



GUAM POWER AUTHORITY

ATURIDÂT ILEKTRESEDÂT GUÅHAN
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September 24, 2025

Lillian Perez-Posadas, MN, RN
Hospital Administrator/CEO
Guam Memorial Hospital Authority
850 Gov Carlos G Camacho Road
Tamuning, Guam 96913

Subject: GPA Findings and Recommendations for GMH Electrical Improvements

Dear Ms. Perez-Posadas:

This outlines the Guam Power Authority's findings and recommendations to support the hospital in its electrical improvements.

Reference:

- Guam Memorial Hospital – Removal and Replacement of Main Electrical Switchboard, Alex Andres P.E., Electrical Design Plans, July 2019 (See Attachment "A")
- Facilities Condition Assessment, Guam Memorial Hospital, Tamuning, Guam, US Army Corp of Engineers (USACE), 08 April 2020 (See Attachment "B")
- GMH Electrical Facilities Assessment, Guam Power Authority, 04 September 2025 (See Attachment "C")
- Memorandum of Agreement between the Guam Memorial Hospital and the Guam Power Authority, 22 February 2023 (See Attachment "D")

Background

A recent power issue occurred on August 19, 2025 revealing conditions that would require upgrades and replacements to select electrical equipment and components to ensure that the hospital maintain a conditionally safe operational state.

A US Army Corps of Engineers assessment on April 8, 2020 identified improvements to the electrical system that's warranted for the facility to be code-compliant, reliable, and maintainable for a 25-year lifecycle. The report references a 2019 Electrical Design Plan to perform a main electrical panel replacement. An abbreviated list was given:

- 1) Replace pad-mounted switch with GPA-owned pad-mounted switchgear
- 2) Replace 2500 kVA pad-mounted transformer with two 2000 kVA pad-mounted transformers
- 3) Replace main switchboard 'MS' with a double-ended switchboard
- 4) Replace one of the three generators with a new, larger unit

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- 5) Replace all old motor control centers
- 6) Demolish manual transfer switches, kirk-key interlocks, and breakers that are the present means for transferring load from one generator to another
- 7) Provide paralleling switchgear to connect all generators to the Essential Electrical System (EES)
- 8) Provide new LS, CR, EQ, NE boards
- 9) Provide new automatic transfer switches for Life Safety, Critical, Equipment, and Non-Essential loads, including two chillers
- 10) Provide new 600 kW load bank and connection for larger load bank

Findings

Current electrical demand records show that GMH reached a peak electrical demand of 1,179 kVA on August 10, 2025. GMH is currently served by three generators - two rated at 1.6 MW generators and one 650 kW. Based on current usage, these generators appear to be appropriately sized for the hospital's operational needs. Information was offered that the two 1.6 MW units were installed in 1992 and 1998 respectively and the 650kW unit in 2004.

A joint electrical assessment by GPA and GMH was conducted on September 04, 2025 to identify the current condition of GMH building's existing electrical system and look into the cause of the electrical fire that occurred on Tuesday, August 19, 2025 at GMH 3rd Floor Electrical Room. Electrical testing was limited to the main switchboard, motor control centers & its main breakers as listed on the electrical assessment document and the electrical panel testing checklist. Test performed were visual inspection, thermal/infrared scan, voltage & load current measurements and environmental conditions. Electrical assessment was limited to "exterior visual inspection". Inspection of electrical equipment under load would have required shut down to permit access to its internal components.

The findings are as follows:

- 1) 277/480V 3-PHASE MAIN SWITCHBOARD
 - a) Main Switchboard per phase ampere and voltage meter are both in good condition.
 - b) Circuit Breakers for the ATS trips frequently and requires a reset when the ATS switches to emergency power. As a result, an additional undue task to switch to emergency power during a fault/power interruption results in an additional time delay in order to re-energize essential hospital equipment.
 - c) Missing screws and altered main switchboard enclosure compromises its watertight properties posing a safety hazard being in close proximity to the chilled & condensing water pump & its pressurized pipes.
- 2) 2nd Floor Motor Control Center "EMCP" and 3rd Floor Motor Control Center "MCPA" & "MCPB"
 - a) The system suffers from the absence of a phase-loss relay to trip the MCC breaker when a lost phase is detected. During the occurrence of a single-phasing, the three-phase motor continued to run at a reduced capacity but drawing increased current on the remaining

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two phases. Under the overload condition, the overcurrent created enough heat to melt & burn the motor starter.

- 3) Delayed response & switching to emergency power during a power interruption due to non-existing or lack of automatic transfer switch and power monitoring devices.
- 4) Electrical equipment not backed up by generator power and identified as follows:
 - a) CME (Chief Medical Examiner Room) – Elevator (1st floor)
 - b) PDPN A & B Panels (2nd floor)
 - c) PDPX Panel (ICU)
 - d) Dry Tap Transformer T-1 (3rd floor)

Focusing on the work necessary to address situations like the one on August 19, GPA Engineering recommends the following:

Near-Term (1-3Years):

- 1) Replace old motor control centers (MCC) with new phase loss protection types. Suggested alternative type of Motor Control Center: Smart MCC. Smart MCC incorporates intelligent devices and communication capabilities, allowing it for remote monitoring capabilities, precise control, and provide detailed data on power quality and motor operation. Ensure that selected replacements are optioned to correctly protect the devices they are meant for.
 - a. Motor Control Center, Ground Floor - "MCC-EQ"
 - b. Motor Control Center, Ground Floor - "MCC"
 - c. Motor Control Center, Ground Floor – "EMCC"
 - d. Motor Control Center, 2nd Floor - "EMCP"
 - e. Motor Control Center, 3rd Floor - "MCPA" & "MCPB"
- 2) Replace or repair old automatic transfer switches (ATS). As mentioned above, the breakers for ATS#2 requires resetting during transfer events. The ATS's must be evaluated individually to determine if it is in good working condition or a candidate for repair and servicing.
 - a. ATS#1 - 4P600A, 600VAC NEMA 1
 - b. ATS#2 - 4P800A, 600VAC NEMA 1
 - c. ATS#3 - 3P150A
 - d. ATS-4R – 4P1200A, 600V
 - e. ATS – Fire Pump
- 3) Replace all manual transfer switches (MTS) with automatic transfer switches.
 - a. MTS "TSL", 3P600A, 600V
 - b. MTS, 3P800A, 600V, NEMA 1
 - c. DTS, 3P600A, 600V, NEMA 1
- 4) Replace the oldest generator with an equal or greater capacity unit.
 - a. Generator #1, 1600 KW, 480V, 3Ø – Installed 1992
 - b. Generator #2, 1600 KW, 480V, 3Ø (Caterpillar) – Installed 1998
 - c. Generator #3, 650 KW, 480V (Kohler) – Installed 2004

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Long-Term (Beyond 3 Years):

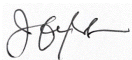
- 1) Implement the full scope of recommendations outlined in the USACE Facilities Condition Assessment. (Appendix B)

Beyond the main power tasks, GPA Engineering advises GMH to address the following:

- 1) Ensure all electrical equipment and installations comply with current NEC requirements.
- 2) Create a Standard Operating Procedure (SOP) for electrical power management during normal and emergency situations to include operation of all ATS and MTS, generator operations and maintenance operations. Ensure that the hospital staff is educated on the SOP on a regular basis.
- 3) Remedy electrical power distribution issues down the line to other main panels, subpanels and individual rooms.
- 4) Replace per-room mini-split air conditioners with efficient, zoned, variable-controlled, ducted-split systems to improve air quality and energy efficiency or update to the original HVAC design intent with newer efficient equipment.
- 5) Address roof water intrusion with structural crack sealing and application of high-performance roof coatings.
- 6) Conduct a comprehensive mold inspection; clean affected areas and identify sources for proper remediation.
- 7) Follow a robust maintenance and replacement plan on all facility equipment. Ensure administrators and management are regularly appraised of the fiscal costs of the plan and all the risks if not performed. A prudent practice is to commit this to an SOP.

GPA submits these recommendations for GMH's consideration. Moving forward, GMH must evaluate these proposals alongside the USACE Facilities Condition Assessment, available budget, and the timeline for the new hospital development. GMH is expected to formally communicate its decisions to GPA in accordance with the with the Memorandum of Agreement between the Guam Memorial Hospital Authority and GPA.

Sincerely,



For: John M. Benavente, P.E.
GENERAL MANAGER
GUAM POWER AUTHORITY