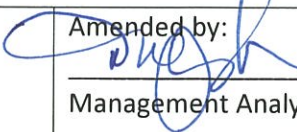

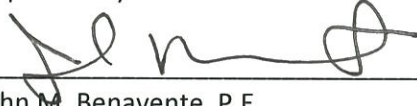


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| <b>GUAM POWER AUTHORITY</b><br><b>STANDARD OPERATING PROCEDURE</b>   | Amended by:  /Candice B. Ananich<br>Management Analyst II          |
| <b>TITLE: Storm Preparation, Operational Response, and Power Restoration Procedures</b>  | Concurring By:<br><br>Melinda C. Mafnas, P.E. Asst. GM, Operations |
| NO: <u>SOP-049</u> Effective Date: <u>February 15, 2019</u><br>Supersedes: <u>SOP-049</u> Dated: <u>June 9, 2017</u><br><br>Page 1 of 23 | Approved By:<br><br>John M. Benavente, P.E.<br>GPA General Manager |

### 1.0 PURPOSE

This Standard Operating Procedure (SOP) is intended to provide guidelines for storm preparation, pre-storm to post-storm operations, and power restoration once tropical cyclone conditions have been declared. This SOP is intended to maintain and enhance a safe and productive working environment and to sustain effective communication among Authority personnel and customers.

### 2.0 GENERAL

After the National Weather Service (NWS) issues forecasts of damaging winds threatening Guam, the Office of Homeland Security/Civil Defense directs government-wide preparedness or response actions which may affect the entire island's population and businesses. Damaging winds can be generated by strong tropical storms and by typhoons. See Appendix B for National Weather Services (NWS) Tropical Cyclone classifications and Appendix C for NWS Alert conditions.

Government-wide preparedness or response actions are organized into four action levels. These levels are called Tropical Cyclone Conditions of Readiness (COR) or just "Conditions." These levels are called Tropical Cyclone CORs, not Typhoon CORs, since damaging winds can be generated by both strong Tropical Storms as well as Typhoons. These Conditions are implemented or set by the Governor through the Office of Civil Defense in coordination with the military. The setting of each Condition is based on the forecasted onset of damaging winds as outlined on Appendix A.

### 3.0 AUTHORITY

- 3.1 The General Manager is the Authority's Overall Coordinator for Island Wide Power System (IWPS) pre-storm to post-storm operations including power restoration.
- 3.2 The Assistant General Manager of Operations (AGMO) is the General Manager's Deputy Coordinator for operations.
- 3.3 The Manager of T&D or his designee is the Sector Coordinator of T&D lines and equipment.

- 3.4 The Manager of Generation is the coordinator of all generating facilities and ancillary facilities including water system diesel stations.
- 3.5 The Manager of PSCC is responsible for coordination and control of the restoration of power system grid operations. Connection of any power generation facility, transmission line, substation, and distribution line shall be under the control of the PSCC Manager.
- 3.6 The Supply Management Administrator is the coordinator for all materials and services needed for pre-storm to post-storm operations including power restoration.
- 3.7 The Safety Administrator is the coordinator for all safety related services needed for pre-storm to post-storm operations including power restoration. The Safety Division shall issue all safety apparatus for personnel.
- 3.8 The Fleet Support Services Manager is the coordinator of all light and heavy vehicles needed for pre-storm to post-storm operations including restoration.
- 3.9 The Chief Financial Officer and Manager of Engineering will coordinate all FEMA requirements for claims of damages by the storm to FEMA. The contact for FEMA claims is the Governor's Authorized Representative (GAR)

#### 4.0 **DELEGATION OF AUTHORITY**

The General Manager and the AGMO have the authority to delegate or assign any employee or employees' special tasks not specifically defined by this SOP.

#### 5.0 **IMPLEMENTATION**

The provisions of this SOP will be implemented once the Governor declares Guam in COR2 (within 24 hours) AND the island is threatened by either a Category B Tropical Storm or a Typhoon Category I storm or greater as defined in Appendix A.

*It is also the discretion of the General Manager based on information received from GPA's Response Activities Coordinator (RAC) to exercise prudent judgment in determining the appropriate actions to take, such as continuing normal business operation or to cease services to the public.*

- 5.1 *Once the island is threatened by a Category B Tropical Storm or Typhoon Category I Storm or greater and the Governor declares Guam in COR2, the General Manager at his discretion, may release all non-essential personnel on duty and authorize essential personnel to initiate pre-storm preparation.*

Critically essential personnel on duty may be allowed up to 4 hours off to secure their families and properties. Thereafter, they shall report to their duty stations.

- 5.2 GPA's Response Activities Coordinator (RAC) will report to the Emergency Operating Center (EOC) at Civil Defense once activated by the Governor or the Administrator of Civil Defense. The RAC will notify the General Manager and System Dispatcher on duty as soon as the Governor declares Guam is in COR2. It is at the discretion of the General Manager to cease normal operations and initiate pre-storm preparation.

Once the approval is given to initiate pre-storm preparation, all Division Managers will be notified to cease normal operations, secure all facilities, and prepare for the impending storm. The System Dispatcher on duty will notify all field crews and all generating facilities, including Independent Power Producers (IPPs) to secure their work sites and prepare for the impending storm.

5.3 The Communications Office is the liaison to the Joint Information Center (JIC) for information regarding Authority pre/post storm activities until deactivated by the Office of Homeland Security/Civil Defense. The Communications Office will ensure information to be released is approved by the General Manager and issued to RACs and all GPA representatives manning various call centers prior to the general media release.

5.4 The General Manager will call a Manager's briefing to discuss pre-storm to post-storm activities, and other related topics. The following Division Manager or key personnel shall be present at the meeting:

- Assistant General Manager of Operations (AGMO)
- Assistant General Manager of Administration (AGMA)
- Assistant General Manager, Engineering & Technical Services (AGMETS)
- Chief Financial Officer (CFO)
- Staff Attorney
- Manager of Transmission & Distribution
- Manager of Generation
- Manager of Power Systems Control Center
- Manager of Engineering
- Environmental Manager
- Facilities Manager
- Safety Administrator
- Supply Management Administrator
- Utility Services Administrator
- Manager of Transportation
- Manager of Strategic Planning, Operation and Research
- Chief Information Technology Officer
- Human Resources Administrator
- Public Information Officer
- Assistant Chief Financial Officer
- Controller
- Chief Budget Officer
- Internal Auditor
- Assistant Manager of Transmission & Distribution
- Assistant Manager of Generation
- Assistant Manager of Customer Services

Each Division Manager will report on availability of critical essential personnel, radios, vehicles, tools, and critical equipment necessary for pre-storm preparation and post-storm restoration operations. The General Manager may request from any Division Manager any of these items he deems necessary to accomplish restoration efforts. The

AGMO will update the General Manager daily on the status/progress of pre-storm preparation and post-storm restoration activities.

- 5.5 Upon completion of the staff meeting, all Division Managers will meet with their critical essential personnel for detailed briefings and immediate implementation of their designated assignments.
- 5.6 Manning the EOC: The EOC at Civil Defense will be manned by personnel identified by the General Manager who have completed National Incident Management System (NIMS) training provided by FEMA.
  - a. The RACs shall coordinate schedules to ensure full coverage at the EOC.
  - b. The RAC stationed at the Office of Civil Defense will receive and transmit all requests for services from the Administrator of Civil Defense. The RAC will relay all information received from the EOC to the General Manager and AGMO either by telephone or radio. The RAC will attend all briefings called by the Administrator of Civil Defense.

#### 6.0 **PRE-STORM PREPARATION**

All Division Managers will be in close communication with the General Manager for updates on pre-storm preparations.

- 6.1 **Finance:**  
The CFO will assign work-order numbers for pre-storm preparation, restoration, and streetlight restoration. The first work-order number will be assigned for pre-storm preparation work. A second work-order number will be assigned for on-premise restoration work, which includes power plants, substations, pipelines, and office facilities. A third work-order number will be assigned for off-premise restoration work, which includes transmission and distribution lines. A fourth work-order number will be assigned for streetlight restoration. The fourth work-order number will only be used when the IWPS system is fully restored and crews are focusing solely on streetlight restoration.
- 6.2 **Facilities: #**  
The Facilities division shall secure the GBNPSB and all GPA generation and substation buildings and surrounding areas. Facilities shall coordinate with WSD to ensure the generators at the GBNPSB are ready for operation. Facilities personnel shall man the GBNPSB during the storm to ensure protective systems are operational.
- 6.3 **Generation:**  
The Power Plants will be manned according to the Generation Division Typhoon Procedures in Generation Policy GP-005.
- 6.4 **Generation Water Systems Diesel: \***  
The Generation Water Systems Diesel personnel will immediately conduct an assessment of all Water Systems generators, including the GBNPSB building generators, PSSC building generator and T&D building generator to ensure all generators are

operable.

The GM or AGMO shall determine the appropriate time to begin disconnecting the water systems sites from the grid and transfer the sites to standby generator power based on the projected path and intensity of the storm to ensure continued GWA services. Generation Water Systems Diesel personnel are responsible for disconnecting the stations from island power before energizing the standby generators.

6.5 Transmission & Distribution:

The T&D Division will operate according to the T&D Division Emergency Condition of Readiness (COR) 2 Pre-Storm Preparation in T&D Policy TD-13.

6.6 Power Systems Control Center:

The PSCC Division shall maintain adequate personnel staffing, as determined by the Manager of PSCC.

6.7 Safety: #

The Safety Division will conduct an inventory of safety supplies and initiate requisitions for pre-storm preparation and post-storm restoration.

6.8 Procurement:

The Procurement Division will immediately conduct an inventory and report on the status of inventory stock levels to the General Manager prior to the initial staff meeting (Section 5.4).

6.9 Transportation:

The Transportation Division will immediately conduct an inventory and assessment on the GPA light duty vehicles and heavy equipment and report on the status to the General Manager prior to the initial staff meeting (Section 5.4).

6.10 Each division shall secure GPA facilities under their operation. T&D shall provide support to secure the Dededo Warehouse and Gloria B. Nelson Public Service Building. Generation shall provide support to secure the Cabras Warehouse.

6.11 Division Managers shall assess and determine required Safety Supplies (Safety Shoes, Personal Protective Equipment, and Miscellaneous Safety Supplies) for pre-storm and post-storm restoration operations, and submit the requests to the Safety Administrator.

7.0 DURING A STORM

7.1 The Piti #7 CT shall be placed on line by PSCC when the storm is nearly upon us and the system is beginning to experience feeder outages. This unit controls frequency well and reacts quickly to disturbances. The Piti #7 will be secured once the disturbance has passed Guam and the grid is stable.

7.2 The T&D Manager or his designee, assisted by the Safety Administrator will determine when weather conditions are unsafe for operations to continue. With the concurrence of the AGMO and final approval of the General Manager, the T&D Manager shall notify

the System Dispatcher on duty to stand-down. The System Dispatcher will broadcast a stand-down to all personnel. In the event of a stand-down, T & D crews will secure from the field and standby at their designated site as directed by the T&D Manager.

- 7.3 No attempts shall be made to restore lines to normal conditions once a stand-down has been declared. During the stand-down, lines or associated breakers or sectionalizing devices shall be tagged out by the System Dispatcher once they sever from the IWPS. Details on all identified problems or discrepancies including the feeder number and location shall be reported to the System Dispatcher for documentation and post-storm reference.
- 7.4 The System Dispatcher may test-close a tripped breaker with the approval of the Manager of PSCC or his assigned designee. The System Dispatcher must broadcast to all crews prior to the test-close of the on-going procedure, and must receive an affirmative response from each crew in the area that the crew is clear from the circuit. In the event of a breaker-trip, the System Dispatcher shall record all information pertaining to the breaker/line for documentation and post-storm reference.
- 7.5 The standby generators serving GWA facilities shall be operated 4 hours before the system begins experiencing high winds as coordinated between GPA and GWA management. Water wells and booster pumps should be able to operate without interruption in order to maintain water reservoir levels. Additionally, wastewater facilities should be continuously operational because of the increased volume caused by storm water infiltration.
- 7.6 All GPA personnel shall follow the Switching and Tagging Procedures (SOP-103) without deviation. All personnel shall monitor VHF field radio communication on their designated channels at all times.

#### 8.0 **POST-STORM RESTORATION**

- 8.1 The General Manager will determine the following for activation of post-storm restoration operations:
  - a. Prevailing conditions (weather and roadways) are safe for personnel to report for work;
  - b. Percentage of IWPS available for reliable operation;
  - c. Time of activation of post-storm restoration operations.
- 8.2 In the event of a total IWPS system outage (blackout), a disconnecting device with visible air breaks between each possible source of potential and the power line or equipment will be opened and tagged. This applies to all substation disconnection switches and breakers including DC battery banks for relay protection, breaker controls, and RTU controls.
- 8.3 All crews shall remain on a 12-hour shift until such time the Governor or the President of the United States declares Guam an emergency disaster area. Upon the emergency disaster declaration, all crews shall work 16-hour shifts.

- 8.4 In the event the General Manager determines that thirty (30%) percent or more of the IWPS is operational, T & D will remain on a 24-hour operation (as noted in T&D SOP TD-13), unless otherwise directed by the General Manager. The T&D Manager will activate the T&D Superintendents to supervise their assigned sectors as listed in Section 9.2. The Assistant Manager of T & D shall oversee the second shift operations.

8.5 Priority of System Restoration:

Upon safe roadway conditions, the T&D Manager shall direct crews to mobilize and assess all transmission lines and substations linking the power plants to the IWPS. The Generation Manager shall also mobilize personnel and assess all power plant facilities. Based on the assessment, the PSCC Manager shall provide a priority restoration plan considering which power plants with black start capability are capable of coming on line and which transmission lines and substations can be restored in the least amount of time to serve critical 13.8 kV distribution circuits in the order listed in Section 18.2.

The PSCC Manager shall be responsible for communicating the plan to the GM, AGMO, and T&D and Generation Managers.

8.6 Damage Assessment:

The Engineering Division will be responsible for conducting a post typhoon island wide assessment of all T&D damages and an assessment of GPA facilities except for Generation facilities.

The Generation Division will be responsible for the damage assessment and cost estimate for all generation facilities. This includes an assessment of all power plant structures, fuel oil pipelines, storage tanks, and the bulk storage fuel farm facility.

Engineering will be the central compiler of all damage assessment cost data including damage estimates provided by the Generation Division of all Generation facilities. They shall submit the damage assessment report and estimate to the GM, AGMO, and CFO.

8.7 Damaged Streetlights:

Damaged streetlights found during restoration will be removed from the site. On the same day they are retrieved, the streetlights shall be turned into the Warehouse and a credit receipt must be issued by Warehouse personnel. T&D Superintendents will be responsible to submit credit receipts daily to the T&D Manager.

8.8 Planning & Regulatory Assessments:

The Planning & Regulatory Division will be responsible for conducting a post typhoon environmental assessment of GPA facilities upon activation by the General Manager. The Planning & Regulatory Division will coordinate the assessments with the T&D and Generation Division as required.

Environmental Assessments will include:

- a. Damage Assessment of transformers (pole-mount, pad-mount and substation), substation breakers, Water Systems generators, fuel tanks, pipelines, and other oil-filled equipment.

- b. Facility Assessment: Determine impact on all permit requirements including, but not limited to, NDPES and PSD permits, and other applicable EPA permits. Ensure proper documentation and reporting is submitted to USEPA and/or Guam EPA.
- c. Oil Spills: Testing for PCBs and oil clean-up on leaking transformers. Oil clean-up for fuel system leaks for all GPA generating Power Plants including Water Systems generators, the bulk storage fuel tanks at the Piti tank farm, and fuel oil pipelines from Piti to Cabras and to the Tanguisson Power Plant. This shall include requirements for any remediation and costs associated with the clean-up activity.

8.9 Generation Water Systems Diesel:

Generation Water Systems Diesel personnel will immediately be dispatched to GWA stations to conduct damage assessments of the generators. The Generation Water Systems Plant Maintenance Superintendent will report on a daily basis to the AGMO and System Dispatcher regarding the status of the WSD generators.

9.0 T&D OPERATIONS

9.1 Sector Assignments

The General Manager shall decide what level of resources is required to restore the T&D system. The T&D Manager will prepare a list of personnel to be assigned for each Sector. The listing shall depend on availability of all necessary resources (i.e. number personnel and their skill levels, vehicles, radios, etc.) for restoration services commensurate to damage in each Sector. The General Manager or AGMO will assign additional manpower to the Sectors requiring assistance at any time during this critical period of system restoration.

- 9.2 The T&D system will be managed by sectors. Each sector is overseen by assigned T&D Superintendents and lead by the T&D Manager and Assistant T&D Manager. Unless otherwise directed by the General Manager or AGMO, the following sector assignments apply:

- Manager of T&D and Assistant Manager of T&D - all Sectors
- Superintendent, Overhead – Lower Central/Southern Sector
- Superintendent, Underground – Northern/Upper Central Sector
- Superintendent, Substation - Substations and Switchyards
- Superintendent, Meter/Relay – Metering/Protective Relay Equipment

9.3 Sector Responsibilities

Each T&D Superintendent will be responsible for the following:

- a. Determine the adequacy of personnel, materials, and equipment for his area of responsibility.
- b. Provide an itemized list of each crew inclusive of personnel, vehicles, equipment and communication devices (field radio codes) to the T&D Manager/Assistant T&D Manager.
- c. Assign his crews within his designated area, as directed by the T&D Manager/Assistant T&D Manager.



## d. Each line crew will consist of the following personnel:

- Line or HVCS Electrician Supervisor
- Electrician Troubleshooter
- Line or HVCS Electrician Leader
- Line or HVCS Electrician II
- Line or HVCS Electrician I
- Lineman Apprentice

Engineers or other personnel may be assigned upon completion of designated duties.

9.4 T & D Field Supervisor Responsibilities

- a. Ensure all personnel vigilantly monitor their assigned radios on the assigned channel.
- b. Conduct a safety Tail-Gate meeting at the work-site prior to the start of the work every day.
- c. Ensure all personnel under his supervision are equipped with correct personnel protective equipment.
- d. Keep a complete and accurate record of the man-hours, vehicles, equipment, materials, and work details for personnel by transmission line, feeder circuit and/or substation, including daily timekeeping.
- e. Ensure accurate records are maintained for Hazardous pay for affected personnel under his supervision.
- f. Keep an accurate record of major and minor feeder outages, noting the time feeder tripped, why it tripped, areas affected, and when it was closed.
- g. Coordinate and inform the System Dispatcher of all outages and related data. Check-in and checkout of project sites with the System Dispatcher. Report events, data, conditions, or other information to the System Dispatcher.
- h. Deal directly with crews assigned under him. Under no circumstances shall a sector's crew work within another crew's area of responsibility without the expressed approval of the designated T&D Superintendent.
- i. If lines require rerouting, provide data, including a site sketch of power lines that require rerouting (information must include feeder, location, pole numbers, and other relevant data) and submit the information within one day to the Engineering Division for immediate action.
- j. Coordinate with Procurement for meal allowances
- k. Ensure personnel eat and are rested to perform the work safely.

9.5 Area of Coverage

## a. Overhead and Underground Line Crews:

| Superintendent, Underground<br>Northern/Upper Central Sector | Superintendent, Overhead<br>Lower Central/Southern Sector |
|--|---|
| Yigo   | Hagatna   |
| Dededo   | Sinajana  |
| Liguan   | Agana Heights   |
| NCS Area   | Chalan Pago/Ordot   |
| Harmon   | Mongmong/Toto/Maite                                       |
| Tumon  | Barrigada   |
| Tamuning   | Mangilao  |
| Barrigada Heights  | Asan/Maina  |
| Latte Heights  | Piti  |
|  | Yona  |
|  | Agat  |
|  | Santa Rita  |
|  | Talofofo  |
|  | Malojloj  |
|  | Inarajan  |
|  | Merizo  |
|  | Umatac  |

## b. Substation Crews:

| Northern/Upper Central Sector | Lower Central/Southern Sector |
|-------------------------------|-------------------------------|
| Anderson Substation           | Pulantat Substation           |
| Yigo Substation               | San Vitores Substation        |
| Marbo Substation              | Tamuning Substation           |
| Dededo Substation             | Barrigada Substation          |
| Dededo CT Substation          | Radio Barrigada Substation    |
| Pagat Substation              | Agana/Mongmong Substation     |
| Macheche Substation           | Anigua Substation             |
| Harmon Substation             | Piti Substation               |
| GAA Substation                | Cabras Switchyard             |
| GIAT Substation               | Apra Heights Substation       |
| Harmon Substation             | Orote Substation              |
| Tumon Substation              | Cold Storage Substation       |
|                               | SRF Substation                |
|                               | Tenjo Vista Substation        |
|                               | Dandan Substation             |
|                               | Talofofo Substation           |
|                               | Umatac Substation             |

9.6 Personnel Responsibilities

Personnel within the T&D sections listed below will have the following responsibilities:

a. Overhead:

All personnel under this section shall report to the T&D Overhead Superintendent in charge of the Lower Central/Southern Sector for restoration of transmission and distribution lines in this sector. Each employee is responsible to use proper PPE and adhere to safety practices and procedures.

b. Underground:

All personnel under this section will report to the T&D Underground Superintendent in charge of the Northern/Upper Central Sector for restoration of transmission and distribution lines in this sector. Each employee is responsible to use proper PPE and adhere to safety practices and procedures.

c. Substation:

All personnel under this section will report to the T&D Substation Superintendent for restoration of substation equipment, operations, and troubleshooting. Each employee is responsible to use proper PPE and adhere to safety practices and procedures.

The T&D Manager will designate personnel to be responsible for the handling of all damaged pole/pad-mount transformers. This responsibility is inclusive of the pick-up of damaged transformers from the field, storage, containment of damaged transformers at the Substation Warehouse catchments, draining of transformers, and repair of transformers to be credited back to the Warehouse. Designated personnel will be responsible for the documentation of damaged, salvaged, and repaired transformers, inclusive of credit receipts. Designated personnel must document the site location of where damaged transformers were retrieved along with the size and type of transformer.

d. Meter/Relay:

All personnel under this section will report to the T&D Meter/Relay Superintendent for restoration of metering and relay protective equipment, operations, and troubleshooting. Each employee is responsible to use proper PPE and adhere to safety practices and procedures.

The T&D Manager will designate personnel to oversee the work-orders received from Customer Services for service and meter related to storm damages. Designated personnel will work in conjunction with the five Customers Service Representatives, as assigned by the Utility Services Administrator, when directed by the General Manager or AGMO.

e. T&D/Administration:

All personnel under this section will report to the T&D Manager/Assistant T&D Manager. T&D Engineers and Shop Planners will assist T&D field crews, as assigned by the T&D Manager/Assistant T&D Manager.

10.0 COMMUNICATION GOVERNANCE #

Maintaining communication with customers before, during and after a storm is critical to maintain customer focus. The following guidelines shall be implemented to optimize communication channels between GPA and its customers.

### 10.1 Customer Contact by telephone

- a. GPA PSCC trouble dispatchers shall manage calls at the trouble desk through the trouble dispatch lines 475-1472, 475-1473, or 475-1474.
- b. Customer Services personnel shall staff the Customer Call Center. The Call Center phone numbers are 647-5787, 647-5788, or 647-5789. If the trouble desk is inundated with calls, calls will be forwarded to the Call Center.
- c. Designated personnel shall answer phones, track all calls and issues, forward the information to the trouble dispatchers, and conduct customer call backs.

### 10.2 Customer Contact through social media

Designated Customer Services personnel shall manage GPA's Facebook page, respond to Facebook messages, track issues and report the issues to the trouble dispatchers.

### 10.3 Restoration updates: During storm recovery operations, the Communications Office shall issue a media release every morning by 0900. The following information shall comprise the release:

- a. Number of customers restored, number of customers without power
- b. % of nominal load
- c. Major areas with active restoration – crew assignments for the day.

### 10.4 Pre-storm Communication: The Communications Office shall issue the following information to the media and post the information on the GPA website and GPA Facebook page:

- a. GPA has begun pre-storm preparation on the island-wide power system. Protective measures at the power plants and substations will be taken to minimize the threat of storm damage.
- b. T&D line crews will focus on tree-trimming and vegetation control as high winds can blow vegetation in to power lines.
- c. Please report power-related issues to GPA via its Facebook page or call its 24-hour Trouble Dispatch desk at 475-1472, 475-1473, or 475-1474.
- d. GPA urges residents to take precautions and protect or unplug sensitive electronic equipment to prevent damage due to lightning strikes or power surges.
- e. Customers are advised to safely clear debris and vegetation that may pose a hazard during windy conditions.
- f. Customers are also advised that if you are experiencing power fluctuations, brownouts, extremely bright lights, dimming/flickering lights, or water coming out of your outlets, turn off your main breaker as you may cause damage to other appliances.
- g. During the storm, the Guam Power Authority will continue to run the island wide power system and keep the power on for as long as possible. Power plants will be operational and T&D personnel will be in the field to address power problems. As the storm approaches and winds pick up, we will eventually have to secure our personnel for safety reasons. Thereafter, as breakers trip, we may need to secure and bring units offline until it is safe to resume operations.

10.5 Post-storm Communication: The Communications Office shall issue the following information to the media and post the information on the GPA website and GPA Facebook page:

- a. After the passage of the storm, crews will begin shift work 24-7 to begin clearing lines and restoring power.
- b. GPA has procedural plans and priorities in place for storm recovery.
- c. Crews will first work on the transmission lines bringing power from the power plants out to the substations. Only when substations are restored, can we begin to restore power to our circuits and ultimately our customers.
- d. GPA will work on restoring critical and priority circuits to the hospitals, water wells, schools and other key areas.
- e. Crews will then focus on areas with major damages throughout the island.
- f. Finally, crews will work on other affected areas throughout the island (smaller pockets of outages) and continue cleaning up power quality issues. In order to energize the most customers, we may have to isolate areas heavily damaged and come back to the respective area at a later time.

10.6 Public Considerations and Safety Concerns:

- a. Power service recovery after a storm is an extremely dangerous effort.
- b. We ask for the public's cooperation and patience as we safely work to restore power to the island.
- c. We will know the outage areas via our SCADA (Supervisory Control and Data Acquisition) and smart grid management systems. Therefore, we ask our customers to keep calls to a minimum and limit calls to emergency safety situations only (down lines/poles, sparking lines and transformers and other immediate dangers).
- d. Please stay away from all down lines and equipment as they may still be energized and can cause harm if you come in contact with the lines or equipment.
- e. Continue to protect or unplug your sensitive equipment.
- f. Please ensure your main breaker is off when running your home generators, ensure your generator is in a well-ventilated area, and take all necessary precautions while operating your generator.
- g. If you are experiencing power fluctuations, brownouts, or power to only parts of your home, turn off your main breaker.
- h. Customers are advised that repairs to damaged weather heads and/or meter boxes are the responsibility of the customer. Once repaired, customers must contact the DPW Permitting Section at 646-3104/3108 to have the repairs inspected prior to contacting GPA for reconnection of power service. Customers can contact GPA Trouble Dispatch at 475-1172/3/4 or the GPA Customer Call Center at 647-5787/8/9.
- i. Customers will be advised when to call if they continue to experience any power issues (no power, low or high voltage fluctuations, brownouts, or power to only parts of your home). At this time, please confirm that your main and auxiliary

breakers are reset and switched on (provided that you are not continuing to run your home generator).

- 10.7 GPA seeks the public assistance in being vigilant for Non-GPA vehicles and or officials picking up any wires or other GPA materials and equipment. Please report these incidents to GPA or GPD.

#### 11.0 DIVISION RESPONSIBILITIES

##### 11.1 PSCC:

- a. All personnel under this Division will report to the Manager of PSCC for the manning of the EMS/SCADA System and Trouble Desk, to include the operation and troubleshooting of all communication lines and EMS/SCADA equipment and software.
- b. PSCC shall use the Outage Management System (OMS) to report on the actual number of customers experiencing outages. PSCC shall report on customer outage numbers to the GM and AGMO on a daily basis.

##### 11.2 Facilities: #

Man the GBNPSB during the storm to ensure building is secure and mechanical and electrical systems are running as required.

##### 11.3 Transportation:

All personnel under this Division will report to the Manager of Transportation, for their assigned duties. The Manager of Transportation shall assign personnel to provide services for all sectors.

##### 11.4 Customer Services: \*

The Utility Services Administrator shall assign Customer Service Representatives to supplement the PSCC trouble desk, staff the Customer Call Center, and manage Facebook messages and posts. The assigned Customer Service Representatives will follow PSCC's shift schedule. The Utility Services Administrator shall track and maintain storm related service and meter work-orders, maintaining control of meter master forms, and answering trouble complaints.

##### 11.5 Engineering:

Upon completion of the T&D damage assessment, the Manager of Engineering will release available personnel to the AGMO for their assignment with restoration efforts.

##### 11.6 Finance:

The CFO will assign designated personnel to be stationed at the T&D Service Center to support restoration efforts and assist in the documentation and tracking of expenses incurred.

##### 11.7 Planning & Regulatory:

All personnel under this Division will provide support to T&D and Generation to direct spill recovery efforts and assist in permitting and clearance of re-routed transmission and distribution lines through NEPA, EPA, and SHPO.

**11.8 Procurement:**

The Supply Administrator will assign 5 Warehouse personnel and other required support personnel, inclusive of vehicles for delivery assignments to the General Manager. All Buyers will report to the Procurement office for direction by the Supply Administrator. The Inventory Manager Officer (IMO) will be responsible for the daily tracking of inventory materials issued and returned to the Warehouse. The IMO will report all deficiencies directly to the Supply Administrator.

**11.9 Safety:**

The Safety Administrator will assign Safety Inspectors to monitor and provide safety services to restoration crews under Section 9.2. Safety Inspectors shall report to the Safety Administrator during restoration at the beginning of each shift.

**11.10 Non-designated Personnel:**

All personnel not listed above shall report to their duty stations, unless otherwise assigned by the General Manager for additional duties.

**11.11 Special Response Crew (SRC):**

A Special Response Crew shall be formed to respond to special assignments as directed by the GM, AGMO, or T&D Manager. The T&D Manager shall appoint a supervisor for the SRC. The SRC Supervisor's responsibilities are the same as those of the T&D Field Supervisor listed in Section 9.4. The SRC is the main floater for the Authority, free to go from one sector to another. When entering or exiting a sector, the SRC shall check-in and check-out with the appropriate T&D Superintendent. The SRC shall at all times adhere to all switching and tagging procedures through the System Dispatcher.

**12.0 MEETINGS \***

The General Manager will conduct daily meetings to assess the status of restoration efforts. The AGMO, AGMA, T&D Manager, and PSCC Manager shall be in attendance along with other key personnel as directed by the General Manager.

**13.0 HELPFUL NOTES**

The following notes are included to provide a safe and uniform approach to restoration efforts.

**13.1 Unauthorized Breaker Trip**

When a breaker trips unexpectedly, the System Dispatcher will contact the Switchman to proceed to the tripped breaker location. The Switchman shall immediately notify the System Dispatcher on the status of the breaker via his field radio on his designated channel. The following information shall be relayed:

- Identify transmission or distribution breaker that tripped by number and by substation or switchyard.
- Identify relay targets on over-current or ground over-current relays. These targets are either "I" for Instantaneous or "T" for Time – on either the over-current or ground over-current relays.

**13.2 Authorized Breaker Trip**

A breaker may be intentionally opened for work clearance, load relief, or other reasons. The System Dispatcher will provide necessary instructions for all Switchmen to complete this procedure safely.

**13.3 Radio Communication**

All radio communication for critical switching and coordination must be performed on Channel 1. Additionally, all personnel are required to monitor Channel 1 for important broadcasts. Other non-critical communication may be performed on Channel 2 through 4. Once non-critical communication is completed, personnel must return back to Channel 1 for proper monitoring.

**13.4 Switching and Tagging**

All GPA personnel shall adhere to the Switching & Tagging SOP-103 without deviation. No crew is authorized to work on any part of the T&D system for any reason without following the standard switching and tagging procedures.

**13.5 Work Along Major Highways**

Crews working along major roadways shall observe all highway safety procedures. The assigned Safety Inspector will ensure a flagman is assigned so traffic moves orderly and safely. The Safety Inspector will coordinate support with the Guam Police Department if needed. All vehicles being utilized for projects along major highways shall have flashers activated while work is in progress.

**13.6 Energized Restoration**

No feeder laterals shall be closed under loaded conditions. Crews shall take precautionary measures to remove loads before lateral fuses are closed or before a connection is made.

**13.7 PSCC**

The PSCC Division shall be the monitoring and control point for the entire restoration process. All crews must obtain clearance from the System Dispatcher before any transmission lines, distribution lines or equipment are either energized or de-energized. Switching & Tagging SOP-103 procedures must be adhered to at all times.

The Manager of PSCC shall function as the Military Coordinator. He shall ensure that all work on joint use facilities is properly coordinated with the appropriate military utilities personnel and he shall be the main point of contact on restoration operations impacting service to the military.

**13.8 Power Poles**

Damaged power poles may be replaced within the right-of-way and no more than five feet away from their original locations. Equipment Operators are responsible to remove damaged power poles from site and store them either at the Pole Yard or the closest designated site.

The Equipment Operator Superintendent will be responsible for the documentation of all power poles that are removed and all newly installed power poles. Documentation



shall include the location, size, and type (wooden or concrete). This documentation shall be submitted to the Engineering Division the following work day.

13.9 Re-routing of Power Lines

Power lines that require re-routing will be handled by the Engineering Division. No re-routing shall be done without the Engineering design and clearance from FEMA, NEPA, and the SHPO. The Engineering Division is responsible for the design and the proper stake-out and clearance of the new work. The Engineering Division will coordinate with FEMA, NEPA, and the SHPO to obtain approval of the installation. Once approval is received, Engineering will inform T & D that work can proceed. ***No re-routing work shall be done unless cleared by the Engineering Division.***

13.10 New Services

No new customers or new streetlights shall be energized during the restoration period.

14.0 RESTORATION OPERATIONS

14.1 Cessation of Restoration Operations

T&D Superintendents shall inform the T&D Manager/Assistant T&D Manager when restoration efforts within his area are substantially completed. The T&D Manager/Assistant T&D Manager will determine if operations will cease within the identified area.

14.2 Continuation of Restoration Operations

Emergency restoration efforts will continue if the following conditions still apply:

- The extent of T&D damages to a given area requires the services of two or more crews.
- High frequency of customer complaints remains high as determined by the General Manager.

14.3 Completion of Restoration Operations

The General Manager will determine the time and date of completion of restoration operations. Upon completion of restoration efforts, prior to returning to normal operating conditions, each T&D Superintendent must ensure that vehicles, equipment, radios, and tools are accounted for and cleaned. Thereafter, the Sector Supervisor will coordinate with Division Managers for the return of vehicles, equipment, radios, and tools that were on loan during the restoration period.

15.0 MAIN HEADQUARTERS

The Gloria B. Nelson Public Service Building will be the main headquarters. All direction from the General Manager shall originate from either the assigned radio handle "Mark 1" or at the Restoration Headquarters.

16.0 CONTRACTS COORDINATOR

- 16.1 The CFO or his designee is the Authority's Contracts Coordinator. The Contracts Coordinator's primary responsibility is the coordination and preparation of contracts for recruitment of off-island personnel and equipment services for assistance in restoration.
- 16.2 The Contracts Coordinator will ensure that the logistics of crews are provided, including travel expenses, vehicle expenses, and related charges.
- 16.3 The Contracts Coordinator will be the primary point-of-contact for the off-island contractors. He will be the official representative for the Authority with regards to approval of administrative activities pertaining to the contractors such as timekeeping and shipping of equipment and materials.
- 16.4 The Contracts Coordinator will be responsible for activating the Memorandums of Understanding (MOUs) with neighboring island utilities and others for assistance in restoration.

17.0 **MEALS** \*

The Authority shall provide three square meals for only those personnel who are working 12-hour shifts or longer during the restoration period, to include contracted personnel. The Authority shall also provide drinks and fruits to these personnel. The Supply Management Administrator will be responsible for coordinating the catering and delivery of meals to personnel.

18.0 **FEMA COORDINATOR**

The CFO or his designee shall be the official FEMA Coordinating Officer (FEMAC) reporting to the Governor's Authorized Representative (GAR).

18.1 The FEMAC shall:

- Ensure proper documentation and approval from the FEMA Representative is obtained for all work, including but not limited to environmental, reconstruction, repair, and rerouting work to be performed on the IWPS. This includes streetlight repairs that will be performed once typhoon emergency restoration is completed.
- Immediately notify the GAR and the FEMA Representative of new information concerning changes in costs.
- Obtain written notification and acknowledgement of work to be performed.
- Attend necessary meetings with the FEMA Representative in the presence of the GAR.
- Ensure the GAR countersigns all documentation to be submitted to FEMA.
- Record all meetings in the form of minutes and/or tape recordings.
- Maintain a FEMA document trail.
- Obtain details and/or parameters in writing of allowable work to be performed from the FEMA Representative.

18.2 Documentation

The types of documentation required shall include, but are not limited to the following:

- Approval letter for the restoration/rebuilding of GPA facilities to ensure compliance with GPA construction standards, NESC regulatory codes, FEMA 406 mitigation standards and local laws (e.g. change-out of existing power poles and lines.)
- Approval letter of Project reporting format.
- Approval letter for rerouting of existing power poles and lines (i.e. change in the footprint of GPA facilities).
- Letter of notification to FEMA when costs exceed 15% of latest estimate.

#### 19.0 **PRIORITY CIRCUITS**

19.1 Restoration of transmission lines shall be prioritized as directed by the Manager of PSCC based on generation availability and minimal restoration time to connect available power plants to the IWPS.

#### 19.2 Critical Load

| Priority | Circuit            | Area                                      | Load  |
|----------|--------------------|---|---|
| 1        | P401               | Tumon                                     | Guam Memorial Hospital  |
| 1        | P112               | Harmon                                    | Guam Regional Medical City  |
| 1        | P203               | Tamuning                                  | Hospital Back-Up, FHP Medical Clinic, Guam Surgicenter, Sagua Managu, US Renal Care |
| 1        | P252               | Agana                                     | American Red Cross  |
| 1        | P250               | Chalan Pago                               | Water Wells – DOC   |
| 1        | P283               | Agana Heights                             | Civil Defense Emergency – 911   |
| 1        | P26/P282           | Agana Heights                             | Naval Hospital  |
| 1        | P87/P88/P89        | Dededo                                    | Water Wells   |
| 1        | P46                | Harmon                                    | Northern GWA Treatment Plant, US Renal Care   |
| 1        | P311               | Barrigada Heights                         | Saint Dominic & GMH Skilled Nursing Facility  |
| 1        | P003               | Cabras Island                             | PSCC, Port Authority  |
| 2        | P321               | Mangilao                                  | Gloria B. Nelson Public Service Building  |
| 2        | P322/P323          | Mangilao                                  | Water Wells   |
| 2        | P330/P331          | Yigo/Dededo                               | Water Wells   |
| 2        | P221/P340/P341     | Southern                                  | Water Wells   |
| 2        | X174 – X175        | Transmission Line                         | Guam International Airport  |
| 2        | Underground 13.8kV | Based on load requirements for generation |   |
| 2        |                    | Storm Shelters                            |   |

| Priority | Circuit                    | Area        | Load                                   |
|----------|----------------------------|-------------|--|
| 3        | P201                       | Tamuning    | Seventh Day Adventist Medical Clinic   |
| 3        | P203                       | Tamuning    | FHP Medical Clinic                     |
| 3        | P310                       | Harmon      | US Renal Care                          |
| 3        | P312                       | Tamuning    | PMC                                    |
| 3        | P270                       | Harmon      | IHP Medical Clinic                     |
| 3        | P271                       | Upper Tumon | American Medical Clinic, US Renal Care |
| 3        | P250                       | Sinajana    | Guam Renal Care                        |
| 3        | P210                       | Mangilao    | American Medical Center                |
| 3        | P261                       | Inarajan    | Public Health                          |
| 3        | P294                       | Mangilao    | Public Health                          |
| 4        | Remaining 13.8 kV Circuits |             |  |

**APPENDIX A****FOUR ACTION LEVELS: TROPICAL CYCLONE CONDITIONS OF READINESS****Condition of Readiness (COR) 4 (normal, 72 hours)**

- Damaging winds (39 mph sustained winds or higher) impacting the island are possible within 72 hours. Due to the risk of tropical cyclones developing and impacting the island with damaging winds within 72 hours any part of the year, the normal Condition on Guam is level 4.

**Condition of Readiness (COR) 3 (within 48 hours)**

- Damaging winds impacting the island are possible within 48 hours. Condition 3 government-wide preparedness checklists are initiated in order to complete them before Condition 2 is set.

**Condition of Readiness (COR) 2 (within 24 hours)**

- Damaging winds impacting the island are possible within 24 hours. Condition 2 government-wide preparedness checklists are completed before Condition 1 is set. Condition 1 checklists, especially outdoor requirements are completed simultaneously with Condition 2 requirements.

**Condition of Readiness (COR) 1 (within 12 hours or occurring)**

- Damaging winds are expected within 12 hours or are occurring. No outdoor activities allowed, except for extreme emergencies.

|                      |                                     |
|----------------------|-------------------------------------|
| Damaging Winds:      | Sustained winds > 39 MPH (34 knots) |
| Destructive Winds:   | Sustained winds > 58 MPH (30 knots) |
| Typhoon Force Winds: | Sustained winds > 74 MPH (63 knots) |

Excerpt obtained from Guam Emergency Response Plan (Hazard-Specific Annex A Tropical Cyclones (i.e., Storms and Typhoons-September 2003).

## APPENDIX B

## National Weather Service (NWS) Tropical Cyclone Classifications

1. **Tropical Disturbance or Tropical Cyclone Formation Alert.** Not a tropical cyclone but an area with the potential for development into a tropical cyclone.
2. **Tropical Depression.** A tropical cyclone with maximum sustained winds of 38 mph or less; at this classification a tropical cyclone number is assigned.
3. **Tropical Storm Category A (weak tropical storm).** A tropical cyclone with maximum sustained winds within the range 30-49 mph. Peak gusts are 40-64 mph. At this classification, a tropical cyclone name is assigned, usually after the tropical cyclone's maximum sustained wind speed is 39 mph (causing damaging winds) or higher. *A Tropical Depression is within the Category A Tropical Storm classification but does not generate damaging winds and does not usually have a name assigned yet.*
4. **Tropical Storm Category B (severe tropical storm).** A tropical cyclone with maximum sustained winds within the range 50-73 mph. Peak gusts are 65-94 mph. *A Category B Tropical Storm generates damaging winds when its sustained winds reach 58 mph or higher.*
5. **Typhoon Category 1 (minimal typhoon).** A tropical cyclone with maximum sustained winds within the range of 74-95 mph. Peak gusts are 95-120 mph. Usually "eye" formation begins in a Typhoon. Overall damage from Typhoon Category 1 can be classified as minimal.
6. **Typhoon Category 2 (moderate typhoon).** A tropical cyclone with maximum sustained winds within the range of 96-110 mph. Peak gusts are 121-139 mph. Overall damage from Typhoon Category 2 can be classified as moderate.
7. **Typhoon Category 3 (strong typhoon).** A tropical cyclone with maximum sustained winds within the range of 111-130 mph. Peak gusts are 140-167 mph. Overall damage from Typhoon Category 3 can be classified as extensive.
8. **Typhoon Category 4 (very strong typhoon).** A tropical cyclone with maximum sustained winds within the range of 131-155 mph. Peak gusts are 168-197 mph. *When a Category 4 typhoon generates sustained winds of 150 mph or greater it is called a Super Typhoon.* Overall damage from Typhoon Category 4 can be classified as extreme.
9. **Typhoon Category 5 (devastating).** A tropical cyclone with maximum sustained winds within the range of 156-194 mph. Peak gusts are 198-246 mph. *Damages from a Category 5 Typhoon are usually severe in nature and overall damage can be classified as catastrophic.*

Excerpt obtained from Guam Emergency Response Plan (Hazard-Specific Annex A Tropical Cyclones (i.e., Storms and Typhoons-September 2003).

## APPENDIX C #

## National Weather Service (NWS) Tropical Cyclone Alert Conditions

| NWS Alert              | When Issued  |
|------------------------|--|
| Tropical Storm Watch   | Tropical Storm conditions are <i>possible</i> within the specified watch area within 48 hours.   |
| Tropical Storm Warning | Tropical Storm conditions are <i>expected</i> somewhere within the specified warning area within 24 hours.   |
| Typhoon Watch          | Typhoon (sustained winds of 74 mph or higher) are <i>possible</i> within the specified coastal area. Because typhoon preparedness activities become difficult once winds reach tropical storm force, the hurricane watch is issued 48 hours in advance of the anticipated onset of tropical- storm-force winds.                      |
| Typhoon Warning        | Typhoon conditions (sustained winds of 74 mph or higher) are <i>expected</i> somewhere within the specified coastal area. Because typhoon preparedness activities become difficult once winds reach tropical storm force, the typhoon warning is issued 24 hours in advance of the anticipated onset of tropical- storm-force winds. |

Excerpt obtained from Guam Comprehensive Emergency Management Plan (Tropical Cyclone Response Annex (December 2016).