

## Instructional Support Program Levy Resolution of Intent

Director Banwart introduced and caused to be read the Resolution hereinafter set out and moved its adoption; seconded by Director Book; after due consideration thereof by the Board, the President put the question upon the adoption of said Resolution and, the roll being called, the following Directors voted:

Aye: Director Canney, Director Banwart, Director Book

Nay: None

Whereupon the President declared said Resolution duly adopted as follows:

### RESOLUTION

WHEREAS, the Board deems it necessary and desirable to provide additional funding for the Adel DeSoto Minburn Community School District pursuant to the Instructional Support Program; and

WHEREAS, in order to consider participating in the Instructional Support Program, the Board must hold a public hearing on the question of participation and set forth its proposal in the form of a resolution which shall include the method that will be used to fund the Instructional Support Program; and

NOW, THEREFORE, BE IT RESOLVED by the Board:

Section 1: That a public hearing on the Adel DeSoto Minburn Community School District's participation in the Instructional Support Program is set for September 10, 2012, at 6:00 o'clock p.m.; the Board Secretary is hereby authorized and directed to give notice of the time and place of the public hearing by publishing said notice in the "Dallas County News" not less than ten nor more than twenty days before the date of the public hearing.

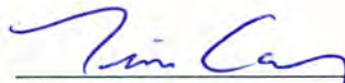
Section 2: That the following, as may be modified as a result of the discussion and input generated at the public hearing, shall be considered for inclusion in the Resolution to Participate in the Instructional Program:

*“Shall the Board of Directors of the Adel DeSoto Minburn Community School District in the Counties of Dallas and Madison, State of Iowa, be authorized for a period of five years, to levy annually, as determined by the Board, an instructional support property tax in an amount (after taking into consideration instructional support state aid) not to exceed ten percent of the total of regular program district cost for the budget year and monies received under section 257.14 as a budget adjustment in the budget year, to be levied upon the taxable property within the school district, commencing with the levy for collection in the fiscal year ending June 30, 2015, through fiscal year ending June 30, 2019, to be used for any general fund purpose?”*

Section 3: That the Board may take action to adopt a Resolution to Participate in the Instructional Support Program following the public hearing.

Section 4: That all resolutions or orders or parts thereof in conflict herewith be and the same are hereby repealed to the extent of such conflict.

Passed and approved 8/13/12.

  
\_\_\_\_\_  
Board President

Attest:

  
\_\_\_\_\_  
Board Secretary



## Instructional Support Program

### Iowa Code §§257.18-.27

School districts may participate in the instructional support program by taking the following steps:

1. Adopt a resolution of intent including the following:
  - a. The amount, not to exceed 10 percent of the regular program district cost, including the budget adjustment/guarantee for the budget year.
  - b. The purposes within the general fund for which the moneys will be used excluding: dropout prevention programs, talented and gifted programs, physical plant and equipment levy uses, management levy uses and special education negative balances.
  - c. The method used to fund the program including one of the following:
    - (1) Instructional support state aid and instructional support property tax; or
    - (2) Instructional support state aid and instructional support property tax and income surtax.
  - d. The date of the public hearing and direction to the board secretary to publish notice of the public hearing.
2. Publish notice of a public hearing in a newspaper meeting the requirements one and two of an official newspaper no less than 10 and no more than 20 days prior to the public hearing date. (Iowa Code §618.3.)
3. Hold the public hearing and take one of the following actions.
  - a. Adopt a resolution of participation within 30 days to participate in the program for no more than five years; or
    - i. Direct the county commissioner of elections to call an election to participate in the program for no more than 10 years. Such direction must be given 46 days prior to a special election held prior to the budget certification date. Special elections are limited, in the odd-numbered year, to the first Tuesday in February, the first Tuesday in April, the last Tuesday in June, or the second Tuesday in September. Special elections are limited, in the even-numbered year, to the first Tuesday in February, the first Tuesday in April, the second Tuesday in September, or the first Tuesday in December. (Iowa Code §39.2, §47.6)
4. If a resolution of participation is adopted under step 3(a), the school district will participate in the instructional support program unless a petition is filed within 28 days of the resolution of participation adoption date. The petition must be signed by the greater of 30 percent of the number of voters at the last preceding regular school election or 100 eligible electors. If a valid petition is filed, the school board can choose to rescind its resolution of participation or hold an election for the time period stated in the resolution of participation. If the school district wishes to exceed the time period in the resolution of participation, it is recommended the board rescind its original action and begin the process anew.
5. If the school board holds an election and the program is approved, the school board must adopt a resolution of participation stating its participation in the program and certify the results of the election to the Department of Management. If the election



fails, the school board must wait 120 days before holding another election or adopting the program by board resolution.

6. The levy will continue for the period determined. At the end of the period, it may be continued for a like period by following the same steps set forth above.

School districts funding the instructional support program with property tax and instructional support state aid will receive the funding in the fiscal year in which the funding was included on the budget. For example, a school district certifying a property tax for an instructional support program on April 15, 2012, for fiscal year 2012-13 will receive the funds in fiscal year 2012-13. The instructional support state aid, if available, will be received monthly in fiscal year 2012-13 beginning around Sept. 15 and ending around June 15. School districts funding the instructional support program with instructional support state aid and a combination of property tax and income surtax for fiscal year 2012-13 will receive the state aid and property tax in fiscal year 2012-13, but the income surtax funds will not be paid to the school district until fiscal year 2013-14. This is because the budget is certified for fiscal year 2012-13 beginning July 1, 2012, and ending June 30, 2013. The income surtax will be calculated on taxes paid in April 2013, for the calendar year 2012. The funds will not be received by the school district until December 2013, which is the first half of fiscal year 2013-14. Income surtax is required to be paid Dec. 1 and Feb. 1 each year. The income surtax rate in a school district for all programs cannot exceed 20 percent. The income surtax for a school district and an emergency medical services district cannot exceed 20 percent.

It is important to note the portion of the funding to be received in instructional support state aid is subject to appropriation by the legislature. For many years the state aid amount has been limited to the amount of instructional support state aid paid in fiscal year 1992-93. Since this amount has been insufficient to pay the instructional support state aid each year, the instructional support state aid has been prorated among all the school districts with instructional support programs. School districts are not allowed additional property tax or income surtax spending authority for the state shortfall. In recent years, the legislature eliminated all instructional support state aid.

*\*\*This document is provided for information purposes only, and is not intended to be a substitute for having your school attorney review any and all related documents and research the law.*

## Project Quotes

### 2-way radio replacement project

On April 9<sup>th</sup> Mike Chapman received quote's on digital radio systems for the Transportation Center, school buses. Since that bid was tendered over 60 days ago, the bids were no longer valid. I requested another bid on July 23, 2012. The Motorola trade-in program was extended and is included in the bids that I am now submitting. I am recommending the bid be awarded to Electronic Engineering of Des Moines Iowa.

Electronic Engineering	\$21,989.00
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Spring Valley Wireless	\$23,280.00
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Prepared for Greg Dufoe, District Superintendent

Prepared by Richard Beechum, Transportation Director



Quantity	Type	Model	Description	Unit Price	Extended Price
1	New Repeater	XPR8400	Motorola Digital, VHF, 100% Continuous Duty, Includes 3 yr. Manufacturers Warranty, GPS Capable, Using Existing Duplexer, Antenna and Coax, Includes Installation	\$2,650.00	\$2,650.00
3	Base Radio	XPR4550	Motorola Digital, VHF, Alpha-Numeric Display, Includes: Motorola Trade In TRBO Rebate, PTT Identification, Private Calling, 3 year Manufacturers Warranty, New Power Supply, Will Reuse Existing Antenna and Cabling	\$610.00	\$1,830.00
3	Base Radio	XPR4350	Motorola Digital, VHF, 2 digit Numeric Display, Includes: Motorola Trade In TRBO Rebate, Private Calling, 3 year Manufacturers Warranty, New Power Supply, Will Reuse Existing Antenna and Cabling	\$525.00	\$1,575.00
25	Mobile Radio	XPR4350	Motorola Digital, VHF, 2 digit Numeric Display, Includes: Motorola Trade In TRBO Rebate, PTT Identification, Private Calling, GPS Capable, 100% Secure Voice Path, 3 year Manufacturers Warranty	\$390.00	\$9,750.00
4	Digital Portable Radio	XPR6550	Motorola Digital, VHF, Alphanumeric Display, Includes: Motorola Trade In TRBO Rebate, Smart Charger, IMPRES Li-Ion, Submersible (IP57), GPS, Talk Group Calling, 3 year Manufacturers Warranty	\$625.00	\$2,500.00
16	Digital Portable Radio	XPR6350	Motorola Digital, VHF, non-Display, Includes: Motorola Trade In TRBO Rebate, Smart Charger, IMPRES Li-Ion, Submersible (IP57), GPS, Talk Group Calling, 3 year Manufacturers Warranty	\$555.00	\$8,880.00
<b>SUB-TOTAL</b>					<b>\$27,185.00</b>
FCC License Modification: Add Digital Designation to current license, License expires 11/02/2012. Can <b>renew</b> 90 days prior to expiration date.				\$130.00	\$130.00
Onsite Installation fee for Base Radios (5). We will swap out radios and test antennas. Any items needing repair will be billable time and material.				\$40.00	\$200.00
Onsite Installation fee for Mobile Radios (25). We will swap out radios and test antennas. Any items needing repair will be billable time and material.				\$30.00	\$750.00
Service Call Fee to Adel (estimate 3 trips)				\$40.00	\$120.00
Additional (Please list below):					
Desk Microphone Option for Base Radios				\$100.00/each	
New install of Base Radio in Central Office; Includes cabling, exterior antenna and labor				\$200.00	\$200.00
New install of Base Radio Antenna in Elementary School				\$45.00	\$45.00
We will reuse the existing repeater duplexer in Elementary School (noted in repeater description)				-	-
Trade In Allowance for CDM750 (15)				\$250.00	<del>-\$3,750.00</del>
Trade In Allowance for M1225 (6)				\$100.00	<del>-\$600.00</del>
Trade In Allowance for CP200 (10)				\$100.00	<del>-\$1,000.00</del>
Unit pricing is based on Motorola Trade-In Promotion ending 8/31/2012					
<b>Spring Valley Wireless, Perry, IA</b>					
<b>TOTAL</b>					<b>\$23,280.00</b>

Tom Lowe  
Spring Valley Wireless  
toml@springvalleywireless.com  
515.240.9890

**\*Prices Good for 60 Days**

From: "Hoch, Scott" <shoch@connectingyou.com>  
 Subject: Digital Radio Bid  
 Date: July 23, 2012 3:00:01 PM CDT  
 To: <rbeechum@adm.k12.ia.us>  
 1 Attachment, 1.5 MB

Richard,

Here is an updated quote. We at Electronic Engineering thank the Adel Community School District for your continued long lasting business relationship and look forward to a strong future partnership.

Thank you for the opportunity,

Scott Hoch  
 515-229-9192

[shoch@connectingyou.com](mailto:shoch@connectingyou.com)

Electronic Engineering

Communication and Security Consultant

46712

2-Way Radio System Replacement Project  
 Bid Worksheet

Description	Unit Price	Extended Price
PR8400 Motorola Digital VHF, 1000m Continuous Duty, Includes Duplexers with 4 NITs, Sorensen, 3 yr. Manufacturer Warranty, GPS Capable, Using Existing Antenna and Cables. Includes Installation	249 <sup>00</sup>	2249 <sup>00</sup>
PR4550 Motorola Digital VHF, Advanced Display, Includes Motorola Trade In TRBO Repeater, PTT Identification, Private Calling, 100% Secure Voice Path, 3 year Manufacturer's Warranty, New Power Supply, New Desk Mic, VHS Backup, Existing Antenna and Cabling	645 <sup>00</sup>	1935 <sup>00</sup>
PR4350 Motorola Digital VHF, 2 digt Numeric Display, Includes Motorola Trade In TRBO Repeater, PTT Identification, Private Calling, 100% Secure Voice Path, 3 year Manufacturer's Warranty, New Power Supply, New Desk Mic, VHS Backup, Existing Antenna and Cabling	599 <sup>00</sup>	1797 <sup>00</sup>
PR4350 Motorola Digital VHF, 2 digt Numeric Display, Includes Motorola Trade In TRBO Repeater, PTT Identification, Private Calling, GPS Capable, 100% Secure Voice Path, 3 year Manufacturer's Warranty	399 <sup>00</sup>	9975 <sup>00</sup>
PR6550 Motorola Digital VHF, Advanced Display, Includes Motorola Trade In TRBO Repeater, Smart Charger, IMPRES Li-Ion, Rechargeable (IP57), GPS, Antenna, Talk Group Calling, 3 year Manufacturer's Warranty	604 <sup>00</sup>	2416 <sup>00</sup>
PR6350 Motorola Digital VHF, non-Display, Includes Motorola Trade In TRBO Repeater, Smart Charger, IMPRES Li-Ion, Rechargeable (IP57), GPS, Antenna, Talk Group Calling, 3 year Manufacturer's Warranty	574 <sup>00</sup>	9184 <sup>00</sup>
SUB-TOTAL		
ONS	125 <sup>00</sup>	125 <sup>00</sup>
ed: Exchange radio, training, case, existing per cable and antenna	425 <sup>00</sup>	425 <sup>00</sup>
Trade IN Rebate	750 <sup>00</sup>	750 <sup>00</sup>
included for all the other radios, if existing wiring	21999 <sup>00</sup> X 30% = 6599 <sup>70</sup>	
11.1% subject to billing, 5% time and materials used.		
TOTAL		21,999 <sup>00</sup>

7/23/12



Adel Desoto Minburn Community Schools

Quantity	Type	Model
1	New Repeater	XI
3	Base Radio	XI
3	Base Radio	XI
25	Mobile Radio	XI
4	Digital Portable Radio	XI
16	Digital Portable Radio	XI

POC License Amendment:

On Site Installation: 5 control station

On Site Installation of Mobile Radios (plus parts if need

Service Fee (if any):

Additional (Please list below): Motorola T

Desktop Microphones are available to be used if needed

X Scott Thacker





Adel DeSoto Minburn  
Community School District

# Project Quotes

## The quotes

Request for quotes were tendered on April 9, 2012. Both companies submitting quotes included product rebates in their total costs, which were in effect at the time the bids were submitted. They are no-longer in effect, however may be extended in the near future. Should the Motorola trade-in program be extended Both companies have given assurances that they will honor their current quotes, as written.

Vendor	Bid Date	Cost
Communications Engineering Company/Des Moines, Iowa	N/A	N/A
Electronic Engineering/Des Moines, Iowa	April 19, 2012	\$22,598.00
Spring Valley Wireless/Perry, Iowa	April 10, 2012	\$22,645.00
Difference		\$47.00



Adel DeSoto Minburn  
Community School District

# 2-Way Radio Replacement Proposal

Prepared for: Greg Dufoe, District Superintendent

Prepared by: Michael Chapman, Transportation Director

May 1, 2012

Proposal number: 2012-001





Adel DeSoto Minburn  
Community School District

# Project Summary

## Objective

This project began as a simple inquiry into the compatibility of our 2-Way Radio System with the new narrow-banding of our broadcast space that will go into effect January 1, 2013. Findings from three companies agreed that our 2-Way Radio System would not be compatible with the new narrow-banding specifications. The emphasis of this project shifted to how to upgrade our radio system. Through further conversations with the three companies two paths were identified and initial bids were requested. First was to upgrade our current analog system, or to upgrade to a digital radio system.

## Goals

The functionality of our radio system was and continues to be the main focus of this project. Increasing Signal strength and improving signal clarity was also a major tenet of this endeavor. As more information was gathered, the desire to improve the privacy and security of our daily communications became a contributing factor, as well as the possibility to expand capabilities, such as GPS, in the future.

## Solution

The best solution, at this time, is to upgrade to a 2-Way Digital Radio System. This path will help the district realize more of goals, than simply fixing the current analog radio system. Both would ensure that our radio system will work well into the future. However, converting to a digital system will immediately improve the strength and clarity of our transmissions, as well as the privacy and security of our communications. Future considerations also make a digital system very attractive.

## Solicitation of quotes

The three companies were invited to submit quotes based on our basic needs. As of this report two of the companies have submitted three quotes, with the third company still pending. Spring Valley Wireless and Electronic Engineering were the two to submit quotes. Communications Engineering Corporation had not submitted a quote as of this report.

## Recommendation for acceptance of quote

It is my opinion that regardless which company we choose, the product and services provided will adequately meet our needs. That being said, it is proposed that ADMCSD accept the quote provided by Spring Valley Wireless of Perry., Tom Lowe, Sales Representative for the following reasons:

- The Spring Valley Wireless quote, was the lowest initial quote.
- The Spring Valley Wireless quote was received the day after the request was extended.
- The Spring Valley Wireless representative helped us develop an inventory of our current radio equipment.

Hi Mike, thanks for the update.

Would it be possible for me to meet with Richard to discuss possible solutions for your communication system?

Please let me know. Thank you.

~Tom



***Tom Lowe***

Spring Valley Wireless

Motorola Solutions Into the Future

420 1st Avenue, Perry, IA, 50220

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**Cell: 515.240.9890 | Office: 515.465.4089 | Fax: 515.465.5836**

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Email: [toml@springvalleywireless.com](mailto:toml@springvalleywireless.com)





# The Future of Professional Two-way Radio: Digital

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## Executive Summary

Two-way voice was one of the first commercial applications of radio technology. In 1933, the first two-way mobile radio system was installed in patrol cars of the Bayonne, New Jersey police department. Since then, two-way radio has moved beyond the realm of public safety to become an invaluable tool for mobile professionals in a wide range of enterprises.

The term "two-way radio" conjures up a variety of images. Many people think of public safety officers using expensive equipment and licensed spectrum to convey mission-critical information at the site of an incident. Others think of hobbyists and sales clerks using low-cost, low-power "walkie talkies" in the unlicensed spectrum to keep in touch over relatively short distances. But there's a vast and growing market between these two extremes for professional users who need high-quality yet affordable equipment that takes advantage of the power, range and coexistence characteristics of licensed channels.

In transportation, energy, government, retail, hospitality and many other industries, licensed professional two-way radio systems offer capabilities that no other mobile technology can provide. Unlike competing technologies, only two-way radio can offer professionals instant, private and cost-effective communication in virtually any environment – anywhere and anytime. With two-way radio, there's no need to deploy supporting infrastructure in a field situation, or to rely on subscriber-based public networks that may be under-supported or even completely unavailable.

For most of its history, two-way radio has been an analog medium, and to this day, the vast majority of systems are still analog. But that's about to change. In the same way that digital technology has transformed other media, it's now revolutionizing the way mobile professionals communicate in the field. Like the digitization of music, TV and other traditionally analog media, digital two-way radio technology offers several advantages over the analog systems of the past.

For example, compared to analog two-way radio, digital two-way radio can offer greater spectral efficiency for higher calling capacity, enhanced voice quality at the farthest margins of the RF range, and more reliable coverage – making it easier to hear and understand conversations, even at long range and in difficult environments. Digital two-way radio also offers many features and capabilities that analog simply can't provide. For example, digital systems can:

- Provide enhanced signaling for user-friendly operation and advanced features
- Enable longer battery life in the field by requiring less transmit power, depending on the specific transmit methods and power-management technologies used in the device
- Enable flexible privacy between individual users and groups, without degrading voice quality or requiring configuration of add-on hardware
- Combine voice communication and wireless data applications in the same device, literally transforming the way field workers get the job done

This white paper gives an overview of two-way digital technology and the advantages it offers to mobile professionals in industries such as transportation, education, building construction and manufacturing, energy and utilities, private security, public safety and local government, and service-intensive businesses such as hotels, motels and casinos. We'll explore unique needs of these mobile workers, and discuss the ways that digital technology serves these needs in ways that analog radio can't. And we will describe how Motorola is leading the establishment of standards, technologies and solutions for the new, digital generation of two-way radio and wireless computing.



## Why Two-way Radio?

Before we look at the advantages of digital, there's a more fundamental question. With alternative and emerging technologies – such as cellular, push-to-talk over cellular, and Voice-over-WLAN – is there any reason for enterprises to stick with two-way radio at all?

While there's no single answer to this question for every organization, two-way radio offers certain advantages that make it the clear choice for the vast majority of mobile professionals who require an affordable, flexible, highly reliable solution – along with the power and range available only in licensed bands. Advantages of two-way radio include:

- **Low total cost of ownership.** Two-way radio requires a small up-front investment, with no recurring monthly fees. A two-way radio solution can typically pay for itself in less than 18 months compared with cellular or public carrier solutions that require recurring monthly fees.
- **Customizable coverage and features.** Two-way radio was developed and has continued to evolve to meet the specific needs of group-oriented communications and dispatch environments. The ability to tailor a two-way solution to meet the needs of businesses – with quick, reliable one-to-one, one-to-many and many-to-many communications – remains unequalled. Carrier-based solutions don't provide comparable levels of customization and performance.
- **Simple, reliable implementation.** On-site and in-the-field solutions often require no infrastructure at all. Users simply turn on their radios and talk directly to each other – for miles – using rugged devices designed for everyday use in the most demanding environments. For group voice calls, with coverage requirements measured in miles rather than feet, two-way radio will continue to provide simplicity and reliability unmatched by cellular, VoWLAN and other competing technologies.

If you're one of the tens of millions of professionals who rely on two-way radio today, it will continue to be your technology of choice tomorrow. And if you're not a two-way radio user today, you owe it to yourself and your business to explore what two-way has to offer.

## Digital Two-way Radio: A Modern Solution for Modern Needs

Analog radio works well, and proves itself every day in countless deployments around the world. However, analog two-way radio has reached the limits of innovations. Virtually everything that can be imagined using analog radio has been already been attempted or achieved over more than a half-century of experimentation and innovation. Today, a new platform is required to break through to new levels of performance and productivity.

Many enterprises are finding they need more than the fundamentals that analog two-way radio delivers. Perhaps their licensed channels are becoming crowded and they need more capacity. Perhaps they need more flexible ways to communicate with users both inside and outside the work team. Perhaps they need access to data in combination with voice to improve responsiveness and productivity. Digital radio provides a powerful, flexible platform that professional organizations can adapt to meet these needs and more.

By migrating from analog to digital two-way radio communications, these organizations can fill many of these needs immediately and build a strong technical foundation for adding new functionality to meet new needs in the future.

Let's take a look at each of these enterprise mobility needs in turn, and explore how digital radio technology can support a more responsive and adept mobile team.



### **Need: Efficient Use of RF Spectrum**

For many two-way users, the most important benefit of digital radio is to make more efficient use of licensed 25 kHz and 12.5 kHz channels. The airwaves are becoming more and more crowded, and the old licensed channel structures – originally designed with the principal goal of serving a handful of broadcasters – are no longer adequate to carry the increasing broadcast and private radio traffic projected in the future.

Regulatory agencies are responding to an impending crisis in RF congestion by mandating more efficient use of licensed spectrum. For example, in the U.S., the FCC is requiring manufacturers to offer only devices that operate within 12.5 kHz channels by 2011. By the year 2013, all users will be required to operate in 12.5 kHz – making it possible for twice as many users to share the airwaves as compared with today's 25 kHz licenses.

The next logical step is to further improve the effective capacity of 12.5 kHz channels. It's only a matter of time before the ability to carry two voice paths into a single 12.5 kHz channel, also known as 6.25 kHz equivalent efficiency, becomes a requirement. But with digital radio, there's no need to wait for a mandate. Devices that incorporate Time-Division Multiple Access (TDMA) can achieve 6.25 kHz equivalency today – doubling the capacity of a currently licensed 12.5 kHz channel or quadrupling the capacity of a 25 kHz channel.

That means many more people can communicate over an enterprise's existing licensed channels, without worrying about interference. And because each TDMA "slot" works independently, these virtual 6.25 kHz channels can be used flexibly according to the organization's needs. For example, two slots within one channel can be used to carry two separate and private conversations, or else one slot could be used for data or priority signaling in conjunction with a conversation on the other slot.

As application designers create new ways to use the additional capacity – for example, combining channels to support full-duplex calling or to increase the data rate – TDMA-based digital devices will be ready to adapt. In fact, well-designed digital radios can adapt to changing usage models on the fly, in the field. And even organizations that need only basic calling capabilities can benefit from the increased capacity of TDMA-based radios by getting two-for-one value for infrastructure such as repeaters and antennas.

### **Digital radio offers:**

**The ability to expand digital voice, data and control capabilities** that can be delivered over a given slice of RF spectrum. By choosing devices that incorporate the appropriate standards and technologies, organizations can get increased capacity and flexibility to support more users and new usage models. For example, devices that use TDMA modulation offer the flexibility to use a single channel for multiple two-way voice conversations, full-duplex conversations, separate voice and data transmissions, control and management capabilities, and more – flexibly switching between usage scenarios as needed.

**Lower licensing and equipment costs.** 6.25 kHz-equivalent systems based on TDMA enable two virtual channels within a single 12.5 kHz licensed channel, providing twice the calling capacity for the price of one license. And because there's still only one "real" channel, any supporting infrastructure does double-duty as well. A second call doesn't require a second repeater, or expensive combining equipment to route both calls through a single antenna site.

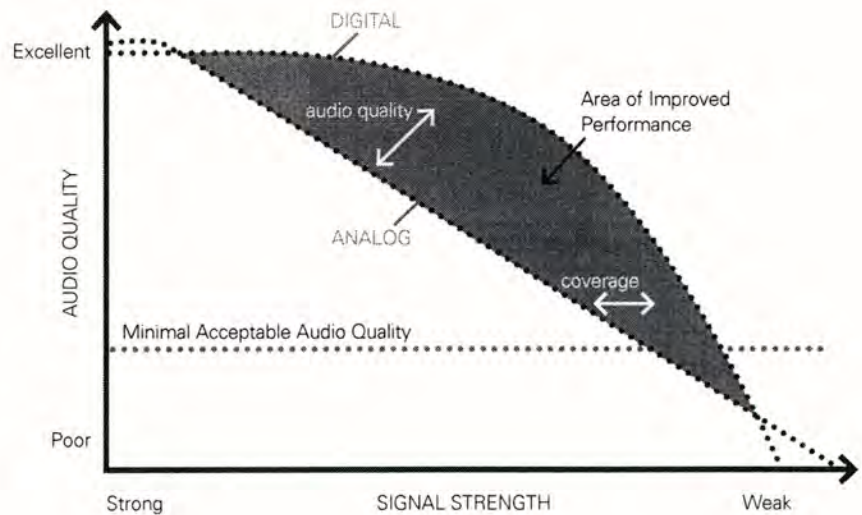
### **Need: Improved Fundamentals, Including Voice Quality, Privacy, Battery Life and Additional Features**

Professional two-way radio users depend on clear, unbroken, reliable voice communications. A missed call, user error, garbled message or dead battery can mean lowered productivity, wasted time and money, unsatisfied customers, and lost business.

Due to the inherent nature of RF physics, analog radio can suffer from several limitations that affect the range and clarity of voice. In an analog system, everything in the environment that disrupts or interferes with the signal itself directly impinges on the voice quality at the receiving end. Although it's possible to boost and retransmit a degraded signal, there's no way to reconstitute the original voice quality. The most common result of this degradation is an increase in static and artifacts that makes the signal increasingly unintelligible as the user approaches the margins of the radio's effective range.

Signal strength falls off exponentially as the distance from the transmitter increases, following the inverse square law. At the same time, the background RF "noise" level remains constant, so the signal-to-noise ratio declines by a factor of four with each doubling of the distance between transmitter and receiver. Environmental factors – such as line-of-sight obstacles and RF interference – can also severely





Digital voice retains better quality than analog as signal strength decreases.

## Digital Vocoder

### What is a digital vocoder?

- A digital vocoder reduces a complex speech signal into a small number of parameters.
- Rather than transmitting the analog speech in its entirety, which requires a relatively large amount of bandwidth, a digital radio transmits only the important parameters. Because small number of digital bits can represent these parameters, they require less bandwidth.

### The vocoding process

- The vocoding process begins by dividing the speech into short segments, typically 20 to 30 milliseconds in length. Each segment of speech is analyzed and the important parameters such as pitch, level, frequency response are extracted. These parameters are then encoded using a small number of digital bits.
- Before transmission, the encoded speech parameters are also protected by the addition of Forward error Correction (FeC) bits.
- During reception, the FeC is used to correct bit errors that may have occurred due to RF channel impairments. While the FeC cannot correct all errors that may occur, it can completely correct a reasonable number of bit errors, providing minimal audio degradation through much of the coverage area.

degrade performance, further shortening the effective range at which analog radio performs with acceptable voice quality.

The only way to retain analog voice quality at the edge of the radio's effective range is to boost signal strength. But this quickly becomes impractical due to the added battery size and drain, the risk of cross-talk and other interference, and regulations governing radio power and spectrum use in various applications. Moreover, techniques that are applied to the analog transmission – such as compounding or voice scrambling for security – alter the quality of the voice signal itself, coloring the sound and adding artifacts that can make it difficult to understand what's being said.

Digital systems, by contrast, incorporate built-in error-correction techniques that reconstitute the voice at nearly its original fidelity throughout most of the RF coverage area.

Depending on the device design, digital systems can also improve field operations through longer battery life and additional features. For example, TDMA-based systems that provide 6.25 kHz equivalency in a 12.5 kHz channel use only half their transmit time to carry a single half-duplex conversation. Since transmitting RF signals is very power-intensive, this means digital systems place less drain on the battery than their analog counterparts. In fact, conversation-for-conversation, TDMA-based digital radios function about 40 percent longer on a battery charge than analog systems.

Moreover, the two-for-one channel capacity of a TDMA-based system can be used to carry a second conversation, to provide dispatch data in parallel with verbal instructions, to enable enhanced call-control and emergency pre-emption, and for a variety of other existing and future applications. In the same way that digital technology is creating new possibilities for

wired and cellular communications, digital two-way radio gives mobile workgroups flexible access to more kinds of information – so they can work faster and more effectively than ever before.

### Digital radio offers:

**Enhanced voice communications over a greater range.** While digital radio signals are subject to the same RF physics as analog, a degraded transmission can still deliver the digital content to its destination intact. Even though signal strength drops off exponentially – just as it does with analog radio – digital error-correction technology can reconstitute the voice with virtually no loss over a far greater area.

**Static and noise rejection.** Analog signals are often distorted in ways that produce audible static. This can be mildly annoying, or it can become progressively worse until the conversation is almost impossible to understand. By contrast, digital receivers simply reject anything they interpret as an error. Although a "dirty" signal can produce artifacts on a digital receiver – such as a brief dropout or mechanical-sounding burst of noise – they never result in the persistent static that can plague analog systems in difficult environments. If the receiver can understand the digital voice signal, it can decode it and reproduce the voice clearly. Moreover, some digital systems incorporate background noise suppression at the transmitter – so, for example, background crowd or traffic noise is never transmitted, and therefore never heard at the receiver.

**Privacy without loss of quality.** Digital systems can provide voice and privacy without requiring extra hardware or altering the quality of the transmission on the receiving end. Moreover, analog systems typically send information at the beginning of a call that is used by the receiver to descramble the voice – which means that someone who joins the call late doesn't get the descrambling information and can't



understand the call. Digital systems, in contrast, repeat the descrambling information several times per second so that late entries can join a private call in progress. And digital systems allow you to easily separate users into private workgroups – each with its own encryption key – so one group isn't distracted by the operations of another.

**Longer battery life.** Because TDMA-based digital systems divide power-intensive transmissions into two independent time slots, each individual transmission uses only half the battery power of an analog system transmitting at the same wattage. Since transmitting is the most energy-intensive operation, digital two-way radios can typically function 40 percent longer between recharges compared to analog radios.

**Flexibility.** Digital radios can be designed to provide additional features in addition to two-way voice. For example, the second time slot in a two-slot TDMA-based system can be used for a second call, dispatch data, enhanced call control, emergency preemption, reverse-channel signaling or other functions. Digital systems can be flexibly configured to meet the specific needs of each mobile enterprise, enhancing productivity and responsiveness in the field.

### **Need: Integrated, Rapid Data Access**

Mobile workers who depend on analog two-way radio are realizing that they can work even more effectively in the field if they also have wireless access to applications and data. For example, construction contractors that have relied on two-way radio for decades are now adding on-site access to work schedules, materials ordering systems, and other tools that can't be accessed effectively through a voice call. It's just as common these days to see a site foreman using a wirelessly connected laptop as a radio.

But as mobile enterprises increasingly adopt wireless data solutions, they face a dilemma: Should they acquire and maintain separate voice and data systems, or adopt a converged system that provides both voice and data in a single unit? And for organizations that already have multiple systems in deployment, how can they preserve their current investment without committing to a

and maintenance costs. If it meets the needs of your business, moving to a converged voice and data platform over time can simplify system administration, and empowers users with systems that are more portable, flexible, and much easier to use than two different and incompatible systems.

### **Digital radio offers:**

**Enhanced operational control, capacity and efficiency,** while providing the mobile workforce with in-field access to operational intelligence. With only one system to install, train, and support, instant access to voice and data becomes both simpler and more affordable. Integrated command and control applications make dispatch, security, scheduling and other support functions more responsive.

**Leverage the power of two-way for voice and data.** To be clear, data services that are integrated into licensed two-way radio systems won't readily enable users to surf the web, send video images, or synchronize their office desktops – it is just not the right technology for such bandwidth-hungry applications. However, it is a great technology for productivity-enhancing applications like messaging, location based services, simple database queries, bar code reading, and fill-in-the-form type of applications. And it is built into your private, licensed communications system – so there are no monthly fees or dependencies on public carrier services, and you control what applications workers can access.

### **More applications, simplified integration.**

Compared to methods for utilizing analog radio systems for data, digital radio offers several clear advantages. Digital systems can readily support industry standard protocols, such as IP addressing and IP packet data services. And rather than relying upon external modems, digital radios can connect directly to computer equipment with standard network interfaces such as USB or Ethernet. This simplifies and lowers the cost of integrating with applications, and at the same time expands the universe of potential applications that organizations can deploy.

**Flexibility to allocate channels to voice and/or data as needed.** With combined digital voice/data systems, there's no need to allocate



Quantity	Type	Model	Description	Unit Price	Extended Price
1	New Repeater	XPR8400	Motorola Digital, VHF, 100% Continuous Duty, Includes 3 yr. Manufacturers Warranty, GPS Capable, Using Existing Duplexer, Antenna and Coax, Includes Installation	\$2,650.00	\$2,650.00
3	Base Radio	XPR4550	Motorola Digital, VHF, Alpha-Numeric Display, Includes: Motorola Trade In TRBO Rebate, PTT Identification, Private Calling, 3 year Manufacturers Warranty, New Power Supply, Will Reuse Existing Antenna and Cabling	\$630.00	\$1,890.00
3	Base Radio	XPR4350	Motorola Digital, VHF, 2 digit Numeric Display, Includes: Motorola Trade In TRBO Rebate, Private Calling, 3 year Manufacturers Warranty, New Power Supply, Will Reuse Existing Antenna and Cabling	\$535.00	\$1,605.00
25	Mobile Radio	XPR4350	Motorola Digital, VHF, 2 digit Numeric Display, Includes: Motorola Trade In TRBO Rebate, PTT Identification, Private Calling, GPS Capable, 100% Secure Voice Path, 3 year Manufacturers Warranty	\$385.00	\$9,625.00
4	Digital Portable Radio	XPR6550	Motorola Digital, VHF, Alphanumeric Display, Includes: Motorola Trade In TRBO Rebate, Smart Charger, IMPRES Li-Ion, Submersible (IP57), GPS, Talk Group Calling, 3 year Manufacturers Warranty	\$605.00	\$2,420.00
16	Digital Portable Radio	XPR6350	Motorola Digital, VHF, non-Display, Includes: Motorola Trade In TRBO Rebate, Smart Charger, IMPRES Li-Ion, Submersible (IP57), GPS, Talk Group Calling, 3 year Manufacturers Warranty	\$555.00	\$8,880.00
<b>SUB-TOTAL</b>					<b>\$27,070.00</b>
FCC License Modification: Add Digital Designation to current license, License expires 11/02/2012. Can <b>renew</b> 90 days prior to expiration date.				\$130.00	\$130.00
Onsite Installation fee for Base Radios (5). We will swap out radios and test antennas. Any items needing repair will be billable time and material.				\$40.00	\$200.00
Onsite Installation fee for Mobile Radios (25). We will swap out radios and test antennas. Any items needing repair will be billable time and material.				\$30.00	\$750.00
Service Call Fee to Adel (estimate 5 trips)				\$40.00	\$200.00
Additional (Please list below):					
Desk Microphone Option for Base Radios				\$100.00/each	
New Install of Base Radio in Central Office; Includes cabling, exterior antenna and labor				\$200.00	\$200.00
New Install of Base Radio Antenna in Elementary School				\$45.00	\$45.00
We will reuse the existing repeater duplexer in Elementary School (noted in repeater description)				-	-
Trade In Allowance for CDM750 (15)				\$250.00	-\$3,750.00
Trade In Allowance for M1225 (6)				\$200.00	-\$1,200.00
Trade In Allowance for CP200 (10)				\$100.00	-\$1,000.00
Unit pricing is based on Motorola Trade-In Promotion ending 4/27/2012					
<b>Spring Valley Wireless, Perry, IA</b>					
<b>TOTAL</b>					<b>\$22,645.00</b>

Tom Lowe  
Spring Valley Wireless  
toml@springvalleywireless.com  
515.240.9890

\*Prices Good for 60 Days





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**Carroll** • 812 Hwy 30 West  
(712) 792-2211 • (877) 711-2178

**Clive** • 1540 NW 86th Street  
(515) 223-4150 • (877) 711-2175

**Indianola** • 1203 N. Jefferson Way  
(515) 961-5123

**Des Moines** • Kaleidoscope Mall  
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**Perry** • 420 First Ave  
(515) 465-4089 • (877) 711-2174

**West Des Moines** • Jordan Creek  
101 Jordan Creek Pkwy Suite 12000 Upper Level  
(515) 255-9588 • (877) 808-0233

**West Des Moines** • Valley West Mall  
(515) 225-9444

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- Sirens
- Mobile Camera System



## Pyramid Communication Mobile Repeaters



## Otto Communications

- Surveillance Kits,
- Lightweight and Heavy-Duty Headsets
- Ear Hangers
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- Skull and Throat Microphones



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- Voice Over IP Communications



## Motorola and Vertex Radios

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- Consoles
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- Radio Rental short and long term
- Leasing

## Security

- Camera Systems
- Card Entry
- Panic Alarms

## Paging

- On Site
- Kitchen Call
- Nurse Call Systems
- Fire Pagers







Spring Valley Wireless - Perry  
420 First Street  
Perry, IA 50220  
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800#: 877.711.2174  
Fax: 515.465.5836

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Michael Chapman  
Transportation Director  
ADM Bus Garage  
1608 Grove St.  
Adel, IA 50003

3/15/2012

Mike,

I would personally like to thank you for taking time yesterday to visit with me and show me around your school district. I want you to know that I really appreciated it.

I am in the process of putting together a spreadsheet with the district's two-way radio current inventory. I think that once this is finished, we will have a much better understanding of what the district's needs are.

I also wanted to assure you that Spring Valley Wireless is a full service Motorola authorized sales and service dealer. We have technicians that can install and work on anything that Motorola manufactures from the 1970's to advanced digital units and control/dispatch centers. I also wanted to let you know a few school districts, municipalities and companies that we have worked with recently. You are welcome to contact any of these entities for a reference:

<b>Johnston Community Schools</b>	<b>Creston Community Schools</b>	<b>Audubon Community Schools</b>
<b>Nodaway Valley Community Schools</b>	<b>Dallas County Sheriff</b>	<b>Audubon County</b>
<b>Iowa State University</b>	<b>DART</b>	<b>Prairie Meadows</b>

We also have worked with the West Des Moines School District, a district that I'm sure you are very familiar with, before they went to a trunking system about 10 years ago.

I am very confident that you will be happy with our service and professionalism. We have been in the radio business for over 40 years and have been servicing central Iowa for that duration as well.

Thanks again for your time. It was a beautiful day which made it nice as well!

Sincerely,

Tom Lowe  
Spring Valley Wireless  
515.240.9890  
[toml@springvalleywireless.com](mailto:toml@springvalleywireless.com)

Quantity	Type	Model	Description	Unit Price	Extended Price
1	New Repeater	XPR8400	Motorola Digital, VHF, 100% Continuous Duty, Includes Duplexer with 4 Mhz Spread, 3 yr. Manufacturers Warranty, GPS Capable, Using Existing Antenna and Coax, Includes Installation	2599 <sup>-</sup>	2599 <sup>-</sup>
3	Base Radio	XPR4550	Motorola Digital, VHF, Alphaumeric Display, Includes: Motorola Trade In TRBO Rebate, PTT Identification, Private Calling, 100% Secure Voice Path, 3 year Manufacturers Warranty, New Power Supply, New Desk Mic, Will Reuse Existing Antenna and Cabling	699 <sup>-</sup>	2097 <sup>-</sup>
3	Base Radio	XPR4350	Motorola Digital, VHF, 2 digit Numeric Display, Includes: Motorola Trade In TRBO Rebate, PTT Identification, Private Calling, 100% Secure Voice Path, 3 year Manufacturers Warranty, New Power Supply, New Desk Mic, Will Reuse Existing Antenna and Cabling	569	1,707 <sup>-</sup>
25	Mobile Radio	XPR4350	Motorola Digital, VHF, 2 digit Numeric Display, Includes: Motorola Trade In TRBO Rebate, PTT Identification, Private Calling, GPS Capable, 100% Secure Voice Path, 3 year Manufacturers Warranty	499	12,475 <sup>-</sup>
4	Digital Portable Radio	XPR6550	Motorola Digital, VHF, Alphanumeric Display, Includes: Motorola Trade In TRBO Rebate, Smart Charger, IMPRES Li-ion, Submersible (IP57), GPS, Antenna, Talk Group Calling, 3 year Manufacturers Warranty	609	2,436 <sup>-</sup>
16	Digital Portable Radio	XPR6350	Motorola Digital, VHF, non-Display, Includes: Motorola Trade In TRBO Rebate, Smart Charger, IMPRES Li-ion, Submersible (IP57), GPS, Antenna, Talk Group Calling, 3 year Manufacturers Warranty	549	8,784 <sup>-</sup>
<b>SUB-TOTAL</b>					
FCC License Amendment:					175 <sup>-</sup>
On Site Installation: <i>New Control Stations</i>					425 <sup>-</sup>
On Site Installation of Mobile Radios (plus parts if needed): <i>Exchang radios and transions - reuse existing pwr cable and Antennas</i>					825 <sup>-</sup>
Service Fee (if any):					
Additional (Please list below): <i>Motorola Trade IN Rebate (21-trade in radios)</i>				21x-425	(- 8925)
<i>Prices assume TRBO Trade-IN of Radios, subject to trade IN rules.</i>					
<i>Desktop Microphones are all included for the new control stations. If existing wiring is unable to be used, it will be subject to billing for time and materials used.</i>					
<b>TOTAL</b>					22,598 <sup>-</sup>

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4/19/12

**Scott Hoch**

Communication & Security Consultant

(515) 229-9192 (CELL)  
(515) 283-1100  
(800) 343-3998

1015 Keo Way  
Des Moines, IA 50309



Quantity	Type	Model	Description	Unit Price	Extended Price
1	New Repeater	XPR8400	Motorola Digital, VHF, 100% Continuous Duty, Includes Duplexer with 4 Mhz Spread, 3 yr. Manufacturers Warranty, GPS Capable, Using Existing Antenna and Coax, Includes Installation	\$2599.00	\$2599.00
3	Base Radio	XPR4550	Motorola Digital, VHF, Alphaumeric Display, Includes: Motorola Trade In TRBO Rebate, PTT Identification, Private Calling, 100% Secure Voice Path, 3 year Manufacturers Warranty, New Power Supply, New Desk Mic, Will Reuse Existing Antenna and Cabling	\$699.00	\$2097.00
3	Base Radio	XPR4350	Motorola Digital, VHF, 2 digit Numeric Display, Includes: Motorola Trade In TRBO Rebate, PTT Identification, Private Calling, 100% Secure Voice Path, 3 year Manufacturers Warranty, New Power Supply, New Desk Mic, Will Reuse Existing Antenna and Cabling	\$549.00	\$1647.00
25	Mobile Radio	XPR4350	Motorola Digital, VHF, 2 digit Numeric Display, Includes: Motorola Trade In TRBO Rebate, PTT Identification, Private Calling, GPS Capable, 100% Secure Voice Path, 3 year Manufacturers Warranty	\$369.00	\$9225.00
4	Digital Portable Radio	XPR6550	Motorola Digital, VHF, Alphanumeric Display, Includes: Motorola Trade In TRBO Rebate, Smart Charger, IMPRES Li-ion, Submersible (IP57), GPS, Antenna, Talk Group Calling, 3 year Manufacturers Warranty	\$609.00	\$2436.00
16	Digital Portable Radio	XPR6350	Motorola Digital, VHF, non-Display, Includes: Motorola Trade In TRBO Rebate, Smart Charger, IMPRES Li-ion, Submersible (IP57), GPS, Antenna, Talk Group Calling, 3 year Manufacturers Warranty	\$559.00	\$8944.00
SUB-TOTAL					
FCC License Ammendment:				\$175.00	\$175.00
On Site Installation: Exchange 5 control stations and install new control stations					\$425.00
On Site Installation of Mobile Radios (plus parts if needed): (exchange radios & trunions) reuse pwr cable/antennas					\$750.00
Service Fee (if any):					
Additional (Please list below):					
Prices assume TRBO tradein of radios, \$100 per trade, subject to trade in rules. Desktop mics are all included for 6 new control stations. If existing wiring is unable to be used, it will be subject to billing for time and materials used.					
TOTAL					\$28,298.00

From: "Hoch, Scott" <shoch@connectingyou.com>  
Subject: **Recall: Radio Bid**  
Date: April 17, 2012 8:10:52 AM CDT  
To: "Mike Chapman" <mchapman@adel.k12.ia.us>

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Hoch, Scott would like to recall the message, "Radio Bid".