Department Capabilities Assessment

and

Strategic Improvement Plan

FY 2017 - FY 2021

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Yellowstone County Department of Emergency & General Services

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Committed to the Protection of Yellowstone County through Prevention, Preparedness, Mitigation, Response and Recovery

Yellowstone County Department of Emergency and General Services developed this strategic plan to guide development of its major programs and projects during the fiscal years of 2017-2021. This plan is subject to continuous review and revision based on input from county leadership and other stakeholders. Emerging and changing threats and needs may also significantly alter the plan's goals and/or timelines.

To continue to improve capabilities for emergency Prevention, Preparedness, Mitigation, Response and Recovery and also to address planned changes in a proactive manner it is vital that the county Department of Emergency and General Services establish its long term vision and goals and, more importantly, communicates its strategies to its members partner agencies, the community at large and other interested individuals.

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Purpose and Development

Yellowstone County Assessment and Strategic Improvement Plan is intended to enhance the department's ability to prevent, prepare, mitigate, respond and recover from acts of terrorism, natural and human caused disasters through the development of a common vision and strategy. This planning effort is executed to assist leadership and partner agencies in directing resources, programmatic efforts, achieving results, ensuring accountability and properly allocating limited resources for the next 5 years. The strategic plan is designed to serve as a long-term guide that is able to direct both short and long term efforts to achieve real results.

Communication of Plan

Carious communications techniques will be used to disseminate the assessment and strategic plan to help build awareness of and support for the development of capabilities in Yellowstone County. Since the strategic plan forms the basis for emergency and disaster management capability improvements the successful implementation depends on effective communication of the plan over the next 5 years over multiple avenues including

- Internally Agencies—The assessment and strategic plan will be made available to all county agencies
- External Agencies--The assessment and strategic plan will be made available to all external agencies through various means including hard and electronic copy. The plan will be the basis of planning with other agencies for Yellowstone County department of Emergency Services with other agencies including but not limited to county fire departments, city departments and federal partners.
- Media and Public—The assessment and strategic plan will be made available to all external agencies through various means including hard and electronic copy. Questions about measurable goals will be answered by leadership of the department of emergency and general services.

Strategic Goals

Yellowstone County Department of Emergency and General Service will pursue the following goals for FY 2017 – 2021.

Strategic Goal 1: Integrate Greeno Repeater to county 9-1-1 center by October 31, 2016

Strategic Goal 2: Prepare for FCC Narrowbanding Phase 2 by upgrading existing repeater communications equipment to Phase 2 capable equipment without losing significant coverage areas by June 30, 2019

Strategic Goal 3: Improve fire department- 9-1-1 center communication capabilities by increasing repeater infrastructure and coverage for rural fire departments and other agencies by establishing a 4-zone simulcast system and integrating it with the new city/county 9-1-1 center utilizing mostly grant funding by June 30, 2019

Strategic Goal 4: Update Yellowstone County's ability to provide notification to residents of life threatening situations across the county by achieving capabilities of the Integrated Public Awareness Warning System (IPAWS) or a system with similar capabilities by June 30, 2021.

Strategic Goal 5: Update the paging system in Yellowstone County for volunteer fire departments, EOC activation and activation of other county emergency response groups to alpha numeric/ SMS/ e-mail capable paging by November 18, 2016.

Strategic Goal 6: Establish a common communications plan or interoperability agreement with local, state and federal partners in Yellowstone County to enhance communications interoperability in emergency situations by December 31, 2017.

Strategic Goal 7: Acquire and distribute dual-band or multi-band interoperability for volunteer fire department leadership utilizing the above mentioned communications plan or interoperability agreement by June 30, 2020

Strategic Goal 8: Update the funding mechanism for grass protection contracts within Yellowstone County to put fire department boards in charge of their own needs as outlined in MCA by December 31, 2017

Strategic Goal 9: Complete an assessment of the county Emergency Operation Center (EOC) and revise this plan to reflect identified gaps in the ability of the EOC to perform adequately in the event of a large scale emergency by June 30, 2017

Strategic Goal 10: Improve interagency information sharing capabilities by building out the LEEP information sharing platform with pre-existing data about PODs, schools and shelters by September 30, 2017

Strategic Goal 11: Revise and update the Pre-Disaster Mitigation (PDM) Plan and Emergency Operations Plan (EOP) by: PDM- June 30, 2017, EOP-June 30, 2019.

Communications

Overview

Communications in Yellowstone County include many different means of communications from the multiple repeater systems for different agencies to the severe weather/ tornado siren system, paging systems for fire, EMS and law enforcement agencies. Most communication systems are specific to organizations or agencies meaning that each agency operating in the county is running their own communications plan with little coordination between agencies. Following a 2016 Airport Fire (ARFF) active shooter exercise a communications committee was formed which is working with the LEPC communications subcommittee to look at improving communications interoperability between agencies in Yellowstone County.

At the heart of the issue is that the City of Billings operates a trunked 800 MHz radio system throughout all aspects of city government including police and fire. The city also has a backup VHF repeater infrastructure for the fire department which is generally unused. A number of federal agencies in Yellowstone County operate on an 800 MHz system as well. County fire agencies use a VHF radio system with an assortment of equipment and programming due to a lack of coordination in purchasing, use, funding and some differences of needs throughout the county. City EMS is contracted through AMR who operate a VHF system designed to cover the City of Billings. The Yellowstone County Sheriff's office operates a VHF system throughout the county on top all additional systems in place.

Rural Fire Repeater Infrastructure

Yellowstone County Department of Emergency & General Services manages repeater sites across Yellowstone County including sites at Skyview, Greeno and Pompey's Pillar. These sites contain radio equipment for local, state and federal agencies. Many of those agencies also have repeater sites at third party tower sites. Repeater infrastructure for agencies outside county fire (FBI, ATF, SO, Billings City etc…) is built and maintained by their agencies.

Yellowstone County Department of Emergency Services manages repeater infrastructure for county fire departments. These VHF repeaters are located at select sites across the county in an effort to provide rural fire departments with reliable communications in the field and back to the 9-1-1 dispatch center in Billings. Currently there are 3 operational repeater sites allowing communications with dispatch, DES East (Dunn Mtn.), DES West (Skyview), and DES Custer.

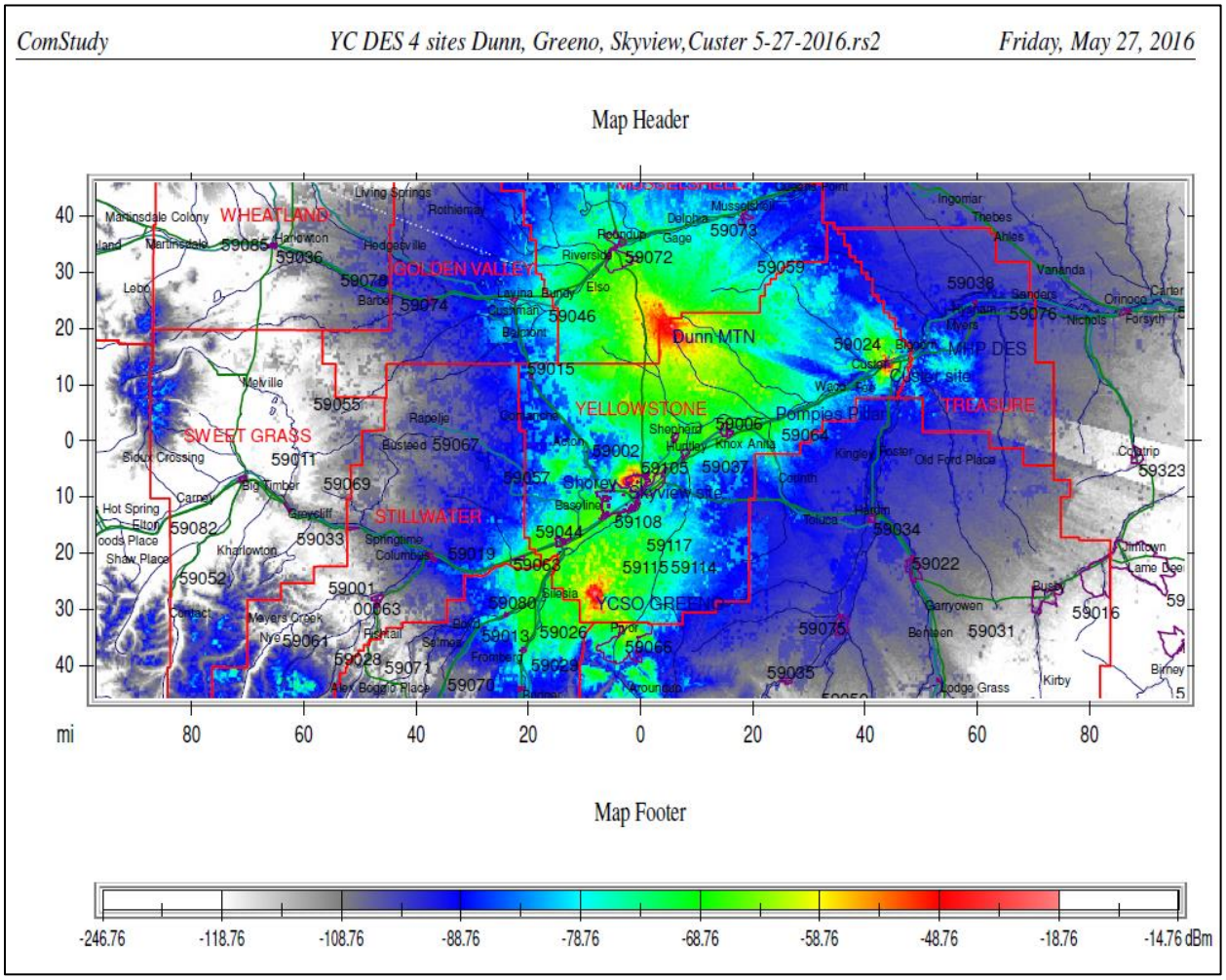
An additional repeater was installed at the Greeno site in June 2016 but time is needed to get this repeater programmed into the 9-1-1 center and all the radios at each fire department. This repeater is expected to be fully operational by October 31, 2016 and will add significant coverage to the southern part of Yellowstone County.

FCC Phase 1 Narrowbanding requirements were implemented in January of 2013 which has allowed for increased use of the frequency sets available to public service agencies. The FCC has already informed state and local governments of their intent to institute Phase 2 narrowbanding requirements, further

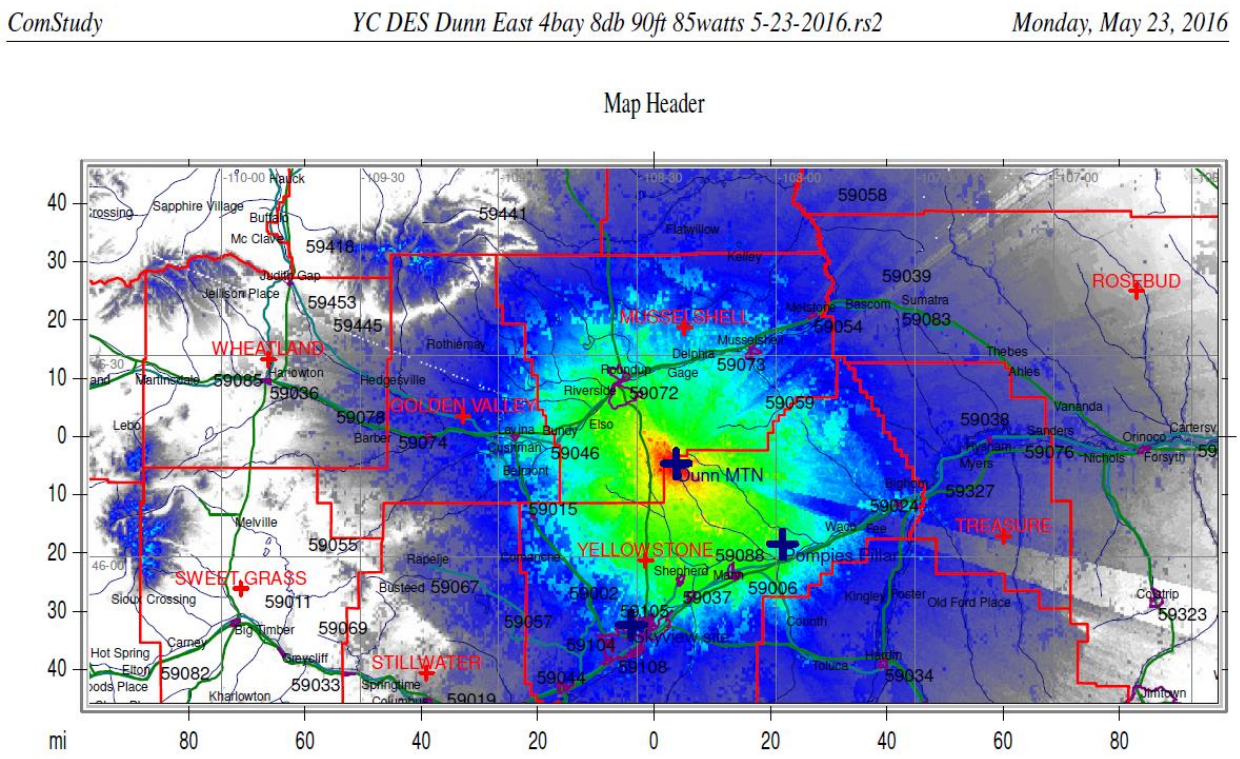
restricting the wavelength of a licensed frequency. The narrowbanding process has reduced the coverage area provided by each repeater and the capabilities of mobile and portable radios to communicate. The FCC estimates an average 3dB loss in signal strength during the Phase 1 transition and this will become more significant with Phase 2 narrowbanding. This has left significant and troublesome holes in the communications ability of the rural fire departments and 9-1-1 center.

Repeater coverage under best conditions, including the DES Greeno repeater is shown on the map below with red, yellow, green and teal (light blue) being shown as areas with reliable radio coverage. Under real-world conditions these coverage areas would be further reduced and areas without communications coverage would increase. Areas with dark blue, grey or white are areas with unreliable or no repeater coverage. There are three core areas in Yellowstone County without reliable repeater coverage under this setup, they are

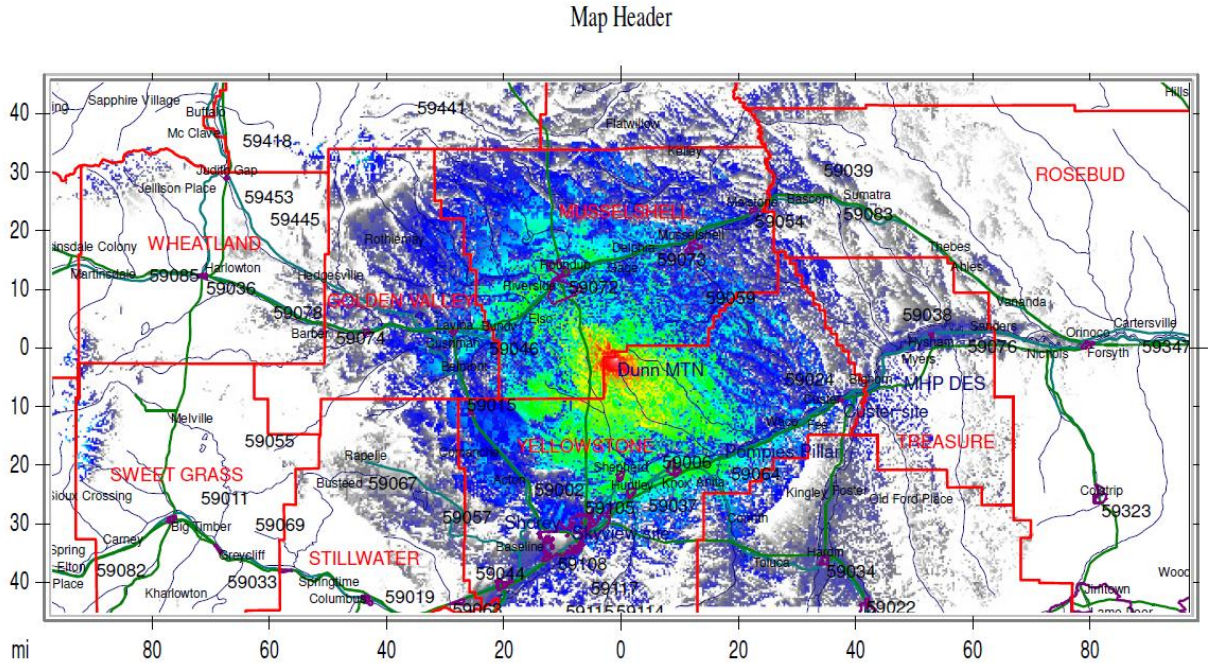
1) Northeast Yellowstone County
2) Southeast Yellowstone County
3) Western Yellowstone County



The map on the previous page showed coverage where an 80-100 watt repeater could broadcast a signal to under optimal conditions. The capabilities of a firefighter to communicate back to the repeater is significantly reduced from this since fire operations are generally conducted from portable/handheld radios which only offer 5-6 watts of total power. The firefighter's ability to communicate back to the repeater, compared to the repeater's coverage is shown below. Many times, this results in a situation where the firefighter can hear a transmission but is unable to communicate back to the person talking.



Repeater Coverage- Dunn Mountain 85watt



Portable Radio Coverage- Dunn Mountain 5 watt talkback

Looking at these two maps it becomes evident that under real-world conditions, communicating with a does not ensure reliable communications across the county. County-wide coverage with a 5-watt portable is shown on the next map. As you can see, even with the whole county communications infrastructure there are large gaps that make communications unreliable, especially in the far corners of the county. A proposed solution for that is the bottom map on the next page Proposed Communications Infrastructure Improvements 3-year plan. This moves the county to a 4-zone simulcast system with 7 repeaters working together in zones so that the county can reach out across our land and ensure that communications is present for the reliable flow of information between resources and the 9-1-1 center. With this upgrade the county will also prepare for Phase 2 narrowbanding by purchasing equipment capable of narrowbanding down to Phase 2 requirements. The final locations of the additional repeater sites may move slightly to provide optimal coverage but would be in the general location as shown on the map. Tactical repeaters will also be placed at strategic locations to expand resource-resource communications and situational awareness during emergencies. Those locations will be determined at a later date

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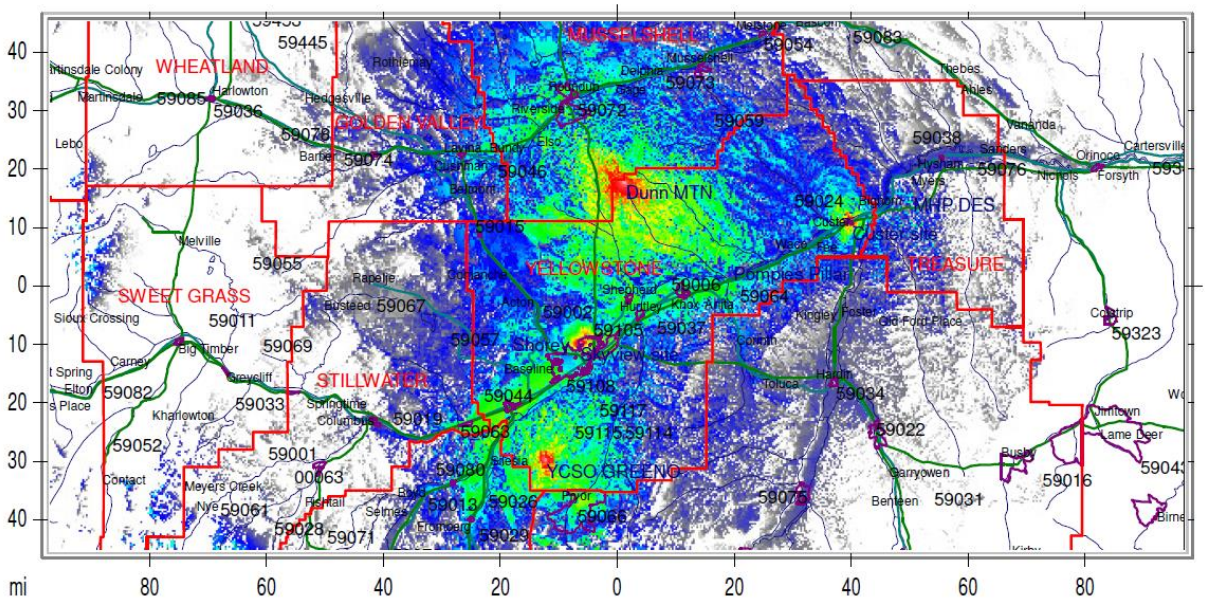
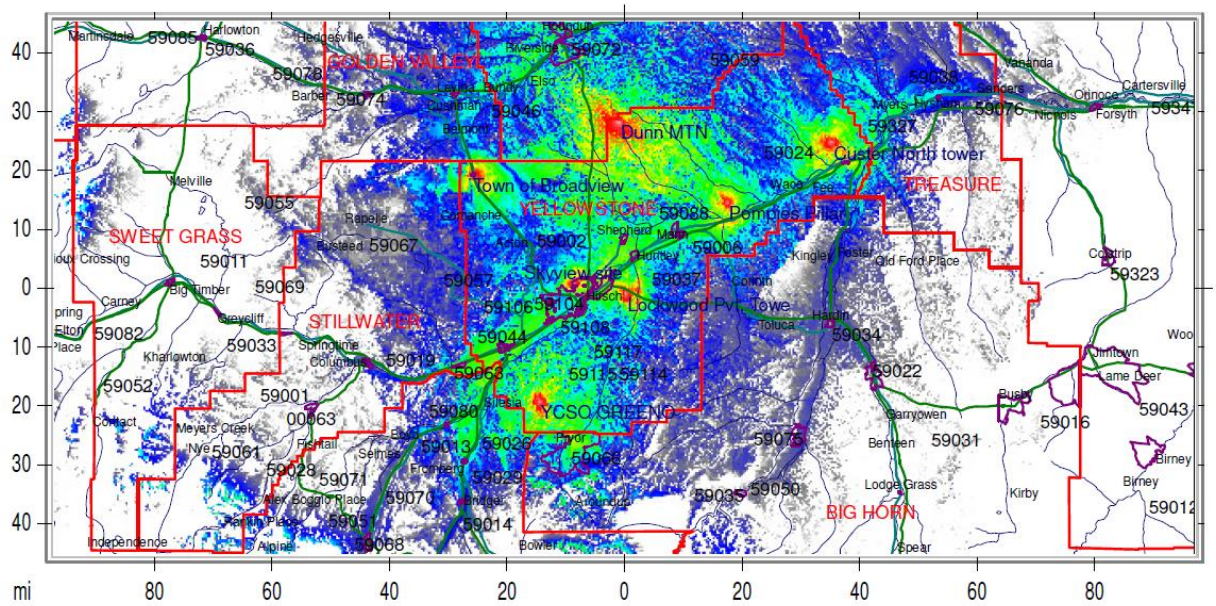


Map Header

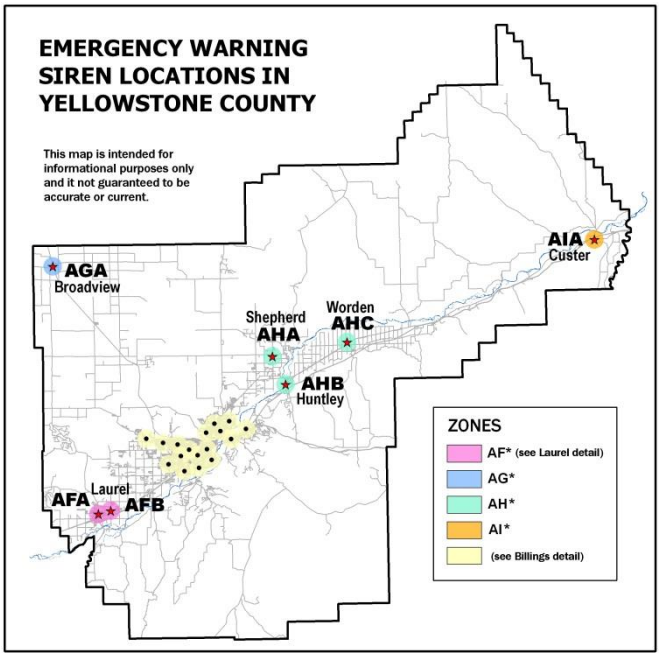


In order to ensure reliable repeater coverage across all of Yellowstone County, which is necessary to do the work fire departments are tasked to complete in a safe and reliable manner 4 additional repeater sites are needed in the vicinity of those three locations. This will likely require renting space on at least two existing, third party tower site, potentially constructing a new, solar powered repeater sites and installing 4 new repeaters throughout the county. This project would have an estimated total cost of $600,000-$650,000 with the majority being funded through solicitations for donations, grants from private businesses and public agencies. Completion is proposed by the end of FY 2019

Partial funding may be available through FEMA, DHS and state grant funds but grant funding is increasingly competitive and expecting grant funding past 75% is unlikely. For that reason $75,000/ year will be requested from the county during FY18 and FY19.

Yellowstone County Public Notification System

Yellowstone County Emergency and General Services maintains and operates a siren system geared towards notification of life threatening situations such as tornadoes or emergencies such as chemical spills, vapor clouds, or major industrial fires. Yellowstone County has 24 outdoor alerting sirens, 17 in the Billings/Lockwood area, 2 in Laurel, and one each in the rural communities of Broadview, Shepherd, Huntley, Worden and Custer. These sirens are radio controlled sirens activated from the Billings/Yellowstone County Communications (9-1-1) Center with a backup control at the Laurel Communications Center. The sirens can be sounded individually, in zones, or all at the same time.



The siren system currently receives annual testing and maintenance but is extremely limited in the information it can deliver because the sirens only sound a single alarm. Additionally, due to the limitations on how far sound can travel, only a small portion of Yellowstone County is covered by the siren system. As the community has grown since the system was developed, almost all the new growth happened outside areas covered by the siren system. No information can be passed from officials to the public over this interface. The siren system also has significant costs associated with its use. The siren system costs, on average $20,000 annually. The system receives approximately $15,000 in maintenance every year through a

maintenance contract. Utility costs to operate the siren system are approximately $5,000 annually and approximately every 20 years the radios used to activate each siren must also be replaced.

Due to the severe limitations of this system and its relative high cost it is recommended that the siren system be decommissioned over the next 5-years (FY17-FY21) and Yellowstone County put the money towards improving public and first responder communication systems. For the 5-year period maintenance would be performed on a 2-year cycle and annual testing would continue. During this time, the funds saved would be used to plan and complete the first responder communications improvements and adoption of a public emergency notification system more consistent with 21st century technology that could be interfaced with the new City/County 9-1-1 center currently in planning stages. The early recommendation is to become capable with the Integrated Public Awareness Warning System (IPAWS) including Wireless Emergency Alerts, the Emergency Alert System, NOAA Weather Radio and other systems currently organized under IPAWS. The county should also work with the state of Montana towards deployment of reverse 9-1-1 Technology with Next Generation 911 (NG911) which utilizes Geographic Information Systems (GIS) mapping capabilities to enhance 9-1-1 capabilities and response organizations. These changes would maintain Yellowstone County's ability to communicate emergency information with its residents but would improve the quality of information that the county could transmit to its residents.

Paging System

Yellowstone County rural fire departments have been using a 2-tone paging system for decades. Some departments who can afford it have been using third party system to add text (SMS) capabilities. Yellowstone County was lucky enough to have a PageGate system donated from St. Vincent's Healthcare in recent years and county funding around $40,000 was used to set the system hardware up. Unfortunately the system has never become operational. The project is back on line being coordinated by DES and currently worked on by IT. Good progress has been made in the last three months to interface the PageGate system with the city/county 9-1-1 center thereby allowing them to page over the new PageGate system. Field testing is currently being set up and will occur summer of 2016. The system will be rolled out to fire departments in fall 2016.

The new PageGate system will substitute alpha numeric paging for the current 2-tone paging system and will add SMS and e-mail capabilities. This will increase paging capabilities and allow for greater paging coverage since alpha numeric pagers require less coverage to receive a page than a 2-tone pager and SMS messages can be received everywhere there is cell phone coverage compared to the current system which only pages where there is repeater coverage.

The new PageGate system will also be used to activate the EOC. Currently EOC activation requires calling each individual that needs to respond to the EOC. This takes significant time during what would be the early hours of a large scale disaster. By utilizing the PageGate system's SMS and e-mail capabilities the majority of EOC staff could be notified in a short timeframe, saving time during the early stages of a large scale disaster.

Radio Usage & Interoperability

Radio usage and interoperability across county, city and federal organizations operating within the borders of Yellowstone County are limited in two means. The first is a single, common communications plan or interoperability agreement. No agreement has been laid out, maintained or agreed upon as to interoperability of agency channels on a large scale across the county with all agencies involved. While it is understood that some frequencies require protection and use by only individuals from specific agencies an outline of which channels can bridge the communication gap is missing and a communications plan to utilize shared frequencies during interagency operations need to be developed. This is a topic of conversation for a recently formed communications committee which came out of a TXX exercise conducted at the Airport Operations Center this spring.

The second limitation is radio hardware. While city and federal agencies are using an 800 MHz system, county agencies are using a VHF radio system. Currently the 9-1-1 dispatch center is able to patch users of different radio bands for short periods of time but this requires significant time during an emergency, is short lived, and can only be conducted between two users, not entire responding agencies. The patch system also does not allow for tactical interoperability during an incident between agencies using different radio bands. An option to alleviate this problem is, after the communications plan mentioned in the above paragraph is completed, for the county and other agencies to execute agreements for interagency use on channels that can be shared. Radio hardware can then be purchased through grant programs for multi-band radios that can operate on both the 800MHz and VHF system to allow for interoperability across all levels of response for agencies that need to establish communications across agencies and radio systems. The equipment will have to be purchased in stages to allow for maximum grant funding but the plan should allow for on-scene leadership to first be equipped with these dual or multi-band radios and then to work them into the field responder level. After the communications plan is finalized funding of the radio equipment could be completed in 3-5 years using primarily DHS grant programs.

Grass Protection Funding

Funding of grass contracts has long been a discussion item in Yellowstone County. A change in MCA has brought up a potential way to move the departments with fire service areas in charge of meeting their own fiscal needs. It is proposed that Yellowstone County funding levels of the grass fire contracts remain constant. Additionally, fire service areas having a difficult time paying for grass fire protection can have their board discuss and pass a resolution requesting the Yellowstone County BOCC, by resolution, assess a special assessment for the landowners within a fire service area under MCA 7-33-2404-2(b) which states that the BOCC may establish a rate as a special assessment of no more than $0.15/ac and no more than $250 for undeveloped land under single ownership for the protection of undeveloped land within the fire service area. This model will be presented to fire service areas after commissioner consideration.

Emergency Operations Center

An emergency operations center (EOC) is a central command and control facility responsible for carrying out the principles of emergency preparedness and emergency/ disaster management at a strategic level during an emergency, and ensuring the continuity of operation of a company, political subdivision or other organization.

An EOC is responsible for the strategic overview, or big picture of the disaster, and does not normally directly control field assets. The EOC makes operational decisions and leaves tactical decisions to lower/ field command personnel. The common functions of all EOCs are to collect, gather and analyze data; make decisions that protect life and property, maintain continuity of the organization and disseminate those decisions to all concerned agencies and individuals. EOCs are managed by an EOC Manager during incidents which, in Yellowstone County is the Director of Emergency and General Services.

Based on an informal review of the Yellowstone County EOC the center lacks the space, technology and layout to complete these operations. Its location, in the basement of Station 1/ City-County Dispatch is inappropriate to withstand a major disaster and with a new dispatch center underway the upkeep of the technology present will be further degraded. To ensure a full picture of the issues and solutions an analysis of the EOCs needs and capabilities will be included in the rewrite of Yellowstone County's Pre-Disaster Mitigation Plan which is set to be conducted in FY17. The recommendations of that report will be reported to the Board of County Commissioners after its completion and this plan will be updated to reflect recommendations.

Information/ Intelligence Sharing –LEEP—Remote & EOC Intelligence Interface

Information sharing is a paramount principle of disaster/ emergency management. One of the primary functions of an EOC is also to collect, gather and analyze data in order to make response to a disaster more effective. Currently no information sharing platform exists in Yellowstone County that can interface between all agencies for the timely sharing of information, especially between agencies at different levels of government. Such an interface does exist and is available through the FBI. The system, named Law Enforcement Enterprise Portal (LEEP) allows for collection and dissemination of information in a multi-agency or multi-jurisdictional response. The FBI maintains the system, provides system support and can easily add additional accounts during a large scale disaster to facilitate sharing of information between all involved agencies.

The Yellowstone County Department of Emergency and General Services is working with the FBI currently to build a profile for county operations, plans and information in this system. This would allow plans for specific emergencies to be loaded into a commonly accessible, remote location where responders can access it from any device with an internet connection. This would include blueprints and plans for sites to be used for points of dispersal (PODs), schools, sheltering operations and intelligence gathered during an incident to ensure that it was shared with all responding agencies. After the system and information is built it will be made available for use by response agencies in Yellowstone County and additional agencies can be added during an emergency situation.

Hazard and Disaster Plans

The Yellowstone County Pre-Disaster Mitigation (PDM) Plan and Emergency Operations Plan (EOP) are both due to be updated at this time. A grant has been applied for to update the PDM plan which should come through later this year and has already been approved by the BOCC. The EOP is being updated by the Dept. of Emergency and General Services in cooperation with the Local Emergency Planning Committee (LEPC) and all partner agencies involved in emergency and disaster response listed in the plan as primary or secondary agencies. After review and revision of these two plans sections will be identified for review annually such as emergency contact numbers. These changes will be completed by the Department of Emergency and General Services and any changes or updates will be presented to the BOCC.