



# Nevada Shared Radio System Project

WASHOE COUNTY PROJECT SUMMARY

# NEVADA SHARED RADIO SYSTEM REPLACEMENT PROJECT

## **1. INTRODUCTION**

The Nevada Shared Radio System (NSRS) supports critical voice communications across the state for thousands of public safety, utility and government personnel. The Nevada Department of Transportation (NDOT), NV Energy, and Washoe County, each own, operate, and maintains their own network, and combined, the three networks operate together to form a statewide system.

The core of the NSRS is a proprietary Harris Enhanced Digital Access Communications System (EDACS®) architecture with Integrated Multisite and Console Controllers (IMC™), Global Positioning System (GPS) Simulcast and Voting, MASTR® III Base Stations (or repeaters), and C3 Maestro™ Dispatch Consoles. The NSRS is an 800 MHz trunked radio system with a mix of multicast and simulcast sites. The current NSRS configuration consists of 114 radio frequency (RF) sites with NDOT, NV Energy and Washoe County responsible for their own group of sites as follows:

1. NDOT – 66 RF sites across three NDOT Districts in the state (three additional new sites are currently under construction)
2. NV Energy – 37 sites between Northern and Southern regions of the state
3. Washoe County – 11 sites with primary coverage in Reno and Lake Tahoe

The manufacturer of key system components comprising the NSRS, Harris Communications, advised the Members that the products are at the end their lifecycle; therefore, Harris has not provided support, parts or software updates for the system since the end of calendar year 2017.

The RFP for the NSRS replacement project was released on April 10, 2017. After two scheduled question and answer periods, vendors provided their final proposals to the Nevada Department of Transportation (NDOT) on January 19, 2018.

The system requirements defined in the functional specification of the RFP were fair and balanced for all proposers, so that the evaluations of the proposals were comparable to each other. Vendors were required to submit proposals that included all new radio system equipment and subscriber units to prevent proposers from including/utilizing existing infrastructure of various brands throughout the state and creating an unintended or unfair advantage.

## **2. SELECTION OF THE VENDOR**

The Nevada Department of Transportation administered the proposal review process. The proposals were evaluated by two separate evaluation teams – a technical team and a cost team, each represented by personnel from each of the NSRS Members, including Washoe County. The technical evaluation team, who did not have access to pricing, reviewed the proposals independently, considering the following 5 evaluation criteria:

1. Response to Scope of Work, with 5 sub-categories
  - a) Description of the system
  - b) Infrastructure/facilities and site development
  - c) System implementation, test and acceptance plans
  - d) Recommended training courses
  - e) Subscriber equipment

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2. Project Plans and Schedules
3. Migration Plan
4. Warranty, Support, and Maintenance Plans
5. Respondent Qualifications and Experience

With the direction and guidance of NDOT's Evaluation and Selection plan which provided definitions of excellent, good, acceptable, and poor, each technical member was required to score each proposal. A consensus meeting was conducted on February 5, 2018 where the strengths and weaknesses of each proposal were discussed. The final technical scores were finalized between the three NSRS Members and recorded.

The pricing proposal was then opened and reviewed to assess whether required equipment and services were included in the proposal. The cost review meeting was held on February 16, 2018 with members from NDOT, NV Energy, and Washoe County in attendance, where the pricing was presented and scored.

The outcome of the above technical and cost review process resulted in Harris Communications selected as the winning vendor. This selection was presented to the NDOT Director for approval on February 21, 2018. The notice of intent was distributed to the vendor on February 21, 2018. For Washoe County, the original proposal price was **\$26,446,298**.

### **3. VENDOR NEGOTIATIONS**

Communication was immediately set up with Harris Communications to schedule reviews of the proposal and to address system requirements to meet Washoe County's needs. A project kickoff meeting was held with all NSRS Members, and the project team from Harris Communications on March 19th and 20th, 2018. The Harris proposal was presented to the NSRS team to review the requirements, system design, implementation and cutover and migration approach to deploying the new system. A plan was developed to revise and update all the project Statement of Works to more accurately reflect the location and ownership of the core equipment shared by the Members, the selection of Washoe County sites, quantities of subscriber mobile and portable radios, and installation and acceptance services to be provided.

Specific site and design changes were made, and additional services and scope including site development were added to the vendor's responsibilities. This additional scope amounted to \$10,740,780, which was not previously included in the system pricing in the proposal. The revised pricing total was **\$34,246,154**.

Washoe County determined the new system price to be too high and an analysis was conducted to determine where prices could be negotiated and reduced, without comprising the system design and planned coverage of the new system.

Pricing negotiations were conducted via conference calls over a number of weeks with Harris (Jayne Leighton, Scott Tangeman, and Tom Clair), Federal Engineering (Washoe County's Radio Consultant, including Rajit Jhaver, David TerMorshuizen), and Washoe County personnel, including Shawn Tayler, David Watts-Vial, Pamela Mann, William Wardell, and Quinn Korbolic. During price negotiations members of the County Management team including Christine Vuletich, Lori Cooke, and Craig Betts were kept informed and consulted on the process and pricing.

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The outcome of these meetings resulted in the following changes to the final pricing:

- All Harris third party services were changed from a fixed price, to a cost-plus basis
- The third-party markup was negotiated to be 25% on equipment, and 32% on services
- The site development work, estimated at \$10,740,780, was reduced to a budget of \$7,033,223 included in the project total, but costs will be quoted, reviewed and approved on a per site basis following the completion of all site surveys.
- Extended system warranty was increased by 2 years during the implementation and deployment of the system
- The final price for the system including radio system infrastructure, dispatch equipment, subscriber equipment (portable and mobile radios), deployment services, and site development is **\$26,537,510.**

Contract Cost Summary	
Infrastructure and Services	\$8,543,700
End-User Radio Equipment	\$10,960,588
Site Development	\$7,033,222
<b>Total</b>	<b>\$26,537,510</b>

Comparison of pricing proposals			
Comparison of the pricing from the proposal, the initial updated pricing, and the Final pricing.	Proposal	Initial Update	Final Pricing
RF Infrastructure & Services	\$11,324,390	\$13,829,673	\$11,845,942
System Discount	(\$5,700,000)	(\$6,782,105)	(\$4,592,982)
Dispatch Equipment and Services	\$2,113,899	\$1,896,147	\$583,647
Subscriber Equipment	\$40,718,115	\$12,502,171	\$26,287,256
Subscriber Discount	(\$26,500,000)	(\$2,103,778)	(\$15,326,668)
Subscriber Count	6,000	2,697	5,070
Extended Warranty	\$0	\$707,092	\$707,092
<b>Total</b>	<b>\$21,956,404</b>	<b>\$20,049,200</b>	<b>\$19,504,256</b>
Post-Warranty Support	\$4,489,892	\$3,456,174	<b>\$0</b>
Site Development	\$0	\$10,740,780	\$7,033,223
<b>Total Agreement Price</b>	<b>\$26,446,298</b>	<b>\$34,246,154</b>	<b>\$26,537,510</b>

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#### 4. PROJECT PAYMENT MILESTONES

Washoe County's portion of the Nevada Shared Radio System payments will be structured differently for:

1. Infrastructure Equipment & Services
2. Subscriber Terminal Equipment (Hand-held and mobile radios)
3. Site Construction and Microwave equipment

##### 4.1 Infrastructure Equipment & Services

Pricing for Infrastructure equipment and related services has been priced on a commercial, firm-fixed price basis, and will be paid based on scheduled milestones. The final amount for the equipment is as follows:

<b>System Equipment</b>	<b>Discounted Price</b>
System Control Equipment, Software, and Licensing	\$1,698,545.77
Network Monitoring and Fault Management Equipment, Software, and Licensing	\$139,860.00
Radio System Equipment, Software, and Licensing	\$3,671,232.87
Antenna Systems	\$341,811.20
Networking Equipment, Software, and Licensing	\$671,875.45
Spare Equipment	\$701,290.47
<b>TOTAL EQUIPMENT PRICE</b>	<b>\$7,224,615.76</b>
<b>Deployment Services</b>	
System Equipment Services	\$612,310.05
System Engineering	\$754,293.00
Migration Services	\$0.00
Project Management	\$331,647.00
System Training	\$247,599.19
Performance Bond	Included
<b>TOTAL SERVICES PRICE</b>	<b>\$1,945,849.24</b>
<b>Other Equipment and Services</b>	
Greenfield site equipment	\$2,675,477.68
Dispatch equipment and Services	\$583,647.53
Extended Warranty Support	\$707,092.00
<b>WASHOE BASE PRICE - Infrastructure and Services</b>	<b>\$13,136,682.21</b>
<b>Additional Discount - Infrastructure (over 26% NASPO Discount)</b>	<b>(\$4,592,982.28)</b>
<b>WASHOE DISCOUNTED BASE PRICE</b>	<b>\$8,543,699.93</b>

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**4.1.1 Milestone payments for Infrastructure Equipment & Services**

Milestone Payment	%	Milestone Payment Amount
1. Contract Mobilization due at Contract Signing (FY19)	6.25%	\$533,981.25
2. Customer Approval of Detailed Design Review (FY 20)	12%	\$1,025,244.00
3. Installation of NSC Initiated (FY 21)	10%	\$854,370.00
3. Installation of the NSC Complete (FY 21)	15%	\$1,281,555.00
4. Factory Staging approved (FY 22)	15%	\$1,281,555.00
5. Equipment Shipment (FY 22)	20%	\$1,708,740.00
6. Approval of Equipment Installation (FY 24)	15%	\$1,281,555.00
7. Final System Acceptance (FY 24)	6.75%	\$576,699.68
<b>Radio System Equipment Billing Total</b>	<b>100%</b>	<b>\$8,543, 699.93</b>

**4.2 Subscriber Terminal Equipment**

Washoe Subscriber Equipment (Terminals) and Programming Services amounts will be invoiced upon shipment of the Terminal units on a per unit basis at the unit prices set forth in the contract pricing pages minus the Radio Volume Discount. Shipment schedules will be determined by customer. The total cost for subscriber terminal equipment in the contract is **\$10,960,587**.

The contract includes cooperative purchasing language that allows other agencies (e.g. the City of Reno) to purchase radios through Washoe County's contract. All agencies currently using EDACS radios incapable of operating on the new system will need to upgrade or replace radios before the new P25 system is operational. Washoe County projected as many as 5,000 radios will need to be replaced in total by the agencies operating within the Washoe County Regional Communications System's coverage area.

- Number of Radios included in the contract: 5,070
- Total Radio Cost before discount: \$26,287,256
- **Total Radio Cost after discount: \$10,960,587**
- Radio discount (off of retail price): 72%
- Radios must be purchased by FY 26

**4.3 Site Construction and Microwave equipment**

Washoe County radio sites must be modified or upgraded in preparation for the new system and new sites must be built to address areas of poor radio coverage. Site construction and installation of Microwave equipment will include materials and services to be provided by third party subcontractors in accordance with the terms and provisions of subcontracts approved by Washoe County.

The mutually agreed upon total amounts for Site Infrastructure and microwave equipment based on expenditures and agreed markup and are shown in the table below. These amounts are conservative

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not-to-exceed estimates. During the initial phase of the project, Detailed Design Review, each site will be assessed and the cost for site infrastructure will be negotiated on a per-site basis. Use of the funds specified in the table below will require a change order.

Site Construction funds will be used for:

- Radio Tower Construction
- Shelter Construction
- Site Development – Roads, Fencing, Land Clearance
- Generators
- Electrical work
- DC Power systems
- Air Conditioning
- Permits, Drawings, Site Acquisition
- Microwave equipment and software

Site Construction and Microwave Equipment	
Site infrastructure and development	\$4,796,577
Microwave Equipment, Software, and Licensing	\$2,236,645
<b>Total</b>	<b>\$7,033,222</b>

## 5. ADDITIONAL PROJECT INFORMATION

### 5.1 Project Schedule

The Nevada Shared Radio System project draft schedule is shown below. The schedule gives a high-level view of the design, deployment, migration and acceptance of the new system.

ID	Name	Duration	Start	Finish	H1 '18	H1 '19	H1 '20	H1 '21	H1 '22	H1 '23	H1 '24	H1 '25	H1 '26	H1 '27
0	<b>Nevada Shared Radio System</b>	1337 days	Mon 10/1/18	Wed 12/27/23										
1	Contract Signed	2 days	Mon 10/1/18	Tue 10/2/18										
2	Contract Signed - Billing Milestone	0 days	Mon 10/1/18	Mon 10/1/18										
3	<b>Prepare for Detailed Design Review (DDR)</b>	115 days	Wed 10/10/18	Mon 4/1/19										
15	<b>Detailed Design Review</b>	34 days	Tue 4/2/19	Fri 5/17/19										
16	Detailed Design Review Meeting	14 days	Tue 4/2/19	Tue 4/19/19										
18	Verify Customer Backhaul Design Documentation	3 days	Mon 4/22/19	Wed 4/24/19										
19	Detailed Design Review Approval	15 days	Mon 4/29/19	Fri 5/17/19										
20	CDR Approved by Customer - Billing Milestone	0 days	Fri 5/17/19	Fri 5/17/19										
21	LMR FCC-Frequency Coordination-License Approval	90 edays	Tue 1/22/20	Mon 4/22/20										
22	<b>Site Civil Construction</b>	801 days	Mon 5/20/19	Wed 7/13/22										
1383	Training	175 days	Tue 10/1/19	Mon 6/15/20										
1384	Cutover planning	60 days	Mon 5/20/19	Tue 8/13/19										
1391	<b>VIDA Network Switching Center's (NSC's)</b>	502.5 days	Mon 5/20/19	Fri 5/21/21										
1910	Region 1 Installation Complete - Billing Milestone	0 days	Fri 5/21/21	Fri 5/21/21										
1911	<b>Region #2 Implementation</b>	403 days	Fri 9/11/20	Tue 4/12/22										
2231	Simulcast System Final Configuration	20 days	Tue 2/1/22	Tue 3/1/22										
2232	Simulcast System Final Optimization	20 days	Tue 2/1/22	Tue 3/1/22										
2233	<b>Region 2 Acceptance Tests</b>	97 days	Tue 3/1/22	Thu 7/14/22										
2260	Region 2 Installation Complete - Billing Milestone	0 days	Fri 11/26/21	Fri 11/26/21										
2261	Perform Software Updates for Region 1	2 wks	Mon 5/30/22	Mon 6/13/22										
2262	<b>Region #3 Implementation</b>	476.5 days	Fri 12/24/21	Mon 10/23/23										
2561	Region 3 Installation Complete - Billing Milestone	0 days	Mon 10/23/23	Mon 10/23/23										
2562	Perform Software Updates for Region 1 & 2	30 days	Tue 10/24/23	Mon 12/4/23										
2563	<b>Final Acceptance</b>	58 days	Mon 10/9/23	Wed 12/27/23										
2567	System Acceptance Testing Complete - Billing Milestone	0 days	Wed 12/27/23	Wed 12/27/23										

### 5.2 Funding

Washoe County has dedicated CIP funding for the milestone payment in FY19 and a portion of the milestone payment in FY20. Washoe County will request that WCRCS members utilize approximately \$700,000 of their infrastructure fund to cover the remaining milestone payment in FY20. Thereafter the county will pursue financing. A future detailed financing plan will be brought to the Board for review and approval.

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Washoe County intends to recover a portion of the costs of the radio system through user fees. Currently, an agency that uses a single radio on the Washoe County Regional Communication System is charged an annual fee to use the radio on the system. It is anticipated that the annual per-radio fees will be increased to account for and recover costs associated with the new radio system. Washoe County has communicated to User agencies that annual per-radio fees will be adjusted to reflect the cost of the system. Washoe County staff will continue to work with user agencies to find an equitable solution to per-radio annual fees.

### **5.3 Radio Replacement Project Support**

Washoe County has previously contracted with Federal Engineering (FE) who was instrumental in assisting the county in contract negotiation and review. Federal Engineering also contracted with NDOT and assisted in evaluating technologies that best meet the requirements of the NSRS, developed the Radio Replacement RFP and assisted NDOT during the RFP technical and cost evaluation and selection process. FE will continue to aide Washoe County during the implementation phase of the Radio Replacement project by providing project management and technical review and verification support for the Washoe County team.