to be considered a measure of last resort.

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FAQs

- **Per Section 727 of the 2022 California Plumbing Code, can the facility store the sewage and liquid waste in a 5,000-gallon tank? Does this tank need to be connected to a sewage line?**

  Yes, holding tanks are required; however, there is no minimum size for the holding tank provided in Section 727, 2022 California Plumbing Code. The capacity shall be based on the Water Conservation/Water Rationing Plan required in Section 615.4.1. A minimum size of 24 hour for holding tank is recommended.

  The purpose of the holding tank is to permit 72 hours of continuing operation if the external sewer connection is severed. Thus, HCAI/OSHPD does not have any requirements for connection of the holding tank to the existing sewer line; however, such connections should be made with sufficient valves to isolate the external sewer lines.

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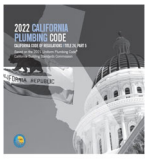
FAQs



- **Can we use bladder tanks to store sewage and wastewater in the parking lot?**

  The exception to Section 727, 2022 California Plumbing Code permits use of leak-proof bags where adequate storage for such bags is provided where they comply with the appropriate local health and environmental authorities' requirements, California Department of Public Health requirements for medical waste management AND requirement for location as well as enclosure.

  HCAI/OSHPD takes no objection for use of the parking lot or any other location for storing these bags, if the storage location complies with the requirements of a lockable screen enclosure, floor, curb, drain connected to a sewer and supply of water as enumerated in this exception.

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FAQs

- **Buildings to be removed from general acute care**

  CAC Chapter 6, Article 1, Section 1.5.2.1.1: By January 1, 2024, the hospital owner shall submit to the Office a complete nonstructural evaluation up to NPC 4 or 4D and NPC 5, for each building.

  NPC 4 / NPC 5 evaluation shall consist of a letter from the hospital on their letterhead signed by the Administrator / CEO stating that BLD-xxxxx will be removed from acute care usage by January 1, 2030. This letter will need to be submitted as part of a Seismic Compliance Unit (SCU) project.

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FAQs

Continued

- **Buildings to be removed from general acute care**

  CAC Chapter 6, Article 1, Section 1.5.2.1.2: By January 1, 2026, the hospital owner shall submit to the Office construction documents for NPC 4 or 4D and NPC 5 compliance that are deemed ready for review by the Office, for each building that will continue to provide acute care services beyond January 1, 2030.

  The facility will need to submit one or more Removal from Acute Care (RACs) construction projects to meet the requirements of Applying for Removal of Acute Care Services. If no construction is required for the removal of acute care services, then this step may be skipped.

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FAQs

Continued

- **Buildings to be removed from general acute care**

  CAC Chapter 6, Article 1, Section 1.5.2.1.3: By January 1, 2028, the hospital owner shall obtain a building permit to begin construction, for NPC 4 or 4D and NPC 5 compliance of each building that the owner intends to use as a general acute care hospital building after January 1, 2030. Hospitals not meeting the January 1, 2028 deadline set by this section shall not be issued a building permit for any noncompliant building except those required for seismic compliance in accordance with the California Administrative Code (Chapter 6), maintenance, and emergency repairs until the building permit required by this section is issued.

  Removal of Acute Care Services (RACs) construction project(s) shall obtain building permit(s) by January 1, 2028. After closure of these projects in compliance, a no construction RACs project shall be submitted to the Office as per Applying for Removal of Acute Care Services indicating whose jurisdiction the building will be in (local authority having jurisdiction or OSHPD). Once that project is closed in compliance, submit a project by January 1, 2030, to the SCU to remove the building from the acute care building inventory.

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HCAi
Department of Health Care Access and Information
Thank You!
Questions?
Please email
SeismicComplianceUnit@hcai.ca.gov

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