Virginia Association of Counties

ACHIEVEMENT AWARDS

SUBMISSION FORM

All submission forms must include the following information. Separate submission forms must be turned in for each eligible program. **Deadline: July 1, 2025.** Please include this submission form as the first page of your electronic entry. If you do not receive an email confirming receipt of your entry within 3 days of submission, please contact **Gage Harter**.

PROGRAM INFORMATION

County: Gloucester County

Program Title: GIS to the Rescue: Creating a Crisis Management Solution

Program Category: Technology

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SIGNATURE OF COUNTY ADMINISTRATOR OR DEPUTY/ASSISTANT COUNTY ADMINISTRATOR

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Title: Deputy County Administrator

Signature: G D Bains

“GIS to the Rescue: Creating a Crisis Management Solution”

Gloucester County GIS Department
Virginia Association of Counties 2025 Award Submission

Executive Summary

Over the years, Gloucester County Emergency Management faced repeated challenges with the crisis management software that was used to track activity and document the work done during an Emergency Operations Center (EOC) activation. There was a great need for a solution that paired well with EOC staff experience, was user friendly and intuitive, improved visibility and flow of information throughout the EOC, provided visualization of an incident with the ability to analyze and interact with the data, as well as be scalable, customizable, and cost effective.

Starting in 2020, Gloucester County GIS collaborated with the Emergency Management department to create “GloCo EOC” – an all-in-one, map-based crisis management solution that met all of the identified needs. It was developed entirely in-house by a single GIS staff member and combines a variety of products from ESRI - the recognized industry standard in geospatial technology - all within the scope of the County’s existing software license, resulting in no extra cost to taxpayers and eliminating $25,000 annual contract for the vendor supported product.

With work completing in late 2022, the solution debuted in 2023 and applies GIS technology in a way that had not been seen before in the Gloucester EOC or in Emergency Management as a whole, catching the attention of Emergency Management professionals across Virgina.

The Problem: An EOC Emergency

Over the years, Gloucester County Emergency Management faced repeated challenges with the crisis management software that was used to track activity and document the work done during an Emergency Operations Center (EOC) activation. Activation can occur for a wide range of situations, ranging from small-scale events needing minimal support staff to large-scale responses requiring 50 or more personnel. It may be for a planned event, like a festival or parade, or an unplanned occurrence, such as a natural disaster, mass casualty incident, hazardous materials incident, or a widespread community impact like COVID-19. Because of the wide range and uncertainty, it's crucial to have a system that can be easily used to support and work through the activation. After years of observing training exercises and real-world activations, several primary concerns were identified regarding the system in place:

Staff experience and comfort level: The Gloucester County EOC is compiled of 56 positions that support different sections that focus on a specific area of an incident. These positions are staffed with County employees that work in other departments and are unfamiliar with Emergency Management. While training occurs throughout the year, with staff turnover, and long gaps between training, staff were uncomfortable working in the EOC and especially using the software.

System structure: The system was out-of-the-box with generic configurations. Several features were unused, as they didn't suit the needs or align with the organizational

structure of the EOC. Already anxious about working in the EOC, when staff logged in to the system, there was instant confusion as it offered no direction on where to find the tools and resources they needed.

Flow of Information –The Call Center, Damage Assessment team, and Joint Information Center are located separately from the main Emergency Operations Center (EOC), which posed communication challenges. Due to system limitations, information had to be relayed verbally. The primary concern being the Call Center - while calls were documented in the Call Center's call log, any items requiring escalation to the EOC had to be written on paper, physically delivered to a designated EOC contact, and then re-entered into the main system to ensure visibility for EOC staff.

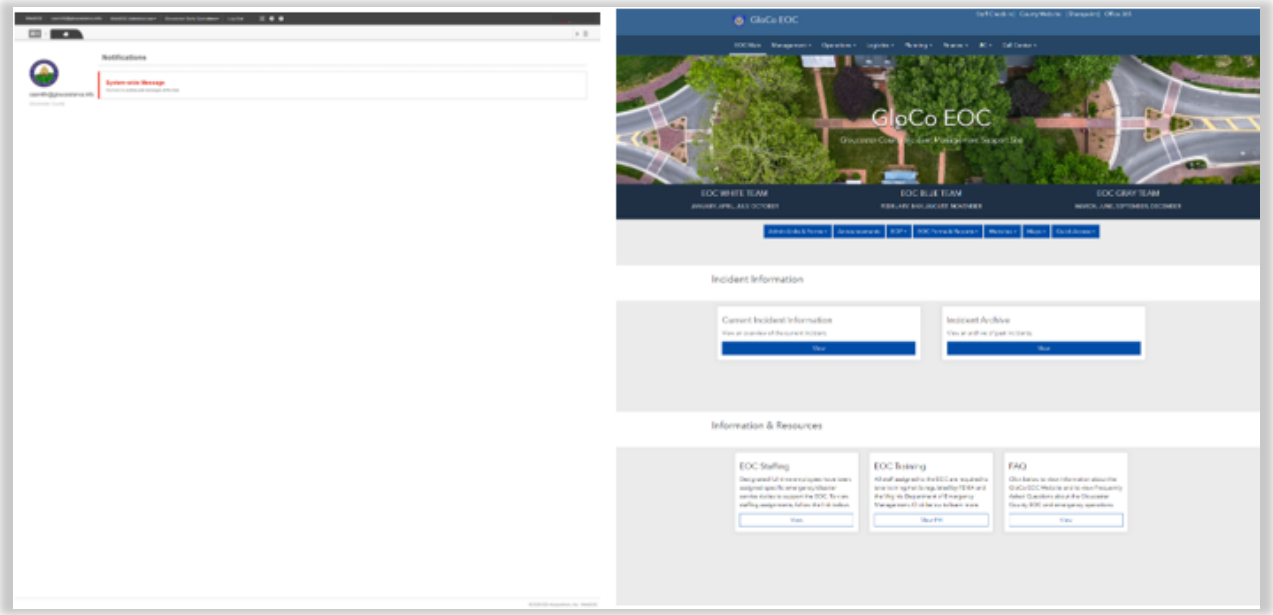
Visualization of an incident – In most cases, incidents or planned events are associated with a specific geographic location. While data related to the incident could be collected, it was not easily visualized without the expertise of a GIS professional. In previous years, designated GIS personnel were solely responsible for mapping affected areas and response actions using specialized software that was not broadly accessible. This process was time consuming and often resulted in outdated information by the time mapping was completed. The absence of real-time mapping hindered effective decision making and situational awareness.

Limited customization and cost– as previously noted, the system was an out-of-the-box solution and had standard configurations. Any modifications required to meet our specific

needs were classified as custom work, which incurred additional costs and extended upgrade timelines. Certain updates could take several months to implement or were not feasible at all.

The Project: GIS to the Rescue

With an awareness of these concerns, in early 2020, GIS approached Emergency Management with the concept to create a replacement solution. Once approved, over the course of two and a half years, GIS worked closely with Emergency Management creating "GloCo EOC" – an innovative, all-in-one, map-based crisis management solution.



Comparison of the homes screens from the previous crisis management system and GloCo EOC.

The system was built from the ground up and developed entirely in-house by a single GIS staff member and combines a variety of products from ESRI - the recognized industry standard in geospatial technology - all within the scope of the County's existing software

license, resulting in no extra cost to taxpayers and eliminating $25,000 annual contract for the vendor supported product.

Creating GloCo EOC was an extensive process that started with identifying scenarios that could impact the local area using data from past impacts and theorizing potential impacts, as well as reviewing the Gloucester Emergency Operations Plan (EOP) and Federal ICS (Incident Command System) guides to ensure the system followed established structures and workflows. From that, it moved into determining what data needed to be collected within these scenarios and the functionality of that data – whether it was static and for informational purposes or interactive and have a life cycle. GIS then created layers to fulfill these determinations. These layers would be the foundation of GloCo EOC and would be used to map and track all EOC activity to include: the incident or event area, animal services requests, business status, operational status of infrastructure (schools, parks, cell and water towers, pump stations, etc.), damage reports, debris reports, field teams, shelters and relocation centers, points of distribution, public information requests, a variety of incident supports sites, road interruptions and detours, vulnerable populations, evacuation zones, etc.

After establishing the layers, the creation of the site took place. GloCo EOC was thoughtfully designed with the intention to provide a visually appealing solution that anyone, with any experience level, can immediately work in. Once the layout was determined, it was applied across all pages to create consistency, so that regardless of the role assignment, staff would be familiar with the page they were looking at. The layout was kept simple, offering intuitive menus that guide staff to the page relative to the position they

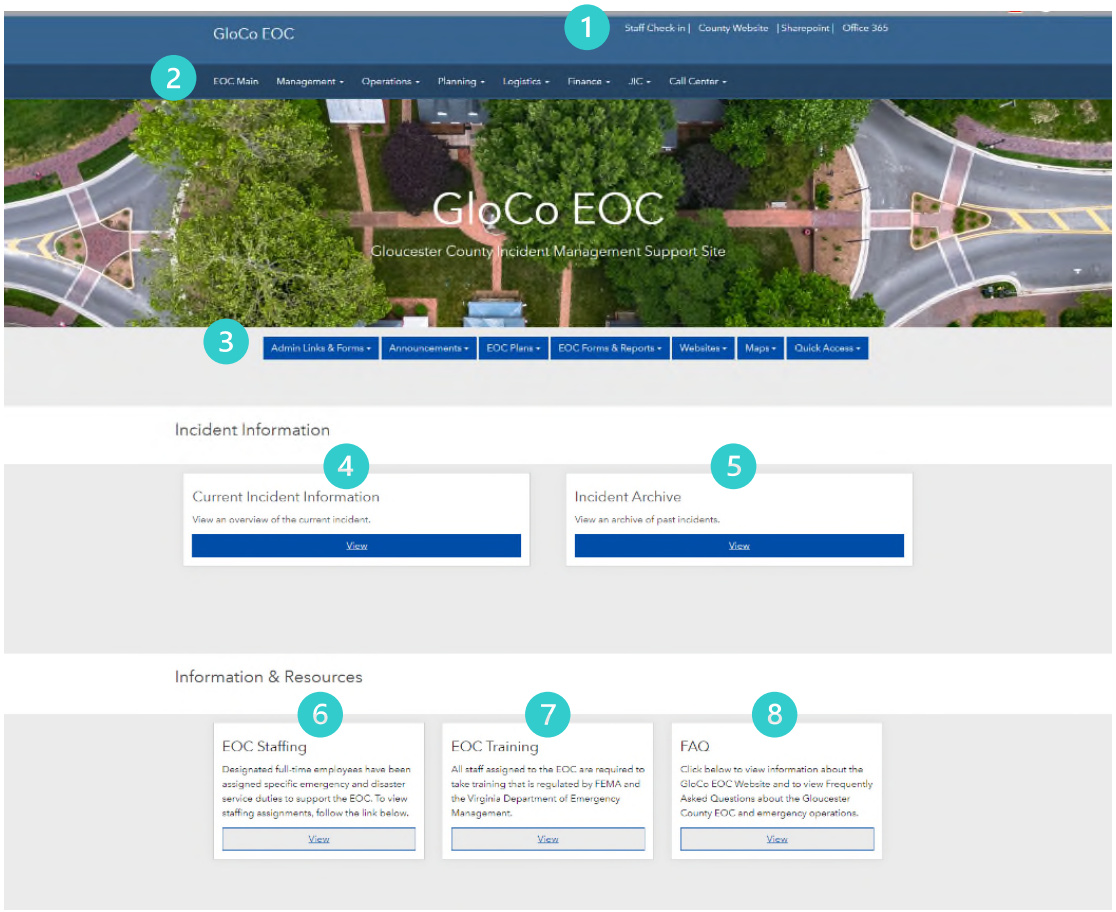
support and to the resources needed to work through the activation – these navigation menus are on every page of the site, allowing full access and visibility to all EOC activity. The primary functions of creating and editing an entry can be completed with minimal steps and clicks, with mapping done automatically upon the creation of the entry. Lastly, the colors, fonts, and other visual elements were kept simple, yet inviting, to create a visually appealing experience.

The site consists of a Home Page, a corresponding Section Main page for each EOC Section (Operations, Planning, Logistics, Finance, Joint Information Center, and Call Center), and a page for each Branch and Unit within a Section.

- *Operations:* Animal Services Branch, Business Recovery Branch, Human Services & Mass Care Branch, Public Safety Branch, Volunteer & Donations Branch.
- *Planning:* Damage Assessment, Documentation Unit, Situation Unit.
- *Logistics:* Debris Management, Infrastructure Branch, Services & Support Unit.
- *Finance:* Time & Cost Unit, Compensation & Claims Unit, Procurement Unit.

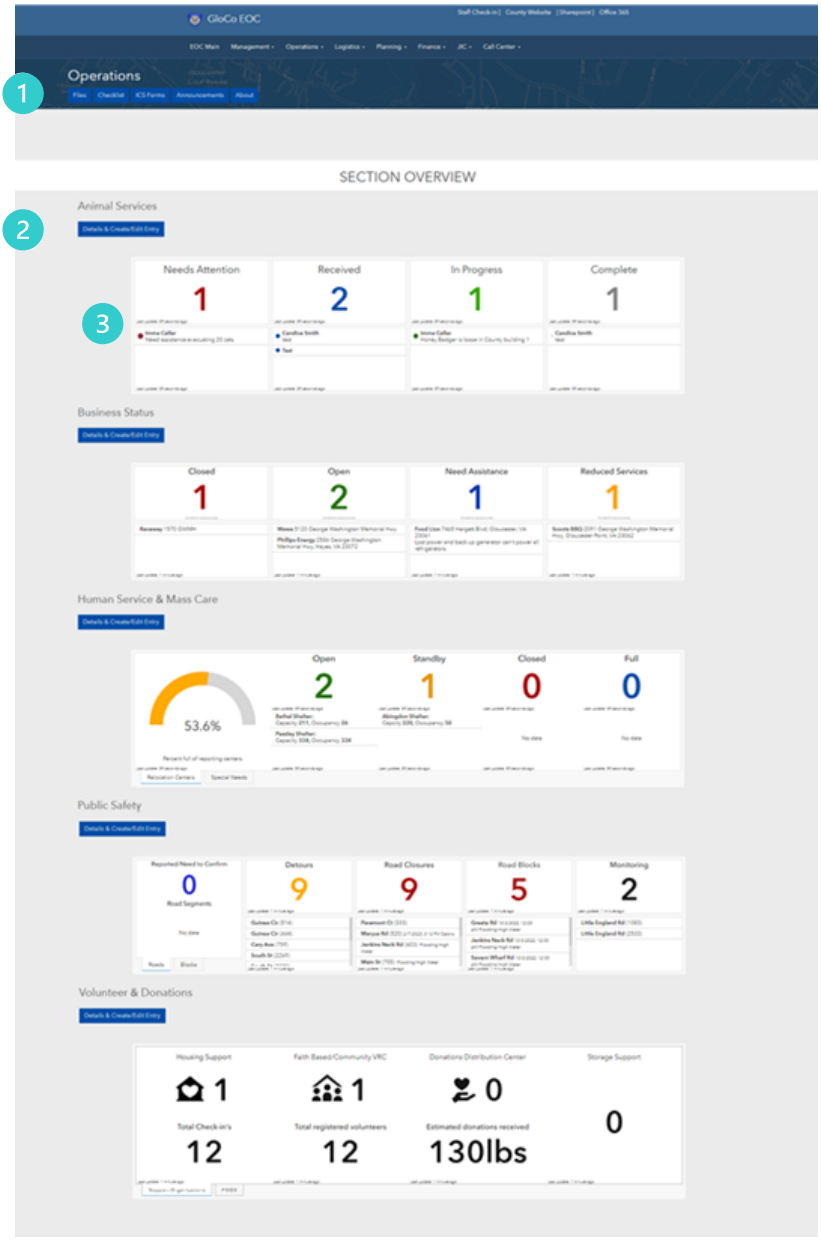
Additionally, it includes a page that provides an overview of the active incident or event and access to an incident archive. Resources that are used to support EOC activities, such as documents, checklists, communication boards, reports, forms and other important information are available in a specially designed SharePoint site that connects seamlessly to GloCo EOC and provides staff complete access and the ability to create, edit, and organize their items.

The Home Page provides the resources and information staff need to work through an activation.



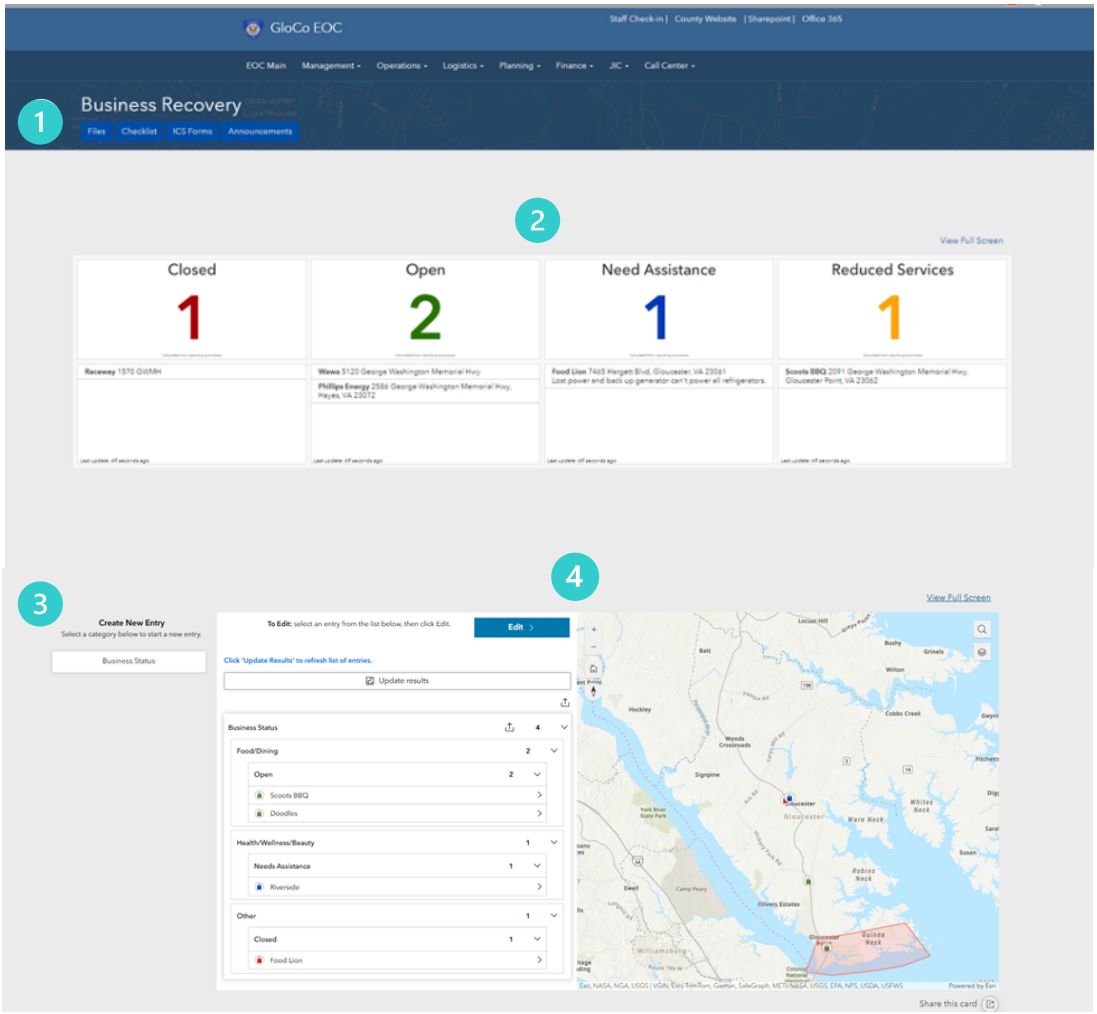
1	**Connection Menu:** access to Staff Check-in, County website, GloCo EOC SharePoint, and Office 365.
2	**Navigation Menu:** access to all EOC Section and Branch pages.
3	**Information Menu:** provides links to general documents and websites.
4	**Current Incident Information:** opens an overview dashboard and a map highlighting important information for the current incident.
5	**Incident Archive:** access to archived incident information.
6	**EOC Staffing:** access to the current EOC staffing list.
7	**EOC Training:** access to the FEMA ICS training website.
8	**FAQ:** Frequently Asked Questions about GloCo EOC and working in the EOC.

The Section Main page provides an overview of the activity for the Branches and Units within the section, providing situational awareness of the entire section in one place rather than having to view each Branch or Unit separately.



1	**Section Sub Menu:** access to the section's files, checklist, ICS forms, EOC announcements, and other relative information and links.
2	Link to Branch/Unit page.
3	Branch/Unit dashboard that shows a summary of their action items.

The Branch and Unit pages are where staff primarily work within the site. These pages include the tools used to log and track the activity for the Branch or Unit. The entries, whether created in the Call Center, an off-site location, or in the main EOC, are automatically assigned to the responsible section and display only in the relative section, providing seamless communication and workflow between staff.



1	**Branch/Unit Sub Menu:** access to the Branch/Unit files, checklist, and other relative information and links
2	**Overview Dashboard:** displays summary of the action items for the Branch/Unit.
3	**Create New Entry:** opens a user-friendly form for the new entry. Once completed, the entry will show on the dashboard, in the entry list, and on the map.
4	**Map, List of Entries, and Edit:** displays the entries, their details and map location, as well as the Edit function.

With support from Gloucester Emergency Management, the solution was debuted and fully implemented in the EOC February of 2023. With the release, staff received in-person training and an instructional guide, "**A Guide to GloCo EOC**", was created and made available for staff to review at any time, fulfilling the need for immediate introductory training as staff rotates. Because staff are now executing their own mapping, the GIS role in the EOC has shifted to a system support role, alleviating the workload that was experienced prior to the implementation of GloCo EOC. It has been successfully utilized to support smaller EOC activity and exercises and will be a priceless asset during a larger scale activation.

Fulfilling Criteria: A Successful Response

GloCo EOC is innovative, using GIS technology in a way that had not been seen before in the Gloucester EOC or in Emergency Management as a whole. The project fostered an ongoing collaboration between Emergency Management and GIS and has offered another option for crisis management, inspiring other localities to break free of the standard and create a solution for their unique needs. Because it leverages ESRI products, it is accessible to most other localities. It has been presented at a variety of conferences, receiving highly positive feedback, with many in GIS and Emergency Management requesting further demonstrations.

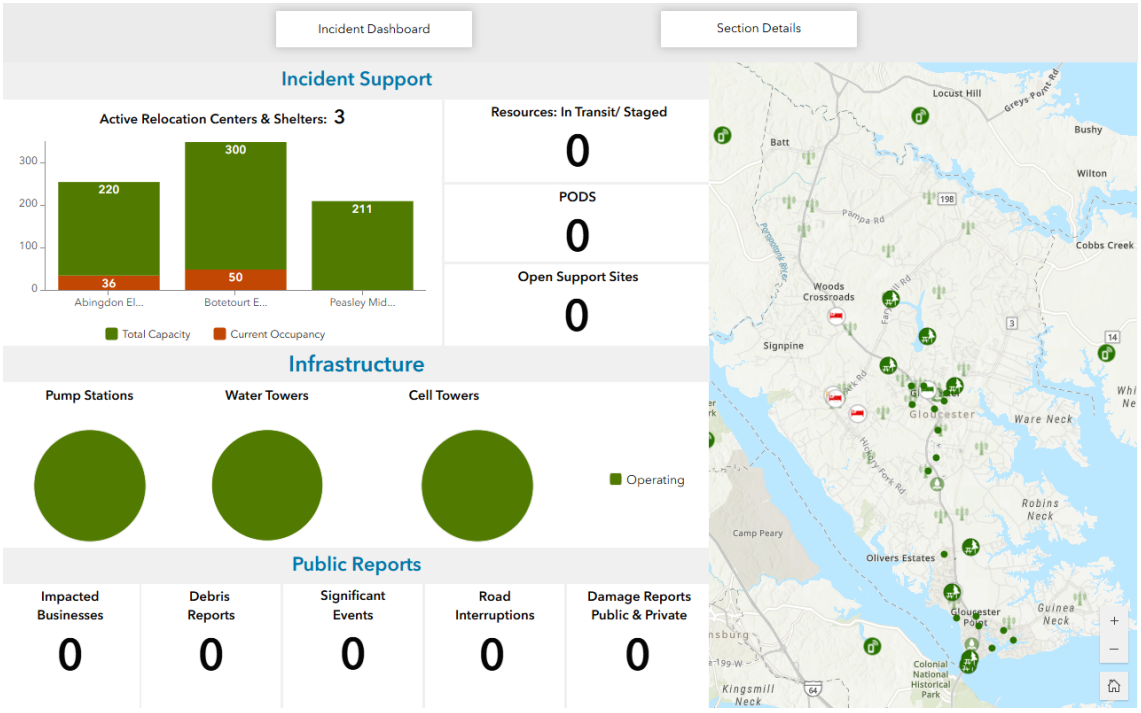


Figure 1

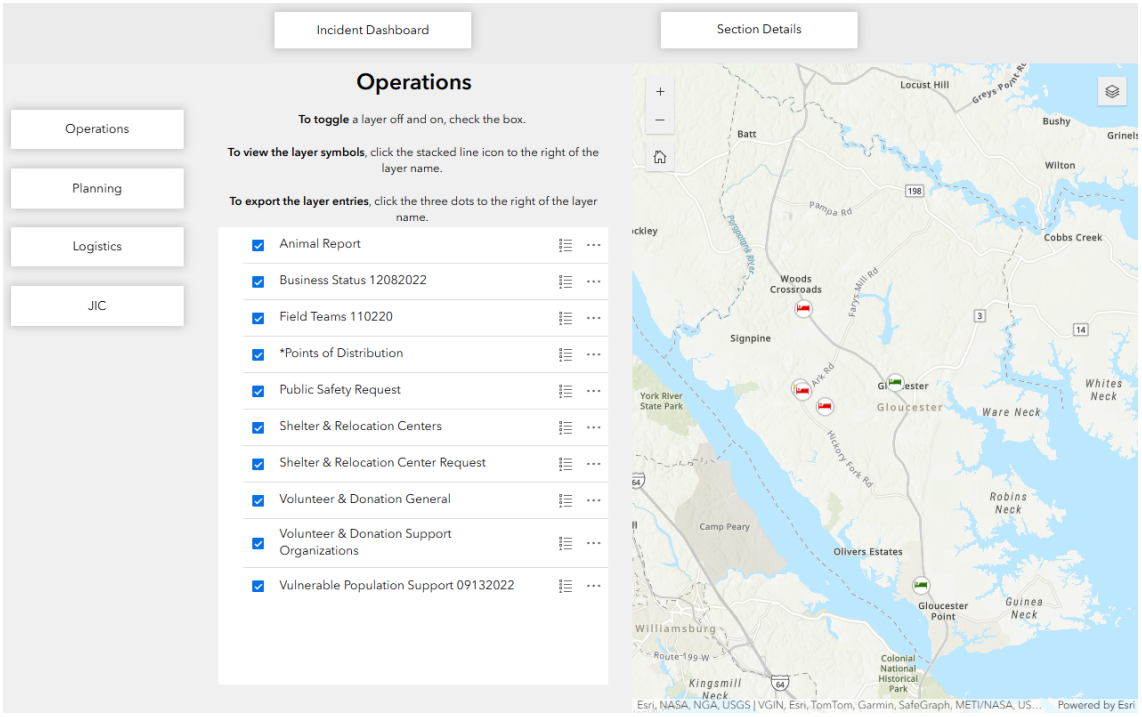
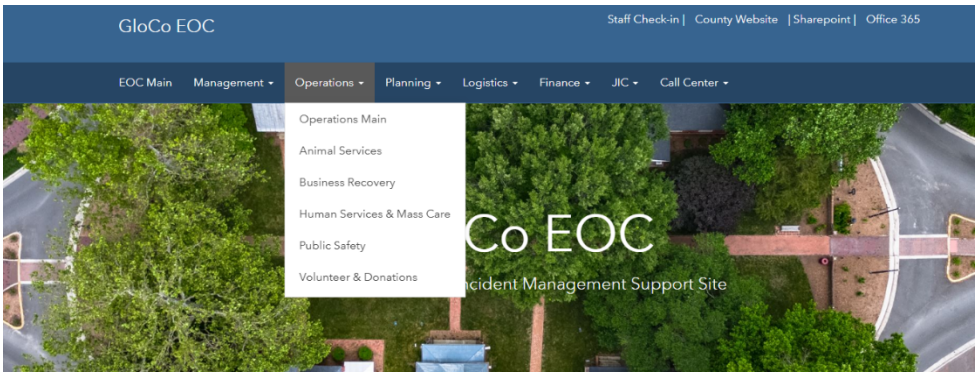
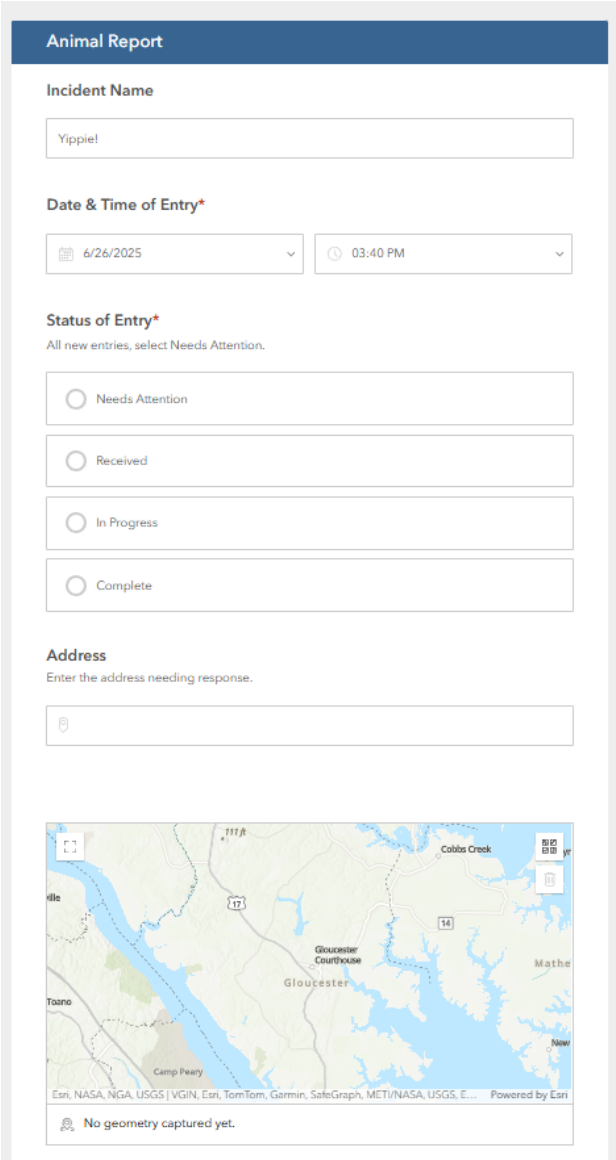


Figure 2

Example of the overview displays for the active incident.
Figure 1: Incident Overview Dashboard. Figure 2: Section Overview



Example of the drop-down menu that staff access to navigate to the Section or Unit they support.



Example of a form used to create an entry.