

# Hurricane Ian After-Action Report

Lee County, Florida

August 11, 2023





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# Handling Instructions

The *Lee County Hurricane Ian After-Action Report* identifies areas of strength and opportunities for improvement based on the lessons learned from Lee County's response to Hurricane Ian. The analysis outlined in this report represents identified best practices and areas for improvement.

The information contained in this document is current as of the date of publication, August 11, 2023.

Input for this report was sought from and provided by Lee County personnel, mutual aid responders, as well as private sector and non-profit stakeholders who supported emergency response activities.

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# Acknowledgments

The mission of Lee County Emergency Management, a division of the County's Department of Public Safety, is to prepare, safeguard and protect the residents of the County and their property from disaster. During emergency events, Lee County Emergency Management is the lead coordinating entity for the Lee County Emergency Operations Center to coordinate response among partners.

The response to Hurricane Ian, beginning in September 2022, was complex, dynamic and monumental, leveraging County, State, Federal and non-profit personnel and equipment resources to support the residents of Lee County. Lee County would like to thank the countless community members, public safety professionals, emergency management personnel and volunteers from Florida and across the nation who supported Hurricane Ian response and recovery efforts.

The development of the *Lee County Hurricane Ian After-Action Report* was informed by detailed feedback from Lee County personnel as well as municipal, special district, private sector and non-profit partners on what went well and where opportunities for improvement exist. Lee County thanks these individuals for their participation in this review effort.



# Executive Summary

The Lee County (the County) Hurricane Ian After-Action Report (AAR) is a review of the County's preparedness, response and recovery efforts to Hurricane Ian. The scope of this AAR focuses on countywide operations and does not cover department-specific operations pertaining to Hurricane Ian. Observations and recommendations included in this AAR are intended to contribute to the County's preparedness and readiness for future hurricane events.

The AAR is organized by the following sections:

- Introduction: Purpose, Approach and Methodology
- Incident Overview: Event Summary, Event Timeline, Hurricane Ian Response by the Numbers
- Hurricane Ian Response Analysis: Observations and Recommendations
- Conclusion

The AAR review process addressed the following focus areas with stakeholders:

- Command and Leadership
- Public Information and Warning
- Information Technology and Communications
- Planning Section
- Logistics Section
- Operations Section
- Staff Support and Wellness

During the review process, it was evident that County personnel, along with local governments, special districts, private sector and non-profit partners who supported the County's Emergency Operations Center (EOC) efforts, were dedicated to supporting the Lee County community before, during and following Hurricane Ian.

This report focuses on broad, policy-level issues or operational problems encountered as a result of the impact of Hurricane Ian. Due to the size and scope of the disaster, it is not meant to include all operational or departmental challenges and does not document County department-level issues and corrective actions taken during or after this event.

## Observations

The following are observations of the County's response and recovery actions before, during and after Hurricane Ian:

**Observation 1:** Interagency coordination and communication resulted in the County's ability to respond to Hurricane Ian and implement innovative solutions.

**Observation 2:** Amid an uncertain forecast leading up to landfall, County leadership leveraged pre-existing plans to guide critical pre-storm decision-making, issue evacuation orders and open shelters.



**Observation 3:** The County, leveraging pre-season preparedness coordination and pre-scripted messaging, had a well-established operational rhythm to manage public information during Hurricane Ian.

**Observation 4:** The County maintained most interoperable communications with partners in the EOC, Emergency Dispatch Center, Emergency Information Hotline (EIHL), Government Communications Network and in the field during Hurricane Ian.

**Observation 5:** The County leveraged and augmented pre-existing plans, relied on built organizational constructs and implemented lessons learned from previous emergency events to meet the scale and severity of Hurricane Ian.

**Observation 6:** The County identified opportunities to expand and further develop an EOC guide and position-specific checklists for personnel, including multijurisdictional, mutual aid, private sector and non-profit partners, reporting to the EOC.

**Observation 7:** The County's debris management operation was equipped with the necessary resources, common operating picture and contracts to remove 6.3 million cubic yards of debris in unincorporated Lee County.

**Observation 8:** The County coordinated effectively with non-profit, local, State and Federal partners to augment field and EOC activities as well as support Points of Distribution (POD) and Disaster Recovery Center (DRC) efforts.

**Observation 9:** While shelters were successfully supplied and operational for County residents on the morning of Tuesday, September 27, the County encountered challenges in managing the expectations of some shelter facilities and mobilizing shelter staff.

**Observation 10:** Staging areas and County property sustained occasional and localized flooding impacts and overcrowding.

**Observation 11:** The National Incident Management System (NIMS) model resulted in span of control challenges for EOC operations.

**Observation 12:** The County leveraged pre-existing staff support and wellness programs and partnerships to support County personnel throughout the response to Hurricane Ian.

**Observation 13:** Mitigation projects throughout the County increased the resiliency of infrastructure and expedited initial restoration activities following Hurricane Ian's storm surge and hurricane-force winds.

**Observation 14:** The County identified opportunities to enhance communication and information flow with elected officials visiting the County EOC to strategically leverage intergovernmental support for the response.



# Introduction

The purpose of the Lee County Hurricane Ian AAR is to provide a review of the County's preparedness, response and recovery actions pertaining to Hurricane Ian, as well as identify strengths and areas for improvement. The observations identified in this report are based on information provided by stakeholders who supported incident response and recovery efforts. Information collected in this AAR is intended to memorialize lessons learned, identify best practices and support the County's readiness for future hurricane events.

This report focuses on broad, policy-level issues or operational problems encountered as a result of the impact of Hurricane Ian. Due to the size and scope of the disaster, it is not meant to include all operational or departmental challenges and does not document County department-level issues and corrective actions taken during or after this event.

## Approach and Methodology

This AAR was developed in two phases. The first phase was conducted from October to December 2022 to collect initial data identifying key actions, events and timeline elements. Data collection methods for this initial phase included:

- A document review of County plans, incident action plans (IAP), situation reports, press releases, EOC briefings and forecasts from local and national meteorologists.
- A series of stakeholder interviews with mutual aid staff and volunteers supporting the County EOC.

The second phase of the AAR was conducted from February to June 2023 to collect data from County personnel, elected officials, private sector partners, municipal representatives, special districts and non-profit stakeholders through a series of group and one-on-one interviews as well as a document of review of operation-specific materials. The following focus areas were addressed in stakeholder interviews:

- Command and Leadership
- Public Information and Warning
- Information Technology and Communications
- Planning Section
- Logistics Section
- Operations Section
- Staff Support and Wellness

## Analysis

Observations and recommendations within this AAR are based on qualitative information collected from stakeholder interviews and document reviews during the course of both phases.

# Incident Overview

## Event Summary

As of August 2023, Hurricane Ian is ranked as the third costliest tropical system to make landfall in the United States (U.S.), behind only Hurricane Katrina (2005) and Hurricane Harvey (2017). Hurricane Ian was the ninth named storm, the fourth hurricane and the first Category 5 hurricane of the 2022 Atlantic hurricane season.

### PRE-LANDFALL

Hurricane Ian developed as a tropical wave off the coast of western Africa on Monday, September 19, 2022, and continued to track west toward the U.S. On the morning of Friday, September 23, the tropical wave formed into Tropical Depression Nine which then strengthened into Tropical Storm Ian, with sustained winds of 40 miles per hour (mph). The County EOC has three activation levels ranging from Level III (monitoring) to Level I (full activation). That same day, initial hurricane preparations began in the County and the EOC opened at a Level II partial activation.

Between Friday, September 23, and Sunday, September 25, then-Tropical Storm Ian's track was uncertain, making it difficult to determine where landfall would take place on Florida's west coast. Forecasts showed landfall between Naples (just south of the County) and Apalachicola (north of the County on the Panhandle). The uncertainty around the location and timing of landfall encouraged the County to monitor the system closely with partners at the National Weather Service (NWS) and National Hurricane Center (NHC).



Figure 1: NWS Advisory 2; Source NWS



Figure 2: NWS Advisory 14; Source: NWS

On Monday, September 26, the NHC upgraded Tropical Storm Ian to Hurricane Ian with a forecast tracking toward Tampa Bay (north of the County). That same morning, the County declared its initial State of Local Emergency (SOLE) and announced that the EOC would increase to a Level I full activation on Tuesday, September 27. The County also suspended tolls on bridges until further notice and announced County offices would close on Tuesday, September 27, and Wednesday, September 28. On a briefing with the NWS – Tampa Bay at 7:00 p.m. on Monday, September 26, meteorologists presented peak storm surge forecasts impacting Tampa Bay with 10 to 15 feet on the barrier island of Pinellas County and 15 feet of water in Tampa



Bay. In red text, meteorologists stressed: “We have to consider this one.” Peak surge forecasts for Lee County remained at 4 to 7 feet.

NWS issued a Tropical Storm Warning from Englewood south to Flamingo, a Storm Surge Warning from the Anclote River south to Flamingo and a Hurricane Watch from Englewood south to Bonita Beach on Monday evening, September 26; all advisories included the County. Hurricane Ian was forecast to undergo rapid intensification overnight which is defined by the NHC as an increase of maximum sustained winds of at least 35 mph during a 24-hour period, and strengthen into a major hurricane before daylight on Tuesday, September 27.

Early in the day on Tuesday, September 27, Hurricane Ian made landfall as a Category 3 Hurricane near La Coloma, Cuba, with sustained winds near 125 mph. As Hurricane Ian passed over the island of Cuba and entered the Gulf of Mexico, the storm resumed rapid intensification. Hurricane Ian’s forecast tracked toward the southeast and, by 5:00 p.m., Hurricane Warnings extended from the Anclote River to Chokoloskee, a nearly 200-mile section of the southwestern Florida coast. Storm Surge Warnings covered the area from the Suwannee River to Flamingo, a more than 300-mile section of the western Florida coast.

At 7:00 a.m. on Tuesday, September 27, the County opened 11 shelters, 10 for general population and one for the special medical needs population, and issued an initial round of mandatory evacuation orders for Zone A and portions of Zone B, along with individuals throughout the County in mobile and manufactured homes. Hurricane Ian’s forecast had shifted farther to the southeast. This forecast prompted additional evacuation orders in the County at 8:45 a.m. to include all of Zone A and Zone B. The County reported anticipated storm surge to be between 5 and 10 feet. Additionally, the County opened five more general population shelters, bringing the total number of open general population shelters to 15. To assist with evacuation, Lee County Transit (LeeTran) used existing plans to provide transportation resources for evacuations and shelter drop-offs at bus stops countywide and individually for those who requested support. At 1:45 p.m., the County expanded the mandatory evacuation order for a third time, to include all of Zone A and Zone B, along with portions of Zone C in North Cape Coral and North Fort Myers, west of Interstate 75. At 3:00 p.m., the Florida Division of Emergency Management (FDEM) arrived at the County EOC.



Figure 3: NWS Advisory 15; Source: NWS

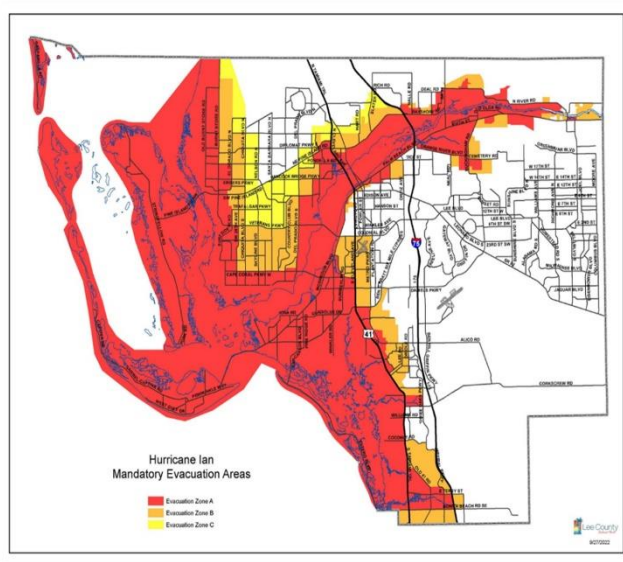


Figure 4: Hurricane Ian Mandatory Evacuation Zones; Source: Lee County

Storm surge risks increased, with forecast surge between 8 and 12 feet. Additionally, the 11:00 a.m. NHC forecast predicted landfall would occur around 8:00 p.m. on Wednesday, September 28. County officials emphasized to the public to not wait until the last minute to evacuate to decrease the risk of heavy traffic. Then, the 5:00 p.m. update from the NHC forecasted Hurricane Ian's landfall even farther south, near Englewood, around 2:00 p.m. on Wednesday, September 28. The NHC advised that Hurricane Ian would make landfall as an extremely dangerous major hurricane. Given the low number of people arriving at public shelters, County leaders contacted law enforcement, fire and local government officials on barrier islands to ask that they drive their communities to survey the progress of evacuations and encourage those left to reconsider evacuating.

At 6:30 p.m. on Tuesday, September 27, the County sent an emergency notification text requesting residents to seek shelter or shelter-in-place by 8:00 p.m. Into the evening hours of Tuesday, September 27, weather conditions in the County began to deteriorate, with reports of gusty winds and tornadoes, as the first bands of Hurricane Ian made their way on shore.

A representative from the Federal Emergency Management Agency (FEMA) arrived at the EOC late in the evening of Tuesday, September 27.

## LANDFALL

On the morning of Wednesday, September 28, Hurricane Ian had strengthened into a Category 5 hurricane, with sustained winds of 160 mph. Storm surge was now forecast to be anywhere from 12 to 16 feet above ground level in Florida's west coastal area from Englewood to Bonita Beach. Around 9:40 a.m., the County released a shelter-in-place alert via AlertLee, the County's Emergency Mass Notification System. By 11:00 a.m., the storm surge forecast increased between 12 and 18 feet for the same geographic area. During this time, the County suspended law enforcement, fire and emergency medical services (EMS) responses. At 3:05 p.m., Hurricane Ian made landfall on Cayo Costa, Florida, a barrier island in Lee County. An hour and a half later, Ian made a second landfall, this time on mainland Florida near Pirate Harbor, just north of the Lee/Charlotte County line, with sustained winds of 145 mph. The County distributed a text message at 4:30 p.m. urging residents with water inundating their homes to go to the highest level possible.

By 5:00 p.m., the NHC indicated storm surge levels would range from 12 to 18 feet above ground level between Englewood and Bonita Beach. The County enacted a curfew shortly after this at 6:00 p.m. in response to reports of looting and due to the uncertainty of infrastructure conditions. At that time, the curfew was put in place until further notice. County officials indicated that the earliest first responders and public works teams could begin thorough damage assessments would be 5:00 a.m. on Thursday, September 29.

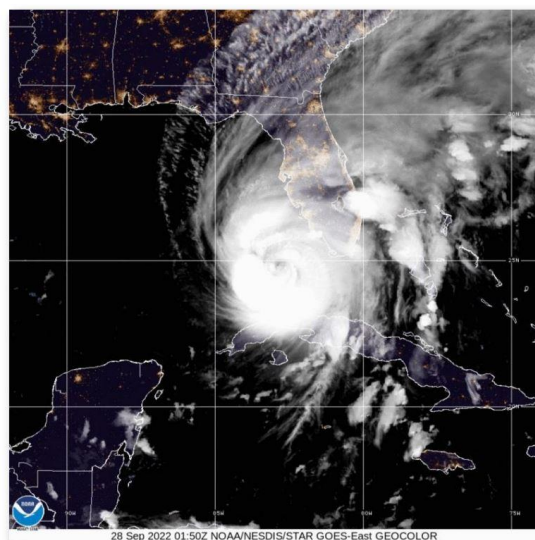


Figure 5: Satellite image of Hurricane Ian over Florida on September 28; Source: National Oceanic and Atmospheric Administration



During the County’s post-storm address in the early evening hours of Wednesday, September 28, County officials fielded questions from local media, noting that less than 10% of shelter capacity was occupied and individuals should go to shelters if needed.

## POST LANDFALL

The County initiated Urban Search and Rescue (USAR) missions in the early hours of Thursday, September 29. The County reported first responders and USAR teams were responding as rapidly as possible to Emergency Dispatch Center calls. USAR resources began to arrive from across the State of Florida, including seven helicopters made available by Miami-Dade County to support search and rescue missions.

The County also conducted initial damage assessments of Hurricane Ian’s impact on infrastructure throughout the County including the County’s roads and 435 traffic signals. 98% of the County was without electricity. Both the Sanibel Causeway and roadway through Matlacha were reported to be impassable, along with dozens of other roadways across the County. Numerous structures were reported demolished in the City of Sanibel, Pine Island, Captiva and the Town of Fort Myers Beach. Mobile homes in North Cape Coral were reported as destroyed.

The County began working with the Florida State National Guard and local municipalities to mobilize POD for food, water and other basic commodities. All 15 general population shelters in the County remained open and saw increased occupancy as the day progressed. The curfew remained in effect throughout the day.

### Post-Landfall EOC Objectives:

- Continuing Search and Rescue operations
- Continuing damage assessment and infrastructure restoration
- Providing resources and support as needed throughout the operational period
- Continuing sheltering operations
- Stabilizing healthcare infrastructure
- Coordinating the dissemination of public information



Figure 6: Image of a portion of the Sanibel Causeway showing the impact of Hurricane Ian; Source: National Oceanic and Atmospheric Administration Remote Sensing Division

In the first 36 hours after Hurricane Ian’s landfall, first responders continued to respond to the pending 752 fire and EMS calls received during the storm and consolidated the list down to 26 outstanding calls due to lack of access. These calls were combined with incoming Emergency Dispatch Center calls and reprioritized on the morning of Friday, September 30. Search and rescue efforts continued throughout the County, with the majority of missions occurring on barrier islands. Traffic throughout the County on Friday, September 30, hindered response efforts, prompting the County to issue a press release encouraging residents to stay off roadways.

The U.S. Coast Guard (USCG) organized and deployed a ferry operation to evacuate the City of Sanibel’s residents to the mainland. Search and rescue responders at the Town of Fort Myers Beach assisted in evacuations from Estero Island, where residents were asked to walk to the Publix for assistance in evacuating. The same occurred on Matlacha

and Pine Island. LeeTran provided shuttle service from the mainland drop-off locations near these islands to area shelters for those who required transport.

The County Department of Transportation (DOT) partnered with the Florida Department of Transportation (FDOT) and continued an assessment of roadways and bridges. The Sanibel Causeway, New Pass, Big Carlos Pass and Big Hickory Pass bridges were all considered nonoperational, along with three bridges in Matlacha.

Numerous supporting agencies and individuals arrived in the County on Friday, September 30, including additional staff from FEMA. 15 shelters remained operational on the morning of Friday, September 30, with the initial wave of shelter consolidation beginning that afternoon.



Figure 7: Image of Matlacha Bridge on September 30, 2023; Source: Agence France-Presse via Getty Images

## EXTENDED RESPONSE AND INITIAL RECOVERY

For the next week, the County continued response efforts and began initial recovery efforts. In addition to continuing to coordinate operations, the County EOC also received elected official visits, which were coordinated through EOC staff and County leadership.

### Urban Search and Rescue and Life Safety

From Thursday morning, September 29, to Monday, October 3, two Type 1 USAR teams partnered with local teams for seven total teams conducting search and rescue efforts. From Tuesday, October 4, to Wednesday, October 5, 15 USAR teams were operational throughout the County. Starting on Thursday, October 6, 12 USAR teams were available to continue search and rescue operations across the County. Unincorporated Lee County, the Town of Fort Myers Beach, City of Bonita Springs and the City of Sanibel remained under curfews. Access through Matlacha was restored and traffic was able to resume on Pine Island on Wednesday, October 5, however, six other bridges remained inoperable during this time.

### Infrastructure

Between Saturday, October 1, and Friday, October 7, teams from Florida Power & Light (FP&L), Lee County Electric Cooperative (LCEC), County Utilities, County DOT, County Solid Waste and County Natural Resources worked to restore the County's infrastructure.

### Response and Initial Recovery EOC Objectives:

- Provide for the needs and safety of the responders
- Provide for the needs and safety of the public
- Search and rescue
- Utility and Infrastructure restoration
- Ensuring adequate mission and resource management



Date	Percentage of FP&L Customers with Power	Percentage of LCEC Customers with Power
October 2	51%	--
October 3	63%	21%
October 4	78%	30%
October 5	86%	30%
October 6	--	--
October 7	97%	60%

By Sunday, October 2, Lee County Utilities and Bonita Spring Utilities had restored water service to all customers with isolated boil water notices. By Monday, October 3, Cape Coral Utilities had restored water service to all customers, with isolated boil water notices. By the end of the week, City of Fort Myers Utilities had restored 90% of water service to customers. Portions of the water infrastructure on Fort Myers Beach were destroyed during landfall when homes were washed away. Restoration efforts on Fort Myers Beach would take much longer due to these impacts.

During the first week of October, County DOT worked to assess and restore traffic signals countywide. On Sunday, October 2, more than half the traffic signals in the County were non-operational which was attributed to power outages. By Tuesday, October 4, 40% of the signals were operational and by the end of the week, 69% of the traffic signals were operational.

Debris management, led by County Solid Waste, began on both land and waterways during the first week of October. Hurricane Ian resulted in more than 12 million cubic yards of debris, including 6.3 million cubic yards impacting unincorporated Lee County and the surrounding waterways impeding access to both land and marine transportation as well as access to buildings and residences. In response to the magnitude of debris, the County opened 33 debris management sites and re-opened the Gulf Coast Landfill to remove and process debris from local and state collections. Additionally, Solid Waste launched a campaign to educate and enlist the help of residents and business owners in the County to collect and place debris accumulated on their properties in a FEMA-compliant manner. On Thursday, October 6, President Biden amended declaration DR4673 to cover 100% of eligible debris removal and protective measures activities for an additional 30-day period.

Hurricane Ian also changed the topography of intercoastal waterways. Lee County Natural Resources coordinated with the USCG to clear navigational channels and managed barge operations to help the facilitation of moving debris as well as shuttling vehicles and resources to the barrier islands.

### Mass Care

The County continued to operate and coordinate shelters and POD sites to support residents during the first week of October with the American Red Cross assuming shelter operations on Monday, October 3. The Salvation Army continued feeding operations at nine sites throughout the County. Additionally, the



first DRC opened in the County on Tuesday, October 4, to support recovery activities. All school shelters were closed by Saturday, October 8. All non-school shelters were closed by Friday, October 21.

Date	Number of General Population Shelters Open	Shelter Census	Number of PODs Open	Number of Individuals Served at PODs
September 28	15	6,039	--	--
September 29	15	1,688	--	--
September 30	15	1,727	--	--
October 1	7	1,712	8	48,536
October 2	4	1,569	8	40,513
October 3	4	1,686	8	32,489
October 4	4	1,378	8	29,921
October 5	4	1,296	8	23,192
October 6	4	946	9	21,208
October 7	3	878	9	14,052

During the first week of October, residents in affected areas such as the Town of Fort Myers Beach remained under a mandatory evacuation notice. To help support these residents, the National Guard continued to offer transport for those wishing to evacuate the island, supported by LeeTran shuttle services to open shelters. The Air Operations Branch continued to evacuate individuals off of the islands as necessary. Additionally, LeeTran expanded its services to include limited, fixed-route offerings.

### Damage Assessment

Damage assessment continued in Lee County, with 24,585 damaged residential structures and 4,690 commercial structures reporting damage. Property loss was estimated at approximately \$3.22 billion. The USCG completed its waterway assessment on Friday, October 7.



# Timeline

## September 23, 2022

Tropical Depression Nine forms in the southern Caribbean.



## September 23, 2022

Tropical Depression Nine strengthens into Tropical Storm Ian. Lee County EOC activates to Level II

## September 25, 2022

Initial Tropical Storm Watch issued for Southwest Florida, including Lee County at 11:00 p.m.

## September 26, 2022

Lee County issues State of Local Emergency.

## September 26, 2022

Hurricane Ian's track shifts, Tropical Storm Warning issued at 5:00 p.m.

## September 27, 2022

Hurricane Ian's track shifts further southeast.

## September 27, 2022

Lee County opens 15 emergency shelters and one special medical needs shelter. Evacuation orders issued for Zones A, B and portions of C.

## September 28, 2022

Initial bands from Hurricane Ian prompt Lee County to suspend emergency services at 10:45 a.m.

## September 28, 2022

Hurricane Ian makes landfall on Cayo Costa at 3:05 p.m. with sustained winds of 145 mph.

## September 29, 2022

Initial Search and rescue efforts begin at approximately 2:00 a.m.

## September 29, 2022

Sanibel Causeway and other local bridges are assessed as severely damaged. 98% of Lee County is without power.

## September 30, 2022

First responders consolidated and responded to all but 26 9-1-1 calls in the first 24 hours of response.

## September 30, 2022

Search and rescue and evacuation continue on Sanibel Island and the Town of Fort Myers Beach. FEMA arrives to support response.

## October 1, 2022

An extended section of Interstate 75 north of Lee County is deemed impassable and re-routed through the County.

## October 1, 2022

8 Points of Distribution open to distribute supplies, food and water with 48,536 individuals served.

## October 2, 2022

40,513 individuals are served at Points of Distribution.

## October 2, 2022

Lee County further consolidates shelters to expedite the return of facilities back to the School District.

## October 4, 2022

Disaster Recovery Center 1 opens.

## October 5, 2022

Southwest Florida International Airport resumes limited operations.

## October 6, 2022

President Biden amends DR4673 to cover 100% of eligible debris removal and protective measures for the following 30 days.

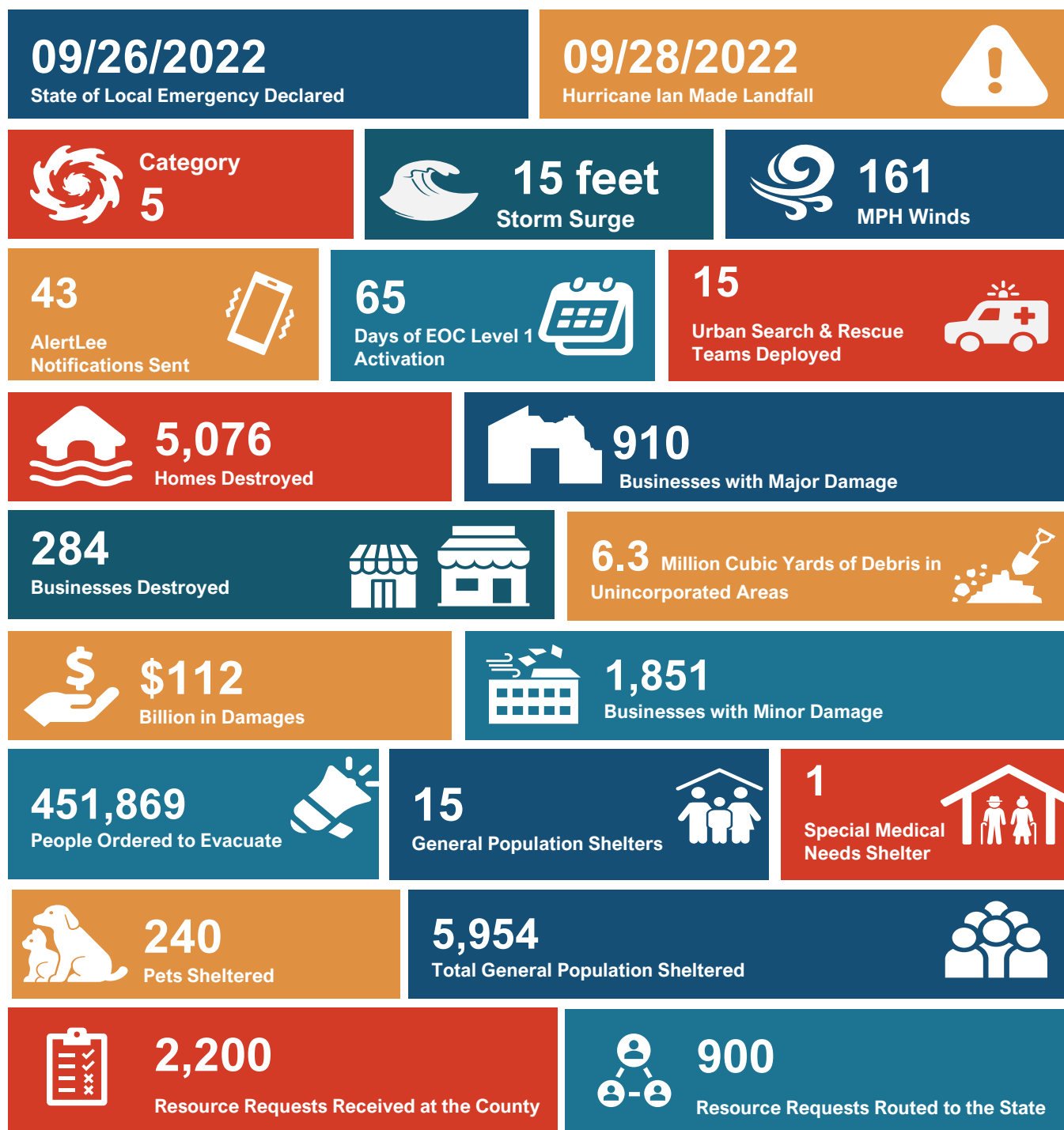
## October 7, 2022

U.S. Coast Guard completes its waterway assessment. Lee County begins the transition from disaster response to recovery.





# Hurricane Ian Response by the Numbers







# Hurricane Ian Response Analysis

The following observations identify and describe strengths and areas of improvement pertaining to Lee County's Hurricane Ian preparedness, response and recovery efforts.

## Observation 1: Interagency coordination and communication resulted in the County's ability to respond to Hurricane Ian and implement innovative solutions.

Stakeholders observed that the level of coordination both in the EOC and the field among County departments and County leadership contributed to the success of response and initial recovery efforts. The County implemented innovative solutions to novel hurricane impacts in the field that were not addressed in prior planning efforts. For example, Hurricane Ian changed the topography of the waterways resulting in limited access to the barrier islands as bridges were either destroyed or impassable. The County, in coordination with State and Federal partners, assembled a task force to address remapping the waterway as well as arrange for the eventual barging operation to transport vehicles and fuel from the mainland to the barrier islands, with the first barge operating on Monday, October 3.

Additionally, following Hurricane Irma, the County memorialized lessons learned in an AAR and identified action items to foster greater resiliency and preparedness in advance of future hurricanes, including Hurricane Ian. Numerous lessons learned from Hurricane Irma led to process improvements, resulting in a faster and more effective response to Hurricane Ian. This included the use of multidisciplinary teams across the County, including Emergency Role Program (E-Role) staffing, to solve new problems that arose after the storm's impact.

## Observation 2: Amid an uncertain forecast leading up to landfall, County leadership leveraged pre-existing plans to guide critical pre-storm decision-making, issue evacuation orders and open shelters.

In advance of Hurricane Ian, County leadership navigated and balanced the uncertainty of Hurricane Ian's track with the critical need for decision-making regarding evacuation orders and opening shelters. The County activated the EOC on Friday, September 23, to monitor the storm and initiate key preparedness activities to stage resources and harden facilities. These preparedness activities were informed by the County's Time Delineated Schedule (TDS) which notes when decisions need to be made and when resources need to be deployed for lines of effort (e.g., sheltering) to operationalize leading up to landfall. Following the Governor's State of Emergency declaration and when Hurricane Ian started to track toward Tampa Bay on Monday, September 26, the County declared a SOLE enabling emergency authorities and procurement policies countywide.

### Time Delineated Schedule

The TDS, updated annually, outlines the timing of countywide decisions and operations before, during, and after a hurricane.

Between the evening of Monday, September 26, and the morning of Tuesday, September 27, Hurricane Ian was tracking more toward the County with an anticipated landfall of Wednesday, September 28, prompting evacuation orders on the morning of Tuesday, September 27. While the short timeframe between the evacuation orders and landfall was scrutinized, the timing of the evacuation orders aligned



with the County's pre-existing plans. The County was able to successfully open shelters on Tuesday, September 27, to accommodate more than 34,000 individuals. On Tuesday, September 27, shelters were at 18.4% capacity with ample availability to support the community. Additionally, there were minimal traffic issues noted and the County maintained capacity among public and private transportation resources to transport people to shelters if necessary.

- **Recommendation:** The County should continue to emphasize preparedness actions, such as sharing talking points in coordination with the local media and actions that the public can take prior to an evacuation order (e.g., boarding up windows, gathering shelter in place supplies, packing a go-bag) that can be shared with the public once a hurricane is forecasted to impact Southwest Florida.
- **Recommendation:** The County should consider providing communication about the timing and thresholds that would result in a potential evacuation order during the runup to a storm to manage the expectations of the public.

**Observation 3: The County, leveraging pre-season preparedness coordination and pre-scripted messaging, had a well-established operational rhythm to manage public information during Hurricane Ian.**

Prior to Hurricane Ian, the County convened public information officers (PIO) and JIC partners to conduct pre-season hurricane preparedness messaging, identify communication platform redundancies in the event of power or telecommunication outages, align department-specific messaging and develop pre-scripted messaging to expedite the external communications approval process. This coordination enabled the County to continue public messaging throughout Hurricane Ian amid the storm's impact on the region's power and telecommunications infrastructure.

During the Hurricane Ian response, the County used a diverse set of communication platforms and provided messaging in English, Spanish and Creole. The County leveraged automated systems including Integrated Public Alert & Warning System (IPAWS), AlertLee and Lee Prepares. While each system delivered pertinent information to the public, there were challenges resulting in alert fatigue. The IPAWS system is used by County, State and Federal partners to push information countywide. Similarly, AlertLee can transmit notifications from the County to all subscribers and can send localized messages from municipalities. As a result, County residents received an increased amount of messaging from Federal, State and local sources and, at times, multiple iterations of the same message.

In addition to the automated systems, the County used social media platforms and the County's website to post statements, press releases and press conferences. The County leveraged Facebook Live from the County EOC to interact directly with the public and provide media an opportunity to access County spokespersons in person and virtually. Additionally, the County pre-scripted and planned billboard messaging along roadways throughout the County to amplify County messaging to the public.

The volume of information produced by the large scale of Hurricane Ian required the County to surge JIC staff. The County was able to meet this demand through establishing a virtual JIC, leveraging pre-established relationships from pre-season coordination, incorporating mutual aid communications staff and utilizing an out-of-state contract. The out-of-state contract proved to be an innovative resource to monitor national media and bi-directional communication occurring on the County's social media platforms. Additionally, the County quelled rumors and managed misinformation. While the JIC had a well-established operational rhythm to manage public information and monitoring, there are opportunities to further strengthen coordination within the EOC and to amplify operational information to the public.



- **Recommendation:** The County should consider convening policy meetings with State and Federal partners to discuss strategies to consolidate messaging cadence and mitigate alert fatigue in both incorporated and unincorporated areas during emergency events.
- **Recommendation:** The County should consider strengthening coordination within the EOC to identify operational developments that can be amplified to the public.
- **Recommendation:** The EOC should consider reevaluating the process of identifying information that needs to be shared with the public, including ensuring complete information is available to the JIC when the request is made.

**Observation 4: The County maintained most interoperable communications with partners in the EOC, Emergency Dispatch Center, EIHL, Government Communications Network and in the field during Hurricane Ian.**

During and post-landfall, the County EOC along with the Emergency Dispatch Center and EIHL maintained interoperable communication capability. The County was able to maintain communications in the EOC providing phone, internet and radio capabilities. However, there were periods when cell-on-wheels (COW) were required to augment cellular vendor outages at the EOC. As a result, the County identified opportunities to upgrade EOC wireless and network hardware capabilities to support the increased volume of devices utilized for a Level I EOC activation.

Similar to the EOC, the Emergency Dispatch Center maintained communications infrastructure. The Emergency Dispatch Center, prior to Hurricane Ian, also conducted a review of activation checklists, surge staffing capabilities and updated scripts for use during hurricanes. As a result, both the Emergency Dispatch Center and EIHL were able to intake the large volume of calls from the public during Hurricane Ian, including requests for welfare checks. At landfall and for the next month, EIHL staff had effectively answered and connected 26,289 calls. Following Hurricane Ian, the County identified a need to further develop a strategy to compile and consolidate inbound welfare check requests made through the Emergency Dispatch Center, EIHL and radios.

To maintain connectivity in the field, the County leveraged the use of radios, mutual aid and donated equipment such as Starlink and COW resources. Prior to Hurricane Ian, in August 2022, the County sustained fire damage to a coastal public safety radio tower site, but was still able to maintain coverage on the islands with the remaining radio towers. While Starlink and COWs did not provide full redundancy, especially on the barrier islands, these resources did provide the County with the capability to communicate with partners outside the EOC.

- **Recommendation:** The County should continue to assess and upgrade wireless and network hardware equipment in the EOC; integrate the use of Starlink and COW resources; and coordinate with cellular vendors to ensure the maintenance of cellular infrastructure in the EOC.
- **Recommendation:** The County should consider exploring methods to compile and consolidate inbound welfare check requests in an automated manner that can be accessed by the County's law enforcement, Emergency Dispatch Center and EIHL, as well as the fire districts.



**Observation 5: The County leveraged and augmented pre-existing plans, relied on built organizational constructs and implemented lessons learned from previous emergency events to meet the scale and severity of Hurricane Ian.**

The County EOC leveraged pre-existing plans and established partnerships as well as incorporated lessons learned from previous emergencies to respond to Hurricane Ian. The County's Comprehensive Emergency Management Plan (CEMP) provided tools for the EOC to establish a consistent battle rhythm of EOC meetings and operational period reporting. Despite the available tools in the CEMP, the magnitude of Hurricane Ian required the EOC to augment the meeting schedule and reporting strategy with a standard operating guide (SOG) and standard operating procedure (SOP) to maintain situational awareness of all response activities.

The TDS was leveraged pre-landfall to ensure that the County EOC had the necessary resources for a Level I activation in which hundreds of personnel including local, State and Federal partners were anticipated to report to the EOC. The County activated existing feeding contracts to ensure the EOC was equipped with enough meals; activated an existing janitorial contract; submitted requests to the State for supplemental bathrooms, showers and laundry equipment; and implemented a new EOC badging system. Additionally, the TDS informed the timeframe needed to prepare County buildings, activate operational contracts, submit resource requests for known needs (e.g., Incident Management Teams [IMT]) and deploy resources to shelter site locations.

The EOC also leveraged staffing plans and protocols to inform pre- and post-landfall activities during Hurricane Ian. Field operations were organized along pre-established geo-districts to both streamline communications and evaluate resource needs at the field level prior to escalating to the EOC. Additionally, lessons learned from previous emergencies, including COVID-19 and Hurricane Irma, informed an increase in supply caches and more effective use of County property for response activities.

The magnitude of Hurricane Ian posed challenges to the County's emergency resource request and procurement process (refer to Figure 8) due to a large volume of inbound resource requests and limited resource availability. For example, the County's WebEOC platform was operating at a slower pace resulting in partners attempting to source resource needs through alternative methods. As a result, the EOC encountered challenges in maintaining full visibility into incoming and deployed mutual aid, commodities and equipment throughout the County. Additionally, Hurricane Ian's degradation of telecommunications and power infrastructure limited non-County partners' access to WebEOC, resulting in the County assuming the interim responsibility of procuring resources. However, as the response shifted to initial recovery efforts, coordination challenges occurred in determining which party was responsible for the ultimate payment of the resource. Despite these challenges, the County received 2,200 resource requests, filled 1,300 and rerouted the remaining 900 to FDEM.

# Lee County Resource Request & Procurement Process

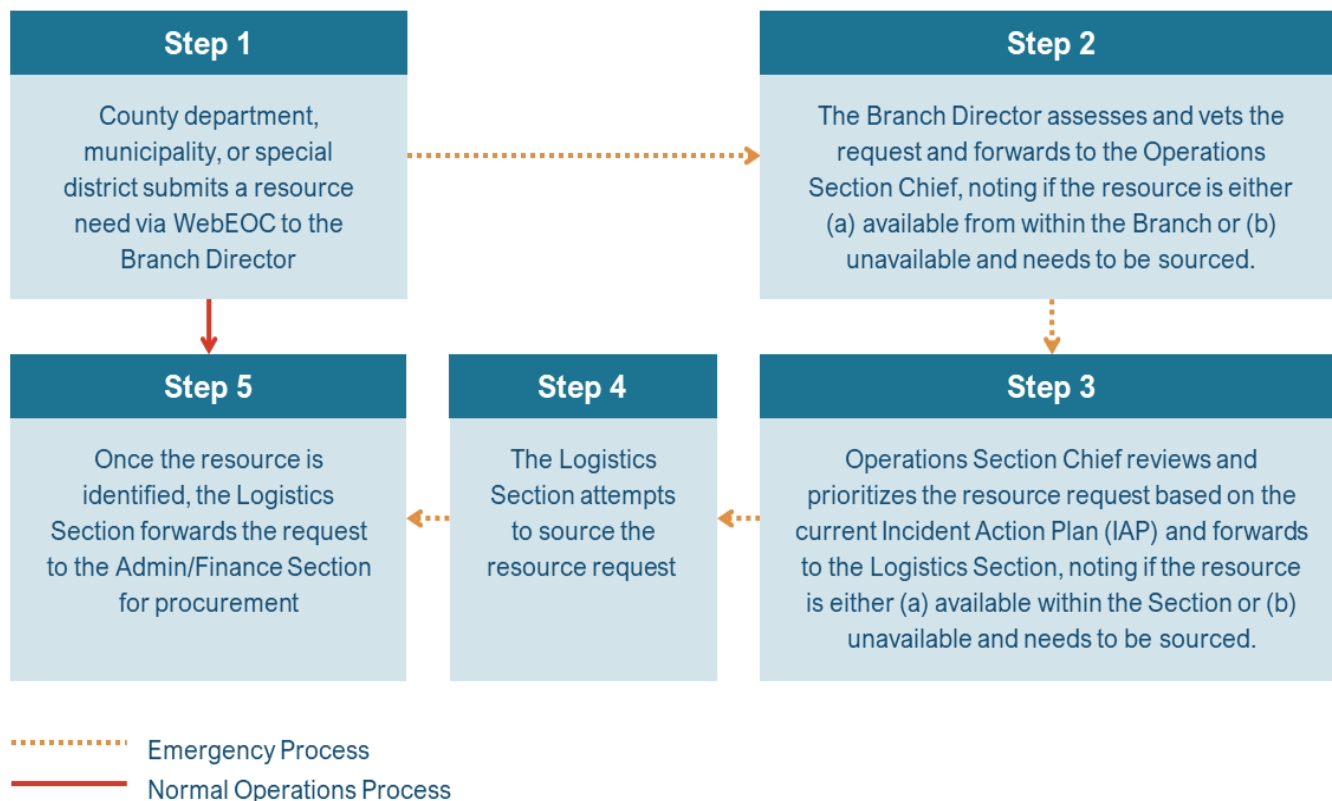


Figure 8: Lee County Resource Request & Procurement Process

- **Recommendation:** The County should consider incorporating lessons learned from Hurricane Ian regarding establishing and maintaining an EOC schedule and reporting structure into future CEMP, SOG and SOP planning.
- **Recommendation:** The County should consider upgrading the badging system capabilities to link to both EOC seats and individuals to track equipment provided as well as manage the overall use of the badges.
- **Recommendation:** The County should consider incorporating lessons learned from Hurricane Ian to strengthen the emergency resource request and procurement process. Additionally, the County should consider establishing a policy on the triggers and circumstances under which normal procurement processes are allowed and when requests should be routed through the EOC.
- **Recommendation:** The County should consider convening a policy meeting with non-County partners to establish a mutual understanding of non-County partner emergency purchasing responsibilities for resources requested through the County’s WebEOC platform.
- **Recommendation:** The County should consider conducting a countywide inventory resource assessment during normal operations to inform current capabilities as well as inform the development



of pre-scripted mission requests. Additionally, the County should consider reevaluating WebEOC and find opportunities to provide increased performance of the system.

**Observation 6: The County identified opportunities to expand and further develop an EOC guide and position-specific checklists for personnel, including multijurisdictional, mutual aid, private sector and non-profit partners, reporting to the EOC.**

Hurricane Ian was a large-scale activation requiring representation from County, State, Federal, municipal, special district, mutual aid, private sector and non-profit stakeholders. As a result, not all individuals reporting to the County EOC were aware of Lee County’s structure, laws and policies. For example, out-of-state mutual aid working in the field and EOC may have not known the difference between incorporated and unincorporated areas. Additionally, while individuals may have known their general roles and responsibilities of where they would be supporting operations, they did not always have full visibility into their specific job duties.

- **Recommendation:** The County should consider coordinating with all EOC sections as well as County leadership to develop checklists or job aids for County personnel, multijurisdictional, private sector and non-profit partners. This would allow individuals who are familiar with the County EOC to have a quick review tool for the upcoming activation and individuals who are unfamiliar with the County EOC to have a manageable checklist to follow for the operational period.
- **Recommendation:** The County should consider further developing an EOC guide that potentially includes elements covering an overview of the County for partners reporting to the EOC; a cross-reference among NIMS, Emergency Support Function (ESF) and Community Lifeline models to facilitate communication in the EOC; and an overview of County government and policies and laws pertaining to incorporated areas, unincorporated areas and special districts.

**Observation 7: The County’s debris management operation was equipped with the necessary resources, common operating picture and contracts to remove 6.3 million cubic yards of debris in unincorporated Lee County.**

The debris accumulation caused by Hurricane Ian required a significant response from the County for both land and waterway debris. The County maintains a comprehensive debris management plan with action items, roles and responsibilities, and third-party vendor information to augment operations. During a six-day period starting on Thursday, September 29, the County completed an initial assessment of debris with the support of 15 teams driving throughout the County and one aerial team conducting a flyover for areas that were inaccessible by vehicle. This initial assessment, on average, normally takes two weeks.

Starting in October 2022, the County initiated a months-long ongoing debris removal operation, leveraging sufficient personnel, resources and equipment. The County also identified the need after Hurricane Irma to increase the number of open debris staging sites to 33, which proved successful in the aftermath of Hurricane Ian. In addition to the 33 sites, the County also made a controversial but necessary decision to augment debris management operations with the reopening of the Gulf Coast Landfill. The County, aware of the environmental and health concerns of reopening the landfill, was proactive and

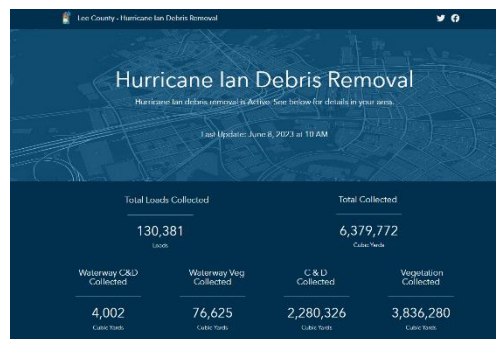


Figure 9: Hurricane Ian Debris Removal Dashboard; Source: Lee County



transparent in conducting stakeholder engagement and communications with nearby communities and the general population. The County also published a public-facing Hurricane Ian Debris Removal dashboard to track progress throughout the County.

In addition to maintaining operational capacity through County resources and contracts, debris management required public engagement to ensure that residents and business owners collected and disposed of debris in a FEMA-compliant manner. To ensure compliance, the County released an engaging and educational campaign providing the community with best practices for debris collection and removal.

**Observation 8: The County coordinated effectively with non-profit, local, State and Federal partners to augment field and EOC activities as well as support POD and DRC efforts.**

The County leveraged partnerships with non-profit, local, State and Federal partners to support response activities and manage POD and DRC sites. The County worked with non-profits to operate and manage the EIHL co-located in the EOC before, during and after landfall. Post-landfall, the County leveraged the capabilities of and partnered with non-profits and faith-based organizations to manage volunteers and donations throughout the County. The County also worked with State and Federal partners to integrate mutual aid, including IMTs from around the country, to support EOC functions and various field operations, including USAR.

The County successfully coordinated the opening of eight official and one unofficial POD sites with the State, with three opening by Saturday, October 1, and the remaining six opening by Tuesday, October 4. The State provided National Guard support to establish and operationalize the POD sites. When the National Guard demobilized, the County transitioned POD site operations to a highly organized volunteer organization. Had the County assessed that additional support was needed for the transition from National Guard to volunteers, there were plans in place to supplement POD sites with County staff. The County also coordinated with faith-based organizations to ensure that houses of worship could function as auxiliary PODs.

Establishing and maintaining the DRCs around the County was a time- and resource-intensive task. The County was able to work with the State and FEMA on setting up DRC locations. The County pre-identified locations by jurisdiction for the placement of the DRCs, while the State and FEMA were on-location and helped integrate with County needs using the Unified Command and Incident Command System.

**Observation 9: While shelters were successfully supplied and operational for County residents on the morning of Tuesday, September 27, the County encountered challenges in managing the expectations of some shelter facilities and mobilizing shelter staff.**

The County successfully leveraged the TDS to supply and open shelters on the morning of Tuesday, September 27, to coincide with the County's evacuation order. However, the County encountered challenges in notifying shelter staff through E-Role of assigned shifts. This included staff supporting multiple school district locations, as well as Florida Gulf Coast University's Alico Arena and at Hertz Arena. E-Role notifications were distributed in a close timeframe to when shelters were opening, resulting in some staff being unable to report to their assigned shelter site in time. The County leveraged backfill staff in this case, but some backfill staff lacked current training on shelter operations. Additionally, E-Role notifications, at times, provided the wrong shift times resulting in secondary staffing gaps. In addition to staffing challenges, County coordination with owners of shelters not operated by the School District of Lee County was, at times, difficult to navigate regarding pre- and post-activation assessments of the shelter facilities. Since Hurricane Ian, the County has explored contracting shelter operations to a third-



party vendor and leveraging a group of County staff to help facilitate shelter coordination between the vendor and the County.

- **Recommendation:** The County should continue to explore and evaluate strategies and methods to staff and coordinate shelter operations.
- **Recommendation:** The County should continue to conduct training and exercises with County staff on shelter operations.

### Observation 10: Staging areas and County property sustained occasional and localized flooding impacts and overcrowding.

The topography of the County is exceptionally flat, which makes it highly susceptible to storm surge and freshwater flooding, which is generally slow to resolve. There are few areas or facilities available outside of the coastal communities or inland floodplain. During landfall, vehicles parked inside and outside of the Lee Civic Center, used as a logistics staging area (LSA), sustained flooding caused by Hurricane Ian. Additionally, some properties, such as airports, were at times crowded with the influx of Federal and State mutual aid resources coming in from around the State and country. Additionally, as a byproduct of the lack of visibility into incoming resources, mutual aid teams established their base camps on County properties intended for debris management use. As a result, there was additional coordination required to relocate resources from debris management sites post-landfall.

- **Recommendation:** The County should consider conducting a land use assessment to both determine the impacts of a Category 5 hurricane on various County properties and increase the number of available LSA locations and debris staging areas.
- **Recommendation:** The County should consider convening with municipalities and private entities to coordinate the establishment of additional base camp locations within incorporated areas of the County.

### Observation 11: The NIMS model resulted in span of control challenges for EOC operations.

The County EOC leverages NIMS branches to organize and coordinate operations. Each branch typically should have a branch director. However, during Hurricane Ian, the Director of the Infrastructure Branch was absorbed into other critical functions, resulting in missed opportunities for lines of efforts, including transportation, power, water/wastewater utilities, maritime and debris management, to coordinate and collaborate on post-landfall efforts. Following Hurricane Ian, the County identified an opportunity to explore a pilot strategy to group like-partners in a separate conference room to facilitate information sharing and span of control.

- **Recommendation:** The County should consider testing and evaluating the pilot strategy to determine whether information sharing, span of control and operational coordination improves. Additionally, the County should consider formalizing a required designated branch director for each branch.

### Observation 12: The County leveraged pre-existing staff support and wellness programs and partnerships to support County personnel throughout the response to Hurricane Ian.

The County's Department of Public Safety had an established staff support and wellness program in place to support first responders during Hurricane Ian. Hurricane Ian impacted first responders through long and taxing shifts and by affecting their homes and families. The Department of Public Safety has a





Licensed Mental Health Counselor on staff, who was instrumental in providing immediate assistance to staff and identifying mental health needs across the County.

Additionally, Hurricane Ian impacted a large number of County employees, many of whom were still carrying on their essential functions. Working through County Human Resources, an Employee Resource Center was established to provide essential items to impacted staff, including food, water and clothing, as well as assistance finding temporary housing. Funding from the Board of County Commissioners Employee Resource Fund, coordinated by United Way, was also made available to staff.

County leadership was instrumental in providing support and information to first responders and other County staff in E-Role. The County also garnered support from non-governmental organizations, such as the University of Central Florida (UCF). UCF was able to set up a hotline for the Emergency Dispatch Center dispatch staff to be able to speak with clinicians while on shift.

While there were multiple support and wellness services and platforms aimed at assisting and supporting first responders, these resources were not always available countywide, especially for nontraditional E-Role staff who were supporting shelter, transportation, debris and other field operations. Magnifying this issue, many individuals supporting the response had personal impacts and losses from Hurricane Ian. Additionally, support and wellness resources were needed beyond the duration of the activation as stressors and trauma last for unspecified amounts of time following the response.

- **Recommendation:** The County should consider increasing the capacity of staff support and wellness programs through hiring trained clinicians and procuring the necessary resources to support all County employees before, during and after disasters.

### Observation 13: Mitigation projects throughout the County increased the resiliency of infrastructure and expedited initial restoration activities following Hurricane Ian's storm surge and hurricane-force winds.

Prior to Hurricane Ian, the County initiated and completed mitigation projects to improve the resiliency of infrastructure throughout the County. The County, in coordination with the Town of Fort Myers Beach, reinforced and fortified portions of Estero Boulevard. During Hurricane Ian, Estero Boulevard remained largely intact resulting in the County only needing to remove debris from the storm surge and wind. Following Hurricane Irma, the County made investments in fortifying traffic signal poles to withstand hurricane-force winds. As a result, following Hurricane Ian which approached the County as a Category 5 and made landfall as a Category 4 hurricane, the County had less significant repairs to hardened transportation infrastructure and only had to restore signal boxes impacted by flooding. These are just two examples of dozens of post-Irma improvements that helped provide resiliency to an otherwise devastated community across the County.

Following Hurricane Ian, the County identified opportunities to further explore mitigation strategies. For example, prior to Hurricane Ian, vehicles and equipment operated by municipalities and special districts were relocated off barrier islands and brought farther inland to safeguard from storm surge and hurricane-force winds. Following landfall, the barrier islands were inaccessible due to bridges being impassable and the waterway topography changing, limiting first push and response activities until vehicles and resources could arrive on the islands. Additionally, there is an opportunity for the County to explore impact modeling to more readily anticipate how a Category 5 hurricane would affect infrastructure countywide and inform a coordinated approach to restore infrastructure.



- **Recommendation:** The County should consider exploring methods to store life-safety equipment and vehicles on barrier islands to withstand storm surge and hurricane-force winds.
- **Recommendation:** The County should consider incorporating impact modeling into hurricane preparedness efforts to anticipate and visualize the potential impacts of a Category 5 hurricane on county infrastructure. Impact modeling may also contribute to informing optimal use of LSA and base camp properties to support teams and crews conducting impact assessment and infrastructure restoration.

**Observation 14: The County identified opportunities to enhance communication and information flow with elected officials visiting the County EOC to strategically leverage intergovernmental support for the response.**

Throughout the Hurricane Ian response, Federal, State and local elected officials arrived at the EOC to gain situational awareness, identify ways in which they could help the response and advocate for their constituents. Following Hurricane Ian, the County identified opportunities to designate a team to liaise with elected officials arriving in the EOC to facilitate greater coordination between the EOC and various levels of government.

- **Recommendation:** The County should consider establishing a team of designated staff as well as a supporting protocol dedicated to liaising with elected officials at the County EOC. The staff should be prepared to escort elected officials through a brief tour of the EOC, provide an overview of the response including the most current Situation Report and IAP and listen to and address their needs and priorities. Additionally, the intergovernmental liaison team should be prepared to have a list of action items for elected officials in the event the elected officials ask how they can help the County's efforts in the response.



## Conclusion

Hurricane Ian was a massive incident on a scale that few communities will encounter. County staff did work during the response well beyond the typical scope of normal duties, yet seamlessly embraced new and emerging roles and responsibilities. This was also true of multi-jurisdictional, private sector and non-profit stakeholders, who were all committed to working together to support the Lee County community.

We are grateful for the support of the Board of County Commissioners, which set the stage for the rapid progress immediately after the storm and still today as we work toward community-wide recovery.

Hurricane Ian presents the County with opportunities to implement, evaluate and update pre-existing hurricane planning, response and initial recovery strategies. Opportunities like those illustrated here, in addition to the upcoming ResilientLee Recovery Task Force report, Hazard Mitigation Grant Fund projects and the County's Community Development Block Grant – Disaster Recovery initiatives, will provide a tangible improvement in the preparedness, response and recovery from future disasters in Lee County.

The size and scope of this disaster does not deter us from rebuilding not just our County infrastructure but the community as a whole, our economy and our sense of place.



# Appendix: Acronyms

Acronym	Definition
AAR	After-Action Report
CEMP	Comprehensive Emergency Management Plan
COW	Cell-on-Wheels
DOT	Department of Transportation
DRC	Disaster Recovery Center
E-Role	Emergency Role Program
EIHL	Emergency Information Hotline
EMS	Emergency Medical Services
EOC	Emergency Operations Center
ESF	Emergency Support Function
FDEM	Florida Department of Emergency Management
FDOT	Florida Department of Transportation
FEMA	Federal Emergency Management Agency
FP&L	Florida Power & Light
HazMat	Hazardous Materials
IAP	Incident Action Plan
IMT	Incident Management Team
IPAWS	Integrated Public Alert & Warning System
JIC	Joint Information Center
LCEC	Lee County Electric Cooperative
LeeTran	Lee County Transit
LSA	Logistics Staging Area
mph	Miles Per Hour
NHC	National Hurricane Center
NIMS	National Incident Management System
NWS	National Weather Service
PIO	Public Information Officer
POD	Point of Distribution
SOG	Standard Operating Guide
SOLE	State of Local Emergency
SOP	Standard Operating Procedure
TDS	Time Delineated Schedule
UCF	University of Central Florida
USAR	Urban Search and Rescue
U.S.	United States
USCG	United States Coast Guard