



Rev. Final

Date: March 2024

ESF #2 Communications

ESF Coordinating Agency:

Division of Homeland Security and Emergency Services/Office of Interoperable and Emergency Communications (DHSES/OIEC)

DPC Member

Agencies:

Division of Military and Naval Affairs (DMNA)/
National Guard (NG)
Division of State Police (DSP)
Office of Information Technology Services (ITS)
Department of Public Service (DPS)

EXECUTIVE SUMMARY

Emergency Support Functions (ESFs) provide the structure for coordinating response activities for disasters or emergencies that go beyond the capability of the local resources. The ESFs are a mechanism used to group functions most often needed to respond to incidents. At the State level, coordinating the delivery of emergency assistance, agency roles, and planning directives are determined by the Disaster Preparedness Commission (DPC). The objective of the ESF #2 Communications is to coordinate the reestablishment of the critical communications infrastructure, facilitate the stabilization of systems and applications, and coordinate communications support to response efforts.

SECTION I: General Considerations and Planning Guidelines

Introduction

New York State will continue to experience a variety of disasters from a number of causes including human, natural, and technology. This Annex outlines ESF #2's approach to providing a coordinated response effort to the support and reestablishment of emergency communications for responding agencies and local municipalities in New York State during the response and short-term recovery phases of a disaster as outlined in the State Comprehensive Emergency Management Plan (CEMP).

Purpose

The State CEMP has been structured into three distinct, but interconnected volumes. These are:

- Volume 1: All-Hazard Mitigation Plan
- Volume 2: Response and Short-Term Recovery
- Volume 3: Long-Term Recovery Plan

The purpose of the State CEMP is to identify the State's overarching policies, authorities, and response organizational structure that will be implemented in an emergency or disaster situation that warrants a State response. The State CEMP serves as the foundational framework for the State's response levels and serves as the operational basis of which other ESF, functional, and hazard-specific annexes are built upon. These ESFs and annexes address a broad range of capabilities in response to the State's highest rated hazards.

Critical Capability

ESF #2 would support the following Critical Capabilities in New York State: Planning, Interoperable Emergency Communications.

The purpose of ESF #2 is to ensure that the strategic and broad-based nature of the State CEMP is more defined to allow the State to adequately prepare for, respond to, and recover from events impacting communications infrastructure. This ESF will also describe the emergency response organizations/agencies and assign responsibilities for various functions relating to communications infrastructure.

Scope

The ESF #2 Annex is an operational-level management plan that outlines the basic concepts required to manage and coordinate State agencies providing response and short-term recovery assistance to anywhere in New York State. ESF #2 will be used to support the State's response during a disaster when communications infrastructure/equipment is negatively impacted. Response activities may include:

- Provide disaster emergency communications in an incident area.
- Support the temporary reestablishment of the basic public safety communications infrastructure.
- Facilitate the delivery of information to maintain situational awareness.
- Coordinate restoration activities among industry partners.

Linkage to other State Plans

ESF #2 will be used to support the State CEMP, Volume 2, Response and Short-Term Recovery and associated plans.

Disaster response begins and ends at the local level. State agency-level support begins and ends based on statutory requirements and/or the needs of the requesting municipality.

This ESF will be in effect from the time it is activated by the New York State Office of Emergency Management (State OEM) until it is demobilized. The ESF will be activated via direction from the State Emergency Operations Center (State EOC) after a determination that the ESF is required. It should also be noted that ESF #2 could have a direct effect on the ability of other ESFs to function due to the loss of communications infrastructure.

Depending on the nature and impact of the disruption to the communications infrastructure, ESF #2 may be used to support an incident. The ESF construct may be used to enhance and strengthen the response and coordination of the Member Agencies.

Situation

The local government is responsible for carrying out the initial response and short-term recovery activities and services and will use all available local resources in doing so. Local emergency response agencies may be fully involved with operational issues that are critical for responding to incidents. However, the parameters and complexity of the incident may, in many cases, exceed the response capabilities of local government. Therefore, the incident may require an activation that falls under the purview of this ESF.

Most county and local governments have developed CEMPs in accordance with NYS Executive Law Article 2-B. Such plans coordinate the collective response of that local government, within its borders, and provide for a mechanism to use all of the existing resources. Some counties have built robust and redundant emergency communications systems, while others may be limited in their capabilities. Also, across the State there are nine Regional Interoperable Communications Consortiums that allow counties to communicate within a consortium and to other consortiums as well.

Any adverse impact to the communications infrastructure will greatly inhibit the abilities of the State of New York during a response. The consequences of a communications infrastructure failure can prevent a coordinated emergency response among State and local resources. It can also inhibit the ability to access real time information and situational awareness. The need for a coordinated and concise response is vital during an emergency. Without the ability to do so, much time, effort, and resources will be squandered. ESF #2 will provide a coordinated effort to restore and supplement public emergency communications. They may also

work closely with the private sector in their efforts to share information and coordination in the restoration of private networks.

Planning Assumptions

1. An incident requiring the activation of ESF #2 may begin locally and escalate to the State level or may require State involvement from the incipient stage of the incident.
2. Communications incidents may be ordinary, day-to-day type scenarios, while other incidents may evolve into an event of greater scope and magnitude.
3. Communications sector incidents may produce major consequences that will quickly overwhelm the capabilities of local government almost immediately.
4. Some communications incidents may require the activation of ESF #2 solely, while other incidents may require the activation of one or more of the other State ESFs.
5. Communications incidents may occur in one location or may occur coincidentally with other incidents throughout the State.
6. The level of training and response capability to a communications incident of local and county response agencies will vary from jurisdiction to jurisdiction and may impact the subsequent response from State agencies.
7. The OIEC is the Coordinating Agency and will coordinate ESF #2 activities and monitor the Member Agencies' activities within ESF #2 to ensure that established goals and objectives are met, and that necessary intragroup coordination is maintained.
8. Coordination between State agencies and ESF #2 must be managed from both a physical proximity and technology standpoint.
9. The Private sector owns, operates, and maintains much of the commercial communications infrastructure in New York State. However, State and local governments own most parts of the public safety land mobile radio communications infrastructure and maintain it either by government employees or through private contractors.

Concept of Operations

1. An incident occurs in New York State that necessitates a State response.
2. As conditions warrant, State OEM will make a determination as to the level of activation necessary for the State.
3. State OEM may solicit input from the Coordinating Agency to determine which Member Agencies will be activated based upon the needs of the operation.
4. The Coordinating Agency and Member Agencies will follow the established Standard Operating Guidelines (SOGs) while operative in the State EOC.
5. The Coordinating Agency and any necessary Member Agencies will assist in the development of incident priorities, goals, and objectives.
6. In the event of a Full Activation (Level 1), ESF #2 will coordinate and integrate with any necessary Federal ESFs, primarily Federal ESF #2.

7. At the end of the State EOC activation, ESF #2 will begin demobilization and transition to a necessary Recovery Support Function (RSF), if needed.

Policies or Authorities

- State Authorities/Policies
 - NYS Executive Law Article 2-B
 - National Incident Management System Executive Order 26.1 of 2006
 - NYS Executive Law 717
 - New York State Radio Amateur Civil Emergency Service (RACES) S.O.P.
- Federal Authorities
 - Department of Homeland Security/Federal Emergency Management Agency (DHS/FEMA) National Response Framework, ESF #2

Annex Maintenance, Distribution, and Revision Process

The State OEM Planning Section has the responsibility for the development, review, and maintenance of all multi-agency response plans under the State CEMP. As required under New York State Executive Law Article 2-B, each ESF annex shall undergo an annual review and update on or before February 15th of each year and be posted online (if applicable) no later than March 31st of each year.

During the annual review by the Planning Section for its material, this Annex is examined for both content and format. For updates that do not impact operational mechanisms or processes, the appropriate edits are initiated within the Planning Section and do not warrant external involvement. Annex updates will also be conducted based upon experiences and lessons learned from exercises or real-world events, or through administrative changes in government. Planning Section updates and/or edits affecting operational capabilities, responsibilities, or otherwise impacting operations will engage stakeholders in a variety of ways, such as verbally, by document review, meetings, webinars, or any combination thereof. Final drafts will be socialized to all appropriate agencies/personnel upon completion.

SECTION II: Preparedness

Mitigation

Volume 1 of the State CEMP is the *State Multi-Hazard Mitigation Plan*. Pursuant to the requirements of 44 CFR 201.4, the *State Multi-Hazard Mitigation Plan* is required to focus on natural hazards that are likely to cause a substantial impact on the State. Mitigation planning efforts for technological and human-caused hazards are also recognized and are being implemented throughout the State as well. New York State participates in Federal, State, and local mitigation programs and identifies ongoing mitigation opportunities. The State takes maximum advantage of available Federal funding to implement mitigation measures at the State and local levels. Throughout the past several years, a substantial amount of funding has been invested in mitigating the impacts of various disasters in all parts of the State. Volume 1 addresses the overall State hazard mitigation planning process, risk assessment, strategy development, and plan maintenance. The *State Multi-Hazard Mitigation Plan* was federally approved by the DHS/FEMA in December 2023.

Risk Assessment

A variety of mechanisms are used to understand the various risks and associated threats and hazards facing the State. As required by the Homeland Security Grant Program (HSGP) and the National Preparedness Goal (NPG), the State must complete an annual Threat Hazard Identification Risk Assessment (THIRA). The process involves the identification of scenarios that will most stress the State's capabilities and an assessment of those capabilities. Those capabilities are mapped to the core capabilities in each of these ESF Annexes created under the State CEMP. Further, New York State has developed additional programs and methodologies to better understand risk at the local level. This includes a County Emergency Preparedness

Assessment (CEPA), which the State has conducted in each of the 57 counties of New York, and New York City. The CEPA provides great insight as to the State’s risk profile from a local level perspective.

Training, Exercising, and Testing

The State of New York sponsors and conducts a variety of training to improve knowledge and response capability. This includes varying levels of training in the Incident Command System, the Professional Development Series (PDS) curriculum, and EOC Trainings. The State also participates in a wide variety of specialized training, including training to meet Federal program and grant requirements, such as the Emergency Management Performance Grant (EMPG). Further, many State agencies identify training requirements within their own organization to meet the needs of the agency for that specific discipline.

The State of New York has incorporated the Homeland Security Exercise and Evaluation Program (HSEEP) into its emergency management program. HSEEP consists of both doctrine and policy for designing, developing, conducting, and evaluating exercises. The State has instituted HSEEP into a host of exercise activities, including those that involve tests and activations of the State EOC. Further, some exercises are often linked to a specific grant requirement, while others are conducted as part of ongoing or existing programs, such as those for the Radiological Emergency Preparedness Program.

The State also utilizes an exercise component as part of the planning process to test the effectiveness of an emergency management plan. These exercises vary in scope and cross several State-level plans or annexes. As a point of reference, the planning process that resulted in the creation of all of the State’s ESF annexes included an exercise component.

The OIEC administers training and exercises specifically to address the management aspect and technical operations of emergency and interoperable communications services. The training courses include Communications Unit Leader (COML), Communications Technician (COMT), Incident Communications Center Manager (INCM), Incident Tactical Dispatcher (INTD), Radio Operator (RADO), Auxiliary Communications (AUXCOMM), and IT Service Unit Leader (ITSL); positions that are formally identified within the NIMS ICS structure.

The OIEC also administers two communications-specific Full-Scale Exercises: The Communication Unit Leader Exercise (COMLEX) and the Communication Unit Exercise (COMMEX). These exercises provide an opportunity for COMU trainees to demonstrate their proficiency and to complete the requirements of the respective Position Task Books (PTB), as they attempt to obtain formal position-specific credentialing as defined in the NYS Communications Unit Credentialing Policy.

Capability Assessment

As part of the THIRA process, the State was required to assess its capabilities under Presidential Policy Directive (PPD-8). In doing so, the State assessed its Critical Capabilities using the construct outlined in the CEPA program. The assessment provided the State with information regarding statewide capability trends and potential gaps that can then be planned for and addressed. Those capabilities have been mapped or linked to each one of the ESF Annexes under Volume 2 of the State CEMP.

Stockpiles, Supplies, and Specialized Equipment

1. OIEC

- a. Mobile Communications Vehicles/Trailers – contingent on OIEC personnel
 - i. Command 1
 - ii. Strategic Technology Reserve (STRs)
 - iii. Rapid Assist Mobile Emergency Radio (RAMERs)
 - iv. Repeater Trailer
 - v. Support Vehicles
- b. Specialized Equipment

- i. Cache Trailers (Radios, Repeaters, specialized cords, and links)
- ii. Cache of Portable Radios
- iii. Cache of Satellite Phones
- iv. Sites on Wheels (SOWs) – quantity 8
- v. Accessibility to commercial wireless carriers' mobile assets

2. DMNA

- a. Limited quantities of interoperable emergency communications equipment – contingent on DMNA personnel and deployments.

3. DSP

- a. Mobile Communications/Command Vehicles are maintained in separate locations throughout the state to provide regional response capabilities.

4. ITS

- a. Mobile Command Center (MCC), Wireless Access Point (WAP), and Emergency Remote Office (ERO) (laptops, internet, and cell services).

Memorandums of Understanding (MOUs)/Letters of Agreement (LOAs)

- Mutualink MOA
- Frequency Sharing Agreements

SECTION III: Response

Alert and Notification

The State Watch Center (SWC) serves as the focal point for receiving or providing notification of incidents in the State. In response to an incident that warrants an increase in State response posture, the SWC will be used to notify agencies that the State EOC is activating.

Activation

State OEM will assess the potential needs and demands of an incident, and then determine if the situation can be remedied through maintaining steady state posture or increasing posture to enhanced monitoring. If formal activation of the State EOC is necessary to effectively manage the response to the incident, the capabilities that are needed to support that activation will be identified, and agencies are notified to staff the State EOC using the ESF construct.

Flexibility will be key in activating this ESF. Not all incidents are the same, and not all activations of this ESF will require the full list of agencies to support the demands of the incident. Therefore, the representation of agencies that will be necessary to support the ESF may vary from incident to incident. The State CEMP identifies three activation levels of the State EOC. This ESF will activate to one of those levels as conditions warrant, with the NYS OIEC serving as the ESF Coordinating Agency. These are:

**NYS EOC
Activation Levels**

- Level 3 – Limited Activation
- Level 2 – Partial Activation
- Level 1 – Full Activation

Level 3 Limited Activation:

- This level may be initiated to meet multi-agency coordination requirements deemed necessary for information, resources, and consequence management support efforts.
- Staffing may include several State EOC command and general staff positions, a select number of State ESFs, and initial representation from federal partners.

Level 2 Partial Activation:

- This level may be initiated to meet increasing multi-agency coordination requirements deemed necessary for information, resources, and consequence management support efforts.

- Staffing may include all State EOC command and general staff positions, multiple State ESFs, and additional representation from federal partners.

Level 1 Full Activation:

- This level is initiated when it is necessary to meet significant multi-agency coordination requirements for information, resources, and consequence management support efforts.
- Staffing may include all State EOC command and general staff positions, most or all of the State's ESFs, and a federal/State Unified Command element.

Direction and Control

The State endorses the development of one response organizational structure that will include all responding agencies. State agencies and ESFs will be organized under the framework of the NIMS ICS as required by NIMS Executive Order 26.1 of 2006 and Homeland Security Presidential Directive (HSPD) – 5. As such, a variety of direction and control components may be utilized to manage and coordinate the State's resources in an efficient and effective manner and to provide the interoperability between the local and Federal response organizations.

The organizational structure of the State's ESFs is inherently different than the Federal construct under the NRF. With the exception of ESF #5 (Planning), ESF #7 (Logistics), and ESF #15 (External Affairs), the State ESFs will be situated organizationally in the Operations Section, and report directly to the Operation Section Chief (OSC), or Branch Directors if established. ESF #5 is assumed by the Planning Section in the State EOC, ESF #7 is assumed by the Logistics Section in the State EOC, and ESF #15 is situated in the Command Element.

ESF #2 will provide incident management support and coordination under the ESF Coordinating Agency. The ESF Coordinating Agency will ensure the activities of the ESF are consistent with this Annex, and that Member Agencies are operating in unison to achieve the common goal or mission of the ESF.

This ESF is assigned under Operations. The ESF Coordinating Agency will be the primary interface with the OSC, and the Member Agencies of the ESF. All requests for assistance will be managed through the OSC to the ESF Coordinating Agency for availability of resources/missions. The ESF Coordinating Agency will be given latitude to facilitate the best resource or solution set in response to the request that the State has received. Confirmation or concurrence of that solution will be confirmed to the OSC to ensure the State maintains a centralized coordination of resources and direction of requests for assistance.

Assignments of Responsibilities

The responsibilities for each agency identified in this ESF are listed below. It should be noted that in some cases, the application of the resources below may have application in other ESFs. Therefore, the capacities for the resources that are identified below include what the agency has in totality and should not be interpreted as additional resources if identified in other ESF annexes.

1. Coordinating Agency – NYS Office of Interoperable and Emergency Communications (OIEC)

The OIEC is the principal State agency for all interoperable and emergency communications issues and oversees and directs the development, coordination, and implementation of policies, plans, standards, programs, and services related to interoperable and emergency communications, including those related to land mobile radio communications. The OIEC supports emergency operations and planned events with assets and staff providing operational communication support as needed throughout the State. The OIEC also maintains fixed land mobile radio sites around the state that support the mission of the Division of Homeland Security and Emergency Services. The OIEC has the ability to coordinate with private carriers for the access of temporary cell sites on wheels (SOWs), cells on light trucks (COLTs), and other communications equipment. The OIEC also has the ability to access the Communications Assets Survey and Mapping (CASM) tool, which provides New York Public Safety Officials with a means to gather and analyze communications

systems data to identify gaps in interoperability and to improve emergency response communications.

2. ESF Member Agencies

NYS Division of Military and Naval Affairs (DMNA) / National Guard

Military forces augment the capabilities of local, county and state response forces; they are not designed to be first responders. The National Guard is the first level of military response generally capable of deploying from armories at notification +24 hours. Federal military forces, if applicable, would be coordinated through the state National Guard through the application of Dual Status Command authority. DMNA capabilities include the ability to support joint incident site communication capability to enable interoperability among civilian agencies. DMNA communications equipment that has interoperability with civilian agencies are limited in quantity. Historically DMNA communications assets with interoperability have been utilized by county OEMs within a Joint Operations Area where DMNA has forces operating. DMNA personnel might require advanced training if needed for non-DMNA communications platforms.

NYS Division of State Police (DSP)

The DSP maintains mobile communications vehicles that can be deployed to an impacted area. All trucks have radios for State Police and the nationwide and statewide interoperability frequencies. Each of the regional trucks will have additional radio equipment capable of operating on the county and local radio systems within their region. In addition, the trucks have satellite and cellular capabilities for voice and data transmission and the capability to connect to landline telephone, cable, or data networks when available on site.

NYS Department of Public Service (DPS)

The DPS's regulatory authority over certain communications providers and close working relationship with non-regulated providers allows DPS to provide status monitoring of outages, estimated restoration times, and act as a liaison between DHSES and the providers for localized inquiries. During emergencies, the DPS can assist providers in coordinating restoration activities with utilities in their respective service territories. Although the DPS is primarily associated with restoration of infrastructure, the DPS does have an active role with the 911 emergency calling system and could provide support as needed to help resolve issues between the service providers and Public Safety Answering Points (PSAPs). The DPS also ensures that the telecommunications industry has emergency response plans.

NYS Office of Information Technology Services (ITS)

The ITS provides IT support for activated State agencies, local districts, and voluntary agencies as well as IT support for the State EOC. The ITS executes the Mobile Command Centers (MCC), MR86, MR84, and Omi directional Access Points (AP) to facilitate open internet connectivity by using dual sim cellular and hardwire circuits. Alternate connectivity kits available are Emergency Remote Office (ERO) deployment, which consists of laptops, internet, and cell services via satellite from Verizon and Sprint. Site Survey Teams assist in determining network and staff relocation technical needs and the potential deployment of required equipment such as laptops, thin clients, and printers. The ITS also manages telecommunications services such as Wireless Priority Services (WPS) for cell phones, Government Emergency Telecommunications Services (GETS) for landlines, and Telecommunications Service Priority (TSP) for network circuits.

Integration of Federal ESFs

The Federal government organizes its response resources and capabilities under an ESF construct. Similar to New York State's ESF construct, Federal ESFs are multi-agency operational components that serve as the primary means for coordinating Federal resources and capabilities into New York State. The Federal ESFs bring together a wealth of capabilities of Federal departments and agencies and other national-level assets. In doing so, they are organized to provide the operating structure for building, sustaining, and delivering Federal response core capabilities in support of the State's critical capabilities. Integration and coordination are key to leveraging the resources of each Federal ESF. As such, New York State ESF #2 will serve at the primary integration point for Federal ESF #2. The table below summarizes Federal ESF #2 and indicates the response core capabilities that the ESF most directly supports. Detailed response capabilities and activities are listed in each Federal ESF Annex.

ESF # 2 – Communications

ESF Coordinator: DHS/Cybersecurity and Communications

Key Response Core Capability: Operational Communications, Infrastructure Systems

Coordinates government and industry efforts for the reestablishment and provision of critical communications infrastructure, facilitates the stabilization of systems and applications from malicious cyber activity, and coordinates communications support to response efforts.

Functions include but are not limited to:

- Coordination with telecommunications and information technology industries.
- Coordination of the reestablishment and provision of critical communications infrastructure.
- Protection, reestablishment, and sustainment of national cyber and information technology resources.
- Oversight of communications within the Federal response structures.
- Facilitation of the stabilization of systems and applications from cyber events.

SECTION IV: Recovery

Short-Term Recovery

There is no clear delineation of when disaster response activities transition into short-term recovery activities. As with all disaster and emergency-related activities, any transition to a new phase will be dependent upon the needs of the response and the identified needs of the individuals/communities affected. In general, disaster response addresses the immediate aftermath and life safety issues of a disaster or emergency, while short-term recovery activities begin as the need for immediate life-saving activities diminishes. At times, these phases will often overlap with one another.

Demobilization

Demobilization of agencies and ESFs from the State EOC will occur based upon operational needs and will be jointly determined by State OEM and the ESF Coordinating Agency. Based upon the needs of the operation, ESFs may begin to demobilize during the response/short-term recovery phase. However, it should be noted that agencies may be subject to a rapid recall for reactivation of the ESF if needed based upon operational needs. In most cases, demobilization of an ESF will include the release of the Coordinating Agency and all Member Agencies. However, there may be instances where the ESFs can be partially demobilized, allowing Member Agencies to be released as the need for their representation and capability in that ESF is no longer necessary.

In the process of demobilizing an ESF, all Member Agencies must ensure that any open or ongoing activities that require cross-coordination with other ESFs are closed out prior to demobilizing. This must be done in a manner to ensure that any dependencies or interdependencies of that ESF are properly and effectively communicated across the response organization. In addition, each agency must ensure that they coordinate their demobilization with their agency-specific counterparts that are represented in other ESFs.

Transition to Long-Term Recovery

As the urgency of a response lessens, and communities begin to focus their efforts on implementing recovery programs, the State's focus will also shift to the long-term recovery needs of the affected areas. In Presidential Disaster Declarations, this will likely include the activation of a federally established Joint Field Office (JFO). JFOs are established, operated, and maintained by the DHS/FEMA, and will include the temporary recovery organization structure put in place to support recovery. To properly ensure effective integration of State and Federal recovery activities, the State will organize in a similar structure to the federal structure contained within the National Disaster Recovery Framework.

Implement Recovery Support Functions (RSFs)

As JFO activation occurs, the Federal government will transition out of the ESF construct and implement the RSFs. RSFs bring together the core recovery capabilities of Federal departments and agencies to focus on community recovery needs. The RSF structure includes the following: Community Planning and Capacity Building, Economic, Health and Social Services, Housing, Infrastructure Systems, and Natural and Cultural Resources. RSFs are intended to facilitate the coordination and delivery of Federal assistance to supplement the recovery efforts of local and State governments and are designed to operate within a timeframe of months to years.

As the Federal ESFs transition to RSFs, the State's ESF posture will be required to transition into the RSF construct. As such, State agencies will transition from their assigned ESF role to the appropriate RSF, as warranted. It is important to note that not all federally declared disasters will require full RSF activation, and not all RSF activations will require full participation from each agency. The transition from an agency to the RSF construct is situation-based, and dependent upon the agency's role(s) within the State response framework. For planning purposes, it is assumed that in a credible worst-case event, the situation may warrant full participation from all agencies that comprise this ESF. In such cases, the following agencies that comprise this ESF will transition to RSF below:

Agency	RSF Assignment					
	Community Planning and Capacity Building	Economic	Health/Social Services	Infrastructure Systems	Natural and Cultural Resources	Housing
OIEC				X		
DMNA				X		
DPS				X		
ITS				X		
DSP	No RSF Assignment					

Attachments

- Standard Operating Guidelines (SOG) for ESF #2: Communications.

