

Technical Feasibility Assessment

Dispatching Rice County Public Safety

from

The Dakota Communications Center
Public Safety Answering Point (PSAP)

DRAFT

Submitted to:

Melissa Reeder & Gary Weiers, Rice County

Date:

November 15, 2011

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November 15, 2011

Ms. Melissa Reeder, Rice County I.T. Director
Mr. Gary Weiers, Rice County Administrator
Rice County Administration Center
320 NW 3rd Street
Faribault, MN 55021

Dear Melissa and Gary:

This letter transmits our draft report setting forth technical considerations associated with having Rice County's public safety dispatch functions performed by the Dakota Communications Center (DCC) located in Rosemount. This document should be considered a draft until local officials and those involved with the DCC have had an opportunity to hear presentation of the contents and ask questions concerning content.

The report compares only the status quo of having dispatch performed from the Rice-Steele Joint PSAP in Owatonna and moving the dispatch functions to the DCC.

We have appreciated the opportunity to work with both of you and Sheriff Troy Dunn during this analysis and value the respect and confidence you have invested in our work effort.

Sincerely yours,
PSC Alliance Inc.

J. J. Nelson

Jeff Nelson



SECTION 1

Abstract

Rice County, MN has partnered with Steele County in the operation of a consolidated, two-county, Public Safety Answering Point¹ since 1997. In the remainder of this document this cooperative, two-county PSAP is referred to as the RSC Joint PSAP. Recently several other counties within Southeast Minnesota began exploring possibilities for further consolidation. Those assessments have been funded by state grants. The Rice-Steele PSAP Joint Powers Board (JPB) decided to join the Southeast Minnesota consolidation assessment. In a parallel action, Rice County also elected to explore preliminary *technical* feasibility of consolidation with the Dakota Communications Center (DCC)². The DCC feasibility is the focus of this report.

PSC Alliance Inc. was engaged by Rice County to perform a time and scope limited technical feasibility analysis. The analysis spanned 2 months beginning late in August, 2011. The focus has been on six (6) technical technical considerations associated with moving the Rice County call answering and dispatch functions out of the shared RSC Joint PSAP . Included technical considerations were:

- Telephone call processing (10 digit and 9-1-1);
- 2-way radio communications;
- 1-way fire department paging/alerting;
- Outdoor warning siren activation;
- Logging recording of voice conversations;
- PSAP backup.

Other essential dispatch factors such as Computer Aided Dispatch (CAD), access to certain Records Management (RMS) information, Mobile Data Computing (MDC), Geographic Information System (GIS), Automatic Vehicle Location (AVL), Mapping, and Minnesota Criminal Justice Information Network (CJIN) considerations have all been *excluded* from this analysis.

This document is neither a tutorial on how to effect consolidation nor a specific design; rather it is a summary review of technical challenges and opportunities associated with consolidation principally focusing upon the voice telecommunications arena. It is important to point out that technical feasibility must be considered and weighed in the context of both operational procedures and policies.

¹ The Rice-Steele Consolidated PSAP Joint Powers Agreement was executed in 1997 but the PSAP did not commence operation until 1999.

² The DCC is a Joint powers agency established to deliver public safety call answering and dispatching services to 11 cities, Dakota County, and the unincorporated areas of the County. The DCC began operating from a purpose built facility in Rosemount late in 2007.



This document contains a few examples of operational considerations which are called out only to illustrate their relevance to any ongoing discussion about the potential for technological change. It is also important to identify that technology cost estimates must be driven by desired functional and operational expectations. For purposes of this document we have made certain general technology assumptions because our only direct contact with end-user public safety officials has been limited discussion with the Rice County Sheriff to draft these findings.³

Method

Rice County identified and designated a project manager (Melissa Reeder, IT Director) for PSC's work during this technical evaluation. A series of teleconferences were held involving PSC's representatives, Ms. Reeder, and Ms. Diane Lind (Executive Director of the DCC). PSC Alliance provided technical consultation and subject matter expertise to both Dakota County during their upgrade of radio communication systems and the creation, construction, and outfitting of the DCC with technical systems. The Dakota radio system upgrades was a County managed project while the DCC was a separate, intergovernmental Joint powers project. PSC has also provided technical consulting support to the RSC Joint PSAP staff and the PSAP Joint Powers Board for more than a decade. Also, in prior work PSC provided technical assistance to the Rice County Sheriff's Office when their VHF radio system was upgraded to enhance coverage and reliability in 1999. Through these insights and relationships, PSC's professionals have considerable experience in the technology used by Rice County, the RSC Joint PSAP and the DCC.

Executive Summary

This report assumes some familiarity on the part of the reader with three (3) important reference documents. These documents are:

[Final Report – Rice Steele Counties Public Safety Communications Recommendations](http://www.ci.northfield.mn.us/assets/r/Rice-Steele-800-MHz-Final-Report-01-29-20093.pdf), January 2009, PSC Alliance Inc.

<http://www.ci.northfield.mn.us/assets/r/Rice-Steele-800-MHz-Final-Report-01-29-20093.pdf>

[Public Safety Answering Point Consolidation – A Guidebook for Consolidation Strategies](https://dps.mn.gov/divisions/ecn/programs/911/Documents/PSAP_Guidebook.pdf), December 2009, Minnesota Department of Public Safety Governor's Work Group on PSAP Consolidation.

https://dps.mn.gov/divisions/ecn/programs/911/Documents/PSAP_Guidebook.pdf

³ Rice County staff have held briefings with selected local public safety officials separate from our technical work.



911 Dispatching – A Best Practices Review, March 31, 1998, Office of the Legislative Auditor, State of Minnesota.

<http://www.auditor.leg.state.mn.us/ped/bp/pe9806.htm>

It is helpful to consider findings, re-quoted below, from the Guidebook for Consolidation Strategies which offer this perspective on the primary reasons to pursue PSAP consolidation:

- 1) *“Service level improvements - Improving service is the single most important reason to consider consolidation.”*
- 2) *“Individual agencies no longer wish to support the training and technology needed or handle the personnel issues for PSAP staff.”*
- 3) *“Potential for cost savings - While cost savings are possible, two points are critical. First, not all consolidations result in cost savings. Second, in those scenarios where cost savings are achievable the actual realization of the savings may not occur for several years due to capital and other start-up costs.”*

These 2009 findings from the Guidebook are consistent with our own experiences over three decades in PSAP planning, operations, and enhancements.



Consolidation of Dispatching is Technically Feasible

Consolidation of dispatching services for Rice County within the Dakota Communications Center is technically feasible. Actually pursuing consolidation will require:

- An initial and ongoing monetary investment which is forecast at approximately \$424,000 based upon preliminary assessment and certain assumptions
- Modified business practices
- Elevated, but manageable, risk
- Reworking of intergovernmental agreements
- Identification of acceptable cost sharing formulas for ongoing operations and maintenance
- Significant commitments of local staff time by public safety and policy officials
- Organizational rearrangements of overlapping tasks and re-definition of job duties and responsibilities
- Regional and state approvals of 9-1-1 call delivery and radio participation plans.

Joining the existing DCC joint powers, consolidated, dispatch service organization is *the* focus of this analysis. It is possible for Rice County to consider other dispatch consolidation endeavors including arrangements with Southeast Minnesota agencies and a renegotiated partnership with Steele County. It should also be fundamental to note that the physical space on the second floor of the Steele County LEC (where the existing RSC Joint PSAP is now located) is insufficient to serve as the host site for significant expansion of the RSC dispatch function to serve other counties effectively.

Another approach that may warrant consideration is for Rice County to undertake a redefined business practice approach to its current RSC Joint PSAP participation. Simply stated, with ten years of experience “under the belts” of the RSC Joint PSAP participants, it may be appropriate to re-visit a host of business practice assumptions about operational matters, service delivery methods and procedures, call delivery strategies, support technologies, staffing, and core expectations. We say more about this in Section 4, **Next Steps**, Page 23.

The PSAP Mission

Regardless of jurisdiction, the primary mission of any PSAP is to receive and process citizen requests for service, most frequently by telephone, and relay or assign that information to appropriate response personnel in a fashion which is timely, accurate, and effective. The relay/assignment process most frequently occurs via radio and/or mobile data



communications. To accomplish this mission, dispatch personnel, use similar technologies and adapt the use of those technologies based upon localized protocols. A secondary PSAP mission is to maintain accurate field unit status and capture information associated with the processing of calls for service and field observed activity.

Service Levels May or May Not Change

In addition to the primary dispatch function, the RSC Joint PSAP dispatchers currently perform some support functions for the Sheriff's Deputies and local police personnel that may not be available via the DCC.

For Rice County to join a larger PSAP like the DCC whose sole function is to provide dispatch support services may be seen as a lower level of service to those accustomed to the local staff engagement provided by RSC Joint PSAP employees. However, others may see that same change as an improvement because radio and telephone calls may be answered more quickly during busy times and with greater focus and depth because of the DCC's larger staff base. PSC's experience has been that the level of dispatch staffing routinely available thru large consolidated centers, like the DCC, allows for greater ability to respond to extraordinary events which may tax the capacities of a smaller PSAP which may be operating with a skeleton staff of only two or three employees during off-peak periods.

Key Action Steps to Effect Remote PSAP Services from the DCC

Below are high-level action steps which would be required to effect consolidation of dispatching services for Rice County from the DCC PSAP.

- Determine Financial Contributions Required for Rice County membership
- Establish suitable membership by executing inter-local Agreements with the DCC Board of Directors
- Reconfigure Rice County, Faribault, and Northfield business processes, and staff, to handle services locally which today might be within the purview of the RSC Joint PSAP
- Interconnect aspects of the Rice County radio system to the DCC
- Rework 9-1-1 call routing databases to redirect calls from the RSC Joint PSAP to the DCC
- Modify appropriate operating policies and procedures
- Train, and deploy suitable staff



SECTION 2 - BACKGROUND

Rice County's commissioned a preliminary technical feasibility review to identify and report on voice and alerting technology considerations which would be expected to accompany relocation of the Rice County dispatch function to the DCC.

Rice County Demographics

The collective population of Rice County is 64,142 people based upon the 2010 census. Rice County experienced a 13 percent increase in population since the 2000 census. There were 24,453 housing units within the County in 2010. Rice County's land area is approximately 495 square miles and community demographics outside of Faribault and Northfield are primarily rural. Population density is 129 persons per square mile. The County is served by Interstate Highway 35, a major transportation corridor. Rice County sits immediately adjacent to the Minneapolis-St. Paul metro area. Rice County shares a common border with Dakota and Scott Counties on the North, Goodhue County on the East, Steele County on the South, and Le Sueur County on the West. Faribault and Northfield are the largest individual cities within Rice county.

Current PSAP services are received from the RSC Joint PSAP which today occupies approximately one-half (East side) of the second floor of the Steele County Law Enforcement Center. The PSAP is located at 204 E. Pearl Street, Owatonna. The PSAP occupies approximately 3,250 square feet of finished space and is equipped with five (5) combination telephone/radio dispatch workstations; a sixth workstation has only telephone and CAD capabilities but no radio controls. (Exhibit 1 at the end of this document contains a floor plan of the RSC Joint PSAP. In 2010 the RSC Joint PSAP performed cosmetic "facelift" of the dispatch facility, new dispatch workstations, and also upgraded to ARMER capable radio control consoles. These 2010 actions followed a shared commitment, in 2009, by County elected officials in both Rice and Steele Counties to migrate onto the statewide ARMER⁴ radio system. Earlier this month the RSC Joint Powers Board authorized the release of specifications to retire and replace the aging telephone and 9-1-1 call processing equipment used at the RSC Joint PSAP.

⁴ The ARMER system is a statewide, shared, 800 MHz trunked radio system designed to support the needs of local government and public safety. The principle of the ARMER system is to make interoperable voice radio communications technology available to government officials across geographic boundaries. Prior to the ARMER migration commitment, Rice County has operated and maintained its own, local, VHF radio systems which have been accessible to dispatchers at the RSC PSAP for communication with local public safety agencies.



The RSC Joint PSAP receives CAD computer services via LOGIS (an intergovernmental computer consortium).

The RSC Joint PSAP was the first consolidation effort in the state of Minnesota spanning two Counties. Prior to consolidation, the City of Northfield operated a separate PSAP which meant there were three PSAPs serving the two counties in the pre-consolidation era.⁵

The RSC Joint PSAP operates with fourteen (14) frontline Full Time Equivalent (FTE) dispatchers and three (3) FTE frontline dispatch shift supervisors. The frontline dispatchers/shift supervisors are engaged in direct public safety service delivery. Additionally the RSC Joint PSAP is authorized a part time dispatcher position on an ad-hoc basis. Administratively the RSC Joint PSAP has four (4) FTE positions. These positions are the administrator, assistant administrator, administrative assistant, and mapping coordinator. Typically there are four (4) dispatch personnel on-duty serving the two Counties.

Dakota County Demographics

Dakota County has a 2010 population of 398,552 which represents a 12 percent increase since the 2000 US Census. There were 159,598 housing units within Dakota County in 2010. Dakota County's land area is 562 square miles and 2010 population density was reported at 709 persons per square mile. Dakota County is a ring county in the southeast corner of the Minneapolis-St. Paul Standard Metropolitan Statistical Area (SMSA). There are 11 incorporated cities in Dakota County. Major transportation corridors include interstate Highways I-35W and I-35E, and State Highways 61, 110, 55, 52, and 77. Dakota County is bounded on the northwest by the Minnesota River and on the Northeast by the Mississippi River.

Current Dakota PSAP services are received from the DCC located at 2860 West 160th Street, in Rosemount. The DCC is a purpose built, stand-alone facility, occupying approximately 20,000 square feet. (Exhibit 2 at the end of this document contains a floor plan showing the DCC console configuration.) The DCC is outfitted with 23 dispatch work stations all of which are capable of 9-1-1 and 10-digit call processing and radio communications capabilities. The DCC PSAP receives CAD computer services via LOGIS (and intergovernmental computer consortium).

⁵ The original analysis which considered PSAP consolidation was prepared in 1995. Le Sueur County was also part of that analysis but elected to discontinue further participation in consolidation soon after the initial analysis was released. Actual consolidated service delivery from the RSC Joint PSAP did not commence for several more years.



During calendar 2012 the DCC PSAP budget authorizes 52 frontline Full Time Equivalent (FTE) dispatchers and six (6) FTE frontline dispatch shift supervisors. Including overcompensation staffing, administrative, operations, technical support, and training personnel the DCC's 2012 budget authorizes 66 FTEs. The DCC's authorized FTE has remained static for two (2) years.

Rice-Steele County (RSC Joint PSAP) Demographics

Rice & Steele Counties' collective population is 99,498 of which 62,723 reside in Rice County and 36,775 reside in Steele County. The two-county land area aggregates to about 926 square miles.



SECTION 3 - TECHNICAL CONSIDERATIONS

ARMER Radio Zone Organization

Current state: Although Statewide in its deployment, the ARMER radio system is geographically regionalized into six (6) zones. The ARMER zones, each with a separate radio zone controller, are:

- Zone 1: Metro area including Dakota, Scott, Carver and Washington Counties and the DCC; controller is in Roseville
- Zone 2: Metro area including Anoka, Hennepin, and Ramsey Counties
- Zone 3: Southern Minnesota including Rice and Steele Counties
- Zone 4: Central Minnesota
- Zone 5: Northwest Minnesota
- Zone 6: Northeast Minnesota

Each dispatch center serving a particular geographic region, plus the fixed radio sites in a region are electronically "attached" to a specific zone, usually via microwave radio links. In order to enable cross zone, interoperable radio communications a series of "inter-zone" links connects the Zone controllers together and permits some cross-zone radio traffic.

Future state reconfiguration: It is important to note that expansion capacity on the ARMER Zone 1 controller is effectively "full". The significance of this capacity comment is that it is not economically viable to migrate Rice County's ARMER radio sites into Zone 1 to limit some of the inter-zone network traffic required to facilitate dispatching from the DCC. By comparison, the ARMER Zone 3 controller has adequate capacity for all planned southern Minnesota PSAPs and the radio sites which are currently identified in approved participation plans.

These inter-zone links allow units operating within Dakota County, for example, to communicate with units operating in Rice County even when the units are operating across zone boundaries. PSAPs with their associated radio consoles are also attached to specific zones for day-to-day communications purposes. Other technology like logging recorders which capture archival recordings of radio communications derive the audio traffic from the zone to which they are primarily attached. *While communication across zones is possible via the inter-zone links, lack of route diversity of these links is a key architectural function in the current ARMER system design which needs to be considered when thinking about moving the dispatch function to the DCC.*



Radio Control Consoles

Within the ARMER network there are two (2) types of radio consoles that have been approved for peer level connection to the ARMER system backbone. These consoles bear the model names:

- Gold Elite: All of the DCC's 23 radio consoles are Gold Elite models. Since 2007 the DCC's purchase investment in radio console technology has exceeded \$1.3 million. So too are the current consoles operating within Scott, Ramsey, Anoka, Carver, and Hennepin Counties. Within Zone 3, only the Rochester/Olmsted PSAP utilizes ARMER interfaced, Gold Elite consoles.
- MCC 7500: All of the RSC Joint PSAP consoles are MCC 7500 models. Since 2010, the RSC Joint PSAP's investment in radio console technology has exceeded \$500,000. Zone 1 users operating MCC 7500 consoles include Washington County and soon Chisago County. Zone 3 MCC 7500 console users include Goodhue, Wabasha, and Le Sueur County (in 2012).

All of the *Gold Elite* consoles connected to the ARMER system are approaching the end of their life cycle since they were first introduced into production in 1986. The end of life for the Gold Elite console series will occur sometime after 2013 when Motorola will discontinue new software releases. The MCC 7500 console series is slated for continued Motorola software support into calendar 2019.

Radio Logging Considerations

DCC Current State: The DCC uses two (2) logging recorders to capture telephone and radio traffic and preserve these audio archives for later retrieval and evidentiary purposes. One logger operates in an analog mode and captures certain dispatch telephone and analog radio traffic. The second DCC logger operates in a digital mode and is electronically networked to capture and store selected ARMER "talk groups" which originate on the Zone 1 controller. Since 2007, the DCC's logging purchase investment has totaled about \$220,000.

RSC Current State: The RSC Joint PSAP also utilizes two (2) logging recorders but they are of different design and manufacture compared to the logging equipment used at the DCC. At the RSC Joint PSAP, one logger captures analog traffic (e.g. telephone and legacy radio conversations) and the second captures ARMER talk group traffic through an interface to the Zone 3 ARMER controller located in Rochester. Since 2010, the RSC Joint PSAP's logging purchase investment has exceeded \$100,000.



An important technical challenge in the logging arena is the need to capture future ARMER radio transmissions pertinent to Rice County which pass thru the Zone 3 controller. Day-to-day Rice County radio transmissions would normally not be presented to the Zone 1 controller serving the DCC under the current system architecture. Were the Rice County dispatching function to be relocated to the DCC, particular technical modifications would need to be made to capture and log the pertinent radio traffic originating in, and of interest to, Rice County. This logging recording issue has policy, procedural, equipment, information transport, and financial implications. Logging the additional radio resources to permit DCC dispatching of Rice County is projected to cost approximately \$75,000 if the number of radio resources were limited to about six (6) channels or talk groups. If the number of radio resources which needed to be logged at the DCC to support Rice County exceeded eight (8), the projected cost to modify logging systems at the DCC is expected to increase to approximately \$150,000.

Telephone & 9-1-1

Both PSAPs - Current state of 9-1-1: There are two independent, but closely inter-related systems associated with the delivery of 10-digit and 9-1-1 telephone calls to both the DCC and the RSC Joint PSAP. These systems are the Enhanced 9-1-1 (E9-1-1) network and the premise equipment used to process calls. For both the DCC and the RSC Joint PSAP the E9-1-1 network function is provided by Century Link (fka Qwest). This network consists of interconnecting leased circuits, 9-1-1 caller databases, and selective routing technology that attempts to deliver 9-1-1 calls to the PSAP most likely to have jurisdictional responsibility for the dispatching service. As with the ARMER network, the E9-1-1 network is regionally zoned. 9-1-1 calls originating within southeast Minnesota are routed via a Century Link selective router in Rochester to the appropriate Southeast area PSAP. Within the Twin Cities metro area there are two (2) redundant selective routers; one in Minneapolis and the other in St. Paul. Each metro area PSAP has connections to both of the metro selective routers for redundancy purposes.

Telephone– 10 Digit Calling

DCC Current State – 10 Digit Calling: Dakota County geographically spans two telephone area codes (651 and 952). The DCC has inbound 10-digit telephone service available to callers needing to reach the PSAP within either area code by calling either 651-322-2323 or 952-322-2323. A key distinction here is that the DCC publishes a universal



access number for each area code for citizens requiring dispatch service.

RSC Joint PSAP Current State – 10 Digit Calling: Within Rice County the 10 digit calling environment is different compared to the DCC. The RSC Joint PSAP continues to process calls received via three (3) separate 10-digit number groups for inbound calls for Northfield, Rice County, and the City of Faribault within area code 507. These “local” numbers are a carry-over from the 1990’s at the formation of the RSC Joint PSAP. At that time a policy decision was made that would not require citizens to dial a different number to reach the Joint PSAP than they had previously been using to reach their local, Faribault or Northfield based, dispatcher in the pre-consolidation days.

PSAP Telephone Equipment

DCC Current State: DCC telephone equipment was installed new in 2007. The equipment manufactured by Cassidian (fka Plant/CML) integrates 9-1-1 call processing, 10-digit call processing, and “back office” telephone functions such as voice mail and statistical data collection on calls passing into/out of the PSAP into a single, integrated system known under the model designation as “Sentinel Patriot”. The DCC’s Sentinel Patriot equipment continues to be actively sold by Cassidian and is next generation 9-1-1 ready. Sale and support of the DCC telephone system is via Independent Emergency Services (IES) based in Hutchinson, MN. The purchase price of the DCC system was about \$889,000. Full 9-1-1 and 10-digit call processing is available at all 23 DCC dispatch work stations. The equipment is configured in a “split” configuration such that approximately half of the telephone traffic is processed via fiber optic connection and the other half is processed via copper connection for purposes of redundancy. The DCC facility was designed with inbound cable route diversity but at the time of building construction the local telephone network provider (Frontier) could not economically deliver inbound cable route diversity.

RSC Joint PSAP Current State: The existing RSC Joint PSAP telephone infrastructure is comprised of three (3) primary subsystems, each of which is independently maintained. 10-digit telephone traffic from Northfield and Faribault is hauled to the Owatonna PSAP facility via circuits leased from Century Link. Special “channel bank” equipment is owned by the PSAP to multiplex the Northfield, Rice and Faribault calls onto the leased circuits. This equipment was installed prior to the opening of the Joint PSAP in 1999. Although maintenance service on this equipment has been infrequent, there is no clear line of responsibility for support of this hardware and PSC has recommended that practice change when the telephone system is replaced.



Existing 10-digit call processing equipment at the RSC Joint PSAP comprises a second telephone system. Both 10-digit and 9-1-1 voice traffic at the Joint PSAP passes through this equipment to the dispatch workstations. A time and material service arrangement with Kieffer Communications has been the past operating practice for support of the Norstar telephone system.

9-1-1 calls within the RSC Joint PSAP are managed via equipment provided by Century Link which has reached end-of-life status. Recently the RSC Joint Powers Board authorized release of specifications to replace both the 10-digit and 9-1-1 call processing equipment at the Joint PSAP. This project is expected to be completed in the first quarter of 2012 at an estimated capital equipment cost of \$305,000.

PSC Alliance anticipates that the leased Century Link circuits and the "channel bank" equipment could be retired in 2012 when Rice County migrates onto the ARMER radio system. This would reduce cost and recurring telephone budget for the RSC Joint PSAP and it would further the goal of having a single, unified telephone system maintenance contract. Based upon current operating practices and past precedent with their current membership, we think it improbable that the DCC would permit the individual telephone numbers which now appear at the Joint PSAP, to continue in the event that Rice County elected to move telephone call processing to the DCC.

Logging Telephone Calls

All of the dispatch telephone transactions at the DCC are currently capable of being logged on existing equipment at each primary dispatch work station. Because we envision that the existing Sentinel Patriot telephone system would be the mechanism for processing 9-1-1 and 10 digit calls from Rice County we see no increase cost or modifications to the existing telephone logging recorder capabilities

Outdoor Warning Sirens

Both PSAPs - Current State: Activation of outdoor warning sirens in time of severe weather (or for other public mass notification events) is a core function for both the DCC and the RSC Joint PSAP. Activation of sirens is performed via radio on VHF systems.

Dakota County Current State: Within Dakota County a project is now underway that will bring further uniformity to the outdoor warning siren activation technology used by all 11 cities and unincorporated



townships.⁶ This outdoor warning siren conversion within Dakota County is expected to be completed for all communities by the middle of 2012. The conversion will bring uniformity to the activation code plan, add backup redundancy to the radio based activation equipment, and condense required radio frequencies down to two (2). The expected outcome for the DCC staff is the ability to activate sirens more quickly and to have fewer individual points of failure in the activation infrastructure while concurrently adding activation redundancy. Individual outdoor warning sirens continue to be owned and maintained by individual communities within Dakota County. Dakota County, through its radio infrastructure ownership model, is responsible for the maintenance of all 800 MHz and VHF radio infrastructure. Cost allocation, to the DCC for these siren infrastructure activation systems/services occurs as an annual financial transaction.

Rice County Current State: Broadly speaking within Rice County two siren topologies exist. Northfield operates a system for its community using a local VHF radio system, remotely controlled from the RSC Joint PSAP with backup access from the Northfield Safety Center. The remainder of Rice County sirens in other communities are activated via a separate VHF radio system maintained by the County and shared with the Highway department. As with Northfield, the RSC Joint PSAP can activate, via remote control, the VHF Highway radio system for purposes of siren activation.

Future State Outdoor Warning Sirens: If Rice County were to move PSAP responsibility to the DCC it would be necessary to add remote radio signal transport facilities and control equipment to the DCC radio consoles. Some consideration should be given to the VHF fixed radio infrastructure within Rice County needed to signal the sirens and efforts will also need to occur during calendar 2012 to narrow band the siren equipment and radio systems to make them compliant with FCC requirements which become effective on January 1, 2013. PSC Alliance estimates infrastructure costs to accomplish DCC remote access and activation capability at approximately \$53,000. Policy attention will be required to determine if Rice County's siren systems are reconfigured to operate on Dakota frequencies already in use or if the current Northfield/Rice County design architecture would remain in place for the future. It should be noted that the future state infrastructure cost estimate excludes conversion of any local siren equipment which is believed to be an individual community (vs. County) financial responsibility.

⁶ Outdoor Warning Sirens: Prior to the current initiative in Dakota County, each local community had its own siren activation frequency and local base radio equipment.



Fire Department Paging / Alerting

Both PSAPs – Current State: VHF radio paging has been found to be the most economical and reliable method of notifying fire and first response agencies that depend upon volunteers of calls for service. In communities that have migrated onto the ARMER system (including all of those within Dakota County), initial call notification is via VHF radio page which is concurrently announced over selected 800 MHz ARMER radio talk groups.

DCC – Current State: Within Dakota County two VHF, narrow band capable, paging networks were commissioned into service when the DCC opened in 2007. Although either network provides Dakota County-wide coverage, operation of the networks primarily occurs on an East/West basis. Policy decisions, based upon call volume and mutual aid agreements, have established that departments in Western Dakota County have pagers configured to respond to selective alerts on the West paging channel while departments on the East side of the County operate on the East paging channel. Since 2007 investment to purchase the ten-site, 2 channel, Dakota County VHF paging system totals about \$900,000. As with other radio infrastructure, maintenance of these systems is administered by Dakota County and billed back to the DCC.

Rice County – Current State: Within Rice County two separate and independent VHF paging networks are operating for fire department alerting. Northfield has installed and maintains one network and it is narrow band capable. Outside of Northfield (which also serves Dundas), all other fire departments within Rice County are notified of calls-for-service via a County owned paging system and it is not narrow band capable.

DCC & Rice County Future State: During calendar 2012 all of the VHF systems which remain in use in Dakota and Rice Counties will need to be converted for narrow band operation to comply with FCC mandates. Within Dakota County all purchased infrastructure is ready for this transition and some is already operating in a narrow band mode. Fire paging/alerting infrastructure within Dakota County is expected to be completed in 2012.

Rice County is expected to transition 2-way radio communications onto the ARMER network during the second or third quarter of calendar 2012. As part of the Rice County ARMER planning process a one-channel, VHF paging network with transmitters at three (3) sites has been budgeted for implementation. This system would be capable of supporting paging in Northfield but as this report is written, no final decision has been made concerning whether Northfield will combine its paging operations



with Rice County or continue to operate a separate system. If Rice County were to move dispatching services to the DCC, a key policy decision which would need resolution involves whether Rice County fire dispatching would be integrated within either the East or West zone of the DCC's current organizational structure. PSC Alliance believes it is improbable that enough regular fire radio communications would be created by the addition of Rice County to/from the DCC to warrant a separate fire dispatch staff function for Rice County alone.

Backup PSAP Voice Communications Functions

Having adequate PSAP backup methods, procedures, and capabilities is critical to existing RSC Joint PSAP operations and future consideration of backup if Rice County's dispatching needs were to move to the DCC. Today, PSAP backup is an acknowledged weakness of the RSC Joint PSAP although this situation is improving as more Southeast Minnesota Counties are migrating to ARMER. Under the ARMER concept, any comparable console (i.e. MCC 7500 series) attached to the same Zone controller can perform many backup radio functions for a disabled PSAP with MCC 7500 equipment. This capability requires planning, inter-PSAP agreement, training, and periodic testing.

Within Minnesota, 9-1-1 call delivery can be re-directed to another PSAP served by the same selective router and the caller telephone number and location information will follow the call to the re-directed destination PSAP. The picture becomes cloudy when both radio traffic and telephone traffic cross ARMER Zone and telephone selective router boundaries. PSC submits that a key consideration in planning for relocation of Rice County's dispatch services to the DCC needs to be careful evaluation, coupled with pilot testing, of backup communications strategies. Such pilot testing could help to validate cost estimates contained in Section 4 for a workable backup concept plan. It is important to note that while both the DCC and RSC Joint PSAP receive shared CAD services from LOGIS, there is no other comparably sized PSAP, using LOGIS, capable of serving as a backup to the DCC.



SECTION 4

Analysis

Both the DCC and Rice County, through its participation in the RSC Joint PSAP, have been operating with locally derived policies and operational procedures. At the RSC Joint PSAP these procedures have evolved over more than a decade of operation since the PSAP went into service. At the DCC, a series of protocols were established prior to the DCC opening in 2007 and have been adjusted since that time. For example within the DCC, primary law enforcement radio traffic is broken into three (3) radio talk groups which reflect both geographic alignment and individual law enforcement agency affiliations, geographic proximity, and call volume. If Rice County's dispatch functions were relocated to the DCC considerable discussion would need to occur concerning where and how to incorporate Rice County's law enforcement radio talk groups into the DCC operational matrix. Statistical consideration of call volumes and operating procedures would need to occur. Today the DCC has exhaustive data concerning radio system usage. The VHF systems now used by Rice County do not have those data collection capabilities.

PSC Alliance anticipates that if Rice County were to integrate its operations with the DCC, considerable cultural adjustment would be required and it will take time and commitment of the parties to work through those details. Organizational alignments will also need to be considered. For example, ARMER radio communications issues, including plan changes, for Dakota County are subject to review through Dakota County's membership and representation on the Metropolitan Emergency Services Board (MESB). Dakota County provides two full time employees who are responsible for radio system maintenance and support and Dakota County actively participates in both metro and statewide radio planning and policy initiatives but not at the Southeast Radio Board.

By contrast, Rice County holds current membership on and is subject to plan review via the Southeast Minnesota Regional Radio Board (SERRB). The MESB and the SERRB are subject to different meeting cycles, organizational policies, grant and budget appropriations, and other factors.

The DCC also is involved with the MESB through staff participation at various MESB working groups on 9-1-1 telephone matters. The MESB utilizes internal staff who have responsibility for Master Street Address Guide (MSAG) maintenance for all nine (9) metro area Counties. Within the RSC Joint PSAP staff structure, a single person is employed to oversee and coordinate MSAG issues on behalf of Rice and Steele Counties. In the event that Rice County migrated its dispatch function to



the DCC planning would need to consider how a variety of “behind the scenes” business practices and organizational relationships would play out given Rice County’s southern Minnesota affiliations and the DCC/Dakota County metro area affiliations.

Cost Estimates

Below are preliminary cost estimates to effect dispatching of Rice County agencies from the DCC. As noted earlier these order-of-magnitude estimates have been developed by PSC alone and have not included discussion of desired features, functions, or technical attributes desired or required by DCC management or Rice County local public safety officials.

Description	Cost Estimate
DCC Console Modifications	\$63,000
Zone 1 – to Zone 3 Interzone Redundancy	\$135,000
Radio Logging ~ 6 radio resources	\$75,000
Telephone & 9-1-1 Reconfiguration	\$12,000
Outdoor Warning Siren Infrastructure	\$18,000
Fire Paging / Alerting (already included in ARMER budget)	\$215,000
Backup PSAP Voice Communications Functions	\$121,000
Subtotal (excludes paging in ARMER budget)	\$424,000

Notes:

- 1) If recorder logged resources required for Rice County at the DCC are more than eight (8) radio channels/talk groups then cost of logging may approximately double. This significant cost increase relates to the fact that radio system infrastructure in Rice County will attach to ARMER Zone 3 while DCC dispatch consoles will attach to ARMER Zone 1.
- 2) These cost estimates do not include any allowance for pro rata share or cost allocation to Rice County when Gold Elite consoles are expected to be retired and replaced in approximately 2015.

Timeline

Significant project initiatives that confront both the RSC Joint PSAP, the DCC, and Rice County during calendar 2012 include:

RSC Joint PSAP:

- New telephone system
- Migration of Steele County onto ARMER
- Migration of Rice County onto ARMER
- New CAD system implementation

DCC:

- Complete new CAD system implementation started in 2011
- Migrate fire departments to narrow band paging



- Commence planning for Gold Elite console replacement

Dakota County:

- Complete outdoor warning siren conversion with local communities
- Commence planning on ARMER system capital replacement
- Reprogram all agency pagers for narrow band operation

Rice County:

- ARMER implementation & conversion
- Outdoor warning siren narrow band conversion
- Fire Department Paging / Alerting Narrow Banding

Based upon the project initiatives listed above and the planning, budget and approval cycles combined with the need for adequate time to develop suitable policies/procedures PSC's experience has been that a two (2) year cycle would be typical from the time that the parties made a commitment to move Rice County's dispatch operations from the RSC Joint PSAP to the DCC. Effectively this means that if the decision were reached prior to the end of 2011, the soonest that a conversion to dispatch operations from the DCC could occur would be sometime in calendar 2014.

Next Steps

The process of defining next steps requires a series of meetings with the potential project participants. Rice County (including elected and appointed officials as well as public safety stake holders) are encouraged to clearly identify written Goals, Expectations, and Vision Statements (GEVS) for any proposed change of dispatch service from the RSC Joint PSAP to the DCC. Similar written GEVS statements should be secured from appropriate DCC administrative staff, Executive Committee membership and the Board of Directors.

Past experience with the formation of the DCC identified that managing end user expectations, and seeking operational and policy input, is fundamental to successfully integrating and managing disparate public safety processes into a shared dispatch environment. Chapter 2 of the Governor's [Guidebook for Consolidation Strategies](#) provides helpful information in charting the course of further inquiry and exploration.



Summary

This analysis concludes that relocating Rice County's public safety dispatch function to the DCC is *technically feasible* with a manageable cluster of associated technical challenges. Of equal importance to the technical considerations are process matters and operational discussions which need to be carefully explored, documented, and agreed upon for a successful transfer of the Rice County dispatch function to occur.

The recent appointment of a new RSC Joint Dispatch Administrator, combined with the discussions about exploring other dispatch options in Southeast Minnesota and the DCC, creates a unique opportunity to re-focus and re-frame Rice County's PSAP Goals, Expectations, and Vision Statement position. In an undertaking of this importance clearly framing and agreeing to a common GEVS outcome is critical to future success and further technical planning.

Exhibit 1 – RSC Joint PSAP

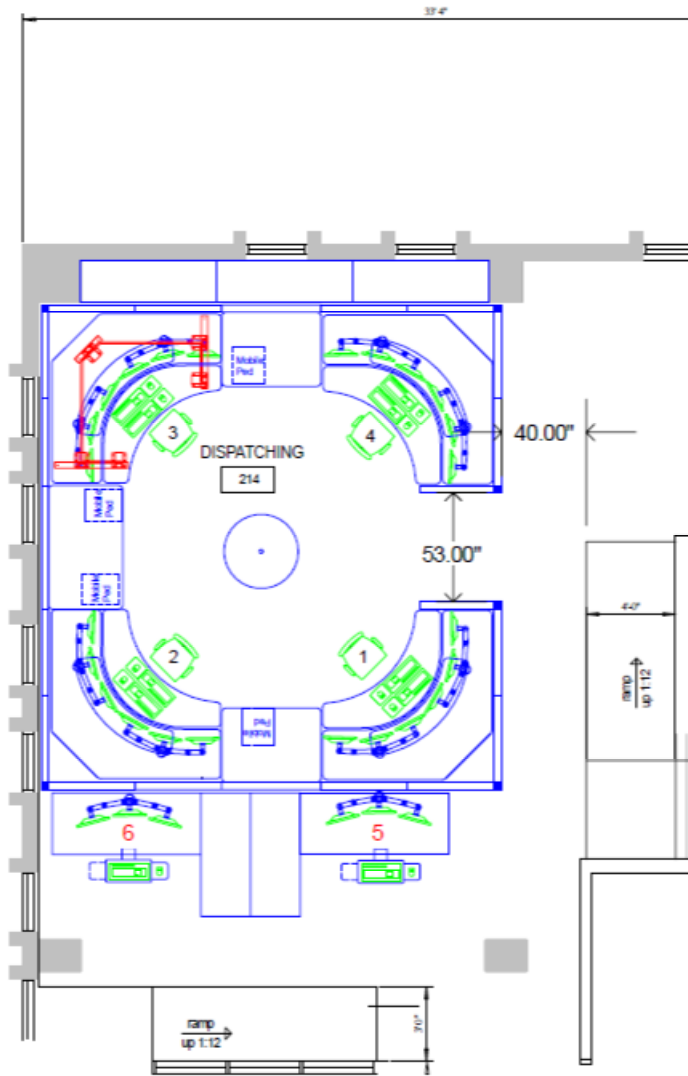


Exhibit 2 – DCC Dispatch Floor Plan

