

Marked Tree Central Receive Node Rebuild Plan

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The Marked Tree Node was destroyed by fire caused by lightning from a severe storm on the evening of Saturday August 22, 2026. The same storm knocked out power to one third of the MLGW customers at one point. The node received and processed data from 15 stations (7 digital and 8 analog). Three additional stations were previously converted to cell modem. The node hosted a legacy PC with a so-called earthworm digitizer along with a supermicro rack mount server that hosted a 10-day data buffer along with triggered data. Nodes are designed to operate autonomously if communication with Memphis is lost. The node relays all data in real time using the CERI microwave backbone and an ATT FirstNet cell modem. **Total equipment loss at the node is \$25,378.**

Staff were able to quickly restore the six digital stations to service using 2 seisnet cell modems intended for digital upgrades in TN and four modems borrowed from other projects (2 AG, 1 HUD, and 1 from the CERI Director's field deployment). When the node is rebuilt, we'll return these modems to their owners put these stations back on their point-to-point telemetry.

We intend to rebuild the MKTA node because it provides a central repeater for most of our seismic stations in eastern AR. We intend to build back without analog hardware which will require converting eight analog stations to digital. We previously closed MTAR and other stations in compliance with our analog upgrade plan from 2022. We will also make use of geobit dataloggers removed from ET to speed the process, with the assumption they will be replaced in the future.

The rebuild will need three Phases.

Phase I. Rebuild the node without analog hardware which will considerably simplify the installation and reduce the power load. We'll use a solid-state industrial PC that will allow use of a single NEMA enclosure. Restore the rescued digital radios for the 7 digital stations: CPAR, HBAR, HCAR, LPAR, LRAR, QUAR, and TWAR. **Total cost is ~\$15,000.**

Phase II. Upgrade to digital 8 analog stations (BLAR, BVAR, HTAR, NFAR, NHAR, TMAR, TYAR, and RVAR). The geobit dataloggers retrieved from East Tennessee will be temporarily needed to restore these stations to service. We will need new telemetry hardware, station hardware, and enclosures for the stations. **Total Cost is ~\$50,000.**

Phase III. Replace the geobit dataloggers with 6-c centaurs. Augment stations with strongmotion. Increase solar and battery accordingly. Assuming the dataloggers and episensors are GFE, likely on the order of **\$200k.**