



# Public Safety Radio System Update

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# Background

- In 2001, the County partnered with Highway Patrol to implement a county-wide public safety 800MHz system as a portion of their statewide system (VIPER)
- In late 2004, the Wake County portion of the statewide system came online with 14 channels, approximately 3,500 users
- The initial cost of the infrastructure was \$21.3 million, which was 100% funded by the County
  - Radio purchases were the responsibility of each customer agency
- Current system, provided by Motorola, is known as 4.1 SmartZone Omnilink

# Background

- 2005
  - Raleigh Fire and RDU added to the system
  - 3 additional channels added (to 17)
- 2007
  - City of Raleigh PD added to the system
  - 7 additional channels added (to 24)
- Other enhancements made as needed
- Town of Cary
  - Cary operates its own independent system
  - Interoperable via separate/shared radio channels

# Current County System

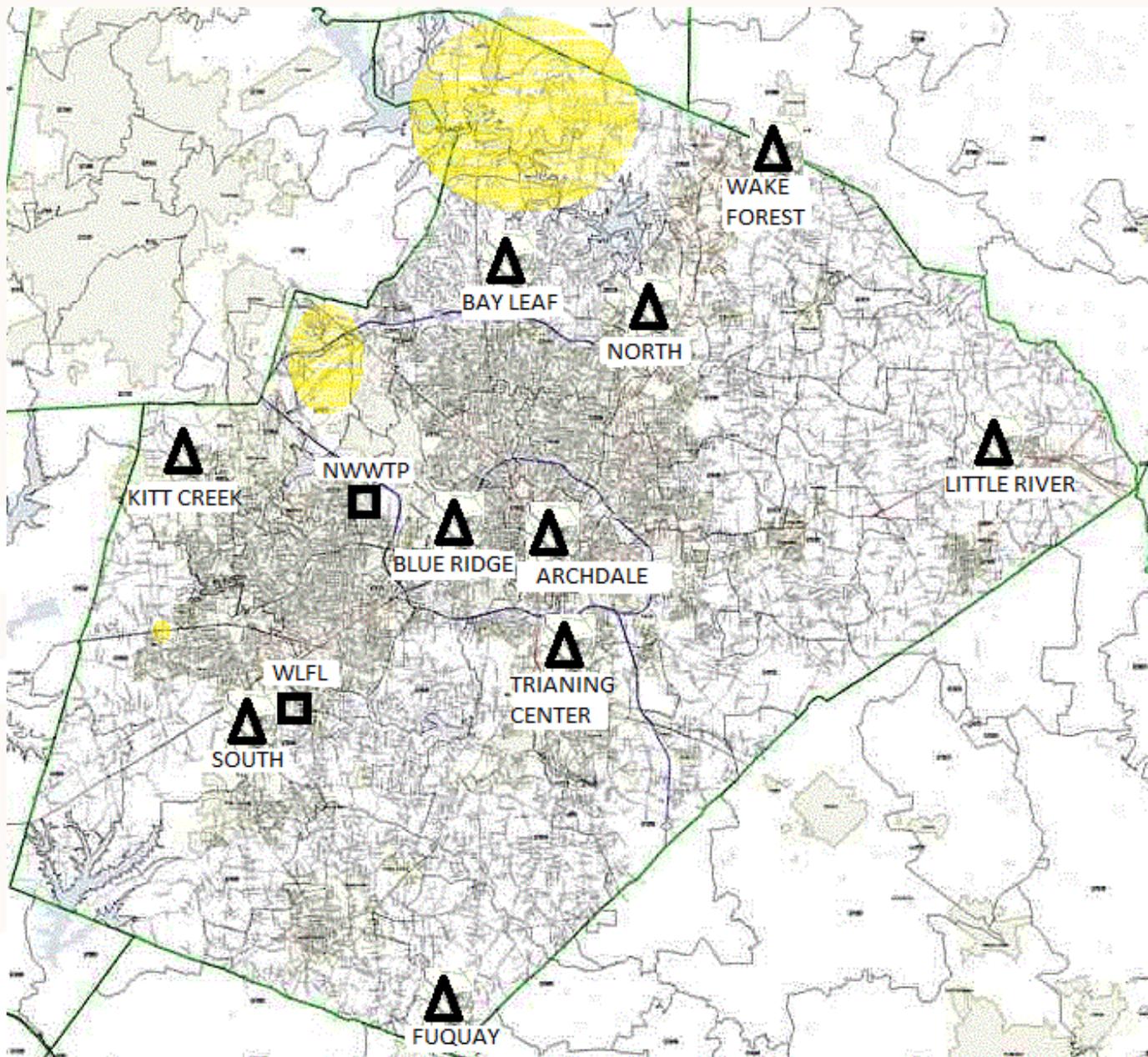
- 10 Towers Sites throughout the County
- 6,500+ individual radios connected to the system
- 50,000 calls per day on average
- The County pays for capital expenses and our customers pay for their own radios and a portion of the maintenance costs, based on:
  - Number of radios
  - 911 incident counts

# Current System Strengths

- System very reliable (hardware/software)
- Very good coverage with few known issue areas
- Stable cost model
- Strong governance model

# Current System Weaknesses

- System ID's virtually exhausted
- Major hardware components no longer manufactured
- No additional upgrades available (can't add tower sites, consoles, etc.)
- End of technical support looming: 12/31/2015
- Grade of service issues during significant events



# Current Customer Agencies

- Wake County Sheriff's Office
- Municipal and County Fire Services (except Cary)
- Wake County Emergency Medical Services
- All City and Town Police Departments within Wake County (except Cary)
- Raleigh Durham Airport Authority - Public Safety
- Wake Technical Community College Campus PD
- Triangle Transit Authority
- Non-Emergency County & Municipal Public Services (GSA, Apex Public Works, HS Transportation...)
- Other State Public & Non-Public Safety Departments (ABC Board)

# Current County System

- Beginning in 2016, Motorola will no longer support the current system. Also, future upgrades are not available. Therefore, a system replacement is required
- In 2008, IS department completed a comprehensive 800 MHz Radio Master Plan which identified the need to begin planning for a system replacement
- In 2010, the County engaged RCC, Consultants, Inc. to assist in evaluating our options for replacement

# Consultant Report Summary

- Three replacement options detailed
  - Option 1 - The County remains in partnership with the Highway Patrol (estimated completion – late 2016)
  - Option 2 - The County combines resources with Cary (estimated completion – 1<sup>st</sup> Quarter 2017)
  - Option 3 - The County pursues an independent system (estimated completion – 2<sup>nd</sup> Quarter 2017)
- A decision to delay beyond the end of useful life can be mitigated through alternate support options

# Process for Evaluating Options

- Steering Committee
- Guiding Principles
- Evaluation Criteria

# Steering Committee

- RWECC: Director Barry Furey, Deputy Director Walt Fuller
- Local Law Enforcement: Deputy Chief Copeland, Garner PD
- Local Fire: Fire Chief Pope, Bay Leaf Fire
- EMS: Chief Jon Olsen
- Emergency Management: Director Josh Creighton
- NCSHP: Captain West, Lieutenant Blanks, Mike Hodgson
- WC SO: Major Hawley, Sergeant Hales
- WC Budget: Mark Matthews
- WC FD&C: Eric Staehle
- WC IS: Frank Hall, Deputy CIO John Higgins
- *Town of Cary: since the Town isn't currently a participating agency, they attended only meetings pertaining to their radio system*

# Guiding Principles

- Get maximum value out of existing system (approach new investment in a safe but frugal manner)
- Provide best service and maximum interoperability with our existing customers
- Ensure that the County has the autonomy to perform upgrades, maintenance and implement enhancements as needed.
- Resolve known coverage issues
- Position ourselves to court new customers to help defray system maintenance costs

# Evaluation Criteria

- User Functionality
  - How reliable and easy to use will the system be for public safety field personnel?
  - How easily will personnel be able to communicate with other agencies and jurisdictions?
  - Which option is the best value in terms of capacity?
- System Management
  - How easy will the system be to manage and upgrade?
  - How easily/quickly can changes be implemented to respond to significant events within the County?
- Costs
  - What components are required and when will costs be incurred?

# Breakdown of Expenditures

## Capital\*

- Primary and backup system controller hardware and software
- Technical infrastructure at tower sites (no civil)
- Microwave equipment for use in connecting the sites
- Radio dispatch console equipment (911 Center, Sherriff's Office, etc.)
- Engineering, project management, implementation services

## Ongoing Maintenance

- Software: bug fixes, enhancements, upgrades...
- Hardware: break/fix support

*\*Capital cost and specific components differ for each of the options on the following slide.*

# Option Overview

Description	Option 1 With NCSHP	Option 2 With Cary	Option 3 Wake Only (Max Use of Current System)	Option 4 Wake Only Timed w/ CoR New Facility
<b>Estimated Capital Project Cost</b>	<b>\$31,003,128</b>	<b>\$30,909,629</b>	<b>\$32,257,687</b>	<b>\$32,055,601</b>
<b>Total Estimated Annual Maintenance</b>	<b>\$1,314,847</b>	<b>\$1,399,015</b>	<b>\$1,494,295</b>	<b>\$1,494,295</b>
<b>Estimated Annual Maintenance - County Portion Only</b>	<b>\$545,900</b>	<b>\$580,846</b>	<b>\$620,404</b>	<b>\$620,404</b>
<b>Total Est. Annual Maint. (15 YR)</b>	<b>\$21,164,955</b>	<b>\$22,519,798</b>	<b>\$24,053,511</b>	<b>\$24,053,511</b>
<b>Estimated Annual Maint. (15 YR) – County Portion Only</b>	<b>\$8,787,295</b>	<b>\$9,349,817</b>	<b>\$9,986,578</b>	<b>\$9,986,578</b>
<b>Total Est. Platform Cost (15 YR)</b>	<b>\$52,168,083</b>	<b>\$53,429,427</b>	<b>\$56,311,198</b>	<b>\$56,109,111</b>
<b>Estimated Project Duration</b>	<b>29 Months</b>	<b>32 Months</b>	<b>34 Months</b>	<b>34 Months</b>
<b>Estimated Capital Project Dates</b>	<b>7/1/2014 To 12/1/2016</b>	<b>7/1/2014 To 12/1/2017</b>	<b>7/1/2014 To 4/1/2017</b>	<b>Phase I – implement consoles 7/1/2014 To 12/31/2015  Phase II – complete tower upgrades 1/1/2015 To 04/01/2017</b>

# Option 1 (NCSHP) Pros

- NCSHP already has primary system controller and network equipment to connect tower sites
- Least expensive option
- Shortest implementation schedule
- Provides some level of coverage outside of Wake County
- Possible ongoing co-funding opportunities

# Option 1 (NCSHP) Cons

- Can limit County flexibility when we want to make changes to the system
  - Wake County has not been able to complete FCC mandated 800 MHz band reconfiguration designed to alleviate interference
  - Wake County has not been able to complete software updates recommended by manufacturer
- NCSHP traffic places a consistently heavy load on system resources
  - NCSHP utilizes an average of 30% of daily traffic on existing radio platform
- Nearly all system IDs allocated to Wake County have been used up (limits new customers)
  - Under proposed NCSHP statewide system ID plan, Wake County will be limited to a block of approximately 17,500 ID's

# Option 1 (NCSHP) Cons

- Can limit the County's ability to make quick changes to meet our customers needs in emergency situations
  - During recent ice event (01/25/2013) NCSHP utilized over 50% of system capacity during peak times
- Partnership may impact tower co-location opportunities with Cary tower sites
  - Cary tower access is key to helping us resolve known coverage issues in the Apex and Brier Creek areas

# Option 2 (Cary)

- Less expensive than Wake Only option (but it forces us to remain in lockstep for future upgrades and enhancements)
- No interoperability improvements or end user gains between Wake/Cary
- No significant impact on end users either way
- While Cary is smaller, sharing the resources still limits County flexibility
  - Radio reprogramming coordination
  - Implementation of system wide functionality/enhancements coordination
- Could possibly limit the County's ability to make quick changes to meet our customers' needs in emergency situations

# Option 3 – Wake Only

- Cost & Value
  - Most expensive option in that it requires additional system components as compared to Options 1 and 2
  - Provides autonomy for all system changes and management
  - Greater control over ongoing expenditures (we retain full control of future upgrade projects)
  - Only option that will allow for competitive procurement
- Eliminates security risks and conflicting priorities associated with partnerships or shared resource model

# Option 3 – Wake Only

- Coverage
  - Possible out-of-County coverage impact associated with terminating NCSHP partnership
  - Does not impact tower co-location opportunities with new Cary tower sites
- Customers
  - Puts us in the best position to court new customers

# Option 4 – Wake Only Timed w/ CoR Building

- Same considerations as Option 3
- Two phase project in which we purchase new radio consoles for new 911 Center to coincide with building opening and replace tower infrastructure in a second phase
- Requires purchase of \$240K of equipment to allow us to connect current system to new radio consoles
- Requires shifting of approximately \$7.85 million forward to FY15
- Speeding up project timeframe reduces overall purchase cost by avoiding an estimated inflation cost of \$210,000

# Next Steps

- Follow-up on any questions raised
- Fully vet pros/cons associated with all options
- Investigate options with City of Raleigh regarding facility timing and console equipment move requirements
- Investigate vendor pool to determine procurement method (Option 3 Only)
- Firm up cost estimates
- Include final recommendation in CIP