

Hello All,

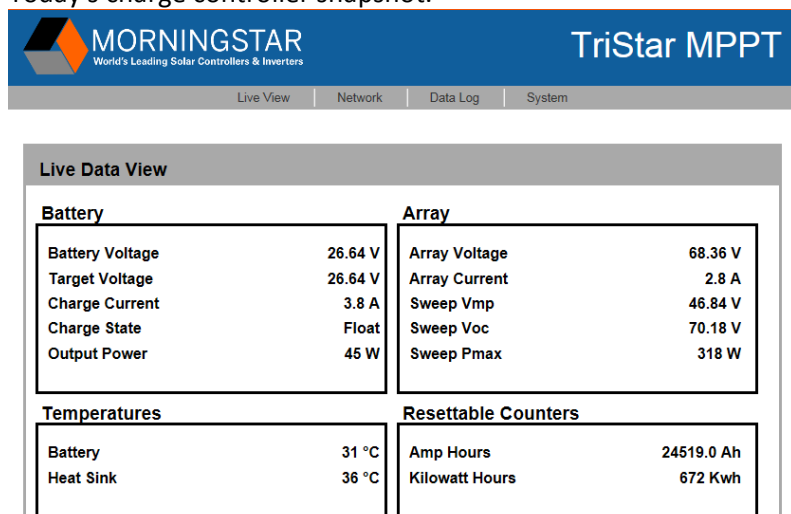
May 2018 has been a very busy and productive month for both the PVARC Repeater Network and the MESH Network. There have been a lot of system's upgrades, updates; rebuilds and new installations that have all been performed.

### Ojai Reeves Road MESH re-installation

On Saturday May 5th the Ojai team of Wayne Francis, John Cuthbert, Ray Smith, Brian Cox and I made the trek to the Reeves Road MESH site in Ojai to rebuild the system. The task could have been a lot longer if not for the Ojai team installing the second solar panel and a new battery enclosure. The day was comprised of installing the charge controller/power distribution panel, integrating the new solar panel, installing and wiring the new battery bank, installing the new PTZ camera and replacing the MESH Node network wiring that the fire had melted. Too late we discovered that one of the MESH nodes was damaged beyond repair and will soon be replaced.

The team worked on parallel tasks which greatly reduces the time spent on the hilltop. The new and old solar panels were connected into the circuit breaker panel. The solar panels were places in series and produced about 75 volts at 500 watts per hour to the solar charge controller that provides about 20 AH to the 24 volt battery bank. So for a 10 hour solar day the system would produce 200 AH. So if the battery bank were at 50% charge, it would only take a 10 hour day to fully charge them. With the system current draw there is about 2 days of total system autonomy.

Today's charge controller snapshot.



Once the battery bank was installed and connected, we were happy to see that the system started to provide a top off charge to the battery bank. On to installing the electronics tray, which included the network switch, the weather station controller and a Raspberry PI to provide a local web page showing the system voltages, control of a Software Defined Receiver (SDR) and interface to the weather station. The new battery bank was installed in its own cabinet which made more room in the main cabinet for future additions.

We also installed a 5 GHz MESH access point on the Ventura County channel of 177. Unfortunately we discovered too late that the 2 GHz MESH access point had failed due to the fire. At first it was working but finally had a hard failure. This will

be replaced on the next trip. The Weather Station did not get fully installed. We discovered that we ran out of mounting locations. Again this will be remedied during the next visit.



New PTZ Camera

## Rasnow Peak

On Sunday May 6th Jay Zatz and I went to Rasnow Peak to install the support structure for the upcoming MESH and Repeater antennas. Prior to the installation I had to manufacture a transition mounting plate to support the mast.



Additionally a network lighting suppression plate was constructed. Finally a PolyPhaser assembly was purchased and installed. The whole installation process went very smoothly. We are now ready for the next trip when the equipment will be installed.



### Camarillo Hills

On Tuesday May 15<sup>th</sup> the Camarillo to Rasnow MESH Link antenna was installed at the Camarillo Hills site. An additional support pipe was added to accommodate the new antenna.



### Rasnow Peak

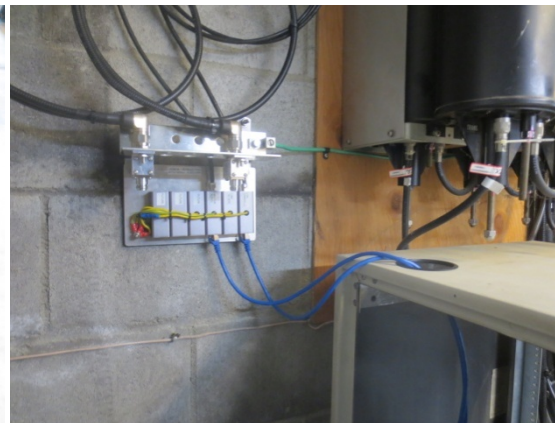
On Thursday May 17<sup>th</sup> Rob Hanson and I made the trip to Rasnow Peak for the formal MESH installation. All went well with a few minor glitches. And as always, it takes longer than you planned. While Rob was mounting the network lighting protection and punching a hole in the cabinet I was on the roof installing the MESH equipment, and repeater and link antennas. The RF and network cabling was secured to the mast and fished into the building, secured to the cable bundle and terminated to their respective locations. Minor issues were I had to go to the roof and re-terminate a network cable crimp and the cabinet rails would not allow the network switch to be secured. This will be remedied on the next trip. Once the cable issue was corrected and plugged into the network switch, I immediately had a connection to the Camarillo Hills Link Dish which was put into service a couple of days earlier. After an hour or so of adjusting the Azimuth and Elevation of the Link Dish antenna for the best signal I was off the roof. I spent some time reviewing the local RF spectrum finding it difficult to find a clean 5GHz frequency for the Link Dish. Finding a temporary frequency I called the task complete and let the hilltop.

Now that there was an operational Link I went back to the Camarillo Hills and after some fine positioning adjusting of the Link Dish I gained about a 6db signal improvement. It would take another four to five days of frequency searching and modulation adjustments to finally settle on a permeate 5GHz Link Frequency. All of these frequency and modulation

adjustment were easily made due to the radios remote management system. This saves a lot of time going back and forth between hilltops.

With the MESH portion of this installation complete the Conejo Valley now has a 5 GHz MESH access point and via a DtD link is interconnected into the rest of the Ventura County MESH Network. The Bozo Interconnect and the UHF repeater installation will take place towards the end of June.

I want to thank the Conejo Valley Amateur Radio Club for their generosity in providing the funding for the MESH portion of this installation. I also want to thank Steve Leong and Hugh Bosma for allowing me to house this equipment in the Bozo Repeater Cabinet. A final note, the Bozo repeater and the MESH system are now plugged into the backup generator.



## South Mountain

On Friday May 25<sup>th</sup> Art Gunderson WB6VKR and I went to South Mountain site to perform site and system upgrades. Art built up and installed a battery backup system for his DMR Repeater and made provisions for the MESH network to connect to it. From the smart AGM specific battery charger to the current monitoring to the LVD board, Art has build up a first class backup system. The site does have a backup generator which does not always automatically start when



there is a power outage. When this is the case a person is tasked to go to the hilltop to start it. This new battery system will sustain the equipment for about 12 to 16 hours by then the generator would have been started.

I replaced the MESH Ubiquiti 8 port Tough Switch with a new Ubiquiti 16 port Edge Switch. This new switch is a fully compliant Layer 3 switch. What this means is the switch will now properly segregate VLAN traffic so there should be no more cross traffic connections with the various overlaid networks. This relieves a long time headache for me.



## Sulphur Mountain

Friday May 25<sup>th</sup> after we left South Mtn, I traveled to Sulphur Mtn. Several site upgrades were performed here today. I installed a 24v DC to 110v AC inverter to power the MESH network systems from the battery system. So along with the repeater systems connected to the backup battery bank, so too is the Sulphur Mtn MESH equipment. The MESH network switch was upgraded from an Ubiquiti 24 port PoE EdgeSwitch to an Ubiquiti 48 port PoE EdgeSwitch. It's hard to believe that I have so many items network items at Sulphur Mtn I was running out of ports. It's a digital world, folks.

Lastly I installed an EdgeRouterX firewall that will enable selected internet only items to be accessed from the MESH network. The first of these cross connects is the Reeves Road PTZ Camera that is now accessible from the MESH network. I want to thank Eric KG6WXC for his many hours in working with me to get this cross connect operational. Additionally Orv W6BI worked with me to properly set the video streams from the cameras for optimal MESH viewing. As time permits more cameras and resources will be made accessible to the MESH.

I want to thank all of you that worked on these projects. We could have not accomplished so much without all of your hard work dedication.

Respectfully,

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