## M E T R O P O L I T A N  E M E R G E N C Y  S E R V I C E S  B O A R D

# RADIO TECHNICAL OPERATIONS COMMITTEE
## ***TENTATIVE AGENDA***
**Board Room, Metro Counties Government Center**
**February 25, 2015**
**1:00 – 3:00 p.m.**

MEMBERS:

Ulie Seal, Chair
  MN Fire Chiefs Association

Ron Jansen, Vice Chair
  Dakota County

Jeff Bjorklund
  Metropolitan Airports
  Commission

Susan Bowler
  Carver County

Chris Caulk
  Isanti County

Jon Eckel
  Chisago County

Clif Giese
  Metro Region EMS

John Gundersen
  Hennepin County

Chad LeVasseur
  Metropolitan Council

Rod Olson
  City of Minneapolis

Chuck Steier
  At-large member, U of M
  Police

Jake Thompson
  Anoka County

Dean Tilley
  Washington County

Chris Weldon
  Scott County

Scott Williams
  Ramsey County

Open
  MN Chiefs of Police
  Association

1. Call to Order

2. Approval of January 28, 2015 Minutes

3. Agenda Items
    a. Ridgeview EMS Console Upgrade – Jeff Frederick
    b. Metro VHF Interoperability System – Voting – Jill Rohret/Tim Lee
    c. Dakota County Sponsorship of Burnsville Center Radios – Ron Jansen
    d. Allocation of 2014 SHSP Equipment Funds – Jill Rohret
    e. Discussion:  Regional Logging-Next Steps – Jill Rohret
    f. Letter Regarding Interoperability Subcommittee – Ron Jansen

4. Moves, Additions & Changes to the System
    a. Existing/Other Systems

5. Committee Reports
    a. Metro Mobility System Usage Update—Chad LeVasseur/Dana Rude
    b. SMG Update
    c. Report from Interoperability Subcommittee—next meeting March 4
    d. Reports from SECB Committees—Jill Rohret
        i. Standard 2.9.0
        ii. SUAII/Change Management Discussion from OTC

6. Other Business
    a. Regional Talkgroup Permissions Update – None

7. Adjourn

Ulie Seal, Chair

**Metropolitan Emergency Services Board**
**Radio Technical Operations Committee**
**Meeting Notes**
**January 28, 2015**

**Members Present:** Ulie Seal, Chair; Jon Eckel; Ron Jansen; Chad LeVasseur; Rod Olson; Dave Pikal; Peter Sauter; Jake Thompson; Dean Tilley; and Chris Weldon.

**Guests Present:** Jill Rohret, Metropolitan Emergency Services Board; Curt Meyer, Hennepin County Sheriff's Office; and Dana Rude, Metro Mobility.

**Call to Order:** Ulie Seal called the meeting to order at 1:00 p.m.

**Minutes of the December 17, 2014 Meeting:**
*M/S/C – Ron Jansen moved to approve the December 17, 2014 meeting minutes. Dean Tilley seconded. The motion carried.*

**Approval of COML Certification for Jay Sliwinski:** Jill Rohret stated that COML certification documents for Jay Sliwinski of Ramsey County Emergency Communications Center was before the committee. All paper work had been signed.

*M/S/C – Jake Thompson moved to approve COML certification for Jay Sliwinski. Jon Eckel seconded. The motion carried.*

**Approval of Bloomington's Console Upgrade:** Seal stated that the City of Bloomington was seeking approval to upgrade their consoles. They will replace their current Gold Elite consoles with MCC 7500 consoles. This will be a one for one console replacement, with the addition of a patching console. They will install one CCGW and use five ports. Removing the Gold Elites will free up 470 IDs.

*M/S/C – Ron Jansen moved to recommend approval of the Bloomington console upgrade. Dean Tilley seconded. The motion carried.*

**Approval of Grant Projects using 2014 SHSP Funds:** Rohret stated that an allocation of the grant projects was included in the meeting materials. The metro region was allocated $277,852.73. The allocation includes all of the projects previously discussed. The allocation includes $6,000 for exercises; $5,000 for TICP maintenance; $17,500 for a Motorola GTR class; $6,100 for the Statewide Interoperability Conference; and $243,252.73 for 7.19 equipment replacement. Rohret noted that the committee had not previously discussed using funds to send people to the interoperability conference. This amount of funds would allow her to pay registration and two nights of hotel for twenty people to attend the conference. As far as the equipment funds go, the TOC will still need to discuss the detailed allocation, which she will put on the February agenda.

Ron Jansen asked if the funds for the interoperability conference were on par with what has been done in previous years.

Rohret responded yes.

*M/S/C- Ron Jansen moved to recommend approval of the 2014 SHSP allocation. Dean Tilley seconded. The motion carried.*

**Metro VHF Interoperability System – Voting:** Rohret stated that now that the metro region is all on the ARMER system, MnDOT was wondering if we still wanted to keep voting in the metro interoperability

system.  Equipment is becoming difficult to maintain and find parts for.  Now that the region is entirely on ARMER, do people need to hear MINSEF in the south metro if there is activity in the north metro?  This committee could discuss and decide this as a whole or a workgroup could be formed to discuss and make a recommendation.

Jansen said that he is ok with splitting up the system and removing the voters.  This may allow more usage for VHF resources as counties could use them without interfering with others.  Dakota County uses VFIRE23 more than VLAW31.

Dean Tilley said that usage is the opposite in Washington County with VLAW31 getting used more.  He said he doesn't understand the technical aspect.  Would Washington County interfere with anyone if they use a resource on Kingstack?  They currently steer resources, but he worries about interference.  He is not opposed to removing the voting, however.

Jon Eckel noted that every agency as a stand-alone base for the resources.  All the PSAPs will hear each other even if cars cannot.

Jake Thompson agreed that the voters could go away.

Chris Weldon agreed.

Rod Olson wondered how a PSAP would decide which tower to connect to.

Eckel said that reverting back to conventional base stations requires more than just pulling a station.

The consensus of the committee was that more technical information is needed.  Rohret will ask MnDOT to attend the next meeting to further the discussion.

**2016 – 2020 SUAII Agreement:**  Rohret stated that ECN was seeking regional concurrence with ECN and MnDOT plans to go out for RFP for an SUAII contract through 2020.  ECN is also seeking agreement on the associated equipment costs for the 7.19 grant program.  Rohret said the Governor included the grant program in is budget request.  Rohret noted that the SECB has not specifically agreed to do the 7.19 upgrade, even though the upgrade would be "purchased" by having an SUA contract.  She said that this concurrence is kind of difficult to give because there are no estimates for local costs; we can only go on what the 2015 costs were.  ECN's suggestion was to concur with the plan up to a certain percentage cost increase.

Jansen said that Dakota County was ok with supporting the SUAII agreement with a three percent increase.  He said the 7.19 equipment estimates will be slightly lower than shown because they have one channel that is already all GTR base stations.

Rod Olson said that the SUAII will be based on current equipment.  Everyone is going to MCC 7500 consoles.  He also said that the 7.19 grant should be based on actual costs.

Rohret stated that SUAII costs for Gold Elites and MCC 7500s themselves were the same in 2015.  As far as the 7.19 grant goes, it would be impossible to know how many 911 funds would be needed to provide the grant.  Additionally, the discussion with ECN all along was that the grant funds would provide reimbursement for the equipment which has to be replaced with the 7.19 grant.  That equipment is included in the estimates included in the packet.  Those pieces of equipment will be the only things eligible for the reimbursement grant.

Olson noted that there are some costs for the base stations that Motorola recommends replacing, such as harnesses.

Rohret reiterated that for the purposes of this grant, those are optional costs. Minneapolis may choose how its set-up is and it could be different from Chisago County's; both could have different harnesses. The set-up is optional to the agency and thus an ineligible expense.

Jansen said that the grant would only cover what is minimally required for the7.19 upgrade.

Thompson said that for the SUAII, he was concerned about keeping in front of the equipment which will be replaced under the agreement. He wants to know exactly what will be replaced. He advocates pursuing a detailed list of equipment replacement and maintenance.

Olson said that the actual contract terms/pricing needs to come back for approval every year. The City will not let him pay without approval of funds. Either complete estimates for each of the five years need to be presented and approved this fall or else it will have to come back every year, even if MnDOT has renewal clauses.

*M/S/C – Ron Jansen moved to recommend concurrence with the SUAII RFP process with up to a three percent increase, inclusion of a detailed equipment list to be replaced and maintained, and contingent upon approval of detailed estimates for each of the five years coming back to the region for approval. Additionally, the installation of the 7.19 upgrade should be delayed to a date to be determined. Jon Eckel seconded. The motion carried.*

Olson noted that as far as the 7.19 grant program goes, there are costs over and above what is listed in the estimates.

Rohret agreed. The grant only covers 50% of required equipment. It does not include labor, installation, or project management costs, or any optional equipment changes an agency chooses to make. She said MnDOT has agreed to assist in installation of base stations to help keep labor and installation costs down.

Eckel asked if Rohret could check on what the state's definition of supplanting is. Agencies must plan and raise a lot of money for this and he does not want to be told that he is supplanting if he does so. Rohret agreed to get the definition.

*M/S/C—Rod Olson moved to support the 7.19 grant program using the estimated equipment costs, noting that actual costs for local agencies will be higher that what is listed in the estimates because the grant does not cover all related expenses. Ron Jansen seconded. The motion carried.*

**Future of the Interoperability Subcommittee:** Jansen said he wanted to discuss the future of the Radio TOC's subcommittee, the Interoperability Subcommittee, with the TOC. This subcommittee meets once or twice a year. Due to the infrequency, he fears people will start scheduling over the meeting times. He doesn't want to necessarily kill the subcommittee, but something needs to change. It has a good cross-section of people, but it is too large. It also needs direction or a charter if it is to continue.

Rohret suggested that the subcommittee could be changed into a workgroup to come together to discuss items when needed, either as the whole group or only those necessary to discuss a particular issue. For example, Fire Chiefs won't want to attend a meeting to discuss Status Board. Or, one meeting could be held annually to discuss interoperability issues.

Eckel said that he is working on creating training. He has found issues with non-system owners which are not in compliance with standards with their fleetmaps. The Interoperability Subcommittee should review fleetmaps.

Seal said that that was not an interoperability issue and shouldn't go to that committee. He liked the idea of making it a workgroup and only having it meet when it needs to.

Curt Meyer agreed. He liked the idea of bringing only relevant people together as needed.

Jansen said that as the Chair of the Interoperability Subcommittee, he will draft a letter to send to the subcommittee. He will bring that letter to the next Radio TOC meeting for review, prior to sending it out.

**Moves, Additions & Changes to the System:** Jansen said that MCC 7500 installation is underway in Dakota County.

Curt Weldon said that Scott County will begin its MCC 7500 installation on March 2.

Chad LeVasseur said that Metro Transit's console installation begins February 2.

Olson said that the Minneapolis City Council approved funding for their console replacement.

Meyer said that Hennepin County will be taking the Brooklyn Park facility's back-up PSAP apart in the next 30 – 90 days.

**Metro Mobility Update:** Dana Rude said that 7500 console installation began on January 26. The 7100 consoles are getting licenses through the Metropolitan Council's IT department. Once done, installation will begin. The fleet is slowly acquiring radios. Presumably most of the demand response fleet will be all ARMER by the end of first quarter. The RFP for providers was let. One current provider will cover two zones; the third zone will have to be re-bid. Of the two zones, one will be in service on May 2 and the second in August. Incumbent providers will begin MCC 7500 training once consoles are installed. He hopes their usage will be restrained once again when the consoles come online, but they are still increasing their total number of radios.

**SMG Update:** Jansen said the meeting date was cancelled. He asked about dual-naming. He thought it was supposed to go away December 31, 2014. Rohret said she would check what was approved in Change Management.

**Interoperability Sub-committee Update:** Rohret stated that the next scheduled meeting will be March 4.

**SECB Committee Reports:** Rohret said that the SECB met in January. It approved the Washington County sponsorship heard here last month, as well as the Scott County console request. It also approved several amendments to county participation plans from Otter Tail and Todd Counties. It approved amendments to the COML and COMT standards, primarily in relation to re-certification. The OTC discussed the sponsorships. Based on what was submitted to the OTC, there were three sponsorships in the metro area that Rohret was unaware of. They include the radios at the Mall of America, and the radios with a towing company, provided by Eden Prairie and Minnetonka. She asked the group how those sponsorships should be handled.

Thompson said that those sponsorships should go through the same approval processes as the other MESB approved sponsorships. They need to come before the Radio TOC by the April meeting. The committee agreed.

Rohret said that the OTC also discussed some amendments to Standard 2.9.0. She wondered how much longer she should fight for tighter roaming provisions. She understands that much of Greater Minnesota needs adjacent site access for coverage within their own county. However, the metro counties invested substantial dollars into the system and did not count on the amount of roaming it is seeing from surround counties in Greater Minnesota. The amount of roaming being seen indicates to her that additional tower

sites might be needed in some of the counties.  The OTC was asking more technical questions that she could not answer.

The committee had a lengthy discussion on the topic, but no resolution to the topic was provided.  The metro people will continue to try to participate in calls discussing the standard.

**Other Business:**  None.

**Adjournment:**
*M/S/C—Jon Eckel moved to adjourn the meeting.  Ron Jansen seconded.  The motion carried.*

The meeting adjourned at 3:09 p.m.

Ms. Jill Rohret
Director of Radio Communication Services
Metropolitan Emergency Services Board
2099 University Avenue West
St. Paul, MN  55104

Ms. Rohret

Ridgeview Medical Center is requesting a change to our participation plan. As a Secondary EMS PSAP, we currently operate 4 Gold Elite consoles which we will be upgrading to 4 MCC7500 consoles and 1 patch console.

We currently have 1 CEB served by 3 T1s. After go-live, we intend to temporarily return one T1 but are working with Carver County on a plan to connect a redundant pathway for both PSAPs which would require the use of that T1 again. Our system will include 2 CCGWs to serve our 11 conventional assets.

By my count we will be releasing 160 console IDs back to the system with this change.

Sincerely,

Jeff Frederick
Communications Center and Security Manager
Ridgeview Medical Center

February 6, 2015

Ulie Seal, Jill Rohret
Chair – Metro Technical and Operation Committee
Metro Region TOC Members

Dakota County would like to respectfully request to continue the sponsorship of the Burnsville Center Security staff to operate on an interoperability only basis on the ARMER system. Burnsville Law Enforcement currently owns and maintains a single portable radio located at the Burnsville Center Mall.  This unit is strictly used for interoperability purposes by Burnsville Mall Security personnel when needed.  All training and or maintenance will continue to be provided by Burnsville Law Enforcement or Dakota County Radio Services.

I have also attached a current spreadsheet depicting the programming of the unit.  Please note there are ongoing discussions on reducing the amount of talkgroups programmed into this unit. This will limit access to a number of resources that are not needed for interoperability.

If there are any questions on this matter please fee; free to contact me.

Thank You and Best regards,
   Ron


Ron Jansen
Dakota County
Radio System Coordinator \ Risk Management, MN Certified COML & MN Certified COMT
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(651) 325-5809  Cell
Ron.Jansen@co.dakota.mn.us

| # | ZONE - A | ZONE - V | ZONE - B | ZONE - C | ZONE - D | ZONE - E |
|---|----------|----------|----------|----------|----------|----------|
| | User Defined | User Defined with Voice Prompt (Optional per Agency) | Dakota Standard | Special Events | City Tactical | City Comm |
| 1 | DK LMAIN 2 | DK LMAIN 2 | DK LMAIN 1 | DK LMAIN 1 | DK LMAIN 1 | DK LMAIN 1 |
| 2 | DK LK ADMIN | DK LK ADMIN | DK LK ADMIN | DK LK ADMIN | DK LK ADMIN | DK LK ADMIN |
| 3 | DK INFO 1 | DK INFO 1 | DK LMAIN 2 | DK LMAIN 2 | DK LMAIN 2 | DK LMAIN 2 |
| 4 | DK TAC 12 | DK TAC 12 | DK LMAIN 3 | DK LMAIN 3 | DK LMAIN 3 | DK LMAIN 3 |
| 5 | DK LMAIN 4 | DK LMAIN 4 | DK LMAIN 4 | DK LMAIN 4 | DK LMAIN 4 | DK LMAIN 4 |
| 6 | DK BV CTYCM | DK BV CTYCM | DK INFO 1 | DK PL C5 | DK AV TAC | DK AV CTYCM |
| 7 | DK CAR-CAR | DK CAR-CAR | DK CAR-CAR | DK PL C6 | DK BV TAC | DK BV CTYCM |
| 8 | DK BV TAC | DK BV TAC | DK JAIL | DK PL C7 | DK DC TAC | DK DC CTYCM |
| 9 | DK TAC 13 | DK TAC 13 | DK L ROAM | DK PL C8 | DK EA TAC | DK EA CTYCM |
| 10 | H-BLM PD | H-BLM PD | DK COCOM | DK PL C9 | DK FA TAC | DK FA CTYCM |
| 11 | MSP 2400 | MSP 2400 | DK TAC 10 | DK PL C10 | DK HA TAC | DK HA CTYCM |
| 12 | SC-N-MAIN | SC-N-MAIN | DK TAC 11 | DK PL C11 | DK IG TAC | DK IG CTYCM |
| 13 | DK LMAIN 1 | DK LMAIN 1 | DK TAC 12 | DK PL C12 | DK LA TAC | DK LA CTYCM |
| 14 | DK LMAIN 3 | DK LMAIN 3 | DK TAC 13 | DK PL C13 | DK MH TAC | DK MH CTYCM |
| 15 | DK B2 OP2 | DK BV OP2 | DK TAC 14 | DK EABV SWAT | DK RS TAC | DK RS CTYCM |
| 16 | DK FMAIN-W | DK FMAIN-W | DK TAC 15 | DK MAAG 1 | DK SS TAC | DK SS CTYCM |
| 17 | DK LMAIN 2 | DK LMAIN 2 | 8SOA3 | DK ALL 1 | DK WS TAC | DK WS CTYCM |
| 18 | LTAC1 | LTAC1 | | | | |
| 19 | LTAC2 | LTAC2 | | | | |
| 20 | LTAC3 | LTAC3 | | | | |
| 21 | LTAC4 | LTAC4 | | | | |
| 22 | ME TAC 1 | ME TAC 1 | | | | |
| 23 | ME TAC 2 | ME TAC 2 | | | | |
| 24 | ME TAC 3 | ME TAC 3 | | | | |
| 25 | ME TAC 4 | ME TAC 4 | | | | |
| 26 | ME TAC 5 | ME TAC 5 | | | | |
| 27 | ME TAC 6 | ME TAC 6 | | | | |
| 28 | ME TAC 7 | ME TAC 7 | | | | |
| 29 | ME TAC 8 | ME TAC 8 | | | | |
| 30 | STAC1 | STAC1 | | | | |
| 31 | STAC2 | STAC2 | | | | |
| 32 | STAC3 | STAC3 | | | | |
| 33 | STAC4 | STAC4 | | | | |
| 34 | STAC5 | STAC5 | | | | |
| 35 | STAC6 | STAC6 | | | | |
| 36 | STAC7 | STAC7 | | | | |
| 37 | STAC8 | STAC8 | | | | |
| 38 | STAC9 | STAC9 | | | | |

| | | |
|---|---|---|
| 39 | STAC10 | STAC10 |
| 40 | STAC11 | STAC11 |
| 41 | STAC12 | STAC12 |

| | Fire Operations | Fire / EMS Main | Pulic Works | Mutual Aid (Local Permissions) | Conventional Interoperability | Statewide I... |
|---|---|---|---|---|---|---|
| **ZONE - F** | **ZONE - G** | **ZONE - H** | **ZONE -K** | **ZONE - CV** | **ZONE - SW** |
| DK LMAIN 1 | DK LMAIN 1 | DK LMAIN 1 | DK LMAIN 1 | DK LMAIN 2 | DK LMAIN 2 |
| DK LK ADMIN | DK LK ADMIN | DK LK ADMIN | DK LK ADMIN | DK LK ADMIN | DK LK ADMIN |
| DK LMAIN 2 | DK LMAIN 2 | DK LMAIN 2 | DK LMAIN 2 | 8CALL90R | STAC1 |
| DK LMAIN 3 | DK LMAIN 3 | DK LMAIN 3 | DK LMAIN 3 | 8TAC91R | STAC2 |
| DK LMAIN 4 | DK LMAIN 4 | DK LMAIN 4 | DK LMAIN 4 | 8TAC92R | STAC3 |
| DK AV OP2 | DK FMAIN-W | DK AV PWC | WA LE NORTH | 8TAC93R | STAC4 |
| DK B2 OP2 | DK FMAIN-E | DK BV PW 1 | WA LE SOUTH | 8TAC94R | STAC5 |
| DK RH OP2 | DK FGR 4 | DK COCOM | SC-N-MAIN | 8CALL90D | STAC6 |
| DK EF OP2 | DK FGR 5 | DK EA  PWC | SC-S-MAIN | 8TAC91D | STAC7 |
| DK FF OP2 | DK FGR 6 | DK FA PW 1 | MSP 2500 | 8TAC92D | STAC8 |
| DK H2 OP2 | DK FGR 7 | DK HA PW 1 | MTRO TAC1 | 8TAC93D | STAC9 |
| DK IF OP2 | DK FGR 8 | DK IG PWC | MSP 2400 | 8TAC94D | STAC10 |
| DK LF OP2 | DK SOT 2 | DK LA PWC | MTRO TAC3 | 8SOA1 | STAC11 |
| DK MH OP2 | DK ALL 1 | DK MH PW 1 | MSP-CALL | 8SOA2 | STAC12 |
| DK R1 OP2 | DK ALL 2 | DK RS PW 1 | GD LMAIN1 | 8SOA3 | 8SOA1 |
| DK MV OP2 | DK ALL 3 | DK SS PW 1 | BCA-TAC7 | 8SOA4 | 8SOA2 |
| DK SM OP2 | DK LMAIN 2 | DK WS PW 1 | H-BLM PD | DK LMAIN 2 | DK LMAIN 2 |

Interoperability

Metro Region Interoperability
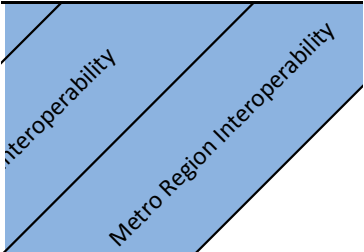
| ZONE - ME |
|---|
| DK LMAIN 2 |
| DK LK ADMIN |
| LTAC1 |
| LTAC2 |
| LTAC3 |
| LTAC4 |
| ME TAC 1 |
| ME TAC 2 |
| ME TAC 3 |
| ME TAC 4 |
| ME TAC 5 |
| ME TAC 6 |
| ME TAC 7 |
| ME TAC 8 |
| DK WEATHER |
| DYN REGP |
| DK LMAIN 2 |

**2014 SHSP Grant Allocation**


MESB to receive $277,852.73


Proposed Allocation

| Project | Amount |
| --- | --- |
| Exercises | $6,000 |
| TICP Maintenance (Planning) | $5,000 |
| GTR Class (Training) | $17,500 |
| Interoperability Conference | $6,100 |
| Equipment (GTR Base Stations/IP Sim. Licenses)* | $243,252.73 |
| **Total** | **$277,852.73** |


*The Radio TOC must determine exactly how to allocate who would receive these funds/equipment.


The grant was worded to allow us to purchase equipment required to be replaced prior to the 7.19 upgrade, to include GTR 8000s, IP Simulcast Software upgrades and IP network equipment.


Per MnDOT's estimates, costs for the equipment is as follows:

GTR 8000 Replacement                     $20,358.00

IP SIM Software Upgrade (per station)     $4,134.00

IP Network Equipment (per RF site)        $17,070.00


The Radio TOC needs to make a recommendation on how to allocate these funds. To divide evenly among subsystem owners would provide an allocation of $24,325.27, which would be just shy of one GTR 8000 plus IP simulcast software for one station.

This grant requires a 50% match, so each entity would need to spend $48,650.54 to receive the full allocation.

| | | # sites | # Quantars | # STR 3000 State | # STR 3000 Others | Channels | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Equipment only cost estimates to upgrade to GTR8000 stations and convert to IP based simulcast** | | | | | | | | | | | |
| 1 | Bear Valley | 3 | | 0 | 0 | 6 | State Cost | $500,505.00 | | $0.00 | | |
| 2 | City Center | 3 | | 0 | 0 | 24 | State Cost | $864,885.00 | | $0.00 | | |
| 3 | Itasca | 11 | | 0 | 0 | 8 | State Cost | $876,837.00 | Itasca Cost | $0.00 | | |
| 4 | St Cloud | 3 | | 11 | 13 | 10 | State Cost | $681,999.00 | St Cloud Cost | $352,536.00 | | |
| 5 | Enfield | 8 | | 0 | 0 | 11 | State Cost | $496,335.00 | Sherburne Cost | $191,766.00 | Wright Cost | $182,964.00 |
| 6 | Olmsted | 5 | | 20 | 35 | 11 | State Cost | $928,833.00 | Olmsted Cost | $874,290.00 | | |
| 7 | Zumbrota | 9 | | 0 | 8 | 8 | State Cost | $555,864.00 | Goodhue Cost | $404,772.00 | | |
| 8 | NorthBranch | 9 | | 0 | 6 | 11 | State Cost | $575,949.00 | Isanti Cost | $45,474.00 | Chisago Cost | $312,186.00 |
| 9 | Anoka | 10 | | 20 | 120 | 16 | State Cost | $977,271.00 | Anoka Cost | $3,286,380.00 | | |
| 10 | Washington(Hastings) | 14 | | 0 | 0 | 16 | State Cost | $686,397.00 | Washington Cost | $897,750.00 | | |
| 11 | Henn West | 7 | | 0 | 56 | 16 | State Cost | $632,121.00 | Hennepin Cost | $1,592,790.00 | | |
| 12 | Norwood | 11 | | 20 | 34 | 15 | State Cost | $1,146,765.00 | Carver Cost | $866,868.00 | Scott Cost | $420,204.00 |
| 13 | Dakota* | 10 | | 63 | 72 | 16 | State Cost | $1,786,711.50 | Dakota Cost | $2,212,909.50 | | |
| 14 | Henn East | 11 | | 0 | 263 | 24 | State Cost | $0.00 | Hennepin Cost | $7,149,327.00 | | |
| 15 | Ramsey | 7 | | 0 | 140 | 21 | State Cost | $0.00 | Ramsey Cost | $4,039,978.00 | | |
| 16 | Minneapolis | 4 | | 0 | 80 | 20 | State Cost | $0.00 | Minneapolis Cost | $2,495,229.00 | | |
| 17 | Stearns County ASR | 4 | 24 | | | | State Cost | $0.00 | Stearns Cost | $537,464.80 | | |
| 18 | Henn SATCOW | 1 | 8 | | | | State Cost | $0.00 | Hennepin Cost | $187,447.20 | | |
| | | | | | | | **State Total** | **$10,710,472.50** | **Other Agency Total** | **$25,134,981.50** | | |
| | | | | | | | **System Total:** | **$35,845,454.00** | | | | |
| | *I don't believe Dakota's numbers reflect the channel which is all GTR at this time. | | | | | | | | | | | |

State Infrastructure (MnDOT responsibility)

Itasca County Owned equipment – maintenance responsibility

| | Alvwood | Bigfork | East Central | Inger | Marcell | Nashwauk | Deer River | Coleraine | Sugar Hills | Warba | Bass Lake |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CH8 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH7 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH6 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH5 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH4 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH3 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH 2 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH 1 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |

Coleraine: Prime Site

| | | State Qty | State Total | Itasca QTY | Itasca Total |
|---|---|---|---|---|---|
| GTR 8000 Replacement Kit Cost | $20,358.00 | 0 | $0.00 | 0 | $0.00 |
| IP Prime Site Controller | $325,275.00 | 1 | $325,275.00 | 0 | $0.00 |
| IP SIM Software upgrade per Station | $4,134.00 | 88 | $363,792.00 | 0 | $0.00 |
| IP Network equipment per RF site | $17,070.00 | 11 | $187,770.00 | 0 | $0.00 |
| | | **STATE:** | $876,837.00 | **ITASCA:** | $0.00 |

Equipment only, no install or program management costs

**Regional-St Cloud Subsystem**

State Infrastructure (MnDOT responsibility)

City of St Cloud Owned equipment - maintenance responsibilty

| | | | |
|---|---|---|---|
| CH10 | GTR8000 | GTR8000 | GTR8000 |
| CH9 | GTR8000 | GTR8000 | GTR8000 |
| CH8 | LSS3000 | LSS3000 | LSS3000 |
| CH7 | LSS3000 | LSS3000 | LSS3000 |
| CH6 | LSS3000 | LSS3000 | LSS3000 |
| CH5 | LSS3000 | LSS3000 | LSS3000 |
| CH4 | LSS3000 | LSS3000 | LSS3000 |
| CH3 | LSS3000 | LSS3000 | LSS3000 |
| CH 2 | LSS3000 | LSS3000 | LSS3000 |
| CH 1 | LSS3000 | LSS3000 | LSS3000 |
| | St Cloud Mn/DOT | Blue Wing | Calvary WT |

Prime Site Ctrl

| | | State Qty | State Total | St Cloud QTY | ST Cloud Total |
|---|---|---|---|---|---|
| GTR 8000 Replacement Kit Cost | $20,358.00 | 11 | $223,938.00 | 13 | $264,654.00 |
| IP Prime Site Controller | $370,713.00 | 1 | $370,713.00 | 0 | $0.00 |
| IP SIM Software upgrade per Station | $4,134.00 | 17 | $70,278.00 | 13 | $53,742.00 |
| IP Network equipment per RF site | $17,070.00 | 1 | $17,070.00 | 2 | $34,140.00 |
| | | | | | |
| | | **STATE:** | $681,999.00 | **St Cloud:** | $352,536.00 |

Equipment only, no install or program management costs

**Regional-Sherburne/Wright Subsystem**

State Infrastructure (MnDOT responsibility)

Shureburne County Owned equipment - Sherburne maintenance responsibility

Wright County Owned equipment - Wright Maintenance responsibility

| | Enfield | Zimmerman | Buffalo | Germantown Hill | Elk Hill | GRE Tower | Annandale | Howard Lake |
|---|---|---|---|---|---|---|---|---|
| CH11 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH10 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH9 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH8 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH7 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH6 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH5 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH4 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH3 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH 2 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH 1 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |

Prime Site

| | | State Qty | State Total | Shurburne QTY | Sherburne Total | Wright QTY | Wright Total |
|---|---|---|---|---|---|---|---|
| GTR 8000 Replacement Kit Cost | $20,358.00 | 0 | $0.00 | 0 | $0.00 | 0 | $0.00 |
| IP Prime Site Controller | $370,713.00 | 1 | $370,713.00 | 0 | $0.00 | 0 | $0.00 |
| Software upgrade per Station | $4,134.00 | 18 | $74,412.00 | 34 | $140,556.00 | 36 | $148,824.00 |
| Network equipment per RF site | $17,070.00 | 3 | $51,210.00 | 3 | $51,210.00 | 2 | $34,140.00 |
| | | **STATE:** | $496,335.00 | **Shurburne:** | $191,766.00 | **Wright:** | $182,964.00 |

Equipment only, no install or program management costs

**Regional-Olmsted Subsystem**

State Infrastructure (MnDOT responsibility)

Olmsted County Owned equipment - maintenance responsibility

| | Viola | New Haven | Rock Dell | Pleasant Grove | Guggenheim |
|------|---------|-----------|-----------|----------------|------------|
| CH11 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH10 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH9 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH8 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH7 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH6 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH5 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH4 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH3 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH 2 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH 1 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |

Prime Site Ctrl

| | | State Qty | State Total | Olmsted QTY | Olmsted Total |
|---|---|---|---|---|---|
| GTR 8000 Replacement Kit Cost | $20,358.00 | 20 | $407,160.00 | 35 | $712,530.00 |
| IP Prime Site Controller | $370,713.00 | 1 | $370,713.00 | 0 | $0.00 |
| IP SIM Software upgrade per Station | $4,134.00 | 20 | $82,680.00 | 35 | $144,690.00 |
| IP Network equipment per RF site | $17,070.00 | 4 | $68,280.00 | 1 | $17,070.00 |
| | | **STATE:** | $928,833.00 | **Olmsted:** | $874,290.00 |

Equipment only, no install or program management costs

**Regional/Goodhue Subsystem**

State Infrastructure (MnDOT responsibility)

Goodhue County Owned equipment - Goodhue Maintenance responsibil

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| CH8 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | LSS3000 | GTR8000 | GTR8000 |
| CH7 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | LSS3000 | GTR8000 | GTR8000 |
| CH6 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | LSS3000 | GTR8000 | GTR8000 |
| CH5 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | LSS3000 | GTR8000 | GTR8000 |
| CH4 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | LSS3000 | GTR8000 | GTR8000 |
| CH3 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | LSS3000 | GTR8000 | GTR8000 |
| CH 2 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | LSS3000 | GTR8000 | GTR8000 |
| CH 1 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | LSS3000 | GTR8000 | GTR8000 |
| | Cannon Falls | Zumbrota | Red Wing | Frontenac | Kenyon | Cannon Falls | Pine Island | Aspen | Sand Hill |

| | | State Qty | State Total | Goodhue QTY | Goodhue Total |
|---|---|---|---|---|---|
| GTR 8000 Replacement Kit Cost | $20,358.00 | 0 | $0.00 | 8 | $162,864.00 |
| IP Prime Site Controller | $346,494.00 | 1 | $346,494.00 | 0 | $0.00 |
| IP SIM Software upgrade per Station | $4,134.00 | 30 | $124,020.00 | 42 | $173,628.00 |
| IP Network equipment per RF site | $17,070.00 | 5 | $85,350.00 | 4 | $68,280.00 |
| | | **STATE:** | $555,864.00 | **Goodhue:** | $404,772.00 |

Equipment only, no install or program management costs

| | | |
|---|---|---|
| CH 6 | CH 6 | CH 6 |
| CH5 | CH5 | CH5 |
| CH4 | CH4 | CH4 |
| CH3 | CH3 | CH3 |
| CH 2 | CH 2 | CH 2 |
| CH 1 | CH 1 | CH 1 |
| Zumbro Falls | Bear Valley | Lake City |

| | | State Qty | State Total |
|---|---|---|---|
| GTR 8000 Replacement Kit Cost | $20,358.00 | 0 | $0.00 |
| IP Prime Site Controller | $325,275.00 | 1 | $325,275.00 |
| IP SIM Software upgrade per Station | $4,134.00 | 30 | $124,020.00 |
| IP Network equipment per RF site | $17,070.00 | 3 | $51,210.00 |

**STATE:** $500,505.00

Equipment only, no install or program management costs

State Infrastructure (MnDOT responsibility)

| | City Center | HCGC | Pointe Building |
|---|---|---|---|
| CH24 | GTR8000 | GTR8000 | GTR8000 |
| CH23 | GTR8000 | GTR8000 | GTR8000 |
| CH22 | GTR8000 | GTR8000 | GTR8000 |
| CH21 | GTR8000 | GTR8000 | GTR8000 |
| CH20 | GTR8000 | GTR8000 | GTR8000 |
| CH19 | GTR8000 | GTR8000 | GTR8000 |
| CH18 | GTR8000 | GTR8000 | GTR8000 |
| CH17 | GTR8000 | GTR8000 | GTR8000 |
| CH16 | GTR8000 | GTR8000 | GTR8000 |
| CH15 | GTR8000 | GTR8000 | GTR8000 |
| CH14 | GTR8000 | GTR8000 | GTR8000 |
| CH13 | GTR8000 | GTR8000 | GTR8000 |
| CH12 | GTR8000 | GTR8000 | GTR8000 |
| CH11 | GTR8000 | GTR8000 | GTR8000 |
| CH10 | GTR8000 | GTR8000 | GTR8000 |
| CH9 | GTR8000 | GTR8000 | GTR8000 |
| CH8 | GTR8000 | GTR8000 | GTR8000 |
| CH 7 | GTR8000 | GTR8000 | GTR8000 |
| CH 6 | GTR8000 | GTR8000 | GTR8000 |
| CH5 | GTR8000 | GTR8000 | GTR8000 |
| CH4 | GTR8000 | GTR8000 | GTR8000 |
| CH3 | GTR8000 | GTR8000 | GTR8000 |
| CH 2 | GTR8000 | GTR8000 | GTR8000 |
| CH 1 | GTR8000 | GTR8000 | GTR8000 |

| | | State Qty | State Total |
|---|---|---|---|
| GTR 8000 Replacement Kit Cost | $20,358.00 | 0 | $0.00 |
| IP Prime Site Controller | $516,027.00 | 1 | $516,027.00 |
| IP SIM Software upgrade per Station | $4,134.00 | 72 | $297,648.00 |
| IP Network equipment per RF site | $17,070.00 | 3 | $51,210.00 |
| | | **STATE:** | $864,885.00 |

Equipment only, no install or program management costs

**Regional-Isanti-Chisago (North Branch)**

State Infrastructure (MnDOT responsibility)

Isanti County Owned equipment - maintenance responsibility

Chisago County Owned equipment - maintenance responsibility

| | Cambridge | North Branch | St Croix Falls | Rush City | Day | Stacy | Center City | Fish Lake | Almelund |
|---|---|---|---|---|---|---|---|---|---|
| CH11 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH10 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH9 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH8 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH7 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH6 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH5 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH4 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH3 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH 2 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH 1 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |

| | | State Qty | State Total | Chisago QTY | Chisago Total | Isanti QTY | Isanti Total |
|---|---|---|---|---|---|---|---|
| GTR 8000 Replacement Kit Cost | $20,358.00 | 0 | $0.00 | 0 | $0.00 | 0 | $0.00 |
| IP Prime Site Controller | $370,713.00 | 1 | $370,713.00 | 0 | $0.00 | 0 | $0.00 |
| IP SIM Software upgrade per Station | $4,134.00 | 29 | $119,886.00 | 59 | $243,906.00 | 11 | $45,474.00 |
| IP Network equipment per RF site | $17,070.00 | 5 | $85,350.00 | 4 | $68,280.00 | 0 | $0.00 |
| | **STATE:** | $575,949.00 | **Chisago:** | $312,186.00 | **Isanti:** | $45,474.00 |

Equipment only, no install or program management costs

**Regional-Anoka Subsystem (Lino)**

State Infrastructure (MnDOT responsibility)

Anoka County Owned equipment - maintenance responsibility

| | Lino | Bethel | Stacy | Ramsey | Ham Lake | Stinson | Blaine | B108 | DNR | Andover |
|---|---|---|---|---|---|---|---|---|---|---|
| CH15 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH14 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH13 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH12 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH11 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH10 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH9 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH8 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH7 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH6 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH5 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH4 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH3 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH 2 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH 1 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |

| | | State Qty | State Total | Anoka QTY | Anoka Total |
|---|---|---|---|---|---|
| GTR 8000 Replacement Kit Cost | $20,358.00 | 20 | $407,160.00 | 130 | $2,646,540.00 |
| IP Prime Site Controller | $419,151.00 | 1 | $419,151.00 | 0 | $0.00 |
| IP SIM Software upgrade per Station | $4,134.00 | 20 | $82,680.00 | 130 | $537,420.00 |
| IP Network equipment per RF site | $17,070.00 | 4 | $68,280.00 | 6 | $102,420.00 |
| | | **STATE:** | $977,271.00 | **Anoka:** | $3,286,380.00 |

Equipment only, no install or program management costs

**Regional-Washington Subsystem (Hastings)**

| | Hastings | Basswood Grove | St Paul Park | Scandia | King | Afton | Hudson Rd | Somerset | Mahtomedi | Hanley | Valley Creek | Hugo | Newport | Forest Lake |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CH16 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH15 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH14 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH13 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH12 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH11 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH10 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH9 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH8 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH7 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH6 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH5 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH4 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH 3 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH 2 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH 1 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |

| | | State Qty | State Total | Washington QTY | Washington Total |
|---|---|---|---|---|---|
| GTR 8000 Replacement Kit Cost | $20,358.00 | 0 | $0.00 | 0 | $0.00 |
| IP Prime Site Controller | $419,151.00 | 1 | $419,151.00 | 0 | $0.00 |
| IP SIM Software upgrade per Station | $4,134.00 | 44 | $181,896.00 | 180 | $744,120.00 |
| IP Network equipment per RF site | $17,070.00 | 5 | $85,350.00 | 9 | $153,630.00 |
| | | **STATE:** | $686,397.00 | **Washington:** | $897,750.00 |

Equipment only, no install or program management costs

| | Burschville | Anoka | Maple Plaine | Medina | Minnetrista | Rogers | Glen Lake | Rockford |
|---|---|---|---|---|---|---|---|---|
| CH16 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH15 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH14 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH13 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | GTR8000 |
| CH12 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | GTR8000 |
| CH11 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | GTR8000 |
| CH10 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | GTR8000 |
| CH9 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | GTR8000 |
| CH8 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | GTR8000 |
| CH7 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | GTR8000 |
| CH6 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | GTR8000 |
| CH5 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH4 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH3 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH 2 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH 1 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |

Prime Site CTRL

**Regional - Hennepin West**

** Quantity needs to be verified

| | | State Qty | State Total | Hennepin QTY | Hennepin Total |
|---|---|---|---|---|---|
| GTR 8000 Replacement Kit Cost | $20,358.00 | 0 | $0.00 | 56 ** | $1,140,048.00 |
| IP Prime Site Controller | $419,151.00 | 1 | $419,151.00 | 0 | $0.00 |
| IP SIM Software upgrade per Station | $4,134.00 | 35 | $144,690.00 | 93 | $384,462.00 |
| IP Network equipment per RF site | $17,070.00 | 4 | $68,280.00 | 4 | $68,280.00 |

**STATE:** $632,121.00    **Hennepin:** $1,592,790.00

Equipment only, no install or program management costs

| | City Center | HCGC | Naper St | Glen Lake | Bloomington | Health East | MAC | Parkers lake | Shakopee | Bramer Park | Brooklyn Park |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CH24 | GTR8000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH23 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH22 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH21 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH20 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH19 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH18 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH17 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH16 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH15 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH14 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH13 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH12 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH11 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH10 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH9 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH8 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH7 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH6 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH5 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH4 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH3 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH2 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH1 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |

**Hennepin East**

\*\* Quantity needs to be verified

| | | Hennepin QTY | Hennepin Total |
|---|---|---|---|
| GTR 8000 Replacement Kit Cost | $20,358.00 | 263 \*\* | $5,354,154.00 |
| IP Prime Site Controller | $516,027.00 | 1 | $516,027.00 |
| IP SIM Software upgrade per Station | $4,134.00 | 264 | $1,091,376.00 |
| IP Network equipment per RF site | $17,070.00 | 11 | $187,770.00 |
| | | **Hennepin:** | $7,149,327.00 |

**Expand Regional Norwood Subsystem to include Scott County**

Scott County Infrastructure additions (Mn/DOT - maintenance/utility responsibility) as agreed to 9/28/07

State Owned Equipment Mn/DOT-maintenance and operating

Carver County additions - Carver County resonsible for Maintenance and operating costs

Scott County Owned Additions- maintenance operating responsibilty

| | Norwood | Minnetrista | Hollywood | Chanhassen | Belle Plain | Shakopee | Jordan | New Prague | Savage | Prior Lake | New Market |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CH16 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH15 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH14 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH13 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH12 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH11 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH10 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH9 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH8 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH7 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH6 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH5 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH4 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH3 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH 2 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH 1 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |

Site physically located in Carver County      Sites physcally located in Scott County

| | State Qty | State Total | Carver QTY | Carver Total | Scott QTY | Scott Total |
|---|---|---|---|---|---|---|
| GTR 8000 Replacement Kit Cost $20,358.00 | 20 | $407,160.00 | 34 | $692,172.00 | 0 | $0.00 |
| IP Prime Site Controller $419,151.00 | 1 | $419,151.00 | 0 | $0.00 | 0 | $0.00 |
| IP SIM Software upgrade per Station $4,134.00 | 61 | $252,174.00 | 34 | $140,556.00 | 81 | $334,854.00 |
| IP Network equipment per RF site $17,070.00 | 4 | $68,280.00 | 2 | $34,140.00 | 5 | $85,350.00 |

**STATE:** $1,146,765.00      **Carver:** $866,868.00      **Scott:** $420,204.00

Equipment only, no install or program management costs

**Regional-Dakota Subsystem**

| | Empire | Arbor Pointe | Buck Hill | Fairfield | Hastings | Marie | Palomino | Sperry | Verizon | Welch |
|---|---|---|---|---|---|---|---|---|---|---|
| CH16 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 | GTR8000 |
| CH15 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | GTR8000 |
| CH14 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | GTR8000 |
| CH13 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | GTR8000 |
| CH12 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | GTR8000 |
| CH11 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | GTR8000 |
| CH10 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | GTR8000 |
| CH9 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | GTR8000 |
| CH8 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | GTR8000 |
| CH7 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | GTR8000 |
| CH6 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | GTR8000 |
| CH5 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | GTR8000 |
| CH4 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | GTR8000 |
| CH3 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | GTR8000 |
| CH 2 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | GTR8000 |
| CH 1 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | GTR8000 |

| | | State Qty | State Total | Dakota QTY | Dakota Total |
|---|---|---|---|---|---|
| GTR 8000 Replacement Kit Cost | $20,358.00 | 63 | $1,282,554.00 | 72 | $1,465,776.00 |
| IP Prime Site Controller | $419,151.00 | 0.5 | $209,575.50 | 0.5 | $209,575.50 |
| IP SIM Software upgrade per Station | $4,134.00 | 63 | $260,442.00 | 97 | $400,998.00 |
| IP Network equipment per RF site | $17,070.00 | 2 | $34,140.00 | 8 | $136,560.00 |

**STATE:** $1,786,711.50  **Dakota:** $2,212,909.50

Equipment only, no install or program management costs

| | Arden Hills | White Bear Lake | Pointe Building | Biosciences Bldg | | | |
|---|---|---|---|---|---|---|---|
| CH22 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH21 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH20 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH19 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH18 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH17 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH16 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH15 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH14 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH13 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH12 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH11 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH10 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH9 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH8 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH7 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH6 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH5 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH4 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH3 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH2 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH1 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |

| | | Ramsey QTY | Ramsey Total |
|---|---|---|---|
| GTR 8000 Replacement Kit Cost | $20,358.00 | 140 | $2,850,120.00 |
| IP Prime Site Controller | $491,608.00 | 1 | $491,608.00 |
| IP SIM Software upgrade per Station | $4,134.00 | 140 | $578,760.00 |
| IP Network equipment per RF site | $17,070.00 | 7 | $119,490.00 |
| | | **Ramsey:** | $4,039,978.00 |

| | City Center | HCGC | Horn Tower | Lowry |
|------|------|------|------|------|
| CH20 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH19 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH18 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH17 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH16 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH15 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH14 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH13 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH12 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH11 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH10 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH9 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH8 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH7 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH6 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH5 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH4 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH3 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH2 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |
| CH1 | LSS3000 | LSS3000 | LSS3000 | LSS3000 |

| | | Mpls QTY | Mpls Total |
|------|------|------|------|
| GTR 8000 Replacement Kit Cost | $20,358.00 | 80 | $1,628,640.00 |
| IP Prime Site Controller | $467,589.00 | 1 | $467,589.00 |
| IP SIM Software upgrade per Station | $4,134.00 | 80 | $330,720.00 |
| IP Network equipment per RF site | $17,070.00 | 4 | $68,280.00 |
| | | **Mpls:** | $2,495,229.00 |

***Prime IP Based Simulcast Site (assume control of 3 sites of 10 channels, no RF site eq)***
***Prime Site - Assume AC distribution circuits available***
***Prime Site - Assume transport, antennas, lines and battery backup provided by others***

| Qty. | Model | Description | APC | APC Disc | List Price | Total Price | Disc Price | Total Price |
|---|---|---|---|---|---|---|---|---|
| 1 | T7321 | GCM 8000 COMPARATOR | 112 | 22% | $ 3,000.00 | $ 3,000.00 | $ 2,340.00 | $ 2,340.00 |
| 2 | CA01183AA | ADD: GCM 8000 COMPARATOR | 112 | 22% | $ 5,000.00 | $ 10,000.00 | $ 3,900.00 | $ 7,800.00 |
| 2 | CA01185AA | ADD: IP BASED MULTISITE OPERATION | 112 | 22% | $ 9,000.00 | $ 18,000.00 | $ 7,020.00 | $ 14,040.00 |
| 1 | X153AW | ADD: RACK MOUNT HARDWARE | 112 | 22% | $ 50.00 | $ 50.00 | $ 39.00 | $ 39.00 |
| 1 | T7321 | GCM 8000 COMPARATOR | 112 | 22% | $ 3,000.00 | $ 3,000.00 | $ 2,340.00 | $ 2,340.00 |
| 2 | CA01183AA | ADD: GCM 8000 COMPARATOR | 112 | 22% | $ 5,000.00 | $ 10,000.00 | $ 3,900.00 | $ 7,800.00 |
| 2 | CA01185AA | ADD: IP BASED MULTISITE OPERATION | 112 | 22% | $ 9,000.00 | $ 18,000.00 | $ 7,020.00 | $ 14,040.00 |
| 1 | X153AW | ADD: RACK MOUNT HARDWARE | 112 | 22% | $ 50.00 | $ 50.00 | $ 39.00 | $ 39.00 |
| 1 | T7321 | GCM 8000 COMPARATOR | 112 | 22% | $ 3,000.00 | $ 3,000.00 | $ 2,340.00 | $ 2,340.00 |
| 2 | CA01183AA | ADD: GCM 8000 COMPARATOR | 112 | 22% | $ 5,000.00 | $ 10,000.00 | $ 3,900.00 | $ 7,800.00 |
| 2 | CA01185AA | ADD: IP BASED MULTISITE OPERATION | 112 | 22% | $ 9,000.00 | $ 18,000.00 | $ 7,020.00 | $ 14,040.00 |
| 1 | X153AW | ADD: RACK MOUNT HARDWARE | 112 | 22% | $ 50.00 | $ 50.00 | $ 39.00 | $ 39.00 |
| 1 | T7321 | GCM 8000 COMPARATOR | 112 | 22% | $ 3,000.00 | $ 3,000.00 | $ 2,340.00 | $ 2,340.00 |
| 2 | CA01183AA | ADD: GCM 8000 COMPARATOR | 112 | 22% | $ 5,000.00 | $ 10,000.00 | $ 3,900.00 | $ 7,800.00 |
| 2 | CA01185AA | ADD: IP BASED MULTISITE OPERATION | 112 | 22% | $ 9,000.00 | $ 18,000.00 | $ 7,020.00 | $ 14,040.00 |
| 1 | X153AW | ADD: RACK MOUNT HARDWARE | 112 | 22% | $ 50.00 | $ 50.00 | $ 39.00 | $ 39.00 |
| 1 | T7038 | GCP 8000 SITE CONTROLLER | 112 | 22% | $ 3,000.00 | $ 3,000.00 | $ 2,340.00 | $ 2,340.00 |
| 1 | CA00303AA | ADD: QTY (1) SITE CONTROLLER | 112 | 22% | $ 5,000.00 | $ 5,000.00 | $ 3,900.00 | $ 3,900.00 |
| 1 | CA01194AA | ADD: IP BASED MULTISITE SITE CONTROLLER SOFTWARE | 112 | 22% | $ 60,000.00 | $ 60,000.00 | $ 46,800.00 | $ 46,800.00 |
| 1 | X153AW | ADD: RACK MOUNT HARDWARE | 112 | 22% | $ 50.00 | $ 50.00 | $ 39.00 | $ 39.00 |
| 1 | T7038 | GCP 8000 SITE CONTROLLER | 112 | 22% | $ 3,000.00 | $ 3,000.00 | $ 2,340.00 | $ 2,340.00 |
| 1 | CA00303AA | ADD: QTY (1) SITE CONTROLLER | 112 | 22% | $ 5,000.00 | $ 5,000.00 | $ 3,900.00 | $ 3,900.00 |
| 1 | CA01194AA | ADD: IP BASED MULTISITE SITE CONTROLLER SOFTWARE | 112 | 22% | $ 60,000.00 | $ 60,000.00 | $ 46,800.00 | $ 46,800.00 |
| 1 | X153AW | ADD: RACK MOUNT HARDWARE | 112 | 22% | $ 50.00 | $ 50.00 | $ 39.00 | $ 39.00 |
| 2 | ST6000 | S6000 MNR MULTI-PROTOCOL ROUTER | 147 | 10% | $ 15,995.00 | $ 31,990.00 | $ 14,395.50 | $ 28,791.00 |
| 2 | ST6010 | S6000 4-PORT ULTRAWAN MODULE | 147 | 10% | $ 3,000.00 | $ 6,000.00 | $ 2,700.00 | $ 5,400.00 |
| 1 | ST6201 | SRC 24 PORT T1/E1 EXPANSION | 147 | 10% | $ 75,000.00 | $ 75,000.00 | $ 67,500.00 | $ 67,500.00 |
| 2 | T7380 | MOTOROLA CO-OP WAN ROUTER RELAY PANEL | 147 | 10% | $ 7,500.00 | $ 15,000.00 | $ 6,750.00 | $ 13,500.00 |
| 2 | CLN1836 | MOTOROLA 2610-24 ETHERNET SWITCH | 147 | 10% | $ 2,250.00 | $ 4,500.00 | $ 2,025.00 | $ 4,050.00 |

**Prime Site Total**     **$ 322,275.00**

Number of Comparitors (Even Number, Comes in groups of 2)

Add Comp   $ 24,219.00
(2 CH)

| | |
|---|---|
| 8 | $ 322,275.00 |
| 10 | $ 346,494.00 |
| 12 | $ 370,713.00 |
| 14 | $ 394,932.00 |
| 16 | $ 419,151.00 |
| 18 | $ 443,370.00 |
| 20 | $ 467,589.00 |
| 22 | $ 491,808.00 |
| 24 | $ 516,027.00 |

| Qty. | Model | Description | APC | APC Disc | List Price | Total Price | Disc Price | Total Price |
|---|---|---|---|---|---|---|---|---|
| 2 | SQM01SUM0205 | GGM 8000 GATEWAY | 147 | 10% | $ 4,200.00 | $ 8,400.00 | $ 3,780.00 | $ 7,560.00 |
| 2 | CA01616AA | ADD: AC POWER | 147 | 10% | $ - | $ - | $ - | $ - |
| 2 | CLN1836 | 2610-24 ETHERNET SWITCH | 147 | 10% | $ 2,250.00 | $ 4,500.00 | $ 2,025.00 | $ 4,050.00 |
| 1 | T7140 | G-SERIES SOFTWARE UPGRADES | 112 | 22% | $ - | $ - | $ - | $ - |
| 0 | CA01195AA | ADD : TRUNKING IP BASED MULTISITE (SIMULCAST/VOTING) BASE R/ | 595 | 22% | $5,300.00 | $ - | $ 4,134.00 | $ - |
| 2 | DLN6677 | FRU: G-SERIES XHUB | 112 | 22% | $ 3,500.00 | $ 7,000.00 | $ 2,730.00 | $ 5,460.00 |

**Per site Total**        **$ 17,070.00**

| Qty. | Model | Description | APC | APC Disc | List Price | Total Price | Disc Price | Total Price |
|---|---|---|---|---|---|---|---|---|
| 1 | T7039 | GTR 8000 BASE RADIO | 112 | 22% | $ 6,000.00 | $ 6,000.00 | $ 4,680.00 | $ 4,680.00 |
| 1 | CA00855AA | ADD: 700/800 MHZ MID POWER | 112 | 22% | $ 6,300.00 | $ 6,300.00 | $ 4,914.00 | $ 4,914.00 |
| 1 | CA00025AF | ADD: CIRCUIT BASED MULTISITE BASE RADIO SOF | 112 | 22% | $ 13,700.00 | $ 13,700.00 | $ 10,686.00 | $ 10,686.00 |
| 1 | CA01400AA | ADD: POWER CABLE, DC | 112 | 22% | $ - | $ - | $ - | $ - |
| 1 | CA00951AA | ADD: STR 3000 RETROFIT HARDWARE | 112 | 22% | $ 50.00 | $ 50.00 | $ 39.00 | $ 39.00 |
| 1 | X153AW | ADD:  RACK MOUNT HARDWARE | 112 | 22% | $ 50.00 | $ 50.00 | $ 39.00 | $ 39.00 |

Station Total $ 20,358.00

IP SIM Software per Station **$4,134.00**

| Equip Type | Item Num | Total Qty | Nomenclature | Description | Unit List | Total List | APC | Discount | Unit Discount | Ext. Discount |
|---|---|---|---|---|---|---|---|---|---|---|
| NETWORK | 1 | 2 | SQM01SUM0205 | GGM 8000 GATEWAY | $ 4,200.00 | $ 8,400.00 | 147 | 10% | $ 3,780.00 | $ 7,560.00 |
| NETWORK | 1a | 2 | CA01616AA | ADD: AC POWER | $ - | $ - | 147 | 10% | $ - | $ - |
| GTR8000 | 2 | 1 | SQM01SUM7054 | GTR 8000 EXPANDABLE SITE SUBSYSTEM | $ 6,000.00 | $ 6,000.00 | 112 | 30% | $ 4,200.00 | $ 4,200.00 |
| GTR8000 | 2a | 1 | CA00855AA | ADD: 700/800 MHZ | $ 6,300.00 | $ 6,300.00 | 112 | 30% | $ 4,410.00 | $ 4,410.00 |
| GTR8000 | 2b | 1 | X306AC | ADD: QTY (5) GTR 8000 BASE RADIOS | $ 71,400.00 | $ 71,400.00 | 112 | 30% | $ 49,980.00 | $ 49,980.00 |
| GTR8000 | 2c | 6 | X591AE | ENH: ASTRO 25 SITE REPEATER SW | $ 10,700.00 | $ 64,200.00 | 112 | 30% | $ 7,490.00 | $ 44,940.00 |
| GTR8000 | 2d | 1 | CA00862AA | ADD: SITE & CABINET RMC W/CAPABILITY OF 7-24 BRS | $ 2,100.00 | $ 2,100.00 | 112 | 30% | $ 1,470.00 | $ 1,470.00 |
| GTR8000 | 2e | 1 | CA00879AA | ADD: PRIMARY 6 PORT CAVITY COMBINER | $ 8,400.00 | $ 8,400.00 | 112 | 30% | $ 5,880.00 | $ 5,880.00 |
| GTR8000 | 2f | 1 | CA00883AA | ADD: 800 MHZ TX FILTER W/PMU | $ 1,000.00 | $ 1,000.00 | 112 | 30% | $ 700.00 | $ 700.00 |
| GTR8000 | 2g | 2 | CA00303AA | ADD: QTY (1) SITE CONTROLLER | $ 5,000.00 | $ 10,000.00 | 112 | 30% | $ 3,500.00 | $ 7,000.00 |
| GTR8000 | 2h | 2 | CA02212AA | ADD: ASTRO 25 SITE REPEATER SITE CONTROLLER SOFTWARE VOICE ONLY | $ 5,000.00 | $ 10,000.00 | 112 | 30% | $ 3,500.00 | $ 7,000.00 |
| GTR8000 | 2i | 1 | CA02686AA | ADD: AC DC POWER DISTRIBUTION | $ - | $ - | 112 | 30% | $ - | $ - |
| GTR8000 | 2j | 1 | CA00293AA | ADD: 43RU SCHROFF CABINET | $ 880.00 | $ 880.00 | 112 | 30% | $ 616.00 | $ 616.00 |
| GTR8000 | 2k | 2 | CA00027AC | ADD: FRONT/BACK, LOUVERED | $ 225.00 | $ 450.00 | 112 | 30% | $ 157.50 | $ 315.00 |
| SURGE | 3 | 2 | DSTSJ48CLT | SPD, RJ-45 OR HARDWARE CONNECTED FOR T1/E1, PROTETS 4 WIRES | $ 120.00 | $ 240.00 | 207 | 10% | $ 108.00 | $ 216.00 |
| SURGE | 4 | 1 | DSTSJADP | RACK MOUNT GROUND BAR, 19 IN FOR TSJ AND WPH SERIES DATE SPDS | $ 88.00 | $ 88.00 | 207 | 10% | $ 79.20 | $ 79.20 |

**ASR Site Equipment Total**    **$ 189,458.00**    **Bid Price  $  134,366.20**

**MNDOT 8 Channel ASR**

| Equip Type | Item Num | Total Qty | Nomenclature | Description | Unit List | Total List | APC | Discount | Unit Discount | Ext. Discount |
|---|---|---|---|---|---|---|---|---|---|---|
| NETWORK | 1 | 2 | SQM01SUM0205 | GGM 8000 GATEWAY | $ 4,200.00 | $ 8,400.00 | 147 | 10% | $ 3,780.00 | $ 7,560.00 |
| NETWORK | 1a | 2 | CA01616AA | ADD: AC POWER | $ - | $ - | 147 | 10% | $ - | $ - |
| GTR8000 | 2 | 1 | SQM01SUM7054 | GTR 8000 EXPANDABLE SITE SUBSYSTEM | $ 6,000.00 | $ 6,000.00 | 112 | 30% | $ 4,200.00 | $ 4,200.00 |
| GTR8000 | 2a | 1 | CA00855AA | ADD: 700/800 MHZ | $ 6,300.00 | $ 6,300.00 | 112 | 30% | $ 4,410.00 | $ 4,410.00 |
| GTR8000 | 2b | 1 | X304AE | ADD: QTY (5) GTR 8000 BASE RADIOS | $ 47,600.00 | $ 47,600.00 | 112 | 30% | $ 33,320.00 | $ 33,320.00 |
| GTR8000 | 2c | 4 | X591AE | ENH: ASTRO 25 SITE REPEATER SW | $ 10,700.00 | $ 42,800.00 | 112 | 30% | $ 7,490.00 | $ 29,960.00 |
| GTR8000 | 2d | 1 | CA00862AA | ADD: SITE & CABINET RMC W/CAPABILITY OF 7-24 BRS | $ 2,100.00 | $ 2,100.00 | 112 | 30% | $ 1,470.00 | $ 1,470.00 |
| GTR8000 | 2e | 1 | CA00879AA | ADD: PRIMARY 6 PORT CAVITY COMBINER | $ 8,400.00 | $ 8,400.00 | 112 | 30% | $ 5,880.00 | $ 5,880.00 |
| GTR8000 | 2f | 1 | CA00883AA | ADD: 800 MHZ TX FILTER W/PMU | $ 1,000.00 | $ 1,000.00 | 112 | 30% | $ 700.00 | $ 700.00 |
| GTR8000 | 2g | 2 | CA00303AA | ADD: QTY (1) SITE CONTROLLER | $ 5,000.00 | $ 10,000.00 | 112 | 30% | $ 3,500.00 | $ 7,000.00 |
| GTR8000 | 2h | 2 | CA02212AA | ADD: ASTRO 25 SITE REPEATER SITE CONTROLLER SOFTWARE VOICE ONLY | $ 5,000.00 | $ 10,000.00 | 112 | 30% | $ 3,500.00 | $ 7,000.00 |
| GTR8000 | 2i | 1 | CA02686AA | ADD: AC DC POWER DISTRIBUTION | $ - | $ - | 112 | 30% | $ - | $ - |
| GTR8000 | 2j | 1 | CA00293AA | ADD: 43RU SCHROFF CABINET | $ 880.00 | $ 880.00 | 112 | 30% | $ 616.00 | $ 616.00 |
| GTR8000 | 2k | 2 | CA00027AC | ADD: FRONT/BACK, LOUVERED | $ 225.00 | $ 450.00 | 112 | 30% | $ 157.50 | $ 315.00 |
| GTR8000 | 3 | 1 | SQM01SUM7054 | GTR 8000 EXPANDABLE SITE SUBSYSTEM | $ 6,000.00 | $ 6,000.00 | 112 | 30% | $ 4,200.00 | $ 4,200.00 |
| GTR8000 | 3a | 1 | CA00855AA | ADD: 700/800 MHZ | $ 6,300.00 | $ 6,300.00 | 112 | 30% | $ 4,410.00 | $ 4,410.00 |
| GTR8000 | 3b | 1 | X304AE | ADD: QTY (5) GTR 8000 BASE RADIOS | $ 47,600.00 | $ 47,600.00 | 112 | 30% | $ 33,320.00 | $ 33,320.00 |
| GTR8000 | 3c | 4 | X591AE | ENH: ASTRO 25 SITE REPEATER SW | $ 10,700.00 | $ 42,800.00 | 112 | 30% | $ 7,490.00 | $ 29,960.00 |
| GTR8000 | 3d | 1 | CA00877AA | ADD: CABINET RMC FOR EXPANSION RACK | $ 600.00 | $ 600.00 | 112 | 30% | $ 420.00 | $ 420.00 |
| GTR8000 | 3e | 1 | CA00880AA | ADD: EXPANSION 6 CAVITY COMBINER | $ 8,400.00 | $ 8,400.00 | 112 | 30% | $ 5,880.00 | $ 5,880.00 |
| GTR8000 | 3f | 1 | CA01058AA | ADD: 700/800 PHASING HARNESS | $ 1,000.00 | $ 1,000.00 | 112 | 30% | $ 700.00 | $ 700.00 |
| GTR8000 | 3g | 2 | CA00884AA | ADD: QTY (1) XHUB | $ 3,500.00 | $ 7,000.00 | 112 | 30% | $ 2,450.00 | $ 4,900.00 |
| GTR8000 | 3i | 1 | CA02686AA | ADD: AC DC POWER DISTRIBUTION | $ - | $ - | 112 | 30% | $ - | $ - |
| GTR8000 | 3j | 1 | CA00293AA | ADD: 43RU SCHROFF CABINET | $ 880.00 | $ 880.00 | 112 | 30% | $ 616.00 | $ 616.00 |
| GTR8000 | 3k | 2 | CA00027AC | ADD: FRONT/BACK, LOUVERED | $ 225.00 | $ 450.00 | 112 | 30% | $ 157.50 | $ 315.00 |
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| SURGE | 5 | 1 | DSTSJADP | RACK MOUNT GROUND BAR, 19 IN FOR TSJ AND WPH SERIES DATE SPDS | $ 88.00 | $ 88.00 | 207 | 10% | $ 79.20 | $ 79.20 |

**ASR Site Equipment Total**    **$ 265,288.00**          **Bid Price $ 187,447.20**

# Considerations for PSAP Logging in the Metropolitan Twin Cities Area
# A Discussion of Local Logging vs. Shared/Hosted Logging

1. <u>Background</u>

Planned future changes in Minnesota 9-1-1 call delivery (NG-9-1-1) and conversion of PSAPs from Gold Elite to MCC 7500 radio consoles is driving the need to discuss the future of logging recording in the metro area. Public Safety Answering Points (PSAPs) have historically created an archival electronic record of certain telephone calls and radio traffic available to the PSAP. These records are commonly referred to as audio logging. PSAP audio logging technology has existed for more than 50 years and has migrated from traffic logged onto wire & magnetic tape to the current architectures which stores logged transactions on mechanical or virtual disk drives. Once the purview of specialized equipment and market-focused vendors, PSAP logging now shares some common characteristics with audio and data traffic logging in commercial call & reservation centers, trading/financial environments, and the health care industries to name a few.

PSAP Telephone traffic can be categorized according to:

- 9-1-1 Traffic
- 10-Digit Published PSAP Access Numbers
- Other telephone traffic (e.g. ringdown hotlines, 'tip' lines, investigative lines, etc.)

PSAP Radio traffic can be categorized according to:

- Dispatch channels or talk groups
- Other secondary channels, resources, and talk groups

Currently most MESB primary and secondary PSAPs now own, operate, and locally administer their own logging systems with most using analog technology. A few PSAPs have also implemented digital capable loggers. Historically the individual ownership model was the only practical approach to deployment of logging since all of the PSAP logging traffic originated at or was delivered to the physical location of the PSAP. Virtualization[1] of 9-1-1 call handling and radio communications technology creates an alternative approach to logging. This paper describes this as the shared/hosted logging model. While technically feasible to implement shared/hosted logging systems there are also policy and procedural planning considerations which need to be addressed.

The MESB has recently assisted a subset of metro area PSAPs in the planning and shared acquisition of Next Generation capable 9-1-1 call answering equipment. This project is referred to as the Call Handling System (CHS) project and has been organized into three phases and affects nine PSAPs. A common cooperative agreement and procurement processes have resulted from the CHS process.

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[1]         For purposes of this White Paper Virtualization is used to describe the shared ownership, operation and management of common technology resources such as 9-1-1 call handling and radio communications infrastructure.

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# Considerations for PSAP Logging in the Metropolitan Twin Cities Area
## A Discussion of Local Logging vs. Shared/Hosted Logging

2. Logging Regulatory Considerations

Within the state of Minnesota three (3) statutory provisions relate to the topic of logging and recording. There is an inference in the MN Code of Administrative Regulation (MCAR) that 9-1-1 calls be electronically logged[2], however there is no similar requirement that 10 digit calls to, or from, the PSAP be logged. Further, while PSAP plans for ARMER system participation request that logging of radio traffic be discussed in plan preparation, there is no statutory requirement to log any particular radio channel or talk group. Further MSA Chapter 403.113 permits the use of 9-1-1 funds collected by the state to be used for purchase of recording equipment. Future changes to the '403' language should consider updating language relating to logging. A third statute addresses data practices aspects associated with requests made for public safety services which are reported using 9-1-1.[3]

3. Government Data Retention Schedules & Data Practices Act Compliance

PSC's experiences with data retention schedules amongst Minnesota PSAPs varies. A few Minnesota PSAPs observe the minimum 31 day retention period for logged telephone traffic. Other PSAPs save the recorded audio traffic for as long as their storage facilities have capacity. Within the Twin Cities metro area each local agency has adopted an individual Data Retention schedule.[4] Presumably if the PSAPs were to collaborate to establish a shared/hosted logging system joint administrative procedures would need to be established to accommodate the retention schedule requirements for all participants. Further, the participants would need to identify and designate either one of their own members as the

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[2]     See Minnesota Administrative Rules 7580, Subp 5 - Recording calls: The PSAP manager shall develop and maintain a system for recording 911 calls received by the PSAP. The records shall be retained for a period of at least 31 days from the date of the call and shall include the following information: date and time the call was received; nature of the problem; and action taken by the dispatcher. A magnetic tape recording will satisfy this requirement. Future changes to '7580' language should consider updating the references to magnetic tape.

[3]     See MSA 13.82, Subd. 4 Audio recording of 911 call: The audio recording of a call placed to a 911 system for the purpose of requesting service from a law enforcement, fire, or medical agency is private data on individuals with respect to the individual making the call, except that a written transcript of the audio recording is public, unless it reveals the identity of an individual otherwise protected under subdivision 17. A transcript shall be prepared upon request. The person requesting the transcript shall pay the actual cost of transcribing the call, in addition to any other applicable costs provided under section 13.03, subdivision 3. The audio recording may be disseminated to law enforcement agencies for investigative purposes. The audio recording may be used for public safety and emergency medical services training purposes.

[4]     See MSA 138.12, Records management states: It shall be the duty of the head of each state agency and the governing body of each county, municipality, and other subdivision of government to establish and maintain an active, continuing program for the economical and efficient management of the records of each agency, county, municipality, or other subdivision of government. Public officials shall prepare an inclusive inventory of records in their custody, to which shall be attached a schedule, approved by the head of the governmental unit or agency having custody of the records, establishing a time period for the retention or disposal of each series of records. When the schedule is unanimously approved by the records disposition panel, the head of the governmental unit or agency having custody of the records may dispose of the type of records listed in the schedule at a time and in a manner prescribed in the schedule for particular records which were created after the approval. A list of records disposed of pursuant to this subdivision shall be maintained by the governmental unit or agency. When records containing not public data as defined in section 13.02, subdivision 8a, are being disposed of under this subdivision, the records must be destroyed in a way that prevents their contents from being determined.

Data Practices Administrator/Custodian for logged traffic or designate an independent agent (MESB?) to undertake this responsibility for them.

4.   Data "Ownership" of Logged Information

Closely linked with the topic of logged data administration is the topic of data "Ownership".  Under current local logging practices, data administration and ownership are typically viewed through the same lens of the agency's policies owning the stand alone logger.  Whichever governmental agency owns the data typically administers it and vice versa.  Any serious discussion of a shared/hosted logging service model needs to contemplate and answer the question of who 'owns' the logged traffic?  While the governance model built for the MESB to support the shared call handling system provides a framework template for a shared/hosted logging system, additional supplemental language would be needed in the areas of data practices management and system administration.   If a shared/hosted logging system is to be implemented within the metro area, legal review needs to occur concerning data 'Ownership' and a group of prospective system owners should convene to establish policy.  Sooner or later the ownership issue is expected to arise with probable legal requests which may surround controversial media events and civil/criminal lawsuits.  The LOGIS model of shared/hosted data may provide guidance on this topic as LOGIS warehouses and manages a variety of government data on behalf of its membership .

5.   Management of Configurations & Access Rights in a Shared/Hosted Environment

Any logging system will require some degree of technical and administrative oversight and management.  For example, in a shared/hosted environment where multiple agencies are accessing common stored logging traffic someone will need to be responsible to set up, monitor, and manage access privileges and trouble shoot performance issues which may arise.  Further, if encrypted radio traffic is to be logged, provisions will need to be made to manage any encryption keys on the shared logging system.  Periodic system backups as well as operating and application software upgrades are also typically required.  Someone with systems expertise may be required occasionally as an expert witness in certain judicial proceedings where the origins and evidentiary aspects of the logged traffic can be presented in court.  While it is theoretically possible to delegate hardware/software upgrades as well as system monitoring and management to a third party vendor, a point-of-coordination contact would be needed to keep remote users informed.   Additionally, it is likely that over time participants may desire modifications to logged radio talk groups/resources, 9-1-1 or administrative call parameters, and other updates.  Such an administrator would also need to be responsible for ensuring vendor compliance with system 'Evergreen'[5] updates, system performance metrics, and encryption management.

6.   Funding, Cost Allocation, and Voting Considerations

Any shared/hosted logging system would require agreement amongst participants concerning how the system would be funded, how costs would be allocated and the level of ownership voting that would apply.  The agreements drafted for the CHS project received input management and legal staff of ten

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[5]       Evergreen refers to the process of routinely upgrading software and potentially hardware to keep the system operating with latest releases and equipment configurations.

metro area PSAPs as well as MESB management and legal staff and could serve as the basis for their adapted use in a shared/hosted logging environment.

7. <u>Technical Considerations</u>

    a. <u>Circuit Based CAMA 9-1-1 Recording</u>:  Except for Call Handling System # 1 (CHS #1) users, 9-1-1 audio traffic within the metro area is currently capable of being logged locally at each PSAP in an analog fashion (typically with bridged connections across individual analog circuits).  Figure 1 (attached) provides an additional graphic representation of how CAMA traffic is collected.  CHS #1 differs from past practice and was installed so that 9-1-1 traffic is presented in a Session Initiated Protocol (SIP) fashion. Analog recording is a common attribute that all existing metro area telephone recorders have provided for many years.

    b. <u>Next Generation 9-1-1 "SIP" Recording</u>:   SIP traffic differs from conventional analog telephone traffic in several key aspects.  Specifically SIP traffic is digital instead of analog.  Within the SIP data stream multiple conversations can be transported in what are known as "sessions".[6]  Individual SIP sessions are identified via specific header and attribute tags contained in the data stream. This identifying information is used both in call routing and local processing by the CHS #1 common equipment.[7]  The identifying information is also used for digital telephone logging.  CHS #1 is receiving 9-1-1 traffic in a purely SIP format with no digital-to-analog conversion taking place.  While the CHS #1 ingress "pipe" is currently designed to support 65 concurrent sessions, only 25 of those SIP sessions are presently being recorded for Hennepin County's PSAP specific traffic.  This is significant because Hennepin County's existing logging contract does not include SIP recording capability for the full 65 sessions of traffic hosted by CHS #1.  Hennepin County has purchased a redundant logging solution from DSS Corporation with one logger installed at their new PSAP in Parker's Lake and the second logger installed in their 'back out' PSAP in Golden Valley.  The CHS #1 architecture has common equipment is installed in Parker's Lake and in downtown Minneapolis not Golden Valley.  A minimum six month planning and implementation window should be contemplated by any PSAP that intends to record SIP 9-1-1 traffic.

    c. <u>Radio Traffic</u>:  All metro area PSAPs currently participate in the ARMER statewide digital trunked radio network manufactured by Motorola.  Many PSAPs also maintain the capability to operate on some analog channels for purposes such as fire/EMS alerting, outdoor warning siren activation, and public works/highway maintenance communications.  All metro area PSAPs operating radio consoles currently have either Gold Elite or MCC 7500 consoles (both also manufactured by Motorola).  Gold Elite consoles accommodate an analog logging interface to the ARMER system but this capability will 'sunset' when the last metro Gold Elite console is replaced with newer digital consoles. In the mean time the

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[6]    For the existing CAMA based PSAPs the 9-1-1 traffic is actually delivered as SIP but down converted to analog to enable recording. Ultimately CAMA conversions will need to be eliminated when full NG9-1-1 service is universal in the metro area.

[7]    Implementing full SIP functionality, and eliminating the CAMA down conversion, on 9-1-1 traffic will help the metro area PSAPs be ready to fully process FCC mandated text-to-9-1-1 service requests.

# Considerations for PSAP Logging in the Metropolitan Twin Cities Area
## A Discussion of Local Logging vs. Shared/Hosted Logging

MnDOT ARMER support team is working to keep an obsolete hardware component (MGEG[8]) operating.  The MGEG's need to be fully retired for metro area PSAPs not later than the end of calendar 2016.  Gold Elite consoles are loosely analogous to CAMA based 9-1-1 circuits.  MCC7500 consoles, by comparison, communicate with the ARMER backbone digitally (similar to 9-1-1 sessions) and except for the selected channel/talk group at a specific MCC 7500 position), the primary radio logging interface for PSAPs will need to be digital.  Motorola's logging architecture interposes an AIS (Archiving Information Server) between the applicable zone controller and the digital logger that is collecting radio traffic of interest for a particular PSAP. A single AIS is capable of supporting multiple digital radio recording sessions.  Within the metro area there are currently seven (7) separate AIS' systems operating.[9] Collectively these servers have an estimated capacity of recording 840 unencrypted radio recording sessions.  A key assumption of this white paper is that this capacity is sufficient for all known PSAP logging requirements (although the number of logged talk groups requiring encryption will impact the total number of AIS devices required in a final design).  As additional PSAPs consider upgrading their Gold Elite consoles key planning considerations are:

- Should each PSAP have its own AIS?
- Are there opportunities to share digital radio logging capability?

It should be remembered that a digital logger must be interfaced to an AIS to actually collect radio traffic and permit its playback.  Motorola has established API[10] licensing arrangements with certain vendors whose products are certified as compatible with Motorola's P25 architecture.  Conversely not all digital logging recorders, even those within a particular manufacturer's product line, are licensed for use in an MCC 7500 Motorola console architecture.[11]

It should also be noted that each metro area PSAP's consoles are primarily affiliated with and connected to either Zone 1 (Water's Edge) or Zone 2 (Golden Valley).  While it is possible to pass radio traffic across radio zone boundaries, a shared/hosted logging design objective should be to organize the radio sharing of such system resources according to Zone affiliation to conserve network bandwidth requirements.

d.  Other Logged Traffic:  As the transition from analog to digital recording has proceeded, logging of additional data sources is occurring for some agencies.  For example, in the future as text-to-9-1-1 ramps up it is anticipated that the content of any text message transactions may also be archived on the logging recorder.[12]   Some US agencies are also using the

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[8]     MGEG is Motorola Gold Elite Gateway, a device used to support discontinued Gold Elite consoles.

[9]     An eighth (8th) AIS has been ordered but is not yet installed.

[10]    API is Application Programming Interface.

[11]    Example:  NICE (and its channel partners) market the "NRX" series digital logging recorder but an API license is not available to integrate this specific NICE product with the MCC 7500 architecture.  Rather Motorola requires that the Motorola branded NICE 7500 logger be used.

[12]    Note that this capability also exists on the CHS #1 MIS (Management Information System) server.

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logging recording capability to store feeds from video cameras, CAD 'screen scrapes', ALI record data, and other information computer workstations, etc. Other logged traffic will impact the size and scope of any shared technical architecture as well as the legal, administrative, data retention, and system administration considerations.

8. Bandwidth Requirements

From a bandwidth and networking perspective there are several considerations. The Motorola AIS is deployed inside the Motorola ARMER network. The AIS can be located at either the Zone controller site, at the PSAP, or at an independent location. For all existing metro PSAPs under the current MCC 7500 deployment plan it is envisioned that if an AIS is purchased for local installation at the PSAP in a single agency configuration, suitable bandwidth exists within a single T1 (1.54 Mps) to operate the radio console functionality as well as deliver traffic to the AIS.[13]

When the 9-1-1 call handling equipment is collocated in the PSAP bandwidth requirements are typically not an issue. However, when a SIP based 9-1-1 call handling system is centrally hosted, suitable bandwidth allocations need to be made to transport the traffic of interest from the common call processing equipment to the location where the digital logging equipment is installed. Generally the performance metrics for logging traffic transport can be somewhat less stringent than what is needed for 'live audio'. The nature of the hardware and software used in logging systems allows for some traffic buffering and delayed packet delivery.

Inter-site bandwidth requirements to haul traffic related to a shared/hosted logging solution will vary depending upon the location of common call handling system elements in the telephone environment and whether the radio logging systems are collocated with ARMER zone controllers or externally. For general planning purposes these bandwidths can be considered as benchmarks for discussion.

| Description | Bandwidth |
|---|---|
| Zone Controller to AIS | 1.5 Mbps |
| AIS to Digital Logger | 1.5 Mbps |
| Telephone Traffic to Digital Logger | 1 to 5 Mbps[14] |

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[13] Although only a single T1 is required to support most console installations, Motorola recommends two T1 circuits, and MnDOT has planned capacity accordingly for route redundancy.

[14] Actual payload determined by the number of concurrent telephone sessions and any unique conferencing requirements that need to be logged and would exclude wide bandwidth technologies such as video logging.

# Considerations for PSAP Logging in the Metropolitan Twin Cities Area
## A Discussion of Local Logging vs. Shared/Hosted Logging

9. Cost

Typical cost elements for various stand alone and shared logging configurations look like this:

| Agency & Cost Element | Cost |
|---|---|
| **Washington County (2011) Stand Alone** | |
| Motorola AIS (includes hardware, firewall, Year 1 warranty and implementation services) | $61,000 |
| Verint Archiving Server | $31,412 |
| Verint Trunked Logging Recorder with Motorola API & Trade-In | $99,659 |
| Verint AudioLog | $48,609 |
| **Washington County Subtotal** | **$240,680** |
| | |
| Hennepin County (2014) - | |
| Motorola AIS (**hardware only, no services cost each**) | ~$31,000 |
| DSS Equature Solution (contract included 12% additional contingency) | $291,000 |
| **Hennepin County Subtotal  (with 1 AIS)** | **$322,000** |

Note:  Both price examples above include capability to log radio and telephone.

10. Examples of What Other Minnesota Agencies are Doing with Logging
    e. South Central ARMER Region

In 2012 the South Central Minnesota Regional Radio Board released an RFP for a shared/hosted logging solution on behalf of the 11 PSAPs within the region.  Motorola's proposal was submitted late and was rejected.  Verint submitted a substantially compliant proposal which consisted of a non-redundant, shared hosted solution for ARMER radio traffic and individual analog loggers for installation at the PSAPs seeking to upgrade their local logging technology.  Blue Earth County, via its IT office, administered the project.  Project Manager Darrin Haeder administered the project and offered these lessons learned:

- From Blue Earth County IT's perspective the project was a solid success and significantly less expensive than if each agency acquired their own ARMER networked logging solution.
- Deployment took much longer than anticipated, primarily due to a protracted Motorola ARMER system release which caused the customer to hold off on implementation until the new release had been installed, tested, and punch list items completed within the region.
- There has been some grumbling amongst membership about ongoing maintenance and operating cost.  In general the project manager thinks these costs are lower than they would have been with individual PSAP solutions.  The 11 PSAP membership has a widely varying budget capacity and involvement in the system.  He feels that the users are now "in the groove" financially.  Recurring maintenance contract for the shared hosted system is about $40,000 including remote monitoring.
- Verint has recently renegotiated its licensing costs with Motorola and is now a certified vendor for MCC 7500 compatibility.
- Haeder felt there was some 'finger pointing' between the vendors during the deployment cycle but ultimately the issues were worked out.   This consumed a fair amount of his time.  Currently he spends 4-8 hours per month administering the system.
- Haeder's early concerns about system sizing have not materialized.  He feels the Region may have avoided sizing issues that might befall larger consortiums with more talk groups.
- No encryption being used on the logging system currently.

## Considerations for PSAP Logging in the Metropolitan Twin Cities Area
## A Discussion of Local Logging vs. Shared/Hosted Logging

- The region has no policy on data ownership or data practices release or data ownership. There have been no media requests to the County IT for data to date. Haeder manages all of the user accounts, permissions, talk group access, etc. This took some time to set up but after the system has stabilize the time investment is a few hours each month. User questions about system performance are directed to Northland Business Systems in Burnsville.
- Northland was helpful in setting up templates for user access which were then cut, pasted, and modified for additional accounts.
- Blue Earth County IT assists Northland with some hardware maintenance and software loads.
- The procurement was funded via an ARMER grant. Local agencies funded the acquisition of the AIS.
- Local users access data on the central ARMER logging storage via a remote access program (Hamachi) which provides remote desktop like functionality. This was a relatively simple and low cost approach to configuring local agency firewalls and inter-agency connectivity to allow access. This might not be the solution for other environments.
  o This has been configured to only allow each agency to access and "see" their respective traffic, plus regional and statewide talk groups, based on their login credentials.
- There is no long term financial plan for replacement of the system when its lifecycle has ended.

Implementation costs for the South Central shared *radio ONLY* logging project were approximately:

| Agency & Cost Element | Cost |
|---|---:|
| South Central ARMER (2012) – 11 PSAP Shared Hosted ARMER | |
| Motorola AIS (includes hardware, firewall, Year 1 warranty and implementation services) | $66,000 |
| Verint Archiving Server & TLR | 245,000 |
| Note: Local PSAPs Responsible for purchasing individual analog recorders for telephone recording | N/A |
| **South Central Regional ARMER Logging Subtotal** | **$311,000** |

f. Rice-Steele 9-1-1 Center

This two-county joint powers PSAP invested approximately $200,000 in an AIS and NICE analog/digital logging solution that serves both Rice and Steele Counties. The system has operated since 2010. Support comes from Motorola/NICE via the annual support contract. The PSAP receives legal advice from the staff of one of its member counties. The PSAP was originally established to host a shared CAD, RMS and mobile data system and many of the "kinks" of data ownership were worked out more than a decade ago. The PSAP and its members now receive IT services from LOGIS. The logging system has been through a major ARMER system upgrade and migration relating to the logging was handled via the software system support agreement.

g. Hennepin County Shared-Hosted Call Handling System

Hennepin County purchased a logging system from DSS in 2014. Hennepin has received authorization to connect one AIS to each of ARMER zones serving the metro (Zones 1 and 2). Historically Hennepin has been a Zone 2 ARMER user but with the opening of its new PSAP it wanted to split its console positions across both zones.

Below are status observations from Hennepin County's representative about the DSS logging system prior to its commissioning into production service during November and December, 2014:

- Challenges & Experiences
    - Interfacing logger to Hennepin County network for CAD & VPN access has been time consuming navigating policy issues at County.
    - Since AIS is attached to Radio System Core it requires permissions from Radio Board before Motorola will install.
    - If any talkgroup uses encryption it reduces talkgroups the AIS can handle but also impacts the number of talkgroups per T1.
    - If other entities desire to participate it will require policy negotiation due to County network interface.
    - Firewalls were an unbudgeted cost
        - Logger firewall provided by logger vendor
        - County firewall
        - Motorola firewall
        - Vesta 4 firewall

Hennepin planned the DSS system to record 4 CAD screens at each dispatch position.

11. Conclusions, Recommendations & Next Steps

The MESB recommends that every metro PSAP review and develop a plan to incorporate digital logging into its technology portfolio.  Typically PSAPs will want to access analog and digital logged resources via the same GUI[15] screen.  Available choices include continued autonomous agency logging, partnership with another agency(ies), or some form of shared/hosted logging deployment.  A recommended goal is for each metro area PSAP to have established its logging requirements and determined which of the three implementation strategies it will pursue by the 3rd quarter of 2015.  PSAPs should not count on viability of an analog radio logging solution beyond the start of the Motorola Version 7.15 (unless it intends to log a small number of radio resources locally using control stations).  The MESB intends to bring forth a policy recommendation that would recommend that MnDOT begin the process of eliminating the MGEG related technology by the end of 2015.

The MESB recommends that PSAP managers familiarize themselves with the content of the Cooperative, Ancillary, and Purchase Agreements used for the CHS project with the objective with the intent of determining if such a method would be suitable for a shared hosted logging approach in the metro.  A representative work group of interested PSAP logging stake holders should be convened to bring forth recommendations on this topic.  Additionally the work group could be charged with developing requirements for a logging system that could be used by metro area PSAPs either individually, in partnership, or in a shared/hosted environment.  The work group may wish to seek funding assistance from the Statewide Emergency Communications Board (SECB) for a shared/hosted deployment

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[15]     GUI is graphical user interface.

approach since other Minnesota regions have been successful in securing funds for this purpose in the past.

Deployment experiences in other venues have demonstrated that there are some purchase and maintenance economies available from shared ownership and operation of logging solutions.

Attachments:

- Inventory
- Block Diagrams
- Decision Tree

# PSAP Logging Decision Tree

```
PSAP Has Existing Analog/Digital Logging ──No──▶ Develop a Plan ──────────────────┐
        │                                                                         │
        Yes                                                                       │
        │                                                                         │
        ▼                                                                         │
    [Yes] ──────────▶ Both Analog/Digital? ──No Digital──▶ Develop a Plan for Digital ◀──┐
        │                   │                                      │             │      │
        ▼                   ▼                                     Yes            │      │
  Any Changes         If Digital, Verify ──No──┐                   │             │      │
  Planned/Needed      Motorola/SIP Readiness   │                   │             │      │
        │                   │                  └───────────────────┘             │      │
        │ ──No──┐           ▼                                                     │      │
        Yes     │         [Yes]                                                   │      │
        │       │           │                                                     │      │
        ▼       ▼           ▼                                                     │      │
      [Yes]   [No]    Interest In Partnership                              Next Steps?   │
        │       │      Or Sharing?                                                │      │
        ▼       │           │                                                     │      │
  Pursue        │      ┌────┴────┐                                                │      │
  Changes       │     Yes       No                                               │      │
  Individually, │      │         │                                               │      │
  In Partnership│      │         ▼                                               │      │
  or Via Shared/│      │      All Done! ◀──────────────────────────────────────────────┘
  Hosting?      │      │
        │       │      │
        ▼       ▼      ▼
     With Who? ◀───────┘
```

## PSAP Logging Decision Tree

Next Steps?

**MESB - Shared / Hosted Logging**   Last Rev   9-Jan-15      **LOGGED RADIO & TELEPHONE RESOURCES**
**County / Regional Primary PSAPs**   Current Rev   15-Jan-15

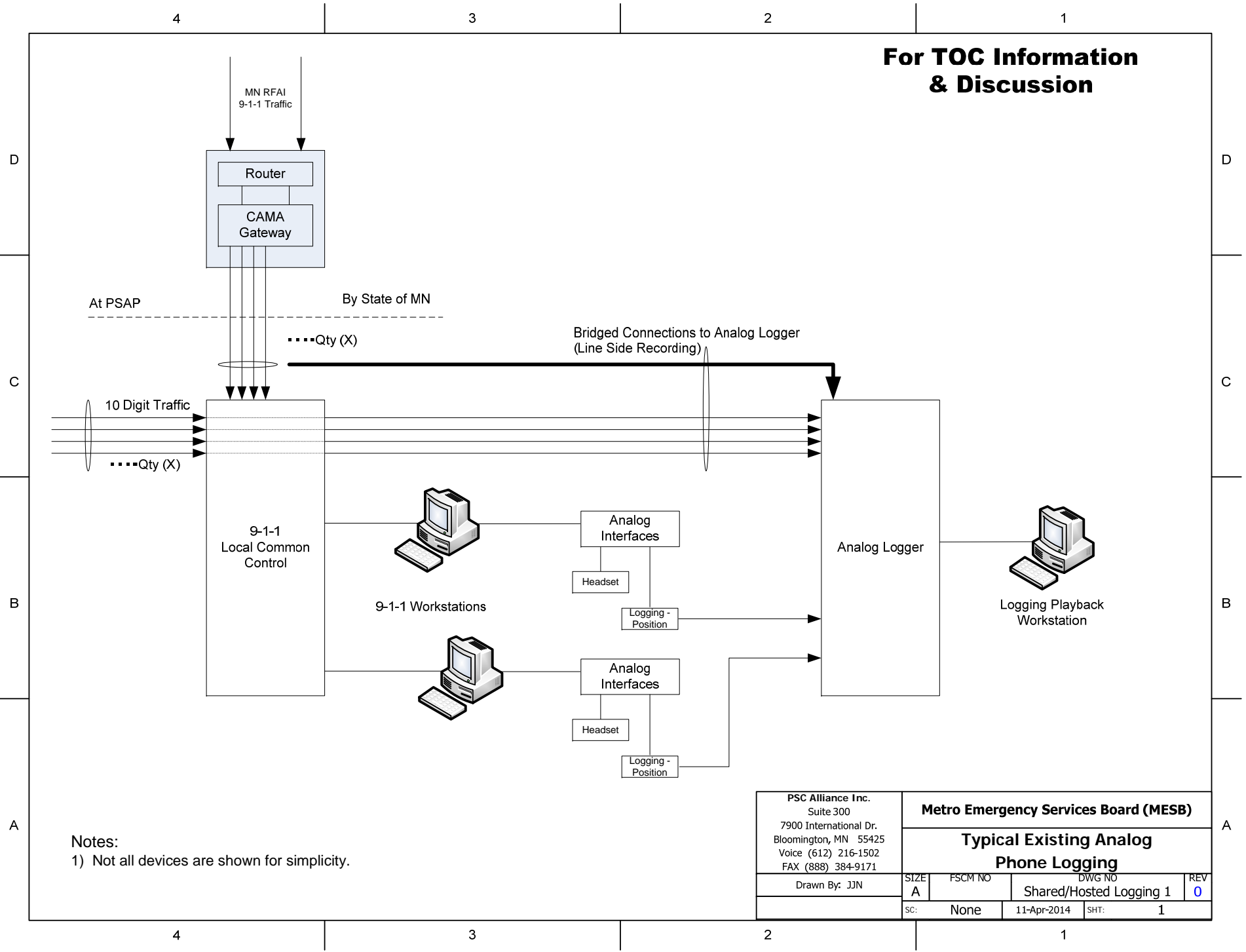| Name | ARMER Zone | Survey Response? | Phone System | Radio Consoles | Notes | Currently Own AIS | Notes |
|------|------------|------------------|--------------|----------------|-------|-------------------|-------|
| Anoka | 1 | Yes | Viper | Gold Elite | | | Tentative 2016 MCC7500 transition if funded |
| Carver | 1 | Yes | CHS 2 | Transitioning | 4 | ✔ | Purchase contract signed; 2015 implementation |
| Chisago | 1 | No | Viper | MCC 7500 | | ✔ | Potential capacity to serve other Zone 1 users |
| DCC | 1 | Yes | CHS 3 | Gold Elite | 4 | | Digital ATIA Based Logging Now; transitioning in 2015 |
| Hennepin | 2 | No | CHS 1 | Transitioning | | ✔✔ | Purchased Qty 2 AIS; one for each metro radio zone |
| Isanti | 1 | Yes | Viper | Gold Elite | | | Transitioning to MCC7500; intend to log via control stations. |
| Ramsey | 2 | Yes | CHS 3 | Gold Elite | 4 | | Transitioning to MCC7500 in 2015; Digital ATIA based logging now. |
| Scott | 1 | Yes | Vesta 4 | Transitioning | | | Contract signed for MCC7500 replacement in 2015 |
| Washington | 1 | Yes | Viper | MCC 7500 | | ✔ | Potential capacity to serve other Zone 1 users |
| MSP | 1 | No | Viper | MCC 7500 | | ✔ | Potential capacity to serve other Zone 1 users |

**Municipal / Special / Secondary PSAPs**

| Name | ARMER Zone | Survey Response? | Phone System | Radio Consoles | Notes | Currently Own AIS | Notes |
|------|------------|------------------|--------------|----------------|-------|-------------------|-------|
| Airport (MAC) | 2 | Yes | Viper | MCC7500 | | ✔ | Potential capacity to serve other Zone 2 users |
| Allina | 2 | Yes | CHS 1 | MCC7500 | | | MCC7500 transition completed; logging strategy undetermined. |
| Bloomington | 2 | Yes | Viper | Gold Elite | | | Interest in shared logging is uncertain. |
| Eden Prairie | 2 | Yes | Viper | MCC7500 | | ✔ | Potential capacity to serve other Zone 2 users |
| Edina | 2 | Yes | CHS 1 | Gold Elite | | | MCC7500 transition planned; logging strategy undetermined. |
| Hennepin EMS | 2 | No | CHS 1 | MCC7500 | | | MCC7500 transition planned; logging strategy undetermined. |
| Minneapolis | 1 | No | CHS 1 | Gold Elite | | | Funding requested for MCC7500 replacement in 2015 (Q3/Q4?) |
| Minnetonka | 2 | Yes | Viper | Gold Elite | 4 | | 2015 MCC7500 transition planned; logging strategy undetermined |
| North Memorial | 2 | No | Viper | Gold Elite | | | MCC7500 transition planned; logging strategy undetermined. |
| Regions | 2 | No | Pallas | Gold Elite | 4 | | MCC7500 transition planned; logging strategy undetermined. |
| RVMC | 1 | No | CHS 2 | Gold Elite | | | MCC7500 transition planned; logging strategy undetermined. |
| St. Louis Park | 2 | No | Viper | Gold Elite | | | 2015 MCC7500 transition planned; logging via control stations. |
| U of M | 2 | No | Viper | MCC7500 | | | Console conversion completed in August; radio logging via MSP. |
| White Bear Lake | 2 | Yes | Viper | Gold Elite | | | MCC7500 transition planned; logging strategy undetermined. |
| | | | | | | **8** | **Total Metro Area AIS Devices Ordered or On-hand** |
| Metro Transit | 1 | No | N/A` | Transitioning | | ✔ | MTC is transitioning to MCC7500 & will have AIS in 2015 |

**Notes:**

1) Estimated existing net radio resource capacity 1,080TGs (unencrypted) & includes Metro Transit

2) Estimated **hardware** cost per AIS purchased $33,000 (excluding services and without encryption)

3) Excludes Metro Transit, DOC, Capital Security, etc.

4) These PSAPs have most immediate digital logging need; near term shared/hosted candidates.

Prepared by:  PSC Alliance Inc.

**For TOC Information & Discussion**

MN RFAI 9-1-1 Traffic

Router

CAMA Gateway

At PSAP

By State of MN

Qty (X)

Bridged Connections to Analog Logger (Line Side Recording)

10 Digit Traffic

Qty (X)

9-1-1 Local Common Control

9-1-1 Workstations

Analog Interfaces

Headset

Logging - Position

Analog Interfaces

Headset

Logging - Position

Analog Logger

Logging Playback Workstation

Notes:
1) Not all devices are shown for simplicity.

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Bloomington, MN  55425
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Drawn By:  JJN

**Metro Emergency Services Board (MESB)**

**Typical Existing Analog Phone Logging**

| SIZE A | FSCM NO | DWG NO Shared/Hosted Logging 1 | REV 0 |
|---|---|---|---|
| SC: | None | 11-Apr-2014 | SHT: 1 |
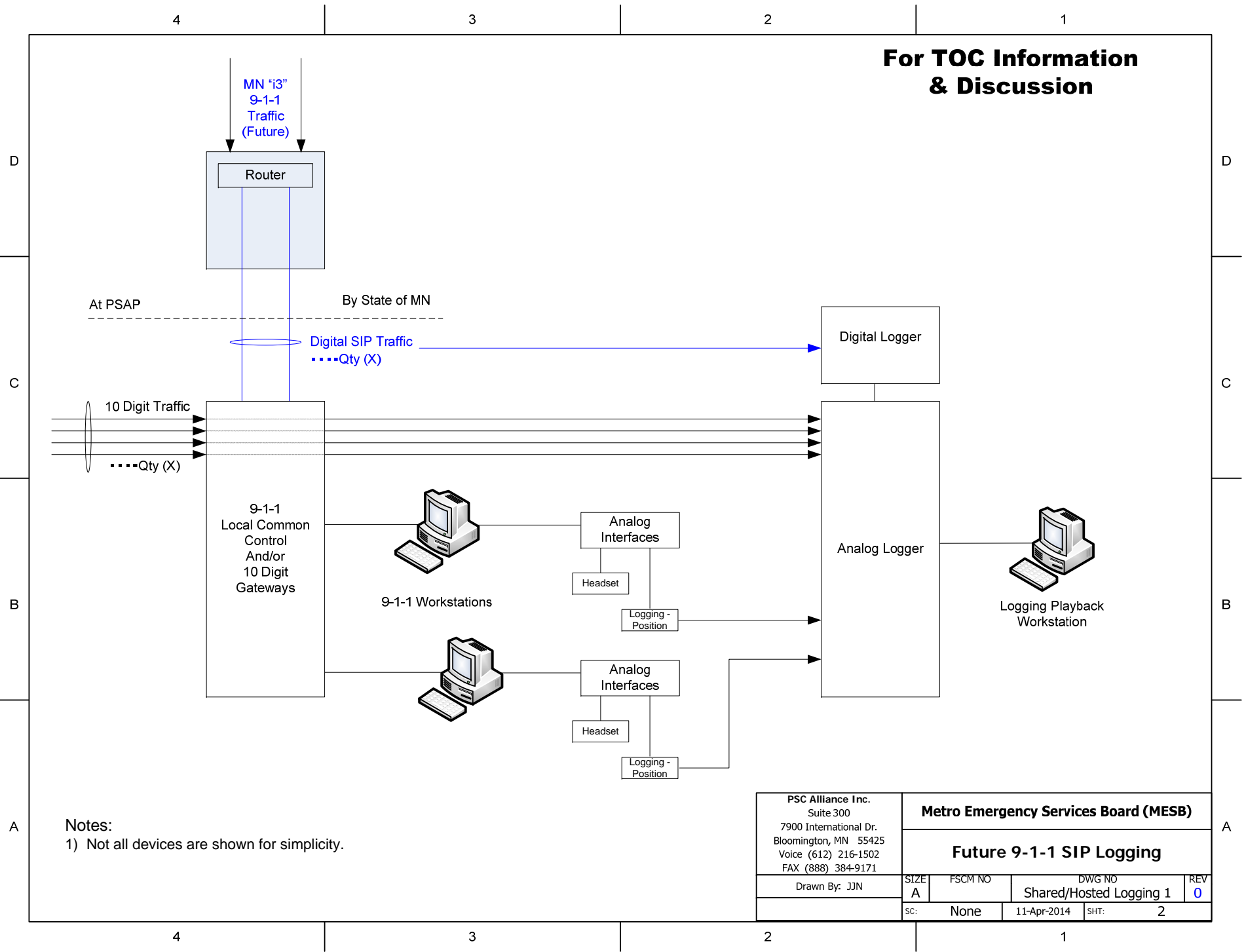
For TOC Information & Discussion

MN "i3" 9-1-1 Traffic (Future)

Router

At PSAP | By State of MN

Digital SIP Traffic
••••Qty (X)

Digital Logger

10 Digit Traffic
••••Qty (X)

9-1-1 Local Common Control And/or 10 Digit Gateways

9-1-1 Workstations

Analog Interfaces

Headset

Logging - Position

Analog Logger

Analog Interfaces

Headset

Logging - Position

Logging Playback Workstation
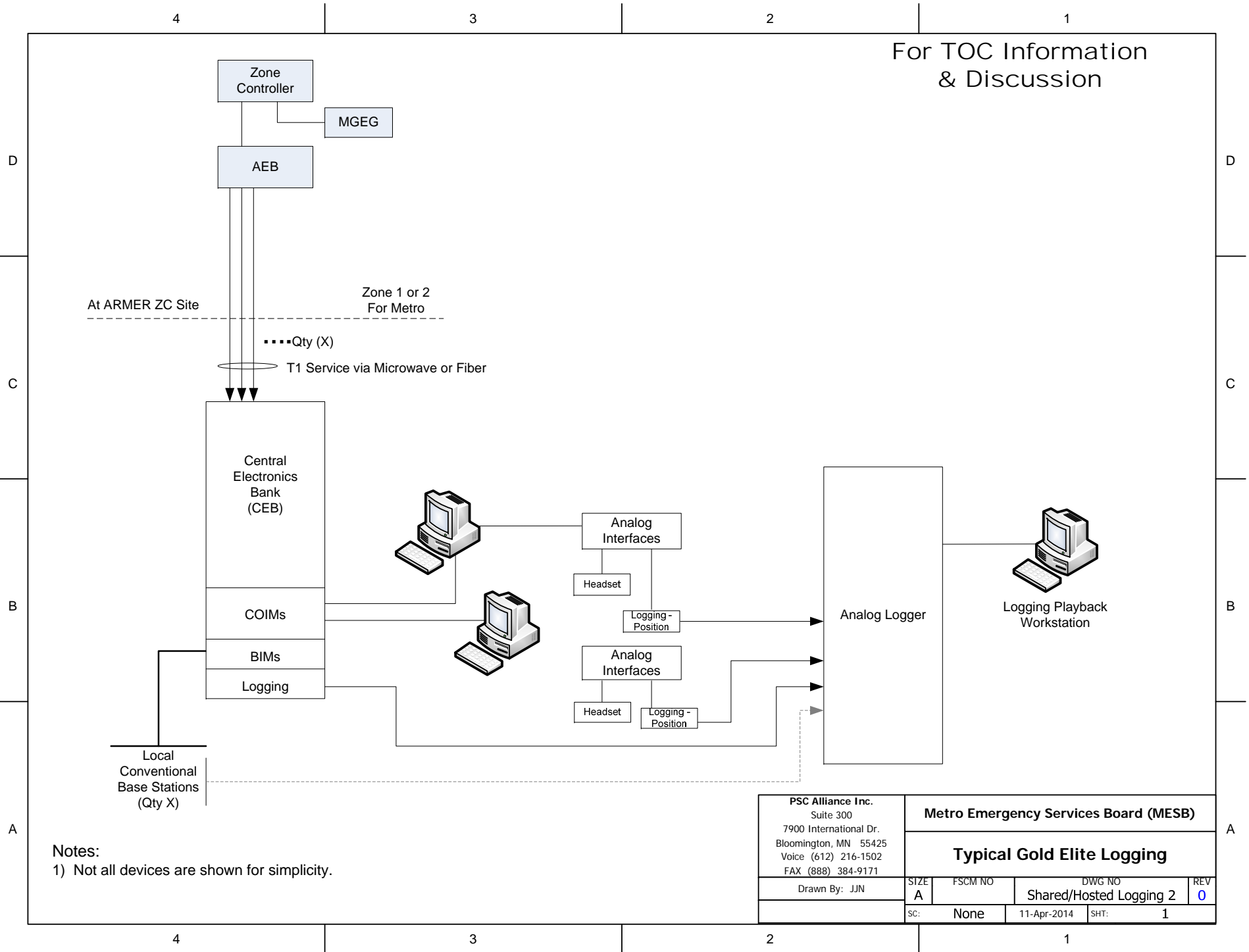
Notes:
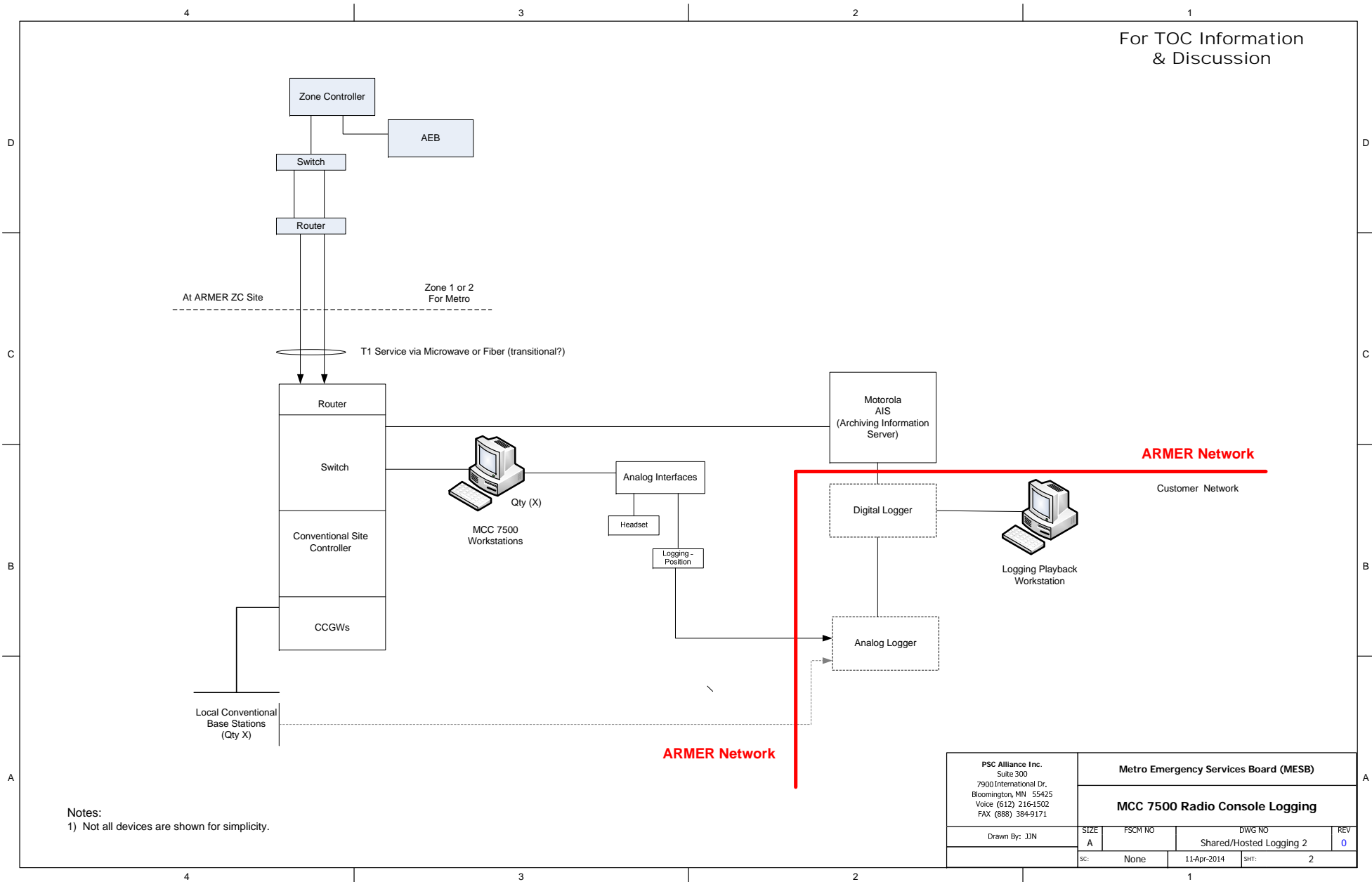1) Not all devices are shown for simplicity.

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Metro Emergency Services Board (MESB)

Future 9-1-1 SIP Logging

Drawn By:  JJN

| SIZE | FSCM NO | DWG NO | REV |
| A | | Shared/Hosted Logging 1 | 0 |
| SC:  None | 11-Apr-2014 | SHT:  2 | |

# For TOC Information & Discussion

Zone Controller

MGEG

AEB

At ARMER ZC Site

Zone 1 or 2 For Metro

····Qty (X)

T1 Service via Microwave or Fiber

Central Electronics Bank (CEB)

COIMs

BIMs

Logging

Local Conventional Base Stations (Qty X)

Analog Interfaces

Headset

Logging - Position

Analog Interfaces

Headset

Logging - Position

Analog Logger

Logging Playback Workstation

Notes:
1) Not all devices are shown for simplicity.

Metro Emergency Services Board (MESB)

**Typical Gold Elite Logging**

| SIZE | FSCM NO | DWG NO | REV |
|---|---|---|---|
| A | | Shared/Hosted Logging 2 | 0 |

| SC: | None | 11-Apr-2014 | SHT: 1 |

**For TOC Information & Discussion**

Zone Controller

AEB

Switch

Router

At ARMER ZC Site

Zone 1 or 2
For Metro

T1 Service via Microwave or Fiber (transitional?)

Router

Switch

Conventional Site
Controller

CCGWs

MCC 7500
Workstations

Qty (X)

Analog Interfaces

Headset

Logging –
Position

Motorola
AIS
(Archiving Information
Server)

**ARMER Network**

Customer Network

Digital Logger

Logging Playback
Workstation

Analog Logger

Local Conventional
Base Stations
(Qty X)

**ARMER Network**

Notes:
1) Not all devices are shown for simplicity.

Metro Emergency Services Board (MESB)

**MCC 7500 Radio Console Logging**

Drawn By: JJN

| SIZE | FSCM NO | DWG NO | REV |
|------|---------|--------|-----|
| A | | Shared/Hosted Logging 2 | 0 |

| SC: | None | 11-Apr-2014 | SHT: | 2 |

## MEMO

To:    MESB Interoperability Subcommittee Members
Fr:    Ron Jansen, Chair
RE:    Future of Interoperability Subcommittee
Date:    February 25, 2015

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The Metro Radio TOC (Technical and Operations Committee) has decided to restructure the way in which its subcommittee, the Metro Region IOSC (Interoperability Subcommittee), operates and meets.

The Interoperability Subcommittee is comprised of an excellent cross section of personnel who have provided a great deal of knowledge and expertise in moving the Metro Region to its goal of full participation on the ARMER Radio System.  Now that the region has reached that goal, and due in part to lack of ongoing issues and agenda items, the Radio TOC decided it is time to reevaluate how the Interoperability Subcommittee operates and continues to move forward.  The Radio TOC has recommended that as input on specific topics or issues arise, workgroups formed from the membership of the Interoperability Subcommittee would be assigned and tasked to evaluate the items.

If anyone has any interoperability issues which need to be discussed or which may require the formation of a workgroup, please forward them to Jill Rohret ([jrohret@mn-mesb.org](mailto:jrohret@mn-mesb.org)), Curt Meyer ([curtis.meyer@hennepin.us](mailto:curtis.meyer@hennepin.us)) or myself (ron.jansen@co.dakota.mn.us).

If you are willing to participate in these smaller workgroups please send a confirmation email back to Jill Rohret at the MESB at [jrohret@mn-mesb.org](mailto:jrohret@mn-mesb.org).

At this time regular full group meetings will be no longer be needed.

Thank you again for your participation in defining and resolving on going interoperability aspects of the ARMER System in the Metro Region.