



HURRICANE IRMA

After Action Report

City Staff
January 2018

City of Marco Island

HURRICANE IRMA *After Action Report*

AFTER ACTION REVIEW

An after-action review (AAR) is a structured evaluation or debriefing process for analyzing what happened, why it happened, and how it can be done better by the participants and those responsible for the project or event. After-action reviews were originally developed by the U.S. Army and are routinely utilized by emergency responders to consistently evaluate and improve performance competency.

Under the direction of the Interim City Manager, the City Department Directors and EOC staff prepared and participated in several after-action review sessions. The review was structured to evaluate the City's actions during pre-storm preparation, hurricane impact and post-storm recovery. Within each storm phase, staff provided their input concerning *what went well, what didn't go well* and *what needs to be done better in the future*.



The issues/areas of improvement recommendations contained in this After-Action Report are intended to improve the City's ability to prepare, respond and recover from future disaster events. The recommendations are aimed to improve the City's Comprehensive Emergency Management Plan and emergency management operations. Conducting an after-action review following a major incident provides City staff the opportunity to collectively identify the organization's strengths and weakness to determine specific areas of improvement to enhance overall performance.

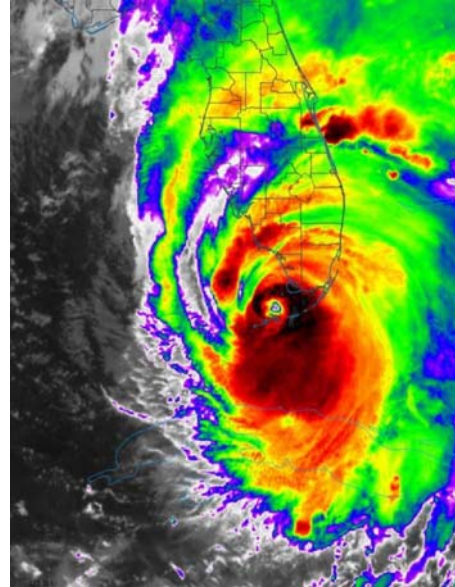
This report is respectfully submitted to the City Manager and the City Council for review to determine administrative, legislative and budgetary priorities for implementation.

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Hurricane Irma, the largest Atlantic storm on record, intensified to a category 5 storm on September 4, 2017. The hurricane was forecasted to strike Florida including a potential direct impact to the City of Marco Island. City Staff activated the Comprehensive Emergency Management Plan (CEMP) and initiated preparedness actions. As the storm progressed, the forecast narrowed confirming a Florida west coast landfall. Recognizing this threat, the City of Marco Island City Council received a Hurricane Irma briefing during the September 5th City Council meeting from the Interim City Manager, Fire Chief and Police Chief stressing the storm's severe threat risk, voluntary and mandatory evacuation notifications, the various methods to access emergency public information and the City evacuation and re-entry procedures. City Council Chairman Larry Honig signed a declaration of State of Emergency on September 6, 2017.



Hurricane Irma tested the City of Marco Island's response capability to a natural disaster concerning five main objectives: *life safety, incident stabilization, environmental concerns, property conservation, and recovery efforts*. The Hurricane Irma team consisted of City staff assigned in accordance with the City's Comprehensive Emergency Management Plan. Department Directors provided specific work assignments to their personnel for pre-and post-storm activities. Many of the employees involved had little experience working major natural disaster incidents but eagerly assumed additional responsibilities and performed exceptionally. City Staff worked closely with local community partners, Collier County Emergency Management and the State of Florida to plan, prepare, respond and recover from Hurricane Irma. On Friday, September 8th, the City activated the Emergency Operations Center and informed the EOC Staff of their duties and responsibilities.

The City placed emphasis on the safety of citizens, visitors, employees and their family members and coordinated a public information campaign utilizing multiple media systems including Code Red, Twitter, the City website, radio and television to keep the citizens and businesses of Marco Island informed. The City Emergency Call Center was established and operated throughout all storm phases. Staff recognized that a large majority of individuals heeded the voluntary and mandatory evacuation notifications given by the City.

As the storm progressed closer to Florida, evacuation became problematic because of the intensity of the storm and the quick closure of evacuation routes and fuel shortages. In the final days leading up to landfall, Collier County inland shelters became the last resort for Special Needs and Island residents who did not evacuate. On September 9th at 7:00pm, Collier County EMS abruptly relocated the ambulance stationed on Marco Island to a staging location 13 miles off the Island.

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On September 10th at 3:35pm, Hurricane Irma made its second continental U.S. landfall over Marco Island with maximum sustained winds of 115 MPH (category 3) and wind gusts exceeding 140 mph. The slow movement of Hurricane Irma resulted in more than ten hours of tropical and hurricane force winds which resulted in damage to residential and commercial properties and widespread tree and power line damage across the Island. Downed power lines and uprooted trees and tree limbs blocked main artery roadways for emergency vehicle access. High winds contributed to an estimated three to six feet of storm surge together with ten to fifteen inches of rain resulting in flooding throughout the Island.

During the storm impact, the City, through the Emergency Call Center and 911, began to receive calls from concerned residents who stayed on the Island or were trapped due to storm surge and damaged structures. Command staff developed response plans for emergency personnel to immediately respond post-storm to conduct rescues and welfare checks. The planned response of emergency vehicles would be led by heavy equipment staffed by Public Works personnel to rapidly push debris off roadways to open emergency routes.

Throughout Hurricane Irma, the City responded to numerous critical infrastructure failures impacting health, safety, and welfare including: Island wide loss of electricity, loss of cellular and internet service, failure of the County 800 MHz emergency services radio system, failure of remote communications to the Water & Sewer Utility facilities, failure of Water & Sewer Utility backup generators and loss of City water pressure and supply due to line breaks.

Immediately after the storm passing, City emergency crews responded to emergency calls in priority order. Requests were made to the County for high clearance vehicles due to road flooding and road clearing from the Jolley Bridge along CR 951 to US 41. Both requests could not be met. The City was self-reliant in clearing roadways and responding to calls for service throughout Sunday night and Monday morning September 11th. Tidal surge and flooding was an issue in multiple areas of the Island and response capabilities were limited due to the lack of high clearance vehicles in the City fleet.

During the morning of Monday, September 11th staff was encountering significant safety issues. There were major road blockages of downed trees, snapped power poles and power lines on the ground which limited emergency vehicle movement throughout the Island. The City's Public Works crews and LCEC worked tirelessly to clear roadways of debris obstructions.



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In addition, lack of water supply and power loss on the Island posed extreme danger to citizens and responders.

The Island was opened to traffic at 10:29 am, Monday, September 11th after all major roads had been cleared. Water & Sewer Utility personnel initiated emergency procedures to maintain operation of sewer lift stations through the rotational use of portable generators and vacuum trucks to maintain normal lift station levels, successfully preventing a sewage spill. Water & Sewer Utility crews



worked to repair and restore treatment and production operations and restored minimal water pressure.

Due to the extent of power loss and residential / commercial property damage, the Police Department, recognizing security challenges and increased calls for service volume, requested mutual aid assistance from Florida Highway Patrol, Collier County Sheriff's Department and the Town of Jupiter Police Department. Police Marine Units initiated waterway damage assessment.

Out of concern of heat stress, the Fire Rescue Department and Code Enforcement officers conducted door-to-door welfare checks throughout neighborhoods that experienced prolonged power loss. Fire Rescue also conducted generator safety discussions with residents to prevent carbon monoxide poisoning. City Hall and the Community Room were opened as cooling centers offering residents cold drinking water and relief from the heat.



The Public Works Department received aid from the Florida Forest Service who deployed a chainsaw team to Marco Island for 14-days. Their efforts were significant in removing debris from blocked roadways and city facilities.

Damage Assessment Teams, made up of personnel from the Growth Management / Building Department, Code Enforcement and Fire Rescue, were activated on the morning of September 11th rapidly performing the initial windshield damage assessment. In the following days, the Damage Assessment Teams finalized the detailed

damage assessment. The City of Naples provided Building Inspectors to assist the City with the detailed damage assessment.

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The Parks & Rec Department opened and operated “Hurricane Café” at the Family Church of Marco Island feeding City employees and mutual-aid responders three meals a day during the first week of recovery.

The City initiated recovery operations on September 13th which continues to this day. City buildings, water & sewer utility plants, parks, vehicles, streets and the storm water drainage system all suffered significant-to-severe damage throughout all facility locations. City staff and contractors continue to conduct temporary and permanent repairs to the

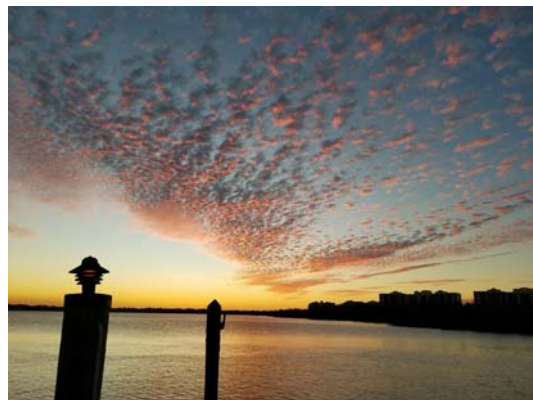


City’s infrastructure. The Growth Management Department initiated the post-storm building permitting process and are receiving permit applications at a rate three times the normal level. Public Works crews are overwhelmed with storm water system repairs, debris removal management, the replacement of street signs, traffic signal repair, sidewalk repairs and right-of-way tree stump removal. The City has initiated the FEMA Public Assistance process to apply for reimbursement for damages and expenses incurred by the City.



There has been a positive response from citizens and businesses regarding the City’s preparation, response and recovery following Hurricane Irma. Much of the success the City experienced is due to the outstanding dedication of the City employees to their community and the City’s strong and supportive leadership team, which was led by Interim City Manager Guillermo Polanco supported by City Council.

It is incumbent on the City and its staff to conduct this after-action review. The purpose is to evaluate strengths, weakness, and identify areas of concern. This focus on the continuous improvement of the City’s planning, preparedness, response and recovery will enhance the City’s response to future disaster incidents.



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ISSUES / AREAS OF IMPROVEMENT

Issue: Improve the Policies & Procedures of providing Public Information

Recommendations:

- ❖ Develop a Public Information Policy within the CEMP which details the procedures to provide public information. The Policy will provide communication protocols including the structure of a review procedure prior to information release, information release schedule, pre-scripted messages and the use of standard documentation procedures to record the public information releases. The policy will also address the operations of the City Emergency Call Center.
- ❖ Expand and improve the use of the City's Website, Code Red and social media platforms for effective public information to be disseminated to the public prior to the hurricane landfall. Staff has identified the need to increase the use of social media platforms and applications to provide the public the choice of a platform they prefer. The use of additional Social Media platforms, such as Facebook Live, will allow City staff to broadcast press releases in video format.
- ❖ Identify dedicated individuals to disseminate information and provide additional staff support. This position must be dedicated to public information duties only.
- ❖ Develop contingency plans to maintain the dissemination of information to the public during situations in which infrastructure is damaged to the point that traditional means of communication is not possible.
- ❖ Routinely conduct public education events to educate citizens about Code Red and assist them through the registration process.
- ❖ Develop a City Social Media Policy.
- ❖ Increase inventory of mobile message boards.

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Issue: Improve the City's Comprehensive Emergency Management Plan and Emergency Operations Center (EOC) capabilities

Recommendations:

- ❖ Update the CEMP to include an Emergency Operations Plan (EOP) that consists of operational checklists that explain how Department personnel should operate during the five phases of a hurricane: preparation, hurricane watch, hurricane warning, hurricane landfall and hurricane recovery. The Plan should include, but not limited to, EOC command structure, contingency plans, personnel / resource tracking system, an assigned / completed daily objectives measurement procedure, financial tracking & filing procedures and the EOC staffing plan including relief personnel. The plan should also include procedures detailing the use of ICS forms throughout all incident phases.
- ❖ Provide All-Hazards position specific training to City EOC staff. Determine required depth of positions and include those employees in the training. The City should support this training by providing relief to employees from their normal job duties while in attendance.
- ❖ Review the Damage Assessment Team documentation procedures including a common City zone map and expand the number of employees who are trained and proficient with Crisis Track Software.
- ❖ Improve knowledge of storm surge forecast and impact risk specific to Marco Island. Seek assistance from the National Hurricane Center.
- ❖ Improve the City EOC's ability to maintain site specific constant weather monitoring not dependent on internet or cellular service.
- ❖ Consider the activation of an Incident Management Support Team (IMST) prior to landfall.
- ❖ Conduct an annual exercise of the Comprehensive Emergency Management Plan. The exercise shall include City personnel beyond the EOC staff. During this annual exercise field personnel will receive ICS form training to maintain competency.
- ❖ Conduct annual VHF radio training across all Departments. Encourage routine use by Departments during normal work duties.
- ❖ Improve pre-storm and post-storm documentation procedures of City facilities and equipment.
- ❖ Provide for EOC Command Staff training at seminars, conferences, the Florida Governors Hurricane Conference and the National Hurricane Conference.

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Issue: Identify factors which had a direct impact on life safety

Recommendations:

- ❖ Seek to gain local control of EMS ambulance transport service to ensure the resource remains on the island to provide service to staff and residents.
- ❖ Develop a post-storm access plan with MIHCC and Physicians Regional Clinic.
- ❖ Develop formal procedures for pre-storm door-to door and post-storm welfare checks inclusive of geo-mapping.
- ❖ Conduct safety checks for home generator operations.
- ❖ Improve/formalize the evaluation procedures required to safely open the two main bridges to traffic.
- ❖ Improve the City's oversight of our Special Needs population.
- ❖ Develop a deployment plan and obtain inventory of portable medical oxygen tanks to support oxygen dependent patients during power loss.
- ❖ Develop biological sampling schedule.
- ❖ Develop relief & rest periods for all City staff including Directors and EOC Staff.
- ❖ Prepare safety messages to be provided to the Community during pre-storm preparations warning of the effects of heat stress and carbon monoxide poisoning.
- ❖ Improve awareness of identifying and providing support to employees suffering from physical and emotional stress.
- ❖ Develop plan for 100% loss of traffic signalization/traffic signage (long and short term).

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Issue: Many Resource Requests submitted to Collier County Emergency Management were denied, not filled or went unanswered for days.

Recommendations:

- ❖ Develop self-sustainability plan to provide logistics, supplies and equipment to maintain operations for 96-hours prior to the arrival of County, State or Federal assistance.
 - ❖ Research and recommend equipment acquisition to improve the City's gasoline and diesel fuel supply and dispensing capabilities to fuel City vehicles, generators and portable equipment.
 - ❖ Review all existing vendor contracts, and confirm the vendor's ability to provide resources.
 - ❖ Develop a meal plan and identify a lead staff member to manage. Additionally, provide staff to support this logistical need for a minimum of 96-hours.
 - ❖ Evaluate and improve drinking water and ice inventory.
 - ❖ Research funding opportunities to acquire the number of generators required to maintain lift station operations.
 - ❖ Develop contingency plan for vehicle mechanic support and tire inventory.
 - ❖ Through vendor contracts, acquire a portable bathroom and shower facility in the event of water supply loss.
 - ❖ Research opportunities for agreements with local business partners.
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Issue: Debris removal agreements and procedures

Recommendations:

- ❖ Conduct an evaluation of the debris removal procedures in place during Hurricane Irma.
- ❖ Evaluate the debris removal agreements with Collier County.
- ❖ Determine community expectations.
- ❖ Research debris removal options with an emphasis on early post-storm mobilization.
- ❖ Improve the instructions provided to the public concerning debris removal.

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Issue: Improve Policies & Procedures which direct the duties and responsibilities of City employees during emergency activation.

Recommendations:

- ❖ Eliminate the essential/non-essential employee terminology.
- ❖ Conduct a staffing needs evaluation and develop Department specific staffing plans for each storm phase.
- ❖ Reinforce to employees the need to have an evacuation plan for family members prior to hurricane season.
- ❖ Improve the employee lodging plan for employees called-back for storm landfall / recovery.
- ❖ Develop an off-Island lodging plan for employees assigned to non-emergency duties following landfall.
- ❖ Develop a contingency plan for off-Island lodging of employee family members.
- ❖ Develop an employee vehicle parking plan.
- ❖ Contract with a Property Restoration Service to respond to employee's homes to conduct emergency repairs while the employee is committed to recovery operations at the City.
- ❖ Prepare a temporary housing plan for employees whose residence is not tenable following a storm.

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Issue: Improve the functionality and storm protection systems of City facilities to limit damage and ensure operational capability through all storm phases.

Recommendations:

- ❖ Plan for the design and construction of a dedicated fully-functional Emergency Operations Center rated for a Category 5 hurricane necessary for the effective management of emergency incidents impacting the City. The EOC shall be designed in accordance with NIMS/ICS standards of incident management; Operations, Planning, Logistics, Finance and Administration sections and ICS/ESF Support Functions; Law Enforcement, Fire Rescue, Utilities, Public Works, Damage Assessment.
- ❖ Develop a checklist which details the procedures required at each City facility to safeguard City assets.
- ❖ Develop a City vehicle parking plan to protect assets and identify high ground level locations.
- ❖ Propose a capital improvement plan to eliminate the use of trailers as City facilities. Damage to these facilities significantly limits the ability of a department to effectively respond to community needs during the recovery phase. Currently, Public Works and the Water & Sewer Utility have employees operating in manufactured office trailers.
- ❖ Improve City storm water management system's resistance to storm damage.
- ❖ Propose a capital improvement plan to acquire generator power capability at all City facilities. Capability should include an external transfer switch to facilitate back-up power in case of main generator failure.
- ❖ Identify a City facility to serve as a post-storm rehab center to provide meals and water to City employees.
- ❖ Secure a contract with a vendor to immediately, upon the storm passing, conduct debris removal from City facilities to expedite the opening/operation of the facility.
- ❖ Enter into an agreement with a community facility to serve as a post-storm temporary shelter to provide cooling and drinking water to residents in need of a respite.
- ❖ Improve hurricane protection of equipment and systems at the City Water & Sewer Utility.
- ❖ Secure a vendor contract for the immediate response post-storm of a Property Restoration Service to conduct damage assessment of City facilities and initiate mitigation efforts to limit additional property damage.
- ❖ Identify and aggressively pursue FEMA Mitigation Grant opportunities to improve the protection of City facilities from storm damage.

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Issue: Acquire equipment to improve preparedness and to provide for safe and efficient emergency and recovery operations.

Recommendations:

- ❖ Increase inventory of high-clearance vehicles / 4x4.
- ❖ Acquire an inventory of shallow draft vessels.
- ❖ Identify safety equipment needs of employees specific to job duties.
- ❖ Acquire a Front-end Loader and Dump Truck for initial push and debris clearing.
- ❖ Increase inventory of generators for lift station operations.
- ❖ Evaluate and acquire or improve stationary generator operations at Water & Sewer facilities.
- ❖ Acquire equipment and systems necessary to maintain SCADA communication with Water & Sewer facilities.
- ❖ Acquire GPS units for damage assessment teams.
- ❖ Increase inventory of portable light towers.
- ❖ Evaluate satellite phone and internet equipment needs.
- ❖ Develop a process to pre-position a Verizon COW (cell on wheels).
- ❖ Plan or acquire a vehicle capable of mass transportation of city employees.
- ❖ Identify and acquire a backup IT server site. Develop Technology “Go-Bags”.
- ❖ Increase CCTV camera sites to provide EOC viewing of real-time conditions.
- ❖ Evaluate and improve spare tire / wheel inventory.
- ❖ Acquire Asset Management and Fleet Tracking software.
- ❖ Increase traffic light parts inventory.
- ❖ Acquire additional generators / battery back-ups for controlled intersections.
- ❖ Improve laundry facilities for employee clothes / work uniforms.
- ❖ Increase inventory of safety fencing.
- ❖ Acquire weather monitoring station.
- ❖ Acquire Smart Board technology for the EOC and Operations Centers to provide live GIS tracking of field operations and maintain a personnel accountability system.
- ❖ Create a cellular phone cache and add analog copper phone line to EOC call center.

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Issue: Items recommended for City Council and City Administration consideration

Recommendations:

- ❖ Determine role and responsibilities of City Council during all storm phases. Include in the CEMP.
- ❖ Consider changes to the City Ordinance to provide pre-storm job site enforcement at time of declaration rather than the current 48 hours prior to landfall.
- ❖ Evaluate the City Policy defining the post-storm permitting process, fee structure and inspection procedures.
- ❖ Review the policy for employee compensation during declared emergencies.
- ❖ Adhere to local and federal purchasing policies.
- ❖ All city capital purchases should be evaluated for resiliency to wind/storm surge damage, long-term maintenance and how the item will be replaced or repaired during recovery. In addition, consider including a return on investment (ROI) statement for all significant capital expenditures. Examples: vehicles, street sign poles, trees in right-of-way, street lights etc.
- ❖ Consider City Ordinance development to require critical facilities be equipped with emergency generators or generator hook-ups.
- ❖ Discussion of the merits or problems with a local ordinance enforcing gas rationing during a declared disaster incident.
- ❖ Employee turnover of experienced and trained employees impacts the City's preparedness, response and recovery during a disaster incident. Address methods to reduce employee turnover.
- ❖ Develop disciplinary procedures to address personnel who decline to report to work during a declared disaster incident.
- ❖ Consider a position responsible for the management of the City's Fleet and Facilities.
- ❖ Consider an increase of Public Works field personnel.

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Issue: Recommended Operational improvements

Recommendations:

- ❖ Improve presence and understanding of EOC Command Structure among City Staff.
- ❖ Develop plan to provide oversight at public fueling locations.
- ❖ Develop standardized procedures to issue badge cards and IT on-boarding of arriving temporary employees. Single point of contact.
- ❖ Improve communications process from the Incident Commander to staff.
- ❖ Identify TECO Gas emergency contact for EOC.
- ❖ Research a check-in procedure for citizens who do not evacuate.
- ❖ Evaluate mutual-aid assistance request procedures for Police & Fire Rescue.
- ❖ Improve information provided to call bank personnel from the EOC to ensure consistency of information provided to the public.
- ❖ Develop daily meeting schedule. EOC briefings, Director briefings, Policy meetings, Safety briefings.
- ❖ Establish a Volunteer Coordinator (POC) upon declaration.
- ❖ Establish a Donation Center / Coordinator (POC) upon declaration.
- ❖ Improve communication with LCEC by identifying one City POC to serve as liaison.
- ❖ Reinforce the documentation process of temporary repairs completed by in-house personnel.
- ❖ Develop operations plan to include conditions, staffing and resources necessary to close main bridges due to life safety concerns.

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