MARIN EMERGENCY RADIO AUTHORITY

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DATE: July 12, 2017

TO: MERA Executive Board

FROM: Dave Jeffries, Deputy Executive Officer for the Next Gen Project

SUBJECT: AGENDA ITEM **B-1:** REPORT #29 ON NEXT GEN SYSTEM PROJECT

Recommended Action: Review, discuss and accept report.

Background:

We are currently in Customer Design Review (CDR) with Motorola. MERA is represented in these discussions by our Federal Engineering Project Manager, Denis Marin, MERA Operations Officer Pat Echols, Richard Chuck and myself, supported by additional County and Federal Engineering staff, as needed. A few key issues:

1) Fire Station Alerting – The Governing Board approved a change order for acquisition of the Mach Alert Fire Station Alerting system at their 06/28/17 meeting.
2) Radio Packages – We have developed the radio equipment lists of what MERA will be providing – The attached list of radio packages was approved by the Governing Board at their 06/28/17 meeting. A detailed list of part numbers and prices will be provided to the Governing Board for approval prior to placing MERA's order for subscriber equipment.
3) Agency Radio Inventory – We are currently working with our member agencies to compare the Communications Division inventory with local agency data.
4) Equipment Fair – Tentatively scheduled for 08/10/17 to allow MERA agencies to see and examine the proposed equipment as well as some optional equipment. This is dependent on the radio packages and radio inventory efforts so that agencies will know prior to the equipment fair what equipment is being provided.
5) Bandwidth Issues – We anticipate having detailed technical requirements to connect the remote dispatch centers and the fire stations to the prime site. This will likely require remote dispatch centers to upgrade their current connections. As for the fire stations, we understand that some locations may not currently have internet access and others may need upgrades. These connections are currently a local agency responsibility.
6) Talkgroup Templates – Fire and Law committees have started working to devise the talkgroup templates they would like to see implemented with the Next Gen system. Once finalized, these will likely drive the format of the other discipline talkgroup templates as well as affect the details of the eventual cutover plan in 2018. Several conventional channels currently in use will no longer be available. In addition, there are a number of new channels in the 700/800 Mhz range that will be available in additional to the 700 Mhz Bay Area Interoperability channels. We have set a due date of 09/01/2017 for this effort.

7) Cutover Plan – We are currently in discussion with Motorola on technical details of the cutover plan as it relates to the transition period in which both the Gen I and Next Gen systems need to be operational and interoperable to allow users on both systems to work together.
8) Microwave Backhaul – Sites have been visited by Motorola and Nokia for Nokia to perform microwave path surveys. We expect a final report this month. These path surveys are critical to confirm that the current design will function properly.
9) Site Development - Work on the design documents is in progress with the preliminary drawings due in early July. Drawings from this process will be part of the future RFP for needed construction at current and new sites.
10) Coordination – At this point, the MERA Project Team has a bi-weekly call for internal coordination, the MERA Project Team and Motorola have a weekly Project Management meeting and a weekly Technical Issues call in addition to Ad Hoc meetings on specific topics.
11) Project Schedule – We reviewed a draft project schedule on 06/29/17 and will be providing an overview of the updated schedule in the near future.

In addition, staff was asked a question about MERA's resiliency in a disaster for both the Gen I and Next Gen system. In general, in addition to building codes, there are several redundancies built into the current system that will be updated and replicated in the Next Gen system.

1) Prime Site:
    a. Power - The prime site is supported by its main power access, supported by back-up power generation and batteries/UPS.
    b. Servers - All redundant and designed to switch to the back-up servers as needed.
    c. Switches - All redundant as well.
2) Simulcast Sites:
    a. Power - The simulcast sites are supported by its main power access, supported by back-up power generation and batteries/UPS.
    b. Control Channel - If we lose a data control channel (1 per site), three additional channels are configured to pick up the data channel load, resulting in the loss of one talk channel only.
    c. Talk Channels - If we lose a talk channel, the site will continue to operate at a slightly reduced capacity.
    d. Antennas/Combiners - The sites use two antennas and combiners to handle the multiple transceivers. If we lose an antenna or combiner, capacity is reduced to 50% for that site, but not eliminated.
3) System wide:
    a. Microwave Loop - Most sites are connected to a microwave loop, so that if a site is out of service, the remaining sites are still supported.
    b. System Failure Modes - The system supports two levels of system failures, Site Trunking and Failsoft. In Site Trunking, an individual site loses connection to the prime site and can no longer share data with the other sites, but will continue to support radio traffic in that area. In Failsoft, a more significant failure that affects the entire system, the radios and system are programmed to a designated site and group users to share channels on a pre-designated basis. While operations are impacted, they will continue.
    c. Conventional Channels – Separate from the MERA talkgroups, our current and new systems include several conventional radio channels that support operations.

d. Dispatch Centers - The Dispatch Centers using MERA can provide back up for each other as they use the same radio equipment, although the use of the two CAD systems may be a limiter. In addition, the County maintains a backup Dispatch Center as well. Each of the Dispatch Consoles is also backup up with an independent back up control station that can be used to communicate with system users if the primary console becomes inoperative. There are also Mobile Command Posts providing different levels of redundancy.
e. Mobile Interoperability - Marin County Public Works and Marin Sheriff's Search and Rescue each maintain a device called an ACU-1000 that allows radios from disparate systems to be connected and provide interoperability in a limited area. CHP Golden Gate also has this technology.

While a significant event might impact MERA operations, these designed redundancies will allow our users to continue to operate while impacts are identified, triaged and repaired. There are other strategies that would further enhance our resiliency, including development of a geographically diverse prime site and a trunking trailer as examples. Both are expensive and require careful technology planning, but may be items that can be explored in future years with grant funding. MERA has been in contact with Marin County Office of Emergency Services and MERA will be listed in their 2017 Marin County Multi-Agency Hazard Mitigation Plan as an in-progress agency with plans to be fully integrated in their 2022 plan. Being involved in this process can increase MERA opportunities for some disaster related mitigation funds for these mitigation efforts.

ATTACHMENTS: **(not included for G.B. 8/23/17 – reference respective item as noted below)**

B-1a Report #27 on the Next Gen System Project (Governing Board, 05/10/17)

B-1b Report #28 on the Next Gen System Project (Governing Board, 06/28/17)

B-1c MERA: Next Gen Radio Packages (Version 6/19/17)