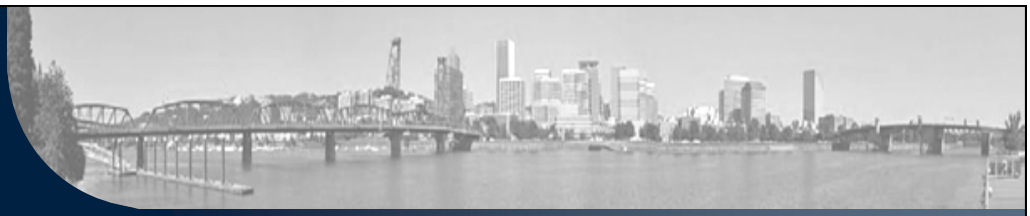
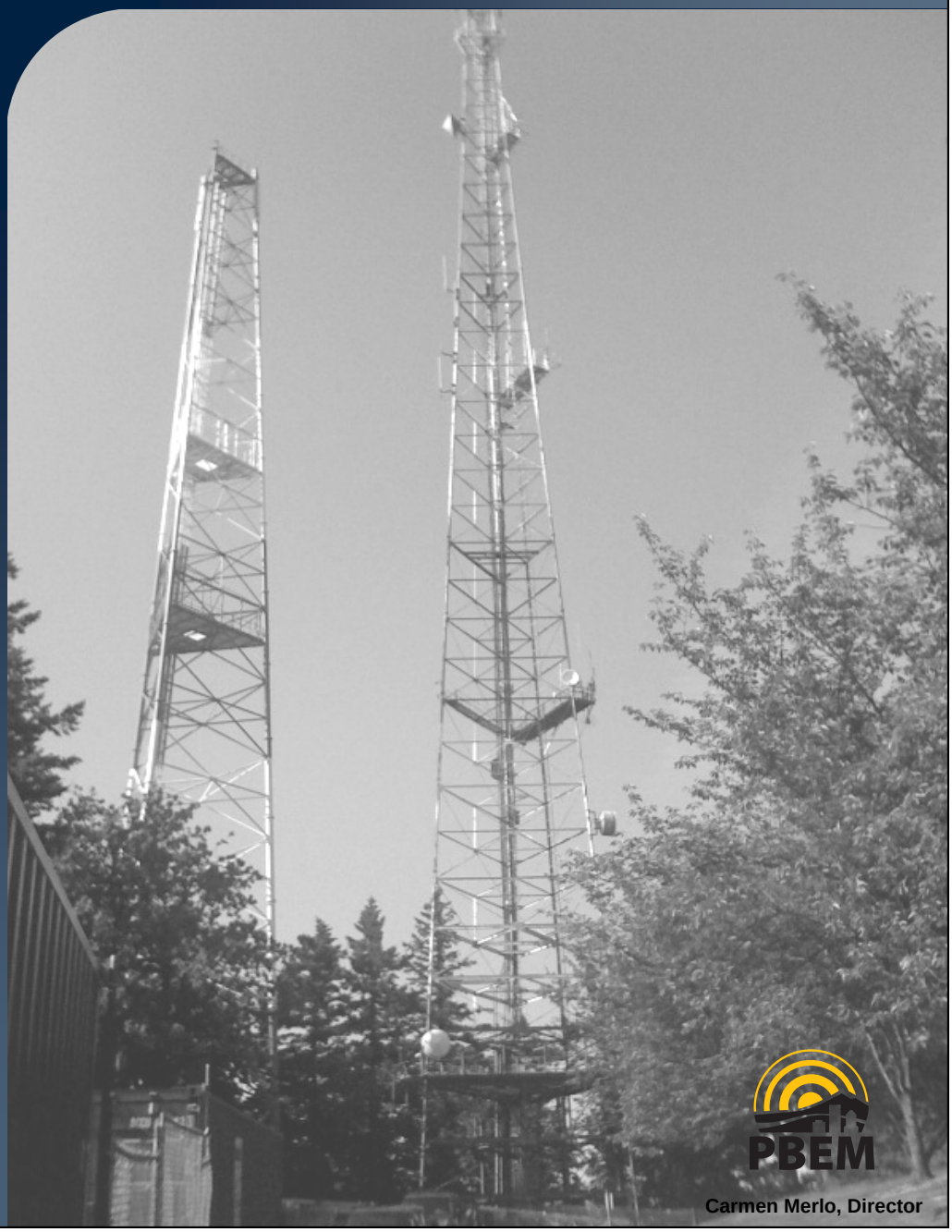


City of Portland

Annex B – Communications

April 2012



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Annex B

Communications

I. Introduction

A. Purpose – This Annex describes the City's communications and information technology infrastructure and establishes a concept of operations for the use of these communications systems in an emergency event.

B. Scope – This Annex supports the City of Portland's Basic Emergency Operations Plan (BEOP) and applies to all City bureaus, staff and elected officials. This Annex does not supersede the Tactical Interoperable Communications Plan (TICP), which documents the interoperable communications resources available within the urban area, control of each resource and rules of use or operational procedures for the activation and demobilization of each resource.

C. Objectives – The provisions of this Annex establish a common understanding of the communications systems used to facilitate and coordinate the exchange and sharing of information and how these systems will be managed during an emergency event.

II. Situation and Assumptions

A. Situation –

1. The Portland Bureau of Technology Services (BTS) is responsible for the management, operations and maintenance of the City's emergency communications and information systems essential to public safety services including, but not limited to: public safety emergency radio system, computer-aided dispatch (CAD), law enforcement records management and fire information systems as well as the City's overall computer and telecommunications technology systems.

2. A large-scale emergency will affect the ability of emergency responders and government officials to communicate by damaging, disrupting or degrading one or more communications systems.

3. Timely communication affects the quality of the response provided and the outcomes achieved.

4. The public safety emergency radio system will be the dominant system for use by emergency responders. However, redundant systems are in place: POTS (plain old telephone service), cellular, Internet, satellite, amateur radio in the event of a catastrophic failure of the primary public safety emergency radio system.

B. Assumptions –

1. When an emergency occurs, communication is critical to the response to, and recovery from, the incident. Even if no infrastructure damage occurs, the nature of the emergency may overwhelm the capacity of the communications systems in place.

2. Sufficient infrastructure will survive an emergency that some form of voice communication (albeit degraded and/or limited) will still be available – whether it is wired, wireless, satellite or some combination thereof.

3. The volume and urgency of messages will scale in direct proportion to the scope, scale and severity of the emergency.

4. Different users will have varying access to communications systems and devices tailored to their routine communications needs and emergency response roles.

5. Sufficient safeguards and authorities are in place to control and coordinate access to the emergency communications system(s) grid.

6. The City's internal and commercial telecommunications systems will probably be overwhelmed by end-users at times, as the telecommunications system architecture is predicated upon normal business (rather than emergency) usage.

III. Concept of Operations

A. Operational Levels – Communications needs change during an emergency – generally in relation to the operational level of the City's emergency management system. During routine operations, all communication devices are normally available. As the status of an incident or emergency escalates to a partial or full activation of the ECC, the availability of communications systems will change; therefore, the reliance and reliability of redundant communications is crucial even during routine operations.

1. Routine operations – During routine operations, day-to-day business communication will be conducted via customary methods, i.e., landline or mobile telephone, pager, public safety emergency radio system, SMS text, or email. PBEM conducts regular tests of several systems that will be relied upon during emergencies to continually ensure familiarity and operational reliability. This testing, done as part of a weekly, monthly and quarterly cycle, includes test pages and satellite phone drills.

    a) The ECC uses a variety of communications systems, including the Integrated Regional Network Enterprise (IRNE) telecommunications network that carries all voice, video and data communications traffic for the City and its partners, cellular, public safety emergency radio system, VHF radio, Broadband Global Area Network (BGAN) satellite uplink and amateur radio. Providing all systems are available, the ECC will use POTS, IRNE for landline voice and data communications, cellular as needed, public safety emergency radio to communicate with emergency responders, and amateur radio as the communication method of last resort. It should be noted; however, that amateur radio is the primary method of communication with Neighborhood Emergency Teams. Satellite uplink serves as a backup to other voice and data systems should they become unavailable.

2. Enhanced and partial operations – Regardless of the activation level, WebEOC will be used as a secure, Internet-based crisis communication and information sharing platform that also serves as an archived record of PBEM Duty Officer and ECC/EOC emergency response activities and communications. Other bureaus and regional partners will have real-time access to input and view data in WebEOC.

3. Full activation – During a full activation there is a greater likelihood of event-related communication degradation. The amount of communication may also increase as the event places higher demands on response activities. The criticality of communications systems may increase, placing additional emphasis on concise, targeted messages. WebEOC may increase in importance as the common platform for event information sharing with internal and external incident command posts and emergency operations centers.

B. <u>Systems and Components</u>

1. Public Switched Telephone Network (PSTN) – The public switched telephone network consists of telephone lines, fiber optic cables, microwave transmission links, cellular networks, communications satellites and undersea telephone cables all interconnected by switching centers which allow any telephone in the world to communicate with any other. Originally a network of fixed-line analog telephone systems, the PSTN is now almost entirely digital in its core and includes mobile as well as wire line telephones. City communications relies heavily on the PSTN for connections to numbers

outside of the City. Internally, the City maintains two telephone switches, one for 9-1-1 phone calls and one to support all other voice calls. Additionally, some 900 City employees are served by a commercial provider for their landline telephone service.

a) The PSTN has some built in resiliency in that it is a network of networks, with the ability to route calls through multiple links to arrive at the desired node. This resiliency depends on sufficient infrastructure remaining viable to provide any network for outbound traffic. Since the City has its own switch, the ability to communicate via phone within City bureaus is not dependant upon the PSTN. Virtually all nodes within the City connect to its telephone switches via geographically diverse routes as well. This may make phone communications within City government and responders more resilient, especially when the PSTN is overloaded due to an emergency.

b) Key City personnel can utilize the Government Emergency Telecommunications System (GETS). GETS is used in an emergency situation when the PSTN is overloaded and the ability to complete a call by normal means is significantly decreased. In these cases, GETS offers a high probability of completion of phone calls when normal calling methods are unsuccessful. Of course, GETS will only work if the network itself is operational and available. A GETS call may be placed from a cell phone; however, it will not receive priority treatment until it reaches a landline network. To receive priority treatment for wireless networks, cell phone service must be registered for Wireless Priority Service (WPS).

2. Cellular / Mobile Wireless Network – Cellular phones rely on a subscription-based wireless communications network. End users utilize a device that includes a two-way transceiver. The signal goes from the end user to a series of antennas (cell towers) through the service provider's network then either back into the airwaves to another cell phone or through the provider's network to a PSTN phone.

a) The vulnerabilities of this system reside with the necessity of both the towers and the provider's network to be operational. The towers and network are both susceptible to physical vulnerabilities from landslides, earthquakes, liquefaction and are further dependant on the availability of electricity. The system also has a limit on its capacity to carry multiple phone calls. Even without any physical damage, if an emergency impacts an area, too many users attempting to call simultaneously will overwhelm the network.

b) The Portland Police Bureau uses the cellular network as the method of data transfer to their mobile data computers. As such, the Police Bureau is dependant on an operational commercial

cellular system. Portland Fire & Rescue (PF&R), the other major user of wireless data capability, continues to use the 800 MHz system as its data transfer platform. However PF&R is expected to migrate to a commercial carrier service in the near future.

c) The cellular network is a distributed network, which makes it less susceptible to single points of failure. However, because cellular providers often share towers for their antenna system the cellular system is vulnerable regardless of providers. Additionally, these towers often rely heavily upon the electrical grid, so loss of electricity over a period of time could result in the failure of backup power. Many cell towers have uninterrupted power supplies (UPS) that can provide several hours of backup power but long-term backup power is not frequently available.

3. Satellite Voice and Data Communications – The City owns several satellite-based communications systems. End users may include a single point of use system such as a satellite phone, or a multi-user network transmitter that operates off of a satellite connection. The advantage of satellite systems is that they are not as vulnerable to damage or destruction from common hazards or threats. The City has approximately 70 single point of use satellite phones and several multi-user systems assigned as redundant communications options. These satellite links operate off of satellites orbiting above the earth's atmosphere. Each service provider sells per minute (or data packet) access to transmit and receive signals via satellite. The single point of use phones operate similar to cell phones. The multi-user systems have multiple ports into which standard telephones can be connected. Ports are also available to connect computers. These transmitters also have a built in wireless connectivity feature. The wireless data transmission capacity depends upon the number of computers connected and the amount of data being sent.

   a) Since satellites are less susceptible to damage from natural hazards or terrorist events, they are fairly resilient. However, signals are vulnerable to disruption by cyber attack and weather and atmospheric conditions. Additionally, in the event of an emergency that stresses many systems, satellite communications may be in high demand. This demand could diminish the availability of satellite access.

   b) The ECC will also be equipped with a larger-scale satellite voice and data solution tied to the City's telephone switching platform and its network connection to the Internet. Selected users across the entire City network will have access to the PSTN and Internet even if all local PSTN-based carriers and Internet service providers are offline.

c) The Water Bureau has a mobile satellite capability on their communications trailer comparable to that of the ECC which could also support critical communications.

4. Public Safety Radio System – Most government and some private agencies within Portland use a radio system operating in the 700/800 MHz frequency range. The City operates a public safety 800 MHz Motorola radio system controlled through a master switch. It consists of a 24 channel, five-site simulcast subsystem, a 10–site IntelliRepeater ® (IR) system and two conventional sites for interoperability. Also installed is an Astro 25 700 MHz four-channel digital layer for encryption capability, arranged in an east and west simulcast configuration with one IR site. Hundreds of talk groups are assigned to police, fire and EMS functions of multiple agencies, as well as supporting other public service agencies in and around the Portland metropolitan area. The radio system itself supports all of Multnomah County, with interoperability with Clark County (WA), Clackamas and Washington Counties, the State of Oregon and the federal government. All together, the system supports more than 11,000 radio devices. The system currently has full trunking capability, with failsoft and site trunking technologies that serve as backup protection in the event of main controller failure.

   a) The City's frequency bands facilitate both voice communications and data transmission via mobile data computers. This system works similar to the cell system in that the signal goes from the end user to a network of antennas and repeaters and then out to the recipient (unless operating on Simplex). There is some network redundancy both internally and through the utilization of networks belonging to other jurisdictions. This system has vulnerabilities similar to those of cell phones – network infrastructure is vulnerable to damage and the system may degrade by overuse. However, the system has Simplex capability to bypass the network. This enables users to use the portable radios for short distance communication without the support of the network. Simplex is limited but can transmit from end user to end user communications with no network access. Simplex is also limited by the power of the individual radio and surrounding conditions. This distance is governed by factors such as terrain, building obstacles, user location, etc.

   b) The ECC maintains a cache of base and hand-held radios that have been programmed with a regional template that allows for radio communications with City bureaus and neighboring emergency responders. Additionally, there are 16 dedicated talk groups allocated for the ECC that can be used during activations for communicating to the field, other ECC sections and responders as well as other area ECC/EOCs. 800 MHz radios are also available in the ECC mobile communications trailer, ECC go kit and individually assigned to PBEM Duty Officers.

c) Also available are 800 MHz frequencies provided by the National Public Safety Planning Advisory Committee (NPSPAC). There are three sets of channels (14 total) available for potential use in Portland: a set of NPSPAC channels allocated to Oregon, a set of NPSPAC channels allocated to Washington and a set of national NPSPAC channels. The NPSPAC system of antennas, repeaters, and interconnections or backbone is active through equipment that is independent of the City's regular 800 MHz backbone, however the systems share towers and both grid and backup power supplies. NPSPAC channels are also designed to facilitate interagency communications i.e., during an emergency the City could use these channels for communications with the understanding that they are equally available to users from other agencies.

d) There are other government and private agencies that operate on VHF or UHF frequencies. Portland Fire & Rescue has ensured VHF is available as a communications backup on all fire apparatus and fire stations. VHF radio is also available in the ECC, ECC mobile communications trailer, ECC go kit and Water Bureau mobile communications trailer. In addition, public works bureaus including water and transportation heavily use VHF. This provides an ability to utilize VHF as a limited back up to the public safety radio system in the event of a catastrophic failure of the primary system.

5. Amateur Radio – Most public safety communications systems are designed to perform in emergencies at any time of day or night and generally fulfill the demands placed on them. When these systems fail or become degraded amateur radio serves as the most reliable communications system. Many of the City's Neighborhood Emergency Teams (NETs) have licensed amateur radio operators and access to amateur radio equipment. During an emergency event, NET members will canvas their neighborhoods and NET amateur radio operators will provide preliminary damage reports and information on community impacts to the ECC. As necessary, the City ECC may use amateur radio to communicate information and request resources, including disaster declarations, to the Multnomah County ECC and/or other city and county ECCs. Currently, amateur radio equipment is available at all fire stations and PF&R's Mobile Command 9, the Water Bureau mobile communications trailer, 9-1-1 center, 9-1-1 trailer, City ECC, ECC mobile communications trailer and ECC go kit.

a) The American Radio Relay League (ARRL) makes emergency communications an objective for its field organization using Amateur Radio Emergency Services (ARES). ARES groups consist of federally licensed amateur radio operators who are trained in emergency communications and have a strong desire to serve their community whenever the need arises.

b) Federal Communications Commission (FCC) rules provide for Radio Amateur Civil Emergency Service (RACES). RACES is a special phase of amateur radio recognized by FEMA that provides communications for civil preparedness purposes for local, regional or national emergencies.

c) The amateur radio communication system is a distributed network. A failure of one node or network does not take down the entire system. As a result, amateur radio is a highly reliable and resilient system.

6. Internet – The City's internal data network can support data and email communications internally but communication with outside users requires an Internet connection. Access to the Internet will be provided through the City's computer network, with satellite connectivity providing the backup access. In addition to WebEOC, normal email connectivity, paging capability and social media may depend on Internet access.

   a) Portland operates the website www.portlandoregon.gov as a portal to information about City government. This site, in addition to www.publicalerts.org, will serve as the primary information-sharing portal for those seeking emergency information about large or citywide emergency events.

   b) Since the Internet is a multi-nodal distributed network, the system as a whole is fairly resilient, although local access could be compromised. The Internet utilizes land-based communication infrastructure, which can be susceptible to physical destruction and virtual (cyber-based) degradation. Aside from susceptibility to localized physical damage, overall network speed can be degraded either intentionally or unintentionally by increased use.

7. Integrated Regional Network Enterprise (IRNE) – The IRNE is a telecommunications network designed to carry all voice, video and data communications traffic for the City and its IRNE partners. The IRNE is a high-capacity, highly reliable design that offers more than conventional telecommunications services available in the region.

   a) IRNE allows municipal and educational entities, regional transportation and public safety agencies to leverage expertise and infrastructure into a broadband, integrated regional and statewide network. The IRNE offers reliability, flexibility and security.

   b) Internal data and voice that is IRNE based does not rely on the PSTN. This means that if the PSTN becomes unavailable, internal voice and data transfer will still be available providing the IRNE system has not been damaged or destroyed.

c) The IRNE possesses several characteristics that make it more reliable. It is fiber optic-based, and the infrastructure crosses the Willamette River on four different bridges. One planning assumption is that while a seismic event will damage many Willamette River bridges – it will not catastrophically damage *all* of the bridges with IRNE crossings, and so will likely not take down IRNE altogether. Additionally, the IRNE is negotiating for an underground crossing of the Willamette River and expects this to be in place by 2013. The IRNE is a ring-based system so that any one node is linked by a ring of fiber optic cable; if service from one direction is interrupted then service would continue via the opposite direction on the ring.

d) Telephone service is provided by Voice over Internet Protocol (VOIP) in many cases. By 2014, most telephone service will be provided by VOIP and will be server-based. Within the next two years, IRNE will have an integrated satellite backup. In the event of the loss of the PSTN, limited voice and data connectivity would continue via BGAN connection. These connections to the PSTN via satellite will be controlled via software to prevent an overload of the system.

8. WebEOC – WebEOC is a secure, web-based crisis information management system that provides secure real-time information sharing to emergency responders, regional partners, city leaders and elected officials. The City uses this system both as a centralized location to post information and as the primary archive of incident information. The City's instance of WebEOC also hosts Multnomah, Columbia and Washington Counties, the Port of Portland, TriMet, Portland Public Schools, Oregon Department of Transportation, and several other partner agencies. Information logs, called "boards," contain ongoing incident-specific information. WebEOC also has a GIS component that allows visual representation of data. WebEOC allows partner agencies and authorized individuals to view and post data for the benefit of all. Regional partnerships rely on Internet access to work – if Internet connectivity is lost, then this capability is also lost.

C. <u>Cascading Use in the Event of System Failure</u> –

1. ECC Communications – the ECC employs a combination of systems to conduct routine communications. Unlike field response operations – no one system is utilized exclusively. The following list summarizes, in chronological order, the communications failover path in the event the primary or preceding system is unavailable:

a) Landline phone/GETS.

b) Cell phone/WPS, cell phone text messaging.

c) Public safety emergency radio sytem800 MHz radio.

d) VHF radio.

e) Satellite phone.

f) Amateur radio.

g) In addition to voice communication via the methods outlined above the ECC also utilizes email via Intranet, Internet and WebEOC to transmit data. If the Internet or Intranet is unavailable, satellite Internet is the method of last resort.

2. Field Response – the primary system for field response is the public safety emergency radio system. The following list summarizes, in chronological order, the communications failover path in the event the primary system is unavailable:

a) 800 MHz radio.

b) Cell phone/WPS.

c) VHF simplex radio cache (if available).

d) Satellite phone (if available).

e) Amateur radio (if available).

D. Reliability and Redundancy –

1. Reliability depends on a variety of factors. Existing voice and data systems have proven to be fairly reliable. Additionally, efforts have been taken to make systems more resistant to degradation or failure. As an example, many wireless transmission towers have backup electrical supplies, and portable radios meet a standard to resist degradation from daily use by first responders. The IRNE's ringed topology typically uses diverse building entries, and all major IRNE nodes have their own battery power systems that will provide a minimum of eight hours of service even when all commercial or back up power is lost.

a) The City's public safety radio system has 24 available channels in which to operate. As such, as long as the system's hardware is operational, there is sufficient capacity to support emergency response. In a "trunked" system, the "trunk" has multiple frequencies. When a radio transmission occurs, the system hunts through the City's 24 frequencies to find an unused frequency to accommodate the transmission. In addition to system durability there are redundant systems that can replace systems in the event of a lack of availability. This system can "busy out" which means that all available trunks are in use. Although unlikely, a

system “busy” tone does not indicate that the emergency public safety radio system has failed.

b) Repeater towers have uninterrupted power supplies and generator capacity. The five simulcast sites have eight hours of back up battery power and on-site generators with a 500-gallon propane fuel tank. Generators are designed to be operable for five to seven days with no support; maintenance and refueling contracts are set up as priority contracts. Of the IntelliRepeater sites four also have uninterrupted power supplies, eight hours of back up battery power and on-site generators with a 500-gallon propane fuel tank. The remaining six IntelliRepeater sites have uninterrupted power supplies and eight hours of back up battery power.

2. Redundancy – Overall communication resistance to stressors may depend on multiple systems to perform a particular function, such as voice communication via radio, cell phone, IRNE, PSTN or satellite. The reliability of a particular medium (such as voice or data) is enhanced by having multiple platforms available as back up. This minimizes the impact of the loss of any one system. The Tactical Interoperable Communications Plan documents available radio caches that could be used to replace inoperable equipment, or expand the capability of an existing system to facilitate mutual aid.

   a) If the scope of the emergency is quite large, PSTN and cellular communications could be stressed by overuse and therefore become unavailable or unreliable for emergency communications. The public safety emergency radio system is the primary system for communications among responders during an emergency. This system would provide connectivity internally, within City government, with field operations and state, and federal partners. Emergency communication of data should be transferred via Internet, providing Internet access is available. The City’s Intranet could be available even when Internet connectivity is absent.

   b) There is limited connectivity via satellite uplinks that can provide access to Internet and voice communications. The voice component of these units is not reliant upon Internet connectivity (i.e., VOIP). In the event satellite-based Internet connectivity is lost, voice communications are still available. However, this satellite-based access is currently only available to the ECC, ECC mobile communications trailer, ECC go kit and Water Bureau mobile communications trailer. As a result of limits on equipment, there may be only a few voice connections and approximately ten Internet connections.

E. Communications Resiliency – During emergency operations, plans, procedures and policies exist to provide layers of communication systems that are intended to ensure a continuous communication capability in the event of catastrophic loss of some systems.

1. Standard hardwire telephones should be the dominant communications system, providing the IRNE and/or PSTN is operational. Most inter-bureau communication can be handled with this system. First responders will likely continue to use radio communications as their standard and customary communications platform.

2. Since the City has its own telephone switching capacity, internal (city number to city number, i.e. 823 and 865 prefixes) phone communications may be available regardless of the status of the PSTN. This will; however, only provide internal phone capability, so the PSTN will still dictate access to external (outside of the City government telephone switch) phone numbers. The other limitation is that there are a few locations (900 city employees in aggregate) that rely upon the PSTN for service. This group includes small remote offices such as Portland Parks & Recreation community centers and most fire stations so they would not be accessible through the City's telephone switch.

3. In the event of a catastrophic failure of the telephone system, the public safety emergency radio system will become the dominant communication system. The ECC will use each bureau's respective radio operational channels to communicate as needed to provide support to bureau Incident Command Posts. Although the public safety emergency radio system is fairly robust, facets of the system can suffer catastrophic failure, rendering it unusable.

4. There are seven layers of back up to the primary public safety emergency radio system:

   a) Redundant SmartZone controller.

   b) Primary 6809 controller.

   c) Backup 6809 controller.

   d) Simulcast failsoft.

   e) Stand-alone failsoft.

   f) NPSPAC backup repeaters.

   g) NPSPAC simplex communications.

5. In the event of a catastrophic failure of the public safety emergency radio system, individual radios can still communicate in Simplex mode.

6. National Public Safety Planning Advisory Committee (NPSPAC) channels can serve as a repeater-based network for 800 MHz radios. At least some NPSPAC channels are programmed into all emergency responder's radios. The ECC Communications Unit Leader will assign NPSPAC channels to city users.

7. In the event that the public safety emergency radio system is completely unavailable, there are multiple users of VHF radio frequencies and multiple VHF repeaters that could support operations. The Tactical Interoperable Communications Plan specifies agencies that have caches of VHF radios that could be requested to replace radios necessary for responders. The ECC has one fixed VHF radio in the communications room, one radio in the ECC go kit and two VHF base radios in the ECC mobile communications trailer. These radios are programmed with most of the VHF public service radio frequencies used in the area. Use and assignment of alternate frequencies is done through the ECC Communications Coordinator and ECC Communications Unit Leader.

8. Amateur radio volunteer operators are organized and prepared to provide a backup communications network. This organized network includes a cadre of operators with equipment to support operations at all fire stations, the Water Bureau, the ECC, the ECC mobile communications trailer, all police precincts, two sites for the Portland Bureau of Transportation (PBOT) and the Bureau of Emergency Communications (BOEC). The PBEM Duty officer, NET Coordinator or the ECC Logistics Section may activate amateur radio support to provide communications redundancy.

9. When routine communications systems are ineffective or inoperable, RACES and ARES serve as a highly reliable means of back up communications to transmit information between field operations, emergency coordination/operations centers and among Neighborhood Emergency Teams. Multnomah County ARES support is activated through a request to Multnomah County Emergency Management.

F. <u>ECC Communications</u> – The ECC includes a message center capable of receiving messages via phone, email, fax, and amateur radio. A message center supervisor will determine how a message will be routed. Generally speaking, if WebEOC is available, the message will be sent via the message function in WebEOC. If WebEOC is unavailable, then the message will be transferred via email or hard copy with the original retained for record keeping.

G. Priority Use for PSTN – In order to enhance government's ability to communicate during an emergency, procedures and systems have been implemented to give access over and above the general public. Two of these utilized by the City are described below.

1. Government Emergency Telecommunications System (GETS) is a National Security and Emergency Preparedness (NS/EP) service of the federal government. It is only to be used while performing duties in an NS/EP role during an emergency after experiencing call congestion or blockage. GETS accounts have been issued to key City personnel. Using GETS allows the user to be placed first in the queue for the next available telephone communication circuit. This assumes that a dial tone is available. The PSTN is engineered at approximately a ten-to-one user-to-port concentration both between the subscriber and the Central Office and between the Central Office and the PSTN. Too many people seeking service at the same time will overload the switch and no dial tone will be available.

2. Wireless Priority Service (WPS) is designed to be used in conjunction with GETS. WPS provides an end-to-end wireless priority communications capability to key personnel during an emergency. WPS ensures a higher priority of call completion in both the wireless and wire line portions of the PSTN. However, there is an on-going cost associated with WPS and only a small number of key City personnel have WPS associated with their City-issued cell phones.

H. Interoperability – The communications system is designed to accept non-customary and non-mutual aid responders. The Tactical Interoperable Communications Plan outlines a variety of systems distributed throughout the region that allows the interconnecting of radio systems operating on otherwise incompatible frequencies. For example, these systems (referred to as gateways) could connect a UHF operational channel with a VHF operational channel. This translates into an accommodation that would allow responders to use their own customary radio systems and still communicate with other responders regardless of their radio systems. These gateways would also allow the use of repeater systems that were designed to operate on other frequencies. One caveat is that some of these systems require the use of radio transceivers on the desired frequency in order to create this cross patch.

1. Non-City Users – Appendix A lists entities that utilize the public safety emergency radio trunked system operated by the City of Portland. For non-city agencies involved in the disaster response, the need for available communications capacity may increase due to the response. In the event of an emergency where these other users will not use the system, their equipment may become an additional asset for City responders and mutual aid. The Incident Communications Plan, developed by the Communications Unit Leader, will outline usage and trunk availability to support non-city users of the public safety emergency radio system.

I. Communications Resource Prioritization – In response to events or incidents that cross jurisdictions, there will likely be competing demands and priorities for interoperable communications assets. Until such time as Incident or Unified Command is established, the lead agency designee (i.e., Public Safety Answering Point dispatch supervisor), in cooperation with assisting agencies/bureaus, will have the authority to designate the use of interoperable assets. Once Incident Command has been established, Command Staff or the ECC Communications Unit Leader will direct the further coordination and delegation of the interoperable communications assets assigned to the event.

1. In the event of a catastrophic communications failure, there will be a need to prioritize system restoration. Prioritization will be affected by tactical demands. Because much of the tactical communications will occur via the public safety emergency radio system, it will be a high priority for restoration.

2. However, prioritization may be influenced by the source of the failure. Communications technicians and the Communications Unit Leader will determine which repeaters and systems can be restored quickly and easily.

    a) Availability of repair personnel, repair parts and the ability to access damaged equipment could all be factors influencing priority of restoration.

    b) Portland Fire & Rescue has redundant communications systems: fire units have both 800 MHz and VHF radios, and PF&R also has a limited cache of portable VHF radios. This capability allows for regional communication capability, but it is the internal redundancy that makes the communications more resilient. The Police Bureau, another major user of the public safety emergency radio system, uses the 800 MHz as the dominant voice communication system with cell phones as a backup. They also move most of their wireless data via the commercial cell network. This means that the cellular network may be a priority for restoration. Notably, the cellular system is not directly under City control.

3. The Disaster Policy Council (DPC) will guide strategic, rather than tactical, communications restoration priorities. This may include prioritizing restoration of Internet access since the public relies on this platform as a regular part of daily life. Whereas tactical prioritization focuses on optimizing emergency response communication operability and interoperability, strategic prioritization focuses on restoration of broader routine communications capabilities to the community as quickly as possible.

4. Means of communicating should be pursued with the following order of operations in mind (subject to variability based on the agencies involved and the nature of the event/incident):

a) Leverage face-to-face communications wherever appropriate. For example, the co-location of all Command and General Staff at an incident command post (ICP) or ECC provides the best direct communications and reduces the demand on interoperability resources.

b) Employ local communications radio caches until such time as either those assets become taxed or inadequate based on the nature and/or scope of the incident.

c) If response agencies are users of a shared system, utilize that shared system to establish interoperable communications.

d) If response agencies operate on disparate systems, utilize shared or mutual aid channels to establish interoperable communications if necessary.

e) If response agencies do not share systems or channels, request a gateway solution to establish interoperable communications. This can be done through the COML.

f) Where interoperable communications cannot otherwise be established between response agencies, request cache radios from the COML or ECC Logistics Section to establish operable communications for responders.

g) If no other method of interoperability can be established, relay communications through staff members.

h) When the same resources are requested for two or more incidents, resource assignments should be based on the priority levels listed below:

    i. Emergencies or large scale incidents where imminent danger to life or property exist that require mutual aid or interagency communications.

    ii. Incidents where imminent danger exists to life or property.

    iii. Incidents requiring the response of multiple bureaus.

    iv. Incidents involving a single agency where supplemental communications are needed for bureau use.

    v. Pre-planned events requiring mutual aid or interagency communications.

    vi. Drills, tests and exercises.

i) In the event of multiple simultaneous incidents within the same priority level, the resources should be allocated with the following priorities in mind:

i. Incidents with the greatest level of exigency (e.g., greater threat to life or property, more immediate need, etc.) have priority over less exigent incidents.

ii. Agencies with single/limited interoperable options have priority use of those options over agencies with multiple interoperable options.

iii. When at all possible, agencies already using an interoperable asset during an event should not be redirected to another resource.

IV. Organization and Responsibilities

A. The Bureau of Technology Services has responsibility for providing and maintaining several facets of the communications system. This includes computers, data connectivity, telephone connectivity, wireless devices, radio repair, radio transmission towers and antennas, and the software that supports these systems. It is anticipated that during an emergency, there will be a high demand on BTS services. As a result, some contingency plans include contracting out services, such as the fueling and maintenance of alternate power supplies at antenna repeater sites.

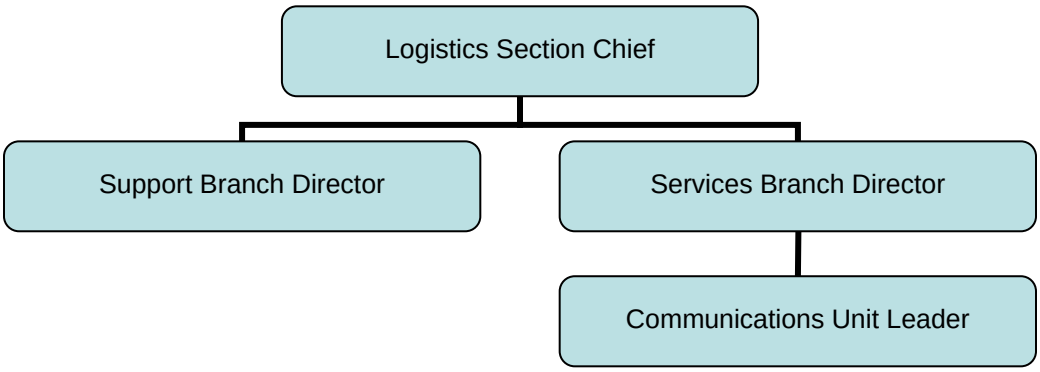
B. The Bureau of Emergency Communications is the communications entry point into the emergency response communication system. BOEC staff is responsible for receiving telephonic reports and requests for service. BOEC staff transmits this information via the public safety emergency radio system to fire, police and emergency medical services. Ongoing communication with first responders is conducted primarily with the public safety emergency radio system.

1. Communications Coordinator (COMC) – The Communications Unit Leader will work with the COMC to coordinate communications with other dispatch centers and the incident communications plan. Locally, the PSAP dispatch center supervisor or dispatcher will act as the COMC. Communications coordinators may also be located at the region/county, state, and federal level.

C. Communications Unit Leader (COML) – The COML is responsible for establishing, maintaining and documenting an incident communications plan and assigning the method by which resources join and participate in incident communications. This includes developing plans for the effective use of incident communications, equipment and facilities; installing and testing communications equipment; coordinating frequency use; distributing communications equipment to incident personnel and maintaining and repairing communications equipment. One element of the overall incident communications plan prepared by the COML

is an incident radio communications plan that delineates frequencies and systems that will allow interoperable communications.

1. Following is a typical organization for the Communications Unit within the Logistics Section.



D. RACES is a radio communication service, conducted by volunteer licensed amateurs designed to provide emergency communications to local or state emergency preparedness agencies. As such, RACES is important to communication redundancy and resiliency, however it is staffed by volunteers and subject to their availability.

E. ARES is a field organization of the ARRL. ARES groups consist of federally-licensed amateur radio operators who are trained in emergency communications and have a strong desire to serve the community whenever the need arises. As with RACES, the City will take steps to organize volunteers providing this function.

F. Police, Fire, Water, Transportation, Development Services, Environmental Services, Emergency Communications and Emergency Management bureaus have resources to aid in communication during an emergency. These resources should be maintained and tested to ensure they operate properly when needed, and that operators are familiar with all systems so successful communications within the scope of available systems will continue. Each user bureau should have its own communications plan that delineates how they will use their communications resources, and defines their backup plan in the event of the loss of any particular system.

V. Administration and Logistics

A. Required Records – Information required for the management of incident communications is identified in the Tactical Interoperable Communications Plan.

VI. Plan Development, Maintenance, and Review

A. Ownership – The PBEM Operations Manager is assigned responsibility for the development and ongoing maintenance of this Annex.

B. Periodic Review – This Annex will be reviewed and revised (as necessary) following each full activation of the ECC or at least every three years.

C. Consultation – Changes to this Annex will be reviewed by the Emergency Management Steering Committee and Disaster Policy Council prior to adoption and implementation.

VII. Authorities and References

A. Statutes – ORS Chapter 401

B. Ordinances – Title 15, Portland City Code – Emergency Code

C. Plans

1. Basic Emergency Operations Plan (BEOP)

2. Tactical Interoperable Communications Plan (TICP)

Appendix A – List of Agencies Sharing Portland's Public Safety Emergency Radio System

The list below identifies agencies that share Portland's public safety emergency radio system. The demand by partner agencies could impact system capacity and availability. Radio system partners could also be a source of additional radio resources.

American Red Cross
Assn. Portland Progress/Portland Patrol Inc.
Boeing
Bureau of Development Services
Bureau of Emergency Communications
Bureau of Emergency Management
Bureau of Environmental Services
Bureau of Technology Services – ComNet
Centennial School District
Central City Concern Hooper Inebriate Emergency Response Service – CHIERS
Clackamas River Water
Clean Rivers Cooperative
Corbett Rural Fire Protection District # 14
David Douglas School District
Drug Enforcement Administration
EMS – American Medical Response (AMR)
Extended Range Weather Forecasting
Fairview – Police Department
Fairview – Public Works
Federal Bureau of Investigations
Federal Protection Service
Gresham -– Environmental Services
Gresham – Fire Department
Gresham – Police Department
Kaiser Permanente Hospital
KATU 2 (ABC)
KEX
KGW 8 (NBC)
KOIN 6 (CBS)
KPTV 12 (FOX)
KXL
Legacy Emmanuel Hospital / Life Flight
Legacy Good Samaritan
Legacy Mt Hood
Metro Regional Government
Microchip Technology Inc.
Milwaukie – Police Department
Milwaukie – Public Works
Multnomah County – Department of Community Justice

Multnomah County – District Attorney's Office
Multnomah County – Emergency Management
Multnomah County – Human Services
Multnomah County – Medical Examiner
Multnomah County – Road Department
Multnomah County – Sheriff's Office
Multnomah County – Vector Control
ODOT – District 2A
ODOT – District 2B
ODOT – District 2C
ODOT – Region Headquarters
ODOT – Sandy Section
ODOT – Traffic Management Operations Center (TMOC)
OHSU – Building Security
OHSU – Emergency Management
OHSU – Facilities Management – Admin.
OHSU – Facilities Management – Utilities
OHSU – Facilities Management – Zone 1
OHSU – Facilities Management – Zone 2
OHSU – Parking Section
OHSU – Public Safety
Oregon Air National Guard
Oregon Humane Society
Oregon Liquor Control Commission (OLCC)
Oregon State Police
Parkrose School District
Port of Portland
Portland Adventist Hospital
Portland Bureau of Transportation – Maintenance
Portland Community College
Portland Fire & Rescue
Portland Parks & Recreation
Portland Police Bureau
Portland State University
Portland Streetcar
Portland Water Bureau
Portland Water Bureau – Hydroelectric Power
Providence Medical Center
Providence Milwaukie Medical Center

RAMS Specialized Security Service / Bonneville Power Administration
Reach Medi-Plane
Regional Organized Crime & Narcotics (ROCN)
Sauvie Island – Fire Department
Shriners Hospital for Children
SW Washington Medical Center
TriMet

Troutdale – Police Department
Union Pacific Railroad
University of Portland
US Coast Guard
US Marshals Service
V.A. Hospital
Willamette Falls Hospital