



# SMITH VALLEY FIRE PROTECTION DISTRICT

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## Memo

ROB LOVEBERG  
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BOARD OF DIRECTORS  
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PRESIDENT

JOHN ABROTT  
KRISTIN MYERS

**To:** Board of Directors  
**From:** Rob Loveberg, Fire Chief  
**CC:**  
**Date:** March 2, 2020  
**Re:** Radio Repeater and Simulcast System

At its February meeting, the Board asked for information on the Pine Grove (Lobdell Summit) repeater and the Lyon County simulcast system project. I inquired to Lyon County and Sierra Electronics about the functioning of the existing repeaters and the status of the simulcast project. I have summarized the information below.

The Smith Valley Fire District (SVFPD) is currently paged from the Bald Mountain repeater. Although reprogramming the Dispatch consoles to page off the Pine Grove repeater was discussed when our fire frequency repeater was installed, the reprogramming never occurred.

Paging will continue to be performed from individual repeaters in the analog mode after the simulcast system becomes operational. I anticipate that SVFPD paging will move to the Pine Grove repeater since the County is still pushing to eliminate the Bald Mountain repeaters. Sierra Electronics will test the repeaters for their effectiveness and coverage during the simulcast project's test period.

As of last week, it appears that the simulcast system will not be made operational until after "Night In The Country" occurs in July. Once the new repeater site on "Y" Hill in Mason Valley is completed, Sierra Electronics anticipates 45 to 60 days of testing to optimize the simulcast system.

Information regarding the new repeaters, repeater tower, and antenna placement at the Pine Grove site are listed below.

- The new tower is 120 feet in height
- The fire antennas are mounted on the southeast tower leg, with the receive (RX) antenna mounted at the 120-foot level and the transmit (TX) antenna mounted at the 50-foot level.
- The RX antenna is a Telewave ANT150F2 omnidirectional 2.5dB gain antenna.
- The TX antenna is an RFS BA1010-2 omnidirectional unity gain antenna.
- The fire and law enforcement frequencies are sharing the RX and TX antennas.
- The fire channel is now operating on a Motorola GTR 8000 repeater. The District's Motorola Quantar repeater equipment was repurposed for the Road Department frequencies (without the District's knowledge or approval).

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The differences between the old repeater system and the new repeater system on Pine Grove are described below in an excerpt from an email from Jared Schindler of Sierra Electronics.

*One of the biggest differences between the old system and the new system will be the coverage and ease of radio operation in a simulcast system. As of 1/14/2020 the fire channel is operating on the new antenna system which includes a separate antenna for RX and TX. The previous antenna system utilized a single antenna mounted at the 40ft level for both RX and TX. The new RX antenna is mounted at 120ft and the TX antenna is mounted at 50ft. Because the RX antenna is mounted higher on the tower, it will be in a better position to capture incoming traffic from units in the field resulting in an improved coverage footprint. Before 1/14/2020 the fire channel was operating on a Motorola Quantar. Now the fire channel is operating on a new Motorola GTR 8000.*

I have enclosed some radio signal propagation maps for the Pine Grove site. The excerpts from an email from Jared Schindler of Sierra Electronics describes the maps and what they represent.

*Let me go into more detail about the maps and what they represent. So far, the maps you have reviewed depict the results of a study called, "Received Power at Remote". This means that each point on the map is color-coded based on the Received Power at the field unit radios, measured in dB. In other words those maps represent how the mountaintop transmitters propagate to units in the field as opposed to how the mountaintop receivers hear the field units. Our software is capable of running other studies to expand on this information, but we typically rely on the Received Power at Remote study to generalize the coverage footprint of a given site. I should mention that these maps are not absolute because they are models and not based on real-world measurements. We will gather that data during our live testing, which we will work with all Lyon County agencies to accomplish.*

*The maps for both Pine Grove and Simulcast are based on mountaintop transmitters at 50ft. The Pine Grove map shows only the Pine Grove transmitter keyed, whereas the Simulcast map also includes the rest of the simulcast transmitters.*

If the Lyon County discontinues the Bald Mountain repeater site, we will experience reduced or eliminated radio coverage in some areas that we operate in or travel through. I anticipate that there may be a loss of radio communication with Dispatch along portions of Highway 395, between Holbrook and Gardnerville, where we now have some service. There will be a loss of radio communication with Dispatch in areas south of Sweetwater Summit and along the Sweetwater Road (the road between State Route 338 and Hawthorne).

Based on my cursory review of the Pine Grove propagation maps and my understanding that Lyon County desires to discontinue the Bald Mountain repeater, I requested additional propagation maps for the US Forest Service repeater site on Masonic Peak and the BLM/US Forest Service site on Corey Peak. The additional maps show that radio coverage can be improved in the southern portion of our response area. In particular, the Masonic repeater site shows promise for covering the primary area in which we respond in areas south of Sweetwater Summit and along the Sweetwater Road. The Masonic and Corey Peak maps are enclosed.

I believe that a repeater at the Masonic site will be necessary to provide adequate radio coverage for the safety and effectiveness of District personnel and our response to incidents in our southern response area. I also believe that Lyon County should look at this site for its law enforcement personnel. As such, I recommend that the District pursue Lyon County's use of 9-1-1 surcharge funds to place and maintain repeaters to cover the southern reaches of the County.