National States Geographic Information Council

# Pre-Incident Checklist for GIS Professionals in State Emergency Operations Centers: *Setting Yourself Up for Success*

From time-to-time during emergencies, GIS professionals are asked to provide GIS support to state emergency managers and first responders. In some cases, this may be a standard practice within the state. In other cases, this may only happen on an ad hoc basis or as part of a contingent that has been asked to support existing GIS staff in a large or extended emergency. This environment may be somewhat foreign to these professionals and there are times when they have limited guidance as to what they need to do to ensure that GIS information provides maximum value for the emergency management and first responder communities.

**Best Practices:** At its 2016 NSGIC Mid-Year Meeting, National States Geographic Information Council (NSGIC) members gathered for a breakout session on addressing deficiencies that they had encountered in supporting emergency management within their states. Subsequent to that, geospatial professionals with significant experience in emergency management at the state and local levels serving on the NSGIC Geospatial Preparedness Committee developed this document as part of NSGIC efforts to establish best practices for emergency management.

**Purpose:** This document is created to provide GIS professionals who are asked to support the emergency management and first responder communities with a checklist of resources or actions that can assist them.

This is not a checklist for use *during* a State Emergency Operations (EOC) activation. This checklist is intended to be used during preparedness and operational readiness activities such as planning, acquisitions, exercises and the prepositioning of equipment, hardware and software.

**Intended Audience:** While this document was originally intended for GIS professionals unfamiliar with the emergency management world, it may also assist GIS professionals currently working in that environment to assess additional actions to consider for better support of their emergency management community.

**Minimum Requirements**: Suggestions for minimum requirements and qualifications for GIS positions and teams that support incident coordination and management are available through NAPSG Foundation: https://www.napsgfoundation.org/all-resources/qualifications-and-credentialing/

## Integration of GIS into the Organizational Workflow

☐ Determine organization make-up and needs

☐ Obtain a copy of the organizational chart and understand who you report to and who needs to have which GIS products

☐ Meet with the key emergency management leaders

☐ Determine their incident-specific needs (and required timeframes for meeting them)

- What questions do they need to be able to answer at each operating period?
- What decisions do they need to make?
- What information do they need to make those decisions?

☐ If appropriate, provide a "show and tell" of GIS capabilities to meet those needs

☐ Provide them with a realistic idea of what support GIS can provide them on a timely basis

☐ Reach agreement on scheduled deliverables and methodology for requesting/tracking ad hoc deliverables

☐ Publish a schedule of standard GIS deliverables

☐ Publish the methodology for requesting/tracking ad hoc GIS deliverables

☐ Work with the key emergency management leaders to incorporate (or upgrade) the use of GIS products into the standard operating procedures (SOP) of the emergency management staff and first responders

## Hardware

Computers

☐ Desktop – Adequate capacity to process GIS analytics and imagery

☐ Laptop – Adequate capacity to process GIS analytics and imagery

Printers/Plotters

☐ Test printers/plotters to ensure that they work appropriately

☐ Appropriate supplies of ink, paper, etc.

☐ Determine the appropriate method for purchasing additional printer supplies (purchase approval forms, signatures needed, etc.)

GPS Hardware

☐ Adequate supply (and in good working order) for post-event data gathering

Projector(s)

☐ Able to project GIS products on emergency operations center (EOC) projectors

On-Site Storage

☐ Adequate server space for data, etc. and data structure has been documented

Off-Site Storage

- ☐ Adequate cloud storage space for data, etc. and in good working order for recovery after catastrophic failure if needed

Multi-GB Flash Drives

- ☐ Adequate storage space and in good working order

External Hard Drive(s) (1 terabyte or more to hold base data and latest imagery)

- ☐ Adequate storage space and the drives are in good working order

Backup Laptop Batteries

- ☐ Fully charged

## Software

- ☐ GIS software is installed and licensing/maintenance is up-to-date
- ☐ Analytical GIS extensions are installed and licensing/maintenance is up-to-date
- ☐ License keys, dongles and codes are documented
- ☐ Adequate licenses for concurrent users in an emergency
- ☐ GIS software has capability to be used if access to a license manager is poor or not available or there is no access to the internet/intranet
- ☐ Drivers for the plotter and/or printer are up-to-date
- ☐ Operating system software is up-to-date
- ☐ Software for GPS data is up-to-date
- ☐ Hardware and software tests are conducted regularly to ensure operational readiness
- ☐ Application workflows are tested regularly. Staff understand the process. When a problem is identified, they update documentation.
- ☐ Connections between incident management and GIS software have been implemented and tested

## Connectivity

- ☐ Email accounts for the GIS unit (to allow access to GIS unit regardless of staff on a shift) are available and working
- ☐ Access to the internet/intranet is tested regularly
- ☐ Cloud-based system(s) for real time collaboration on documents and/or sharing files (i.e. AGOL, Google Docs or DropBox accounts) have been created for the GIS team
- ☐ Email inbox limits are capable of handling larger attachments and large volumes of emails
- ☐ Access to a FTP server (for data distribution)
- ☐ Cloud server access (for redundancy and data distribution)
- ☐ Homeland Security Information Network (HSIN) accounts acquired for GIS staff (for access to the secure HIFLD data, GII and other DHS web services, secure collaboration, etc.)
- ☐ GIS web services have been tested regularly
- ☐ GIS web applications have been tested regularly
- ☐ Mobile apps have been tested regularly

## Data and Data Services

- ☐ Latest statewide data (or data services)
- ☐ Latest data (or data services) that local governments would use in times of an emergency
- ☐ Latest federal data
- ☐ Homeland Infrastructure Foundation Level Data (HIFLD Open and HIFLD Secure). (Refer to HSIN connectivity above for HIFLD Secure data)
- ☐ Standardized directory for data that is available and distributed
- ☐ GIS team has reviewed information in the NSGIC GIS Inventory to determine what data may be of assistance
- ☐ GIS team has reviewed the International Charter (for potential for imagery)

*Event specific data*

- ☐ Staff are trained (and designated) to work on event templates and data models
- ☐ Staff are trained (and designated) to gather event specific data
- ☐ Forms (electronic or paper) are created for use in gathering (and standardizing) event specific data
- ☐ US National Grid (USNG) is used for data gathering
- ☐ Damage assessment methodology conforms to that used in the FEMA damage assessment forms
- ☐ Methodology exists for obtaining input on events from social media
- ☐ Methodology is in place to QA/QC event specific data
- ☐ Methodology exists for intake and distribution of event specific data to and from field staff
- ☐ Proven methodology is in place for intake and distribution of event specific data to and from local or federal governments
- ☐ State plan or contract is in place to quickly obtain imagery in the event of an emergency and you have tested it
- ☐ Agreed upon metadata for all data provided (including the date/time when it was gathered/created)

*Data storage/backup/resiliency*

- ☐ Copies of local, state and federal data that you can to use in the event that the internet isn't accessible in the EOC during an event
- ☐ Remote cloud storage of current state (and local if appropriate) GIS base data and imagery (in the event of a catastrophic failure or incident)
- ☐ GIS team has tested these capabilities for recovery/resiliency

## GIS Products

- ☐ Common and standardized incident symbology has been integrated and incorporated into standardized products, web maps, and apps (Refer to https://www.napsgfoundation.org/all-resources/symbology-library/)
- ☐ Directory for GIS products
- ☐ All GIS products are archived and have a date/time stamp
- ☐ Screenshots of web services with time and date are taken and saved on a regular basis to assist in documenting conditions during an emergency/incident
- ☐ List of standard GIS products and their delivery schedule has been published
- ☐ Published instructions for requesting and tracking ad hoc GIS products
- ☐ GIS products utilize the US National Grid (Refer to implementation guidance and templates at https://www.napsgfoundation.org/all-resources/us-national-grid-resources-2/)
- ☐ System in place for emergency managers to track product requests
- ☐ GIS team briefed on the products required for the situation reports
- ☐ Methodology for GIS product distribution has been documented and published to the emergency managers within the EOC
- ☐ Where practicable, the GIS workload has been distributed across local, state and federal agencies and sharing mechanisms have been agreed to and tested
- ☐ Mapbooks, web maps and apps created and stored for use in the field
- ☐ Templates created for all standard GIS products and anticipated ad hoc requests
- ☐ Typical loss estimation and other GIS models are available for use
- ☐ Standing orders for GIS activities for common emergencies have been documented and distributed (Refer to https://www.napsgfoundation.org/all-resources/standard-operating-guide-templates/)(NAPSG GIS Incident-Specific SOP Template for Tornadoes, pg. 38)

## Staffing

- ☐ Room provided for GIS team within the EOC
- ☐ If some staffing will be provided from remote location(s), the connectivity and workflow tested
- ☐ Listing of all GIS staff approved for the EOC and their 7x24 contact information
- ☐ Listing of GIS staff available (or are working with the State GIO to get staff) from other agencies as needed (get them access to data/products, etc.)
- ☐ GIS team lead has worked with the state GIO (and other state agencies) to develop call-up procedures for GIS staff in other agencies when required
- ☐ NSGIC Emergency GIS Contacts List (for collaboration with individuals in other states, etc.)
- ☐ GIS staff understands the capabilities of the Emergency Management Assistance Compact (EMAC) to bring in assistance (real and virtual) from other states
- ☐ GIS team shift routines have been documented and staff briefed on them
- ☐ Format for GIS team shift briefings developed and documented

## Training

- ☐ Briefing (or training, if available) on EOC operating procedures has been provided to the GIS team
- ☐ GIS SOP developed and GIS staff has been trained on it and has exercised using it
- ☐ Staff is trained in the current GIS software, templates and data models (consider certifying staff competency in these areas and provide training where necessary)
- ☐ Staff has received basic training in the Incident Command System (ICS 100, 200, 700 and 800 suggested)
- ☐ Staff has obtained training from the FEMA online GIS courses
- ☐ GIS scenario training has been provided for the GIS staff (emphasize the need for timely delivery of GIS products in accordance with the delivery schedule and use of templates/models)
- ☐ Use of GIS deliverables by emergency managers is included in the emergency management scenario training for the EOC
- ☐ Training provided to the emergency management staff on how GIS products can be used by staff to assist them
- ☐ Training provided to the emergency management staff on how to request custom GIS products during an EOC activation
- ☐ Members of the GIS team are trained on how to document their incident-related activities, both on paper and digitally (e.g., WebEOC, E-Team, etc.)

## Communication

- ☐ Relationships have been established (with 7x24 contact information) and documented with appropriate GIS professionals at the local, state and federal levels
- ☐ If possible, have a GIS staff member attend emergency management meetings to understand current and future emergency management needs
- ☐ If possible, have a GIS staff member sit in on emergency management calls w/state, local and/or federal officials
- ☐ Provide regular communication with the GIS team on emergency management and first responder needs, expectations and product delivery timetables
- ☐ Confirm that GIS team members have been briefed on requirements and restrictions for communication with the public
- ☐ Conduct daily GIS calls with other state and local GIS professionals to determine GIS needs and assist in responding to them

## Mobile (in the event of a mobile deployment)

- ☐ Ruggedized laptops (fully charged) with up-to-date versions of Microsoft Office and GIS software installed
- ☐ External hard drive(s) (1 terabyte or more to hold base data and latest imagery)
- ☐ Projector and projection screen
- ☐ Flash drive (multi-GB)
- ☐ Backup laptop batteries
- ☐ Broadband access card activated
- ☐ Cell phone with published number and TXT or SMS activated
- ☐ Hub and CAT wire
- ☐ GPS units

**Living Document:** This document is intended to be a living document. NSGIC appreciates comments, edits or additions that practitioners feel would improve its contents. In addition, please feel free to contact the NSGIC Geospatial Preparedness Committee Co-Chairs to discuss your suggestions. More best practice documents are available on the NSGIC website at www.nsgic.org.


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