

MARIN EMERGENCY RADIO AUTHORITY

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DATE: November 28, 2018
TO: MERA Governing Board
FROM: Ernest Klock, Operations Officer
SUBJECT: AGENDA ITEM C-2: NextGen Project Motorola Contract Change Order #8
Multi-Protocol Label Switching (MPLS) for the Microwave Network – Review and
Discuss

Recommended Action: Review and discuss Motorola Contract Change Order 8 in the amount of \$1,967,943.09 for the inclusion of Multi-Protocol Label Switching for the Microwave Network into the MERA Next Gen System project.

This Contract Change Order number eight (CCO#8) covers one item associated with the design of the microwave network for the MERA Next Generation Radio System (Nextgen System). The cost for CCO#8 is \$1,967,943.09, which includes taxes on equipment estimated at 9% for San Rafael. A detailed description of the services, equipment, and associated costs are included in the attached CCO#8. Appendices A through C provide supporting documentation including post-warranty services (System Upgrade Agreement II - SUAII) scope and cost.

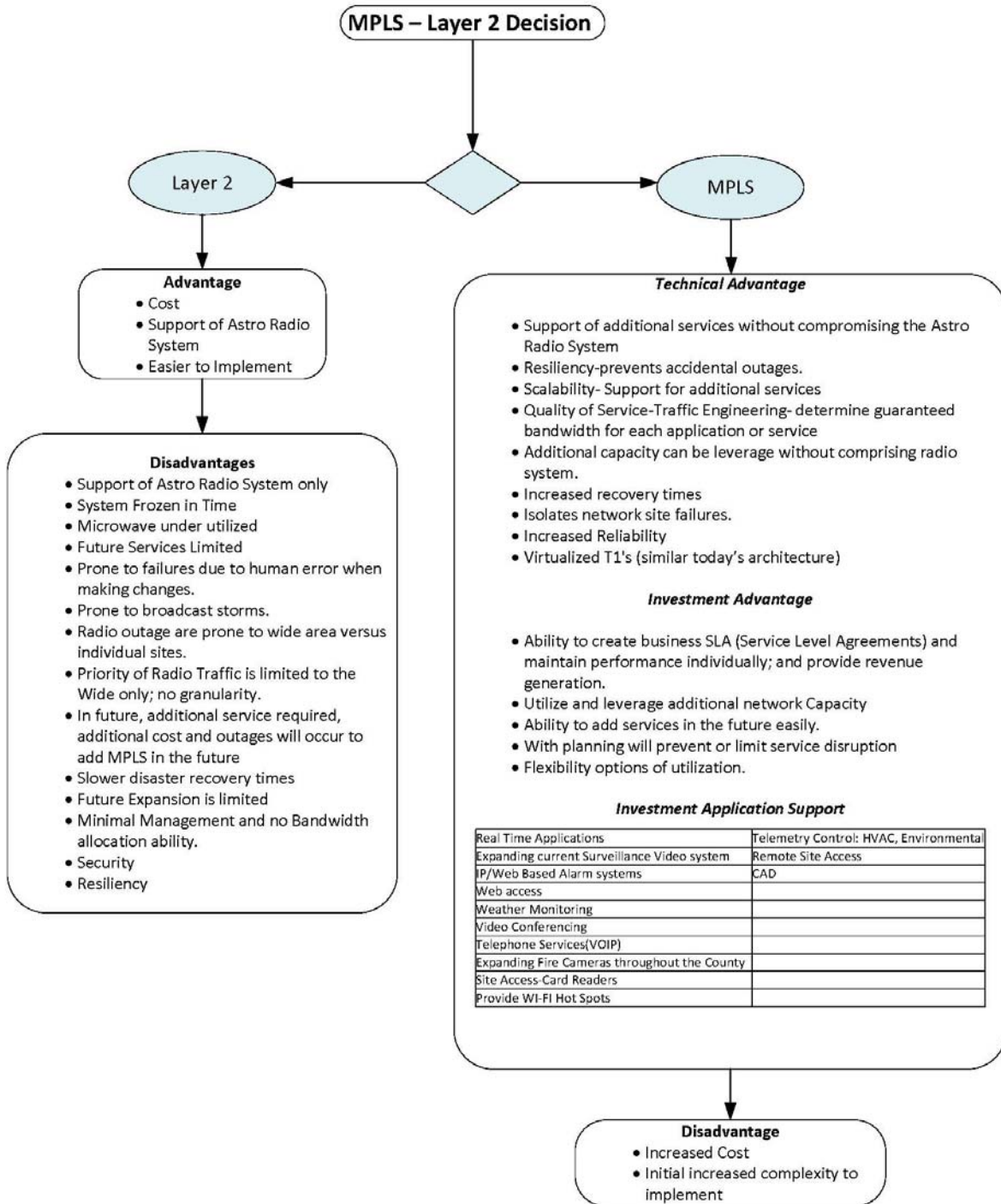
Design of the Next Gen System is currently awaiting decision on this item in an effort to avoid any additional costs associated with potential re-design. This item has been discussed at several MERA meetings beginning with the September 5, 2018 Operations Group meeting and most recently reviewed with the Finance Committee on November 14, 2018.

Item 1 - Multi-Protocol Label Switching (MPLS) for the Microwave Network - \$1,967,943.09

Replacement of the currently proposed Layer 2 network architecture with MPLS network architecture is proposed for the NextGen System microwave network to provide increased reliability, increased redundancy, and to ensure that non-LMR data services can continue to be provided for both MERA members and MERA non-member agencies (e.g, FBI & CHP Circuits, Cameras). A complete list of non-LMR connections carried over the existing microwave network is provided in Appendix A within CCO#8 (Attachment 2). This list has been created in conjunction with County Radio Communications staff, MERA staff, and Motorola. A deeper explanation of the differences in the technologies is provided by Federal Engineering in the attached letter dated September 5, 2018 (Attachment 1).

The NextGen System Request for Proposals (RFP) specified Layer 2 as a replacement for the existing MERA T-band system. Motorola submitted a Request for Information (RFI) prior to bidding the contract to ensure MERA wanted to implement Layer 2 as this was not consistent with their experience in building other Bay Area radio systems. The response was to stay with Layer 2 for the Motorola contract as it was believed to be an acceptable replacement for the MERA T-band system and the most

cost-effective approach. The presence of non-LMR traffic (e.g, FBI & CHP Circuits, Cameras) on the existing MERA microwave system was not clear during development of the NextGen System RFP and so accommodations for it were not considered. The following diagram compares the two technologies.



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Layer 2 will function to carry voice radio traffic (small bursts of data) but cannot carry larger data packets such as video traffic without increased vulnerability - through feedback loops - to the NextGen System. Under the “feedback loop” scenario the NextGen System network could be overwhelmed by the data surge resulting in a widespread system outage.

Summary

Previous staff reports have recommended approval of CCO#8 due to the increased redundancy and reliability that a MPLS network provides, as well as the ability of MPLS to carry non-voice traffic. The project team is exploring various aspects of this CCO#8 including impacts to Next Gen project budget reserves in light of recent change orders, cost/benefit analyses of implementing MPLS after implementation of Layer 2, and the need to continue non-voice traffic services to non-MERA members. Decision and/or addition of this item needs to be made prior to the completion of the system design (currently stalled at 75%) as continuing the design and making this decision at a later date could expose MERA to additional costs.

ATTACHMENTS: (to be distributed under separate cover)

Attachment 1 – Federal Engineering Layer 2 vs. MPLS Letter dated September 5, 2018

Attachment 2 – Motorola Contract Change Order #8