Filling a Critical Gap in Oregon's Emergency Alert System

Emergency Alert System Resiliency

Oregon's Emergency Alert System (EAS) serves as the first line of information dissemination in the event of both local and statewide emergencies. The system allows county and state emergency managers to broadcast messages to the public with critical messages. In the event of an emergency the EAS will likely be residents' only method of accessing vital services. Broadcasters throughout the state have invested in equipment that allows them to receive emergency messages, national, statewide and local, and push them out to specific audiences. The current EAS system is all-digital and relies on electricity and internet to broadcast messages. In the event of a catastrophic emergency, such as a fast-moving wildfire or a Cascadia earthquake, electricity and internet are compromised, and emergency managers will not be able to send messages to broadcasters for dissemination.

Following the breakdown of the EAS during September 11 the Department of Homeland Security (DHS) and the Federal Emergency Management Agency (FEMA) developed a digital, nationwide system tied to a central server in Washington D.C. Called the Common Alerting Protocol (CAP) the system has been shown to be very effective, as seen through the successful use of Amber Alerts. Prior to this transition to a digital program, the system was based on a series of encoders and decoders that could transmit and receive messages without the need for electricity or the internet. Broadcasters in Oregon are equipped with decoders that allow them to interpret messages sent from encoders and transmit them to an audience.

Most emergencies are local. When the digital system fails, state and local authorities will be dependent on this Legacy System, the series of encoders and decoders. While a few Oregon counties have encoder units, most do not. Placing an encoder unit in the Emergency Operations Center (EOC) of every county in the state will allow for a swift, local and accurate response to local and statewide emergencies when the CAP system is not functioning. Emergency Managers can use the encoders to transmit potentially lifesaving information to broadcasters, who have the ability and equipment to reach the target audience.

OPB Signal Distribution System

Oregon Public Broadcasting's signal distribution system is aging and reaching end of life. This terrestrial distribution system operates completely independent of fiber connections, which will likely be unavailable during a natural disaster. This independent infrastructure allows OPB to distribute local, state and national emergency messages to the citizens of Oregon. The budget to harden the system and build in much needed redundancy is $300k.

A $1.1 million investment from the state will ensure that in a critical emergency, county and state emergency managers will be able to broadcast vital information to residents.

BUILDING AN ANALOG EMERGENCY ALERT SYSTEM (EAS) STATEWIDE.

There are three elements to enable local emergency managers to get a message out to broadcasters. This document outlines in detail how these elements will work together.

1. The primary broadcast station is designated to receive messages from a county and then broadcast those messages. All other broadcasters in an operational area monitor that primary station (The LP-1) and repeat those messages. FCC rules and regulations require all broadcasters and cable systems to employ EAS decoders in their facilities. Broadcast stations test their EAS encoder/decoder systems weekly and monthly with an audio message. The results are logged and are available for inspections.

2. The second element is an EAS encoder capable of originating emergency messages. These units will be located at the operations center or dispatch area of each county. Less than one third of Oregon counties have these units now and most of these units predate 1997 and were donated to the county. This plan proposes to replace the older units with new units and software making it user friendly for emergency personnel to use.

3. Radio Links between emergency operations center and the primary station in each operational area make up the third element and the element which is the most complex in terms of the hardware employed. The goal is to get the message created by the county to the primary station, by radio. It is not a "Cookie Cutter" system for every county. We can draw from the experience of what some counties have done previously but additional capability will be added as necessary.

    a. Radios. The radios we propose to use are small. They can mount in a small cabinet along with a power supply. They will operate on a single frequency. That frequency will be one of the following: 166.25 MHZ. 450.600 MHZ., and 455.600 MHZ. These frequencies have been coordinated statewide and are reserved by Part 74 of FCC Rules as a secondary or auxiliary service to broadcast operations. The units will be new and with the infrequent use should last for a long time with very little maintenance. These radio facilities at the county will only transmit and the units at the primary broadcast stations will only receive.

    b. Coaxial cable. A cable is used to deliver the signal to the antenna or from the antenna to the receiver. The length is dependent on which antennas will be installed will vary as does the structure they are being installed. The radio might need to be employed on a rooftop shack or located in the dispatch area. Each county and each station will have different lengths of cable installed. The cable mostly used will be foam coax ½" diameter.

    c. Antennas. They are located in a manner to provide line of site communications from transmitter to receivers. The type will vary as the locations of the EOC's and the Primary stations vary from county to county. There ae two types of antennas; directional and non-directional. Directional antennas boost the signal in one direction. Non-directional antennas are used when the point-to-point communications are employed from different directions .

    d. Licensing. Because the frequencies used are allocated for broadcast use, they will need to be licensed to a broadcast entity. The entity will normally be the LP-1 station.

The state is divided into operational areas. These areas are divided into areas of dominant influence or as the broadcasters say the "ADI". In each county the question is asked what radio, television stations are people listening or viewing? If an emergency message is sent you want to reach those people that will respond to the message. Each area may contain several counties so accommodation's need to be made to allow multiple counties to access the stations that the people in those counties. The exact detail of each counties equipment list is not known without a physical walk through of each one of the counties. We can however cover the majority of the basics using past installations as an example.

Of the 36 counties, 26 of them will require a repeater site. This will require coordination of the site owner, frequency allocations and licensing concerns. The following is the list of the 10 repeater sites that are being proposed.

Operational Area "Portland Metro" (5 counties)

This area contains 5 counties. Clackamas. Columbia, Multnomah, Washington, and Clark County located in Washington State. An EAS encoder and transmitter are installed in each county. Clarke County is covered so we only need to upgrade the four Oregon counties

The Portland area uses a local relay network or "LRN". A repeater is located on the Sylvan Tower and maintained by the staff at OPB. It receives on 455.600 and transmits on 166.25 MHZ. The equipment is old and donated but is still functioning. This repeater also repeats signals from the EOC in Salem and is the input source for the state relay network. The 166.25 transmitter does operate on a 24/7 basic and is licensed to Oregon Public Broadcasting's KOPB-FM.

Yagi type directional antennas are used for the counties and a non-directional antenna is used for the repeater. This proposal will also place a new EAS encoder in the Salem facilities of the Oregon Emergency Response system or OERS. The radio system in Salem is fairly new and would not need upgrading. The primary stations will use Yagi type directional antennas pointed to sylvan heights.

Each county will be facilitated with an EAS encoder, a transmitter, and antenna.

KOPB-FM and KXL-AM the two primary stations for the area will also be facilitated with radios and antennas.

Operational Area "South Lane" (3 counties)

This area contains 3 and ½ counties. They are Lane, Linn, Benton, and the western area of Douglas County where Reedsport and Winchester are located.

A repeater is located on Prairie Peak near Corvallis. The site is donated by Silke Communications in a building used by KDUK-FM. The repeater is currently licensed to KOPB-FM in Portland.

If an emergency messages in needed for the western Douglas County area, the. Lane County will launch the message as all the media there is from Eugene stations.

The counties transmit on 455.600 and the repeater transmits on 166.25 MHZ.

The three counties will be facilitated with a new encoder, transmitter, and Yage type antenna pointing to Prairie peak. KKNU the primary station will be facilitated with a new receiver and Yage type antenna.

Operational Area "Central Oregon". (4 counties)

The areas served are in Jefferson, Crook, Wheeler and Deschutes counties. This area has some difficult issues in covering the distance and the sites available. It will require a repeater. I have contacted Ken White co-owner of the site on Grizzly Peak outside of Madras and the site space will be donated.

Prineville, Madras, and Bend will transmit on 455.600 and be received on Grizzly Peak. There will be an EAS encoder in each one of those counties emergency communications area. Jefferson and Wheeler Counties dispatch is in Sherman County and is connected by microwave equipment.

Grizzly will transmit on 166.25 and be received at the KOAB-FM transmitter site on Awbury Butte.

The frequencies will be licensed to KOAB, 91.3 in Bend and will serve as a primary station. The counties will use a yage type antenna to transmit to Grizzly, and be received on a common non-directional antenna provided by the site. Yagi type antennas will be used for the link between Grizzly to Awbury

Operational area "Eastern Oregon" (2 colunties)

This area is located at the eastern side of the state and covers a vast area. Most counties can connect direct however; two counties will need a repeater, Baker and Union Counties.

The Primary station is KCMB in LeGrande They will need a repeater. A repeater site exists halfway between LaGrande and Baker City. Both Union and Baker counties can transmit on 455.600 MHZ. from their respective EOC's and the repeater will transmit the signal back to the studio in LaGrande on 450.600 MHZ.

The license will be assigned to KOBK in Baker City, an OPB affiliate.

Operational Area, "Gorge". (5 counties)

The primary station is KMSW in The Dalles. The counties served are Hood River, Wasco, Morrow, Gillam, and Sherman. The repeater site is "Stacker Butte" the site that bicoastal media uses for their FM station KACI.

It should be noted that Sherman and Gillian Counties share a 911 center in Moro.

The four counties will use 166.25 MHZ. using yagi type antennas to talk to Stacker Butte.

Stacker Butte will use a VHF non-directional antenna to receive the counties and repeat the signal on a 450.600 MHZ. transmitter with a yagi-style antenna directed to downtown The Dalles and the studios of KMSW.

The repeater site will be maintained by John Mckay an SECC member and a local engineer for bi-coastal media. KACI-FM will provide building and tower space for the repeater.

The site will be licensed to Oregon Public Broadcasting's KOTD-FM.

Operational Area, "Capitol" (3 counties)

The Capitol area consists of Marion, Polk, and Yamhill counties.

The primary station is KWVT-TV and the EAS decoder is located at the transmitter site. Therefore no studio links are required.

Both Marion, and Polk counties gat get to the site directly from their operations center in Salem, and Dallas. However Yamhill County will require a repeater to get an emergency message from McMinnville to the KWVT-TV site.

The repeater site reserved is at the transmitter site of KYTT licensed to Independence. Yamhill will transmit on 450.600 and the repeater will receive the 450.600 and re-transmit on 455.600. Marion and Polk will transmit on 455.600. The KWVT Transmitter site will receive the 455.600 signals from the three counties and the EAS encoder will also be at the transmitter site.

The transmitters will be licenses to KOPB-FM, Portland.

Operational Area, "Coos" (1 county)

The primary station is KSHR-FM in Coos bay. It serves only Coos County. KYTT serves as the LP-2 station to help get the president's message into Curry Counties through a network of translators.

For Local emergency messages, the area does not require a repeater. It does have some specific challenges to get an emergency message from Coquille Oregon, the county seat, to the Coos Bay area where all the radio and TV stations are located.

There is not any Private IP conductivity between the county seat in Coquille and the broadcast stations in Coos Bay. In order to get an EAS message it will require two EAS Encoders. One in the dispatch center in Coquille and that message will make it to coos bay on the phone line used for general dispatch. The second EAS unit will be located at the county sheriff's radio site, Blue Ridge. A 450.600 MHZ. Receiver will be needed at the primary station to receive that signal. The transmitters will be licensed to KOPB-FM, Porland.

Operational Area; Southern Oregon (3 counties)

In this operational area multiple counties are served; Jackson, Josephine, and Klamath.

There are two primary stations. The primary station is for Josephine and Jackson Counties is KOBI-TV in Medford the receive site is King Mountain west of Medford. It will receive the 455.600 from the two counties and send it to the studios on a private microwave. The primary station for Klamath County is KOTI-TV in Klamath Falls. The

receive site is on Stukel mountain west of Klamath Falls. They will receive the 455.600 from Klamath County and send it to the KOBI-TV studios in Medford on a private microwave.

A total of three Endecs, three transmitters, and two receivers will cover these counties.

The transmitters will be licensed to KOPB-FM, Portland

The remainder of the 10 counties will not need a repeater. Each one of the counties will require one transmitter at the county's EOC, transmitting on 455.600 plus an EAS encoder, and one receiver on 455.600 at the Primary station. This is a list of those counties, the primary station and the licensing station.

Clatsop;

EOC Location, Astoria

Primary Station, KCYS-FM, Seaside

Licensing Station, KOAC-FM, Astoria

Curry;

EOC Location, Gold Beach

Primary Station, KGBR, Gold Beach

Licensing Station, KOPB-FM, Portland

Douglas;

EOC Location, Roseburg

Primary Station, KRSB-FM

Licensing Station, KOPB_AM, Eugene

Grant;

EOC Location, Canyon City

Primary Station, KJDY-FM, John Day

Licensing Station, KOJD-FM, John Day

Harney;

EOC Location, Burns

Primary Station, KYQT-FM

Licensing Station, KOBN, Burns

Lake;

EOC Location, Lakeview

Primary Station, KLCR-FM

Licensing Location, KOAP-FM Lakeview

Lincoln;

EOC Location, Newport

Primary Stations, KYTE-FM KSHL-FM

Licensing Station, KOGL-FM Gleneden Beach

Morrow;

EOC Location, Heppner

Primary Station, KUMA-AM

Licensing Station, KTVR-FM

Tillamook;

EOC Location, Tillamook

Primary Station, KTIL-FM

Licensing Station, KTMK-FM

Wallowa;

EOC Location, Enterprise

Primary Station KWVR-FM

Licensing Station, KTVR-FM