

Winter Wrath 2018



Facilitator's Guide

EXERCISE SENSITIVE



December 4, 2018
National Geospatial Preparedness Summit

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Important Note

The audience for this Facilitator's Guide is **facilitators only**. Exercise Players should not read the contents below until after the exercise is complete. This guide includes some of the information included in the Situation Manual plus additional information for the Exercise Facilitators as indicated.

1 Introduction

This National Geospatial Preparedness Summit (NGPS) preparedness exercise is a hybrid, discussion-based and functional exercise designed to advance skills of GIS staff and use of location-enabled decision support capabilities by decision makers and operators. It will promote shared understanding and enhanced operational coordination. Key elements of that coordination involve data, analytics, products, and technology requirements, all of which support decision making.

This scenario-driven exercise is structured to explore four key questions outlined below. Associated objectives are described in the following subsections.

- What are the **core information needs for decision makers** throughout readiness and into response and recovery?
- Based on these core information needs – how should **spatial data be managed, shared, analyzed, and visualized** to support effective decision making? *This includes decision making by the affected public as well.*
- How can **crowdsourced information** be integrated with GIS to improve situational awareness and aid decision making during an event?
- How do the different solutions for **managing and sharing resource information** across jurisdictions improve or hinder operational coordination in a mutual aid event?

1.1 Core Information Needs

When an incident occurs, first responders and decision makers must make life and death decisions under considerable time constraints. The ability of first responders and senior leaders to make informed and efficient decisions relies on access to actionable information across agencies and jurisdictions.

Emergency managers and first responders need to identify some pre-established questions that they will need answers in advance of an actual disaster. These are the questions and answers that provide actionable information through each phase of emergency management. Once these questions have been identified, the iterative process of information collection and solution design can be initiated.

1.2 Geospatial Preparedness

Geospatial information is critical to addressing core information needs because disaster response is an inherently spatial problem across preparedness, readiness, response, and recovery. Once core information needs are identified, geospatial data must be collected, and information products must be designed to efficiently address core information needs.

NAPSG Foundation has worked across a broad group of stakeholders to develop and provide a suite of relevant national guidance:

- [First Responder Core Information Guideline](#)
- [Mutual Aid Information Requirements](#)
- [Guidance on Resource Management Dashboards](#)
- [National Flood Preparedness Guideline](#)

While much of the core information needs identified in this process remain constant over time and disaster type, the geospatial technology used to support core information needs advances very rapidly.

Therefore, the NGPS event and this exercise are designed to provide an opportunity to evaluate existing and emerging geospatial tools and information sharing practices in a collaborative environment.

1.3 Mutual Aid

Disaster response efforts in 2017 and 2018 affirmed just how crucial it is to support local first responder agencies nationwide in the clear skies preparedness phase. Public safety officials and first responders need access to innovative and standardized technology solutions and practices for daily operations involving multi-jurisdictional response that can automatically scale to support large-scale disasters, involving more complex resource management and mutual aid across state and tribal boundaries.

The 2017 and 2018 disasters also affirmed the need for hands-on capacity building forums that increase skills and practical experience in applying innovative technology for resource management and mutual aid in the field. The Winter Wrath Exercise is an opportunity to test approaches for best managing and sharing resource information to maximize operational readiness for events requiring mutual aid.

This Situation Manual below provides objectives and desired outcomes, a high-level scenario overview, and proposed facilitator questions for discussions during the exercise.

2 Exercise Goals

We have four primary goals for the Winter Wrath Exercise:

1. Validate and refine all-hazards core information needs, for consistent use by agencies across the nation.
2. Advance the skills of GIS staff and use of location-enabled decision support capabilities by decision makers and operators – to promote shared understanding and enhanced operational coordination.
3. Identify a replicable method for integrating crowdsourced information into GIS that increases decision maker confidence in the information, while improving situational awareness.
4. Determine the most effective approach for managing and sharing resource information in support of seamless regional mutual aid.

The interpretation of these goals may vary based on the audience (decision-maker, first responder, or GIS specialist) and the organization as described below.

2.1 National Organizations and Agencies

- Verify core information requirements needed for effective decision making across all-hazards and levels of government.
- Identify and validate common features and capabilities of location-enabled decision support capabilities needed to drive action and support decision making.
- Identify and validate emerging smart practices regarding common operational coordination decision points, information requirements, and GIS capabilities that should be incorporated into national guidelines, standards, tools, and templates.

2.2 Local, State, Territorial, and Tribal Agencies

- Validate and strengthen understanding of operational decision points, core information requirements, and GIS capabilities required to support decision making in a winter weather event.
- Understand core information needs for the public and the technology required for public information maps.
- Understand how to incorporate crowdsourced information into GIS applications for improving situational awareness.
- Understand the benefits of (and techniques for) managing and sharing resource information in real-time through live dynamic feeds.
- GIS staff have a better understanding of how to develop and deliver the right information products to decision makers at the right time to inform operational coordination in a winter weather event.
- Operators and decision makers have a better understanding of GIS staff capabilities, products, and analysis that support decision making in a winter weather event.
- Bridge terminology or communication gaps between decision makers, operators, and GIS staff to better anticipate and fulfill information requirements.

3 Exercise Roles/Responsibilities

3.1 Injects

Injects are releases of information from the Exercise Controllers to the Exercise Players. These include simulated statements, documents, layers, and maps. These will be managed via the PrepToolkit platform and received by Players as messages with text, links, and/or attachments.

3.2 Simulation Cell

A Simulation Cell is used to generate injects, receive player responses, and disseminate information in place of an organization that may not participate in the exercise but would be on the scene of the incident if it were real. The Winter Wrath Simulation Cell will be operating PrepToolkit and ArcGIS Online to provide Injects to Players.

3.3 Facilitators

Facilitates discussions and supporting release of injects, ensuring discussions stay on target to achieve workshop objectives. There will be a Lead Facilitator and a GIS Facilitator in each of the Player rooms.

3.4 Players

Participate by engaging in collaborative, forward thinking discussions and hands-on solution development – including examining and where possible validating capability and capacity needed to change outcomes, maintain mission assurance, and identify potential challenges or opportunities for improvement.

Below is a list of simulated agencies that players and exercise control will be assigned to. It is important to recognize we will not be using these agencies existing systems and employees. The simulated agencies merely provide operational and incident context.

Table 1: Simulated Participating Agencies for Players.

Simulated Agency	Simulated Location	NGPS Room Location
Type II Incident Management Team	Incident Command Post (Field Exercise Only)	Glenn Miller Ballroom – East (Day 1 – Dec. 3)
Boulder City and County*	Regional EOC	Glenn Miller Ballroom - West
Douglas County*	Regional EOC	Multipurpose Room 235
Jefferson County*	Regional EOC	Glenn Miller Ballroom - Center
City and County of Denver*	Regional EOC	Glenn Miller Ballroom - East
State of Colorado*	State EOC	Rooms 384 & 386
FEMA Region 8*	FEMA R8 RRCC	Room 247

* See Appendix 1 with the basic organizational charts for the simulated agencies.

Table 2: Simulation Cell for Controllers.

Simulated Agency	Simulated Location	NGPS Room Location
Pueblo County	Regional EOC	SimCell - Room 382
Morgan County	Regional EOC	SimCell - Room 382
Weld County	Regional EOC	SimCell - Room 382
Colorado Department of Transportation	CO-DOT EOC	SimCell - Room 382
GISCorps	Remote Support	SimCell - Room 382

3.5 Pre-Assigned Positions

Boulder City and County EOC	
Position	Person
EOC Manager	Justin Albrecht
Operations Section Chief	Todd Bianchi
Community Services Section Chief	Brandon Barth
Situational Awareness Section Chief	Chris Corwin
Resource Mobilization Section Chief	Charles Laird

Douglas County EOC	
Position	Person
EOC Manager	Stephanie Hackett
Public Information Officer	Brandon Lenderink
Operations Section Chief	Jason Frederickson
Planning Section Chief	Andy Goldblatt
Logistics Section Chief	William Porter

Jefferson County EOC	
Position	Person
EOC Manager/EM Director	Grey LaCerte
Consequence Mgmt Lead	Angelo Marino
Situational Awareness Lead	Luke Finley
Resource Mobilization Lead	Scott Glazer
Support Function Lead	Jennifer Grote

Denver City and County EOC	
Position	Person
Incident Commander	Justin Kates
Public Information Officer	Anna McRay
Operations Chief	Jeff King
Planning Chief	Patrick Moniz
Logistics Chief	Alex Naar

State of Colorado EOC	
Position	Person
EOC Manager	Stephen Lai
Public information Officer	Regina Hagger
Operations Section Chief	Chad Beam
Planning Section Chief	Jason Ray
Logistics Section Chief	Edward Garner

FEMA Region 8 RRCC	
Position	Person
Regional Coordinating Officer	Jason Gamble
Recovery Liaison	Jimmy Rodriguez
Operations Section Chief	Robert Mahoney
Situational Awareness Section Chief	Zach Lamb
Resource Mobilization Section Chief	Peter Rennert

3.6 Discussion Questions

Exercise participants will engage in discussions, functional exercise play (decision making or GIS activities), and out-brief presentations focused around exercise-specific objectives. Facilitated discussions will be centered on discussions regarding desired outcomes, priorities, courses of action to meet the needs of those affected, resources, and potential challenges with employing geospatial capabilities to support operations. In each room there will be three primary groups of stakeholders with specific questions addressed to them: Decision-makers, First Responders, and GIS staff.

4 Facilitator Resources

4.1 Detailed Narrative

The scenario begins on December 4th, 2018 (Phase 0: Forecast) with a snowfall forecast (Inject 0.1) with projections based on the historic 2003 March snowfall event. This includes 24-36" of accumulation within a period of 2-3 days in populated areas like Denver and Boulder. Exercise players will be expected to quickly estimate the potential impact using a [Situational Awareness Viewer Tool](#). Impact to Lifelines (Inject 0.2) is a key concern as well as life-safety in areas where critical infrastructure and residential dwellings themselves are subject to collapse. Players are also expected to design a public information map (Inject 0.3) with layers that address core information needs (Evacuation, Shelter Status, Road Closures, and Hazards).

The scenario then fast-forwards to December 6th (Phase I: Early Impacts) where exercise players will respond to early impacts of the snowfall. Some mountainous areas exceeded the 36" snowfall prediction with much of the Colorado Front Range receiving +20" and this can be seen in the observed snowfall total (Inject 1.1). Photos from social media (Inject 1.2) show widespread damages including roof collapse, traffic accidents, damage to fires stations, downed powerlines, and impacts to agriculture. First responders are out in the field doing rapid damage assessment (Inject 1.3) and we can see early results show we are going to need additional resources.

On December 7th (Phase II: Resource Management) players are expected to solve resource management challenges. They will first be provided with a static export (Inject 2.1) from Incident Resource Inventory System (IRIS) and expected to make some decisions around resource allocation. Shortly after they will be provided with a geo-enabled and dynamic web service (Inject 2.2) from the National Mutual Aid System platform (NMAS) which will provide a more powerful capability to allocate resources appropriately. This will be critical to both life safety and lifeline restoration.

For the final phase (Phase III: Transition to Recovery) we will fast-forward to December 11th, life-saving missions are completed, and players will need to prioritize resources and efforts for Recovery. Players have received a wide variety of information from Phase I and II, but now need to configure geospatial decision support tools to utilize rapid damage assessment results (Inject 3.1) and lifeline impacts (Inject 3.2) with a focus on Transportation, Energy, Food, Water, Sheltering, and Safety & Security.

4.2 Guiding Discussion Questions

Exercise participants will engage in discussions, functional exercise play (decision making or GIS activities), and out-brief presentations focused around exercise-specific objectives. Facilitated discussions will be centered on discussions regarding desired outcomes, priorities, courses of action to meet the needs of those affected, resources, and potential challenges with employing geospatial capabilities to support operations.

4.3 Technology

PrepToolkit

Link: <https://preptoolkit.fema.gov/web/winter-wrath-2018/about>

[PrepToolkit](#) houses the Winter Wrath Master Scenario Event List (MSEL) and will be used to drive exercise conduct. The MSEL is a chronological listing of injects that drive exercise play. At the time of the exercise, the MSEL will be in a state of Conduct, meaning all injects will be in a synchronized state and ready for release to exercise players. Players will act on each inject.

In the MSEL, injects have a Planned Release Time assigned to them. Controllers staffing the control cell/simulation cell will manually release injects and can use this time as a guide to help keep the exercise moving. When an inject is released, its status will change from synchronized to released.

All Winter Wrath injects are email injects. These emails will be sent from a simulated email account (NGPS-SIMCELL@preptoolkit.fema.dhs.gov). Prior to conduct, controllers will need to setup their mailbox within PrepToolkit with the provided credentials.

Controllers should routinely monitor the simulated account email inbox for incoming messages. Note that PrepToolkit will send a courtesy copy email to this simulated email account (the originator of the message) as each email inject is released.

Note: All email injects will be sent with the following format:

Subject: *** EXERCISE EXERCISE EXERCISE *** Event #[Event Number Field]

Email Body: Implementer Message field prefaced and appended with the label "*** EXERCISE EXERCISE EXERCISE ***"

Winter Wrath Story Map

Link: <https://arcg.is/1Xb0Oq>

This Story Map will provide a brief narrative and instructions for each Inject as they are released. The Simulation Cell will be "publishing" a new tab simultaneously with the PrepToolkit E-mails and the Facilitator should refresh the Story Map on the main screen as well.

Winter Wrath Situational Awareness Viewer

Link: <https://bit.ly/2r5z0Dd>

This web mapping application will be provided to all players as a pre-configured geospatial tool that provides common ground and a way to easily add injects to the map where applicable. Each facilitator should be able to demonstrate the basic functionality of this application for their room.

- [Add Data](#) – this will be used to add the latest inject data to the map. By default, it is set to search the Winter Wrath Inject Group.
- [Situational Awareness](#) – this will be used to click on a feature and then analyze the potential impact by revealing layers that intersect with the feature.

Winter Wrath Situational Awareness Web Map

Link: <https://www.arcgis.com/home/item.html?id=044080331cf04cd7b62a90f8908d74a3>

This web map is the foundation of the Winter Wrath Situational Awareness Viewer mentioned above and will be provided to all GIS Staff Players as a starting point for creating their own web maps. They should save one copy of this web map, ideally one per jurisdiction, and clearly label their copy with their jurisdiction name for the exercise. See documentation: [Save maps](#)

Winter Wrath Inject Group

Link: <https://arcg.is/nKTui>

This ArcGIS Online Group will be provided to GIS Staff Players as a place to find all inject related material. Players do not contribute content to this Group. The Simulation Cell will periodically share injects into the group once a new inject is released and a notification email has been sent out via Prep Toolkit.

Winter Wrath Exercise Play Group

Link: <https://arcg.is/0qyvGr>

This ArcGIS Online Group will be provided to GIS Specialists Players as a place to index all general exercise content they would like to share with others. Please encourage GIS Specialist Players to follow the guidelines for sharing and item details outline on the Group home page.

5 Hotwash

The main purpose of a hotwash session is to identify strengths and weaknesses of the response to a given event, which then leads to another governmental phase known as "lessons learned," and is intended to guide future response direction to avoid repeating errors made in the past. A hotwash normally includes all the parties that participated in the exercise or response activities.

Each team will give a **5-minute** briefing based on exercise play and with a focus on improvement in their own organizations versus feedback on the Winter Wrath exercise itself. Here are the key questions we would like you to answer:

- What went well?*
- What went not so well?
- What would you like to have prepared in advance for next time?
- A brief tour of the geospatial tools produced in the exercise.**

*Remember the key themes: Core Information Needs, Geospatial Preparedness, Mutual Aid.

** The GIS Specialist can quickly present (on-screen) any apps that support the points made above. Instructions for sharing these apps in a Player Group will be provided.

Please designate one Decision-Maker to provide the briefing and one GIS Specialist to operate the presentation itself.

Please use the ArcGIS Online Player Group and categorize the apps you would like show with "Hotwash" to facilitate faster presentations.

6 Injects and Timeline

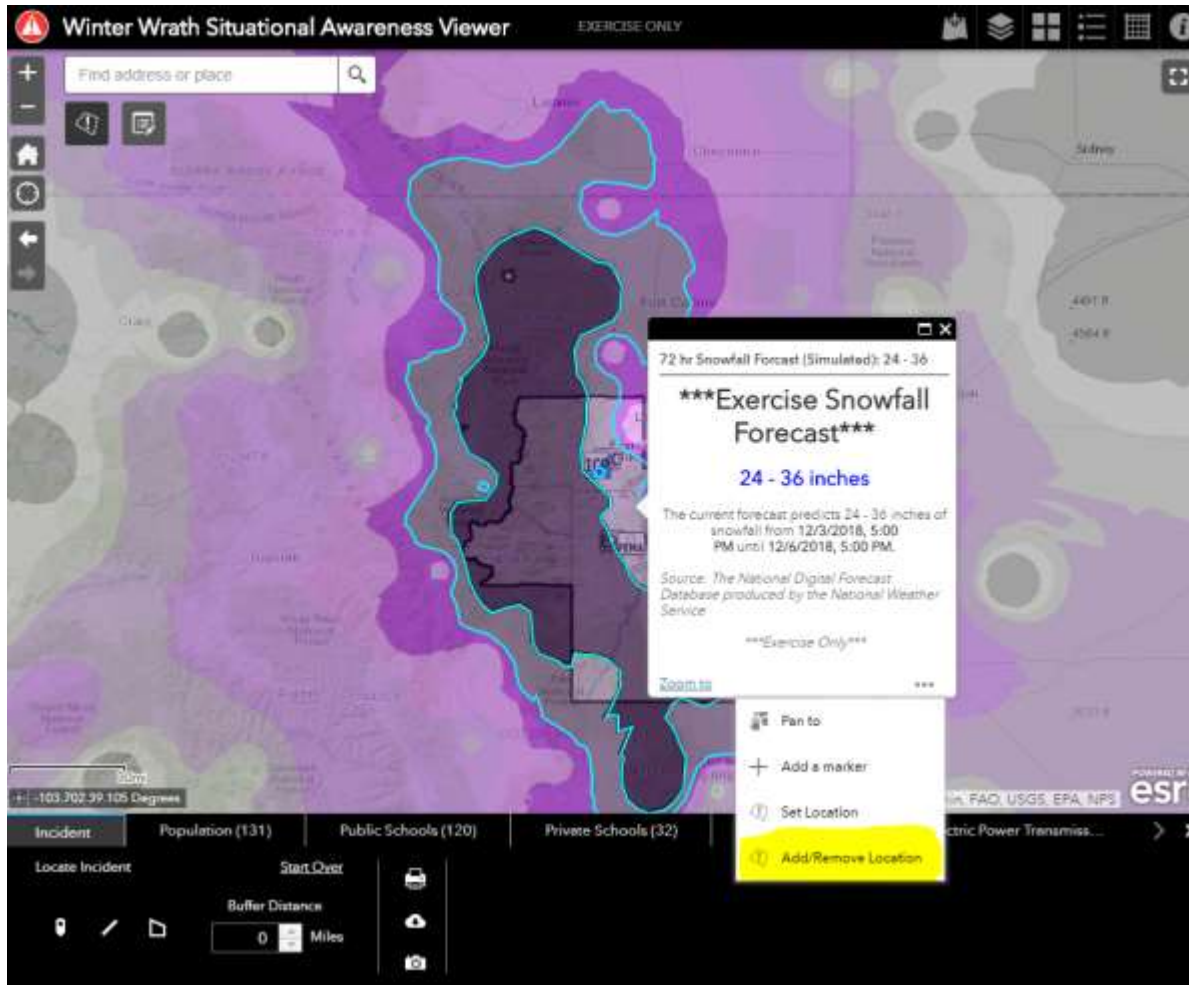
A short player in-brief including exercise logistics and scenario description will be provided as a plenary immediately before the start of the exercise. Players will adjourn to assigned breakout rooms at conclusion of the briefing where facilitators will assist them in organizing consistent with NIMS. A liaison will be identified for each simulated jurisdiction.

6.1 Phase 0 Forecast

The scenario begins on December 4th 2018 ([Phase 0: Forecast](#)) with a snowfall forecast (Inject 0.1) with projections based on the historic 2003 March snowfall event. This includes 24-36" of accumulation within a period of 2-3 days hours in populated areas like Denver and Boulder. Exercise players will be expected to quickly estimate the potential impact using a [Situational Awareness Viewer Tool](#). Impact to Lifelines (Inject 0.2) is a key concern as well as life-safety in areas where critical infrastructure and residential dwellings themselves are subject to collapse. Players are also expected to design a public information map (Inject 0.3) with layers that address core information needs (Evacuation, Shelter Status, Road Closures, and Hazards).

Inject 0.1 72-h Snowfall Forecast	
Time	15 Minutes
Planned Release	01:20 PM
Narrative	EXERCISE ONLY - The National Weather Service has just released a 72-hour snowfall forecast.
General Instructions	To get started, use the Winter Wrath Situational Awareness Viewer (http://bit.ly/2r5QD63) to add the NWS Snowfall Forecast Layer to the map. Follow the instructions on the application. The GIS Staff can find the Forecast Layer item in the Inject Group (https://arcg.is/nKTui) and add to their own web maps and apps. Answer the questions and address tasks as indicated in the Exercise Story Map (https://arcg.is/1Xb0Oq). You may need to refresh the Story Map if it is already open on your screen. Load the Story Map on the big screen so you can view the questions together.
Questions for Decision-Makers and Intended Outcomes	<ol style="list-style-type: none"> 1. How many inches of snow are expected in your area of responsibility? Can you answer that yourselves or do you need support from the GIS Specialists? They should be able to add the forecast layer to the map themselves using the Situational Awareness Viewer, click on the map, and estimate the maximum amount they will receive in their area. 2. Based on this forecast – what decisions can you make about your level of readiness and activation? Are you going to activate your emergency operations center? They should have more questions than answers at this point but certainly be considering standing up their EOCs. Local knowledge may dominate this conversation. 3. What additional information needs do you need to make decisions at this point in preparation for the storm? This should be a cue to discuss core

	<p>information needs and information gathering during the Readiness Phase. Do agencies have set triggers for precipitation / accumulation? Many for rain, but do any organizations in the room have triggers for snowfall?</p>
Tasks for Decision-Makers	<p>A. Assign a Situation Unit Leader (SITL - or equivalent) to liaise with the GIS Unit Lead (GIUL) for your Group. Other staff can interact with the GIS Unit but the SITL is the gatekeeper for their Tasks.</p> <p>B. Ask the GIUL to provide an analysis of the forecasted event and impacts based on the information needs you've identified. At a minimum, ask for an estimate of population and number of schools that will receive 24 or more inches of snow.</p>
Questions for GIS Specialists and Intended Outcomes	<p>1. Based on this forecast – can you begin to assess potential impacts to brief decision makers and first responders? Yes – they should immediately think about using the Situational Awareness Viewer and bonus points if they can show and help the decision-makers use the tool themselves.</p> <p>2. Impact analysis – approximately how many people live an area expected to receive +24" of snow? How many schools? Use your Winter Wrath Situation Awareness Viewer or other GIS tools available. They can use the Situational Awareness Viewer for this step. ~3,260,177 people, 901 Public Schools, 290 Private Schools. If they get lower numbers, it may be that they did not know you can analyze multiple polygons. See screenshot on the following page for guidance. Also, the topic of accuracy may come up. This will overestimate impact by selecting large census units – but what are the alternatives (e.g. finer scale population data)?</p> <p>3. Where can you find the “real-world” 72-hour forecast layer? The Living Atlas, Earth Observations category.</p>
Tasks for GIS Specialists	<p>A. Assign a GIS Unit Lead (GIUL) for your Group to Liaise with the Situation Unit Lead (or equivalent) in your jurisdiction. This might be based on years of experience or simply who is most comfortable presenting and organizing the tasks.</p> <p>B. Provide a briefing or report to the SITL answering their specific questions regarding potential impacts. This can be through verbal communication, using the map, OR bonus points if they use the Report functionality in the Situation Awareness Tool.</p> <p>C. Create a copy of the Winter Wrath Situational Awareness Web Map for your jurisdiction. Add the NWS Snowfall Forecast Layer to your web map. The web map and layer will be in the Inject Group.</p> <p>D. Begin preparing a Situational Awareness Viewer. They can use the ArcGIS Pro Deployment Tools or simply begin building an App from the web map they created above.</p>



This is a reminder that to do an analysis on 24" or more, they will need to run the tool on two polygons. This means, repeating the same step twice, but on the second try using the Add/Remove Location button. Take notes – was this intuitive or difficult? We can provide feedback to the Esri Solutions Team.

Inject 0.2 Forecasted Impact to Lifelines	
Time	15 Minutes
Planned Release	01:35 PM
Narrative	EXERCISE ONLY - The FEMA Region 8 Office has just released a preliminary impact report for Lifelines based on the 72-hour snowfall forecast. Read the document below. If you are in the room with FEMA – just tell them they already performed this task.
General Instructions	To get started, access and read the Lifelines Forecast Report (http://bit.ly/2DZATtG) and then answer the questions and address tasks as indicated in the Exercise Story Map (https://arcg.is/1Xb0Oq). You may need to refresh the Story Map if it is already open. Refresh the Story Map on your

	screen in the room and remind them to refresh the Story Maps on their laptops.
Questions for Decision-Makers and Intended Outcomes	<ol style="list-style-type: none"> 1. What are your biggest concerns and immediate needs for action based on this impact report? There is no correct answer for this, just an opportunity to get familiar with the Community Lifelines the way FEMA Structures them. 2. Based on this impact report – what Lifeline / Emergency Support Function liaisons will you be contacting? This will vary based on experience and organization chart. Prompt them to look at the org chart in the Sit Man if they need help here. Interesting discussions may arise regarding Emergency Support Functions vs Lifelines, please take down notes on any action items that you think should be raised in the hotwash. 3. Can you quickly visualize the Transportation impacts mentioned in the impact report using your Winter Wrath Situation Awareness Viewer? The goal here is to let the decision makers themselves try to find the location mentioned in the document. They can use the Winter Wrath Situational Awareness Viewer, or the Story Map themselves. It may be easier for locals. The goal here is to drive them to a more interactive briefing in the future (for example, Inject 3.2).
Tasks for Decision-Makers	<ol style="list-style-type: none"> A. The Situation Unit Leader (or equivalent) should ask the GIUL to conduct additional analysis on the Lifelines / Emergency Support Functions of greatest concern: Cell Towers, Transmission Lines, Shelters, Major Highways, Hospitals, Fire Stations, and Wastewater Facilities. Alternatively – if the SITL feels comfortable, they can run the tool themselves. Discuss the pros and cons of that approach.
Questions for GIS Specialists and Intended Outcomes	<ol style="list-style-type: none"> 1. Based on the construct of Lifelines / Emergency Support Functions presented in the document, how are you going to organize your GIS-based apps and analysis on potential infrastructure impacts listed above? We are hoping they will discuss the idea of splitting up Apps into themes or using a Story Map to do so. We will present one alternative later in the exercise. They should not actually build this out themselves. 2. Where can you find the “real-world” base data needed for this map? This will be a combination of the HIFLD Data Portal, NAPSG Core Information Needs Group and some localities may already have regional datasets for these. 3. Of the layers listed above, which ones do you think you will need to replace with your own local layers? There is no single correct answer here although cell towers seem to draw suspicion more than any other layer. Discuss the possible advantages and disadvantages of each County having their own silos of data. Local source can be more

	accurate but can be more difficult for regional analysis. Are there benefits to sending feedback to HIFD data providers to fix?
Tasks for GIS Specialists	<p>A. Provide an analysis of potential impacts to the Lifelines / Emergency Support Functions of greatest concern: Cell Towers 93, Transmission Lines 420, Shelters 431, Major Highways 11, Hospitals 58, Fire Stations 376, and Wastewater Facilities 44. You may use the Winter Wrath Situational Awareness Viewer or help the Situation Unit Leader (or equivalent) to do this themselves. Remind them that this is time sensitive and while they can work on building a new app, they should divide and conquer and use the tools available to them.</p> <p>B. Continue working on your own web maps and apps to incorporate the core information you think you will need for the remainder of the exercise. Share your web map and app into the GIS Player Group: https://arcg.is/0qyvGr</p> <p>(Don't forget to check the guidelines for sharing on the Group home page)</p>

Inject 0.3 Request for Public Information Map	
Time	15 Minutes
Planned Release	01:50 PM
Narrative	EXERCISE ONLY - The Colorado North Central All-Hazards Region is in the middle of creating a Regional Public Information map this winter and have not quite finished getting it ready. Work together to get this ready for your jurisdiction prior to the storm making landfall.
General Instructions	To get started, access and review the Public Information Solution (http://bit.ly/2r6gaMs) and then answer the questions and address tasks as indicated in the Exercise Story Map (https://arcg.is/1Xb0Oq). Don't forget to refresh your Story Map.
Questions for Decision-Makers and Intended Outcomes	<ol style="list-style-type: none"> 1. What core information needs does the public have in the readiness and response phases of an event like this? We will have covered this in another session. Expected answers are 1) Evacuation Zones (if applicable) 2) Open Shelters 3) Road Closures. During the Response phase these are critical and a good baseline. Hazard information is also relevant but must be easy to understand and timely. Additional information beyond this often clutters the map and confuses people. 2. What text and media would you put in the "About" section of this application? Please pass this information on to your GIS Staff. No correct answers here, we are interested in diversity of experience and especially guidance from people with public information management experience.

	<p>3. How will you share this web mapping application with the Public? Can you integrate this into your early warning systems / wireless alerts? Discuss the advantages of having a PIM stood up 24/7, even when there is no disaster, to help the public adjust and expect such information. For alerts, links can be shortened and map area extents zoomed into the exact area of interest with live information to enhance alerts.</p> <p>4. What is your multi-jurisdictional and regional approach for providing a Public Information Map? Is it one map per jurisdiction? Or is it a shared map for the region? There is no correct answer here but remember that disasters do not respect agency boundaries nor do many members of the public (especially tourists from out of town).</p>
Tasks for Decision-Makers	<p>A. Based on the layers available in the App table of contents / layer list, the Incident Commander and / or Public Information Officer (or equivalent) should indicate which layers they would like turned on by default. Explain this to the GIUL. Instruct them to look at the layers in the table of contents of the PIM App (some are turned off by default) and write down which layers they would like to see turned on.</p> <p>B. Provide a short text for the About section of the App. This is based on the question above.</p>
Questions for GIS Specialists and Intended Outcomes	<p>1. Is this public information map ready for public demand and usage? While the GIS Team are not the owners of this app – they should be able to answer the questions based on observation. They should be thinking about where the layers, web map, and app is hosted. ArcGIS Online is a scalable platform vs using their own local infrastructure.</p> <p>2. What are the key elements of a public information map that you need to check before sharing with the public? Make sure the layers, maps, and apps are shared publicly. They also should consider the way content is shared and make sure no layers are editable by the public. Feature layer views are ideal for this type of map.</p> <p>3. In the “real-world” where do you get the following incident data / live feeds for your area: Evacuation Zones, Open Shelters, State & Local Road Closures? There are no correct answers for this and there will be a wide variety of perspectives. For evacuation zones this will vary widely, although interesting to mention is Oregon has a statewide feed. Open shelters are accessible via the National Shelter System but this may not be consistently used by all jurisdictions. For road closures many agencies rely on a website from their State DOT but do not have access to layers and may or may not have a local road closure status feed. The Connected Citizens Program from Waze and the Live Traffic Feed in the Living Atlas are other options that may come up.</p>

Tasks for GIS Specialists	<p>A. The GIUL should, at a minimum, develop a plan for producing, releasing, and maintaining a Public Information Map. They should discuss how they maintain the currency of the map – will they have editable layers for evac zones, road closures and shelters? If yes, where will they get those templates from.</p> <p>B. If you are farther ahead, go ahead and start producing a solution for Public Information and share into the GIS Player Group: https://arcg.is/0qyvGr If they choose to deploy a Public Information Map, they can use the Esri Solution that they learned about in their Training. It will look very similar to example shown, but they will need to publish layers for shelters, road closures, and evacuation zones. Either way – we <u>will not</u> be expecting them to maintain the status of these layers during this exercise.</p>
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6.2 Phase 1 Early Impacts

The scenario then fast-forwards to December 6th ([Phase I: Early Impacts](#)) where exercise players will respond to early impacts of the snowfall. Some mountainous areas exceeded the 36" snowfall prediction with much of the Colorado Front Range receiving +20" and this can be seen in the observed snowfall total (Inject 1.1). Photos from social media (Inject 1.2) show widespread damages including roof collapse, traffic accidents, damage to fire stations, downed powerlines, and impacts to agriculture. First responders are out in the field doing rapid damage assessment (Inject 1.3) and we can see early results show we are going to need more additional resources.

Inject 1.1 Snowfall Totals	
Time	15 Minutes
Planned Release	02:05 PM
Narrative	EXERCISE ONLY - The National Weather Service has just released some snowfall observations. Please add the NWS Observed Snowfall Layer to your Winter Wrath Situation Awareness Viewer. Answer the questions and address tasks as indicated in the Exercise Story Map (https://arcg.is/1Xb0Oq).
General Instructions	To get started, use the Winter Wrath Situational Awareness Viewer (http://bit.ly/2r5QD63) to add the NWS Snowfall Forecast Layer to the map. Follow the instructions on the application. The GIS Staff can find the Forecast Layer item in the Inject Group (https://arcg.is/nKTui) and add it to their own web maps and apps. Answer the questions and address tasks as indicated in the Exercise Story Map (https://arcg.is/1Xb0Oq).
Questions for Decision-Makers and Intended Outcomes	<ol style="list-style-type: none"> 1. What is the greatest amount of snowfall observed in your area of responsibility? This is a generic question that will vary by jurisdiction. They will need to click on the points or look at the legend to determine this and it could be tricky.

	<p>2. Based on these observations – what decisions can you make about your level of response and anticipated impacts? This does not reveal too much new information, so they may not have much to discuss. The goal here is to highlight how much more useful the information is in the next two injects.</p> <p>3. What additional information do you need beyond observed snowfall to understand potential impacts? There is no correct answer here. Perhaps photos and observations from the field? Status of Lifelines? We are hoping they will recall the workshops on Core Information Needs and begin thinking about the phases of damage assessment.</p>
Tasks for Decision-Makers	<p>A. Add the NWS Observed Snowfall Layer to your Situational Awareness Viewer to answer some of the questions above.</p> <p>B. The Situation Unit Leader (or equivalent) should ask the GIUL for assistance if needed.</p>
Questions for GIS Specialists and Intended Outcomes	<p>1. In the “real-world” where do you find observed precipitation data? There will be a variety of answers here – there are some nationwide sources in the Living Atlas from NOAA, but also many agencies have local sources such as Urban Drainage networks.</p> <p>2. How do you currently add precipitation data to your maps in the “real-world”? There will be a variety of answers here - we are interested to hear if most agencies use separate maps or bring information together into one view.</p> <p>3. Are you able to provide any additional insight based on the NWS Observed Snowfall Layer? This is a chance for the GISSers to do some problem solving – can they sort / filter the points in their jurisdiction to answer the questions quickly?</p>
Tasks for GIS Specialists	<p>A. Assist the Situation Unit Leader (or equivalent) in answering their questions. Use your Winter Wrath Situational Awareness Viewer or your own tools. This is a chance for the GISSers to do some problem solving – can they sort the points in their jurisdiction to answer the questions quickly?</p> <p>B. Continue working on your own web maps and apps. This might be a Situational Awareness Viewer, Public Information Map etc. Remind them to not get trapped by group-think and allow small teams to work in parallel on a project.</p>

Inject 1.2 Crowdsourced Photos	
Time	30 Minutes
Planned Release	02:20 PM
Narrative	EXERCISE ONLY – A local volunteer group / NGO offered to collate impact photos from social media to assist with your early impact assessment.
General Instructions	To get started, access the NGO Twitter feed: https://twitter.com/NAPSG_Exercise . Answer the questions and address tasks as indicated in the Exercise Story Map (https://arcg.is/1Xb0Oq).
Questions for Decision-Makers and Intended Outcomes	<ol style="list-style-type: none"> 1. Is this Twitter feed of photos helpful on its own? Are you going to use it? We expect a wide variety in answers here, especially around trust and validation. 2. If yes, who in your EOC staff will you assign to review the photos? How will they follow-up on urgent items? Please keep track of any organizations that have a plan for this and potentially raise in the hotwash, but we suspect many will not have a plan.
Tasks for Decision-Makers	A. The Planning Section Chief and/or the Situation Unit Leader should work with the GIUL to develop a plan to better visualize the photos and discuss potential improvements.
Questions for GIS Specialists and Intended Outcomes	<ol style="list-style-type: none"> 1. Do you have sufficient GIS support to address your plan for using the crowdsourced photos? The answer should be “no”. There might be hundreds of photos and this requires manual placement of photos. These photos do not have any geotagged information in the files – just the locality description in the tweets. 2. IF NOT, what groups might you be able to call on for support with a task like this? GISCorps & NAPSG Foundation, local Voluntary Organizations Active in Disaster (VOADs) etc. 3. (After completing task B and C) What are some improvements you can make to the web mapping application and/or workflow based on this discussion? Improvements should include a process for filtering out information that has been rejected and any other creative solutions for more quickly mapping the photos.
Tasks for GIS Specialists	<ol style="list-style-type: none"> A. The Planning Section have asked you to come-up with a plan to better visualize the photos. Assuming you have asked for outside support, the NAPSG Foundation and GISCorps have provided you with a web mapping application and layer in the Inject Group: https://arcg.is/nKTui B. Present the web mapping application to the Decision-Makers and explain how the vetting process could work. App: https://arcg.is/1KOSyS They should be able to figure out that the Crowdsourced Photo Map has a process for rejecting photos. For instance, if they click on the rejected photos in the layer, they will see those photos are not in the Crowdsourced Photo Map.

Inject 1.3 Rapid Damage Assessment (Local)	
Time	15 Minutes
Planned Release	02:50 PM
Narrative	EXERCISE ONLY - The Colorado North Central All-Hazards Region launched a First Responder Field Data Collection App for rapid damage assessment. Early results from a localized area are beginning to show in a Dashboard.
General Instructions	To get started, access the Operations Dashboard: http://bit.ly/2r7Jyln The GIS Specialists will have access to the Survey123 Form and Layer in the Inject Group. Answer the questions and address tasks as indicated in the Exercise Story Map (https://arcg.is/1Xb0Oq).
Questions for Decision-Makers and Intended Outcomes	<ol style="list-style-type: none"> 1. How many Rapid Damage Assessment Surveys have been completed? Read the Dashboard ☺ 2. Are there any immediate issues that need to be resolved that might impact life safety? Yes, there should be many victims, first responders needing assistance, and even livestock issues to consider– these are observations reported by first responders. Many of these would be handled at an incident command level, but this should be provided to the EOC as well. 3. What improvements would you make to the Dashboard to better address your core information needs? We would like to know what they expect to see on a Dashboard. What are the highest priority metrics to track?
Tasks for Decision-Makers	<ol style="list-style-type: none"> A. Identify the locations of the tasks that you think are important for life safety and ask the GIUL for support in tasking these out. There should be at least 90 entries into the system. This might include a variety of answers, including asking them to export a spreadsheet. They should acknowledge the use of USNG and how that provides a common location language for communication, especially for incidents that do not occur an addressed location. B. The Operations Section Chief (or equivalent) should discuss how they would like the Dashboard designed with the GIUL.
Questions for GIS Specialists and Intended Outcomes	<ol style="list-style-type: none"> 1. What are some of the steps required to deploy a system like this? They should now be familiar with the setup from their GIS Training. 2. Would you deploy a new Survey123 and Dashboard for each incident or keep the apps persistent? There are disadvantages to creating new forms for each disaster. They should consider archiving the data and keeping all of the links and apps consistent whenever possible.
Tasks for GIS Specialists	<ol style="list-style-type: none"> A. Discuss and present a plan for how you would help with tasking out assignments and what technology you might use. You can access the Survey123 Layer in the Inject Group: https://arcg.is/nKTui They might simply create assignment maps around areas that require follow up, or

	<p>they might consider using something like Workforce for ArcGIS for more real-time integration.</p> <p>B. Write down some of the Dashboard improvements requested by the Operations Section Chief (or equivalent). Start creating your own dashboard that reflects these improvements and share into the Player Group: https://arcg.is/0qyvGr They may still be working on their Situational Awareness Viewer and Public Information Map. It would be a good idea to have small teams working on each.</p>
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6.3 Phase 2 Resource Management and Mutual Aid

On December 7th ([Phase II: Resource Management](#)) players are expected to solve resource management challenges. They will first be provided with a static export (Inject 2.1) from Incident Resource Inventory System (IRIS) and expected to make some decisions around resource allocation. Shortly after they will be provided with a geo-enabled and dynamic web service (Inject 2.2) from the National Mutual Aid System platform (NMAS) which will provide a more powerful capability to allocate resources appropriately. This will be critical to both life safety and lifeline restoration. Finally, they will watch a short demonstration on how resource adjudication works in the National Mutual Aid System (Inject 2.3).

Inject 2.1 Resource Inventory from IRIS	
Time	15 Minutes
Planned Release	03:05 PM
Narrative	EXERCISE ONLY – All of your agency’s resources are committed to response missions. You have requested all available resources from neighboring jurisdictions, but they too are impacted and facing similar resource constraints. You are beginning to seek resources from jurisdictions outside of the affected area, and outside of your immediate mutual aid region. You have received information about available resources from Pueblo County, Morgan County, and Weld County.
General Instructions	Use the Incident Resource Inventory System (IRIS) export provided from surrounding jurisdictions to answer the questions below. See attachment in the email. Answer the questions and address tasks as indicated in the Exercise Story Map (https://arcg.is/1Xb0Oq).
Questions for Decision-Makers and Intended Outcomes	<ol style="list-style-type: none"> 1. Based on the impacts observed in the last inject (Crowdsourced Photos and Rapid Damage Assessment) – what are your highest priorities for resources? They should be thinking about snow plows, additional fire trucks / EMS, public works, perhaps even feeding and sheltering for livestock. 2. Based on the lists provided to you, where will you consider requesting the resources from? This may be difficult given the fact that they must

	<p>download the items from the email as attachments and make sense of the spreadsheets and KMLs.</p> <p>3. When was this resource information last updated? How reliable is this resource information in making decisions around resource requests? This may be difficult given the fact that they must download the items from the email as attachments and the data is static, it may have changed before they even open the file.</p>
Tasks for Decision-Makers	A. The Logistics Section Chief (or equivalent) should work with the GIUL to begin identifying which resources you will request and where they will come.
Questions for GIS Specialists and Intended Outcomes	1. If a new resource inventory list is going to be sent to you every 2 hours, come-up with a plan of action / workflow to keep this information current for Decision-Makers. Assuming they figure out a way to display the data – how are they going to keep it up to date?
Tasks for GIS Specialists	A. Assist the Logistics Section Chief (or equivalent) with their resource requests. Use your Winter Wrath Situation Awareness Viewer and / or any other GIS tools. The Add Data widget does allow you to add KML and .csv (if they have coordinates), but this is only temporarily in the map. They would have to download and republish the data to keep it up to date.

Inject 2.2 Resource Inventory as a Service	
Time	20 Minutes
Planned Release	03:20 PM
Narrative	EXERCISE ONLY – You have just been informed that outside resources can provide you with a live and dynamic resource inventory list via the National Mutual Aid System (NMAS). Use this new resource information to answer the questions and address tasks as indicated in the Exercise Story Map (https://arcg.is/1Xb0Oq).
General Instructions	Add this layer to your Winter Wrath Situational Awareness Viewer. The GIS Staff can also find the NMAS feature layer in the Inject Group (https://arcg.is/nKTui) and add to their own web maps and apps.
Questions for Decision-Makers and Intended Outcomes	<p>1. Based on this newly provided resource inventory, how might you augment your original resource request? They should be aware of the advantages of having a live feed vs a static inventory.</p> <p>2. Does the geography of the incident and resource availability information help you determine which resources you will request from specific jurisdictions? They should be able to overlay the inventory against hazards / barriers and determine drive times more easily.</p>

	3. When was this resource information last updated? It should be clear from the pop-up when they click on it, it should be time stamped and during an actual incident this might be updated several times daily.
Tasks for Decision-Makers	A. The Logistics Section Chief (or equivalent) should work with the GIUL to revise your resource request and make sure that this layer is added to maps and apps.
Questions for GIS Specialists and Intended Outcomes	<p>1. How would you integrate a service like this into your own web maps and apps? It could be added to the web map viewers so it persists in their applications.</p> <p>2. If this layer were not shared publicly, what steps would you take to collaborate with the service provider? Shared interorganizational groups, see Documentation.</p>
Tasks for GIS Specialists	<p>A. Assist the Logistics Section Chief (or equivalent) with adding this new layer to their Winter Wrath Situational Awareness Viewer (if needed). They should be able to quickly use the Add Data widget to view the data.</p> <p>B. Update your own maps and apps with the updated resource information as a live service, removing the previous data from the excel spreadsheet or KML. This might be important if they have added it to their own internal Situational Awareness Viewer.</p>

Inject 2.3 Resource Adjudication	
Time	20 Minutes
Planned Release	03:40 PM
Narrative	EXERCISE ONLY – Boulder, Douglas, and Jefferson counties have all requested resources from jurisdictions outside of the Colorado North Central Region. Some resources are being deployed, others have changed their status due to cascading events.
General Instructions	Watch the video provided to learn more about how resource adjudication works in the National Mutual Aid System. Answer the questions and address tasks as indicated in the Exercise Story Map (https://arcg.is/1Xb0Oq).
Questions for Decision-Makers and Intended Outcomes	<p>1. How does the availability of this live information impact operational decision-making in a multi-jurisdictional response?</p> <p>2. How would you want to access resource information and manage resources in an event like this? Within your agency's existing situational awareness & decision support tools? WebEOC or equivalent? AND/OR A separate system like the National Mutual Aid System?</p>

	3. What are the advantages and disadvantages of each approach for sharing and using resource information to drive mutual aid decisions in an event?
Tasks for Decision-Makers	<p>A. Check your Situational Awareness app with the live feed of resource information. Observe the change in status and availability of resources following the requests and deployments that have occurred.</p> <p>B. Work with the GIUL (or designee) to begin planning a 5-minute briefing for the hotwash at the end of the exercise. The format for the brief is: What went well? Not so well? What would you want to have prepared in advance for future event?</p>
Questions for GIS Specialists and Intended Outcomes	N/A – focus on your tasks.
Tasks for GIS Specialists	A. Continue working on your maps and apps – you will be expected to assist with the hotwash brief at the end of the exercise. Please add your finished products to the Player Group and categorize as “Hotwash”. Contact the Sim Cell if you need assistance.

6.4 Phase 3 Transition to Recovery

For the final phase (Phase III: Transition to Recovery) we will fast-forward through to December 11th, life-saving missions are completed, and players will need to prioritize resources and efforts for Recovery. Players have received a wide variety of information from Phase I and II, but now need to configure geospatial decision support tools to utilize rapid damage assessment results (Inject 3.1) and lifeline impacts (Inject 3.2) with a focus on Transportation, Energy, Food Watering and Sheltering, and Safety & Security.

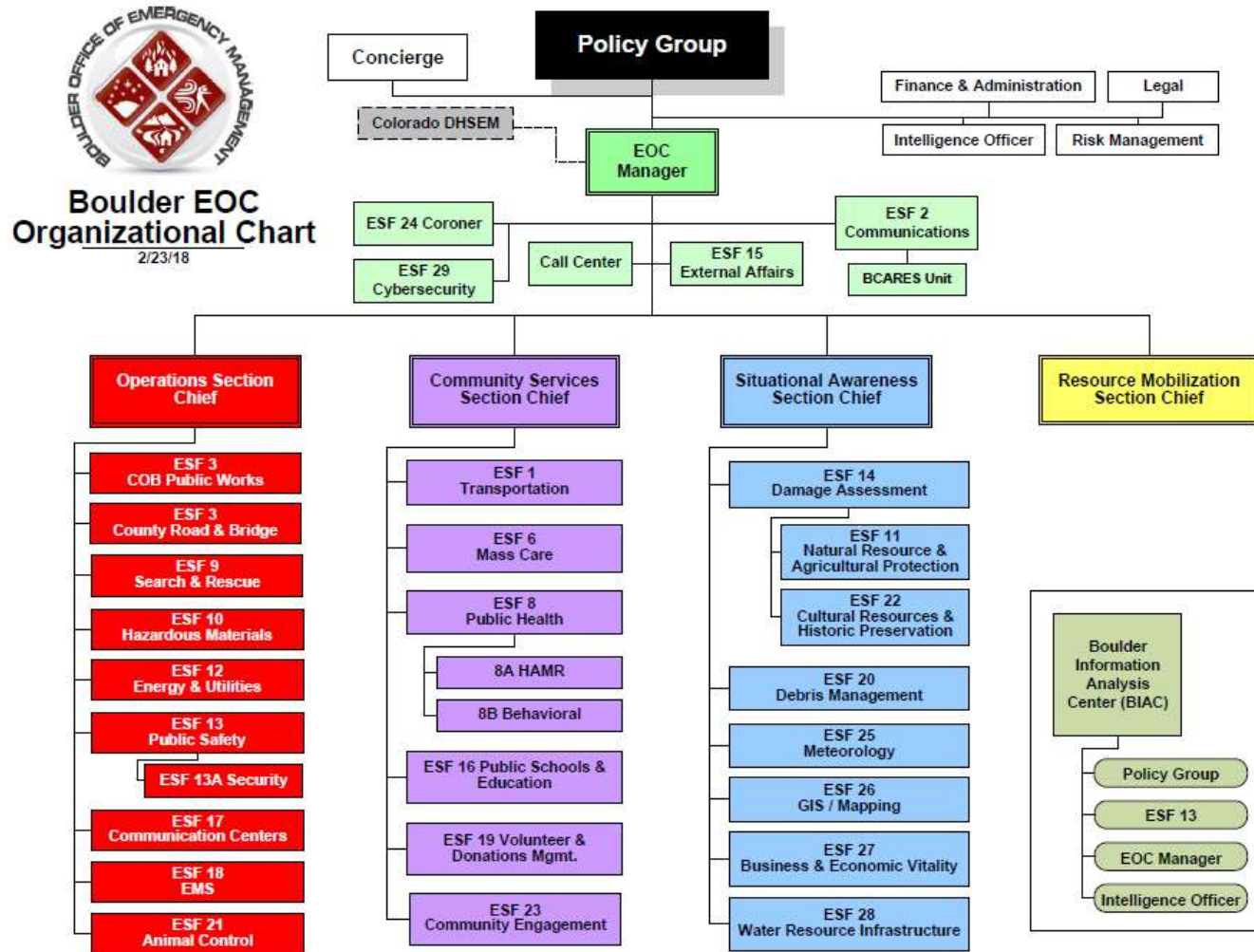
Inject 3.1 Rapid Damage Assessment (Regionwide)	
Time	15 Minutes
Planned Release	04:00 PM
Narrative	EXERCISE ONLY - The Colorado North Central All-Hazards launched a First Responder Field Data Collection App for rapid damage assessment. After three days, we can evaluate and quantify impacts across the region using the same Layer and Dashboard shown earlier. Use this new information to answer the questions and address tasks as indicated in the Exercise Story Map (https://arcg.is/1Xb0Oqg).
General Instructions	To get started, access the Operations Dashboard: http://bit.ly/2r7Jyln The GIS Specialists will have access to the Survey123 Form and Layer in the Inject Group. The SIM CELL should be removing the filter on the layer, so the Dashboard may just need to be refreshed to show additional points.

Questions for Decision-Makers and Intended Outcomes	<ol style="list-style-type: none"> 1. In addition to first responders, who else in your community and outside response partners might need to view this information? Preliminary Damage Assessment Teams, Public Works, Red Cross, Animal Welfare, the Public, etc. 2. How will this information fit into your overall damage assessment and potential disaster declaration? Do the participants use this information or start their damage assessment from scratch?
Tasks for Decision-Makers	<ol style="list-style-type: none"> A. Make a list of key stakeholders and decide what information they will need from the rapid damage assessment field data collection. B. The Operations Section Chief (or equivalent) should work with the GIUL to refine their Dashboard based on this new information and your feedback for improvement.
Questions for GIS Specialists and Intended Outcomes	<ol style="list-style-type: none"> 1. What is your plan for incorporating the impact information from crowdsourced photos and rapid damage assessment into the overall damage assessment process? They should make sure that all information is used in the damage assessment process. For example, they can use impact from earlier sources (Phase I / II) to prioritize resources for the Preliminary Damage Assessment or other more thorough data collection surveys (Phase III). 2. Is there a role for remote sensing in assessing impacts for this disaster (versus a flood, hurricane, tornado, wildfire, etc.)? Consider Satellite imagery, Aerial imagery, Civil Air Patrol, and Drones. This is an open-ended conversation, we expect for this incident Drones may be used locally for tactical observations, but we are not exactly sure how Satellite, Aerial Ortho, CAP, etc. would be used in a winter event. The goal here is to get them thinking that remote sensing should be addressed in all of their pre-plans.
Tasks for GIS Specialists	<ol style="list-style-type: none"> A. Develop a plan to assist Decision-Makers with their requests above. Think about keeping the data focused and up to date (hint: feature layer views). While the GIS Specialists in the room do not own the feature layer, they should be able to think through using feature layer views to share subsets of the data with audiences based on their needs. For instance – damage assessment team may just get access to structure survey points. B. If you began working on a Dashboard earlier, be sure to check that it is updated with new points from across the region and / or create a new dashboard depending on the needs your Operations Section Chief (or equivalent) identified. This layer should just update once the SIM CELL removes the filter.
Inject 3.2 Lifeline Impacts	
Time	15 Minutes

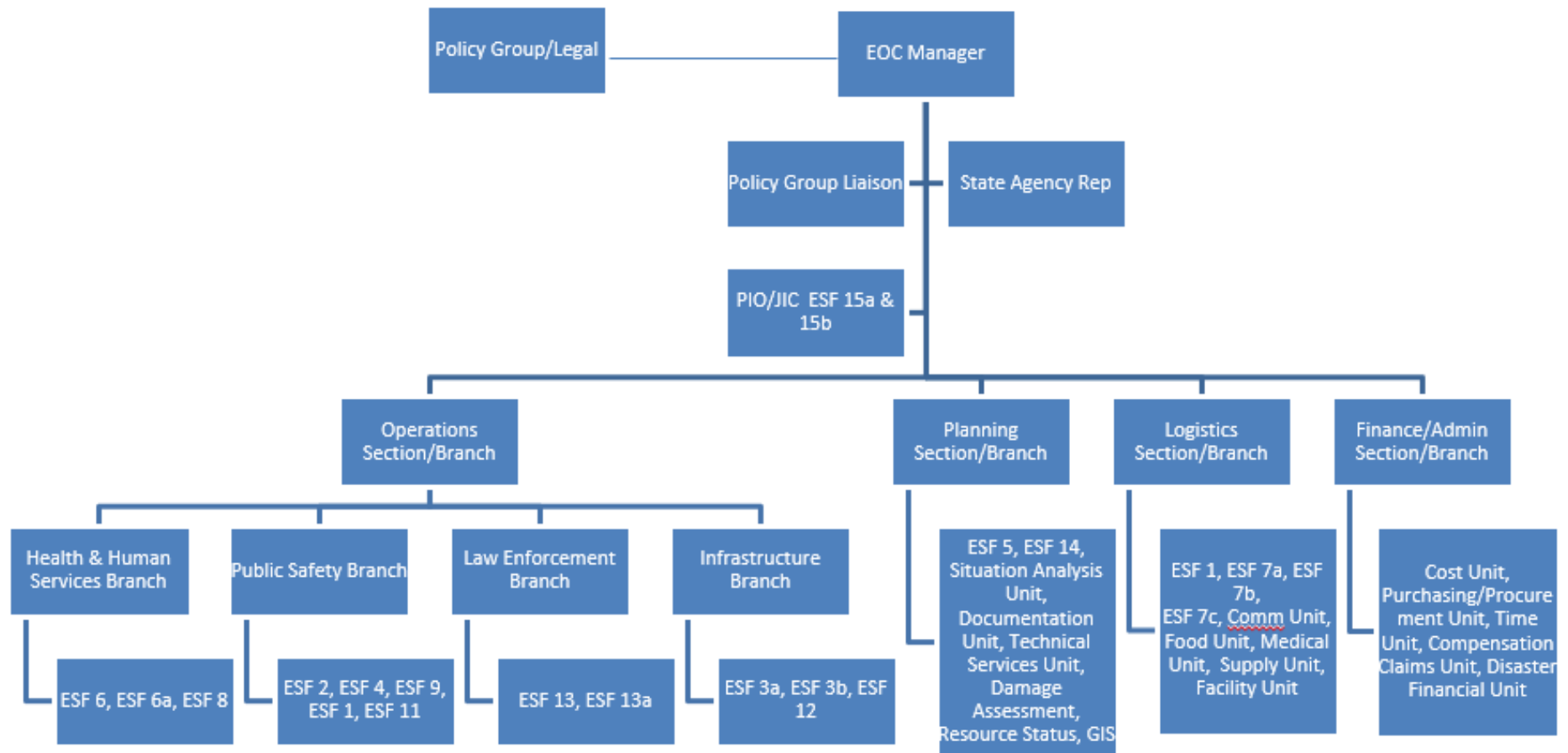
Planned Release	04:15 PM
Narrative	EXERCISE ONLY - The FEMA Region 8 GIS Staff have been working with the State EOC on a way to better visualize the impact to Lifelines with an incident briefing website. Use this website to answer the questions and address tasks as indicated in the Exercise Story Map (https://arcg.is/1Xb0Oq).
General Instructions	To get started, access the Lifelines Impact Story Map: https://arcg.is/1WaOqe
Questions for Decision-Makers and Intended Outcomes	<ol style="list-style-type: none"> 1. What are your core information needs regarding these 3 Lifelines going into Recovery: Energy, Food / Water & Sheltering, Transportation? This is a chance to discuss the information needed by decision-makers regarding community lifelines and follow up on Inject 0.2. 2. Across all 7 Lifelines, discuss where do you currently get status information in the “real-world”? Energy providers, National Shelter System, State Departments of Transportation, etc.
Tasks for Decision-Makers	<ol style="list-style-type: none"> A. Make a list of where you commonly access status information for each of the 7 Lifelines. Discuss with your GIS Specialists. B. The Planning Section Chief (or equivalent) should work with the GIUL to finalize the 5-minute hotwash briefing. Please head down to the Glenn Miller Ballroom – Center at 4:25PM sharp.
Questions for GIS Specialists and Intended Outcomes	<ol style="list-style-type: none"> 1. Across all 7 Lifelines, discuss where you currently get status information in the “real-world”? Compare and contrast your answers with the decision-makers in the room. It will be interesting to see where the gaps are.
Tasks for GIS Specialists	<ol style="list-style-type: none"> A. Work with the decision-makers in your room to make a list of where you commonly access status information for each of the 7 Lifelines. IF time permits, share this list into the Players Group as a Word Document or PDF. This may be tight with the deadline, they can share their list after the exercise is complete. B. Provide support to your Planning Section Chief (or equivalent) in developing the briefing in preparation for the hotwash. Make sure your apps show up in the Player Group Category ‘Hotwash’.

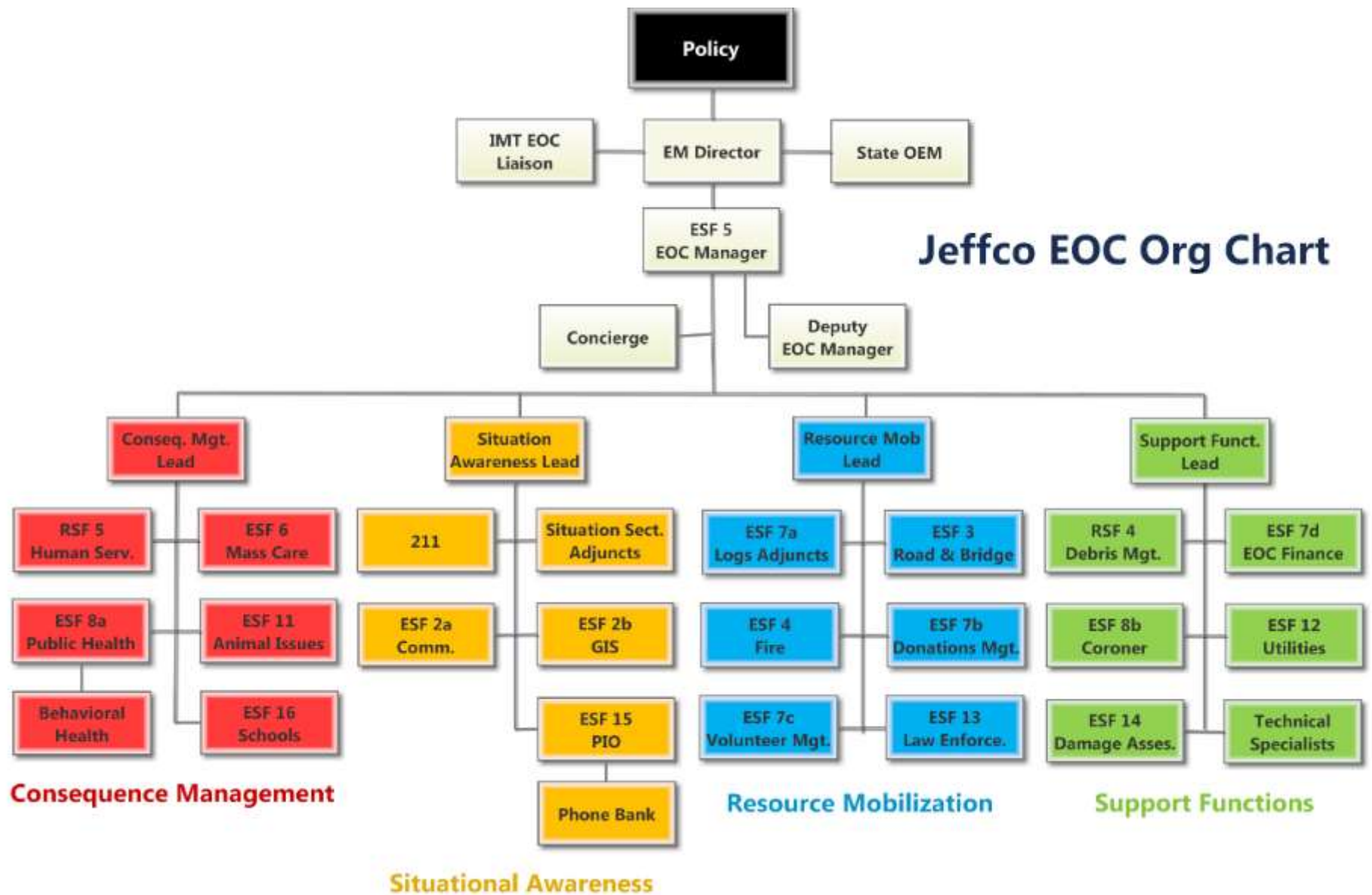
IMPORTANT: Please ask the lead presenter (decision-maker) and GIS Specialist to meet at the Glenn Miller Ballroom – Center at 4:25PM sharp to get setup for the briefing.

7 Appendix 1 - Simulated Agency Organizational Charts

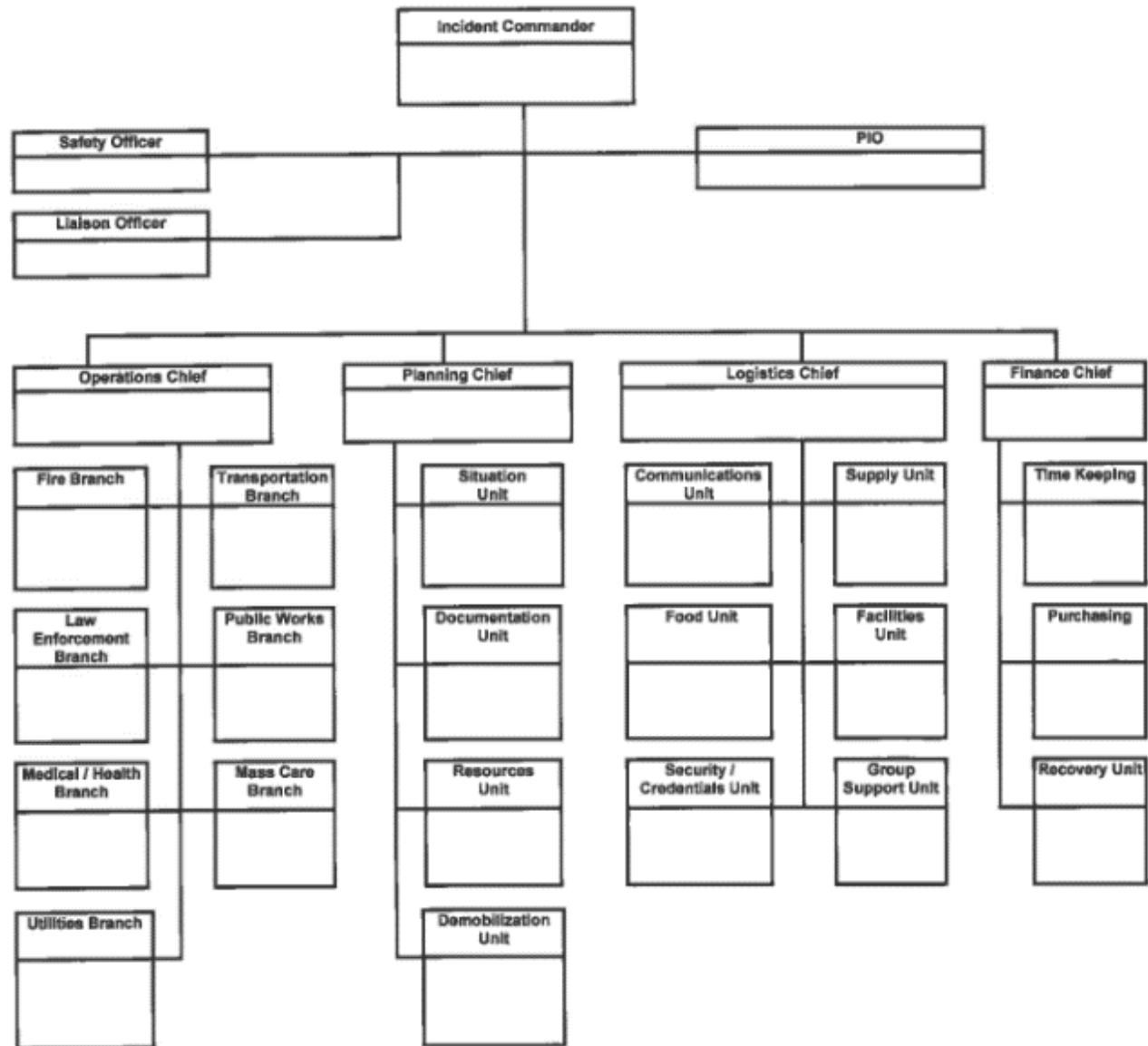


Douglas EOC Management Structure

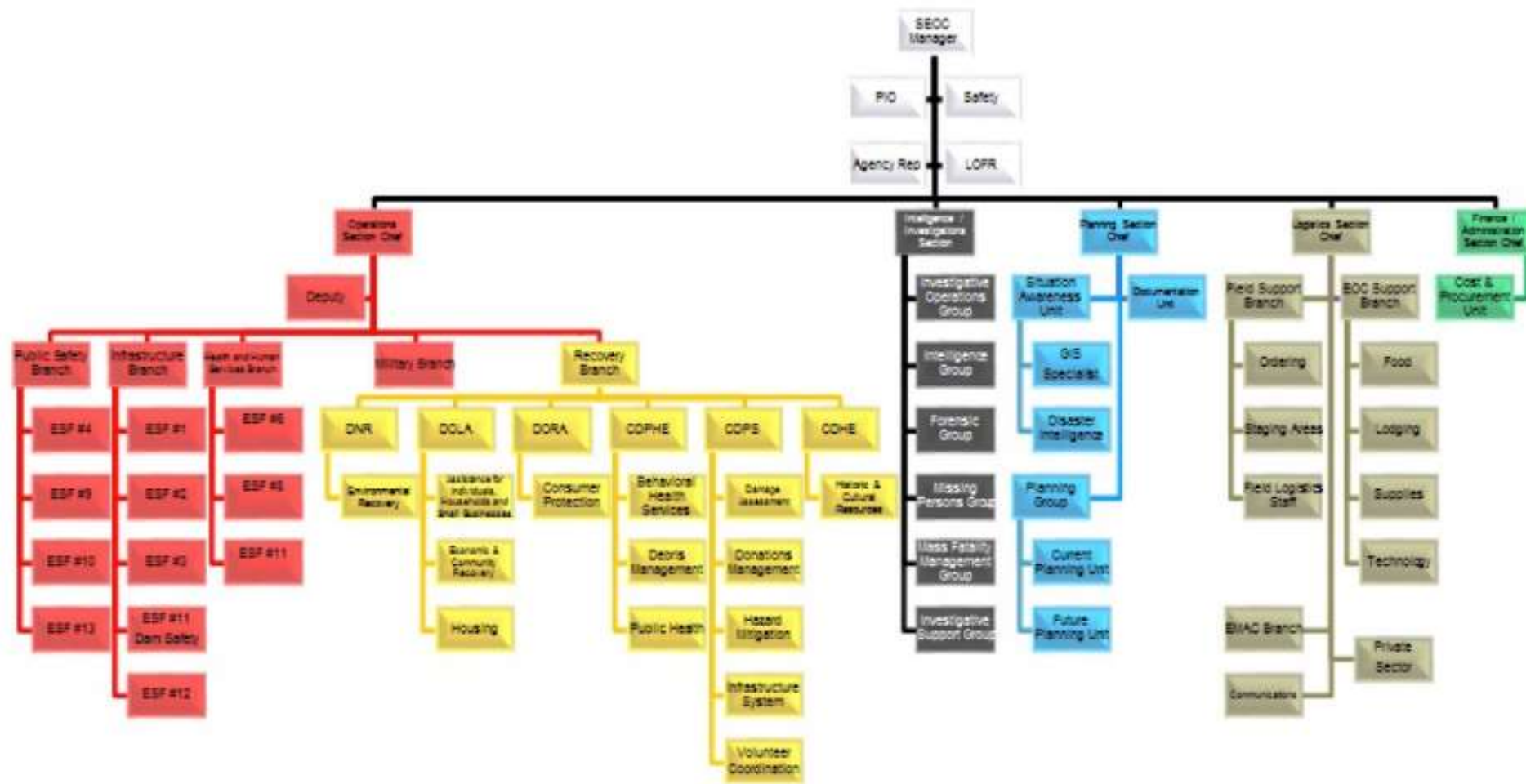




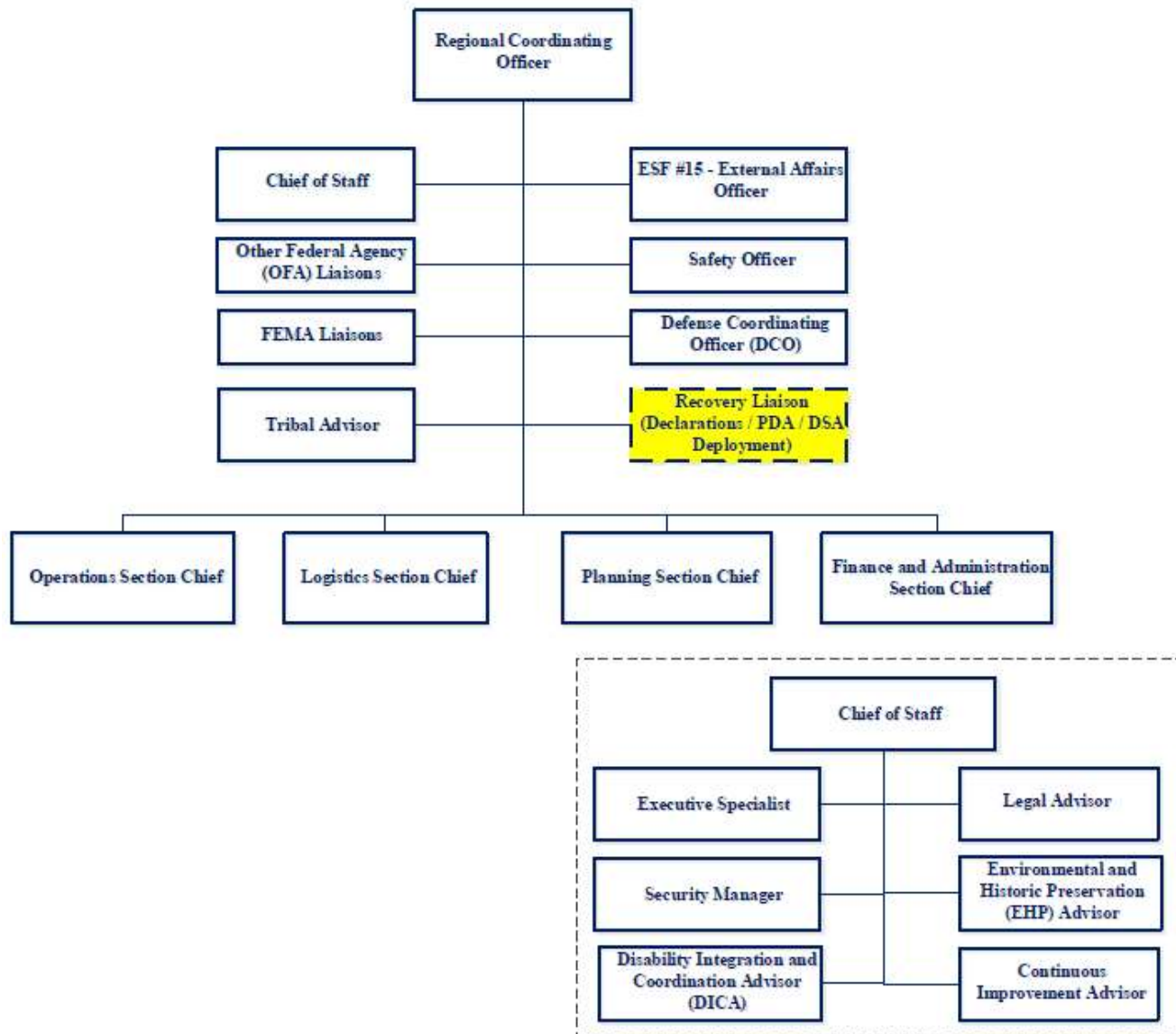
City and County of Denver EOC



State of Colorado EOC



FEMA Region 8 Regional Response Coordination Center



8 Appendix 2 – Exercise Control Team

