



Principles Surrounding the 700 MHz Band

The Federal Communications Commission is now deciding how the remaining 60 MHz of the 700 MHz band to be released by television broadcasters in 2009 will be used. There is opportunity to implement a primary recommendation of the 9/11 Commission and provide the nation's public safety agencies a nationwide interoperable broadband network. NPSTC urges the Commission to integrate these guiding principles into its decisions addressing the structure and rules of the 700 MHz band.

Recognize the Need—Current public safety communications operations are local or regional in nature, complex and difficult, perennially underfunded and have dangerous delays and disruptions lurking. Congested public safety channels pervade every urban and suburban area. The 9/11 Commission recommendation is grounded on this reality and the enormous enlargement of state and local government responsibilities.

Ensure Meaningful Public Safety Participation—Spectrum from the remaining 60 MHz can be committed to promote public/private use across the 700 MHz band by establishing a trust or like structure to build a nationwide broadband network for all agencies and provide commercial access to finance the network. The current 12 MHz in the 700 MHz public safety segment is not adequate to support a shared network nor could it do so without compromising local agencies. Any proposal should embrace a governing structure where public safety representatives have standing to participate meaningfully in

administering the network to ensure that it responds to public safety's requirements, upholds standards and promotes local participation. Public safety must maintain unfettered

control over the 24 MHz previously allocated for public safety by direction of Congress. To the extent private enterprise provides some of the network infrastructure for public safety use of that spectrum, the network must be built to public safety specified requirements, and remain subject to public safety oversight and control.

Adopt the Broadband Optimization Plan—The Broadband Optimization Plan (BOP) provides significant and innovative relief to public safety and reflects public safety's extensive work and commitment to pursue coexistence across services. The Commission should comprehend the value in providing public safety additional channels, the flexibility wideband affords local agencies, and how technologies across all services can be promoted in the 700 MHz band. Any action must resolve positively the complexity in relocating 700 MHz channels, the investment already committed to voice and data, and the intricacies of border regions.

Require a Serious Commitment To Building a Public Safety Network—Any proposal making a serious and not casual commitment to public safety should be given careful consideration. A serious proposal encompasses defined deployment mileposts and addresses public safety's underfunding and does not simply offer public safety ability to purchase commercial spectrum. Award must be based on elements in addition to that of highest bidder. There must be fidelity to improve public safety communications. An auction winner's license should be contingent on satisfying

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NPSTC Executive Director

Marilyn Ward

Happy 10th Anniversary NPSTC! As we move toward our June meeting, preparations are being made for a celebration of NPSTC and its 14 member associations. Our June meetings will be held in Denver, Colorado, and will be followed by meetings of the

Office of Interoperability & Compatibility's SAFECOM Executive Committee and Emergency Response Council later in the week. We begin our NPSTC meetings on Monday with training on coordination in wideband and broadband for the Regional Planning Committees (RPCs) including a Computer Assisted Pre-coordination and Resource Database System (CAPRAD) update and training using guidelines designed for this new technology. Following training on Monday, the RPC Committee will hold its meeting, followed on Tuesday by meetings of the Interoperability, Spectrum Management, and Technology Committees, and the quarterly Governing Board meeting on Wednesday.

NPSTC's 10th anniversary will be celebrated on Tuesday night with a walk down memory lane to mark all the growth and accomplishments NPSTC has achieved in the last 10 years. We thank these celebration sponsors of our anniversary gathering—Access Spectrum, Alcatel-Lucent, Cyren Call, Data Radio, M/A-COM, Motorola, and Pegasus Communications.

As we celebrate this anniversary, NPSTC gratefully acknowledges its strong supporters and regretfully notes a changing of the guard. We say good bye to Glen Nash, long-time Chair of the Technology Committee, who is stepping down due to job obligations and to long-time member Larry Miller, retiring representative from the American Association of State Highway and Transportation Officials (AASHTO). NPSTC's Vice Chair, Harlin McEwen, will step down from his executive role although he will continue to work with NPSTC as the International Association of Chiefs of Police (IACP)

representative and as the strong advocate for public safety telecommunications he has always been. NPSTC also gratefully acknowledges Dr. David Boyd, Director, Command, Control, and Interoperability Division, Science and Technology Directorate, Department of Homeland Security (DHS), for his long-term support of NPSTC's initiatives. Dr. Boyd funded CAPRAD when he was with the National Institute of Justice (NIJ) and has always been a strong supporter of local and state users.

700 MHz NPRM

The last month has been very critical for those of us planning to use wideband or broadband services for public safety. The Federal Communications Commission (FCC's) Notice of Proposed Rulemaking (NPRM) on 700 MHz is the biggest and most difficult filing since the 800 MHz days in the 1980s. This technology could change the way we do business in the future and will certainly open up a new world for public safety communications. NPSTC's Vice Chair, Harlin McEwen, has led a policy committee to tackle the issues dealing with a spectrum trust and to develop a response for Governing Board approval. The filing went in May 23 with replies due June 4. This was an incredibly difficult 170-page NPRM with quick turn-around responses required. I would like to thank those who worked night and day, weekends and holidays, to complete this work. Now, we wait and see what the reply comments will be and the Commission's response to our proposals.

We have some exciting things happening in NPSTC and hope you come along for the ride! Attend our meetings, by phone or in person. Come join the ever-evolving environment of NPSTC and public safety communications.



The Communications Component of the Incident Command System – What Needs to Change? *By James D. Reutlinger*

The concept of the Incident Command System, referred to as “ICS” was developed more than 30 years ago, in the aftermath of destructive wildfires in California. Although all of the responding agencies cooperated to the best of their ability, numerous problems with communication and coordination hampered their effectiveness. As a result, Congress mandated that the U.S. Forest Service design a system that would make a significant change in the way these types of incidents were managed by the agencies responding to the Southern California wildfires that occur each year.

By 1981, ICS was widely used throughout Southern California by the major fire agencies. In addition, the use of ICS in response to non-fire incidents was increasing. Over the years, ICS has been looked at and used in different forms by many agencies.

In 2004, ICS was a mandated part of the National Incident Management System (NIMS) and is now expected to be used in an all-hazard environment by public safety agencies receiving federal preparedness funding.

In April 2007, an ICS Communications Summit was held in Washington, D.C. The Summit was sponsored by the U.S. Department of Justice Office of Community Oriented Policing Services (COPS) and the Department of Homeland Security SAFECOM Program. The Summit was a gathering of public safety management officials involved in important communications interoperability projects. The purpose was to develop a police, fire, EMS, and emergency management consensus approach to defining the primary communications resources within ICS. In an effort to facilitate the Summit’s success, COPS and SAFECOM sponsored this meeting through SEARCH, The National Consortium for Justice Information and Statistics.

Also present were key federal policymakers and program officials from SAFECOM and the COPS Office. Attendees established the foundational criteria for future developments in the critical realm of communications under ICS. The general theme was that the communications function plays a much greater role today in the success of an operation than thought by the original designers of ICS. This has occurred for a variety of reasons. Summit attendees were asked to identify some of these reasons and make recommendations for change within the ICS structure to better meet the needs of today’s agencies.

To develop their recommendations, they looked at the successes, best practices, and lessons learned, while examining challenges and areas needing improvement.

The consensus approach was used to develop and finalize these recommendations, and it is hoped that these will be considered by the NIMS Integration Center for implementation.

Recommendations

1. Make ICS adaptable for operational needs and technological solutions by creating a living document review process. The ever-changing technological advances that are appearing in the communication area require that this process be reviewed on a regular basis to confirm that all elements are still relevant.
2. Provide the flexibility in the ICS structure for local agencies to shape the templates to fit their needs.
3. Examine the issue regarding the lack of standard names for common channels. The group felt this needed to be addressed on a national level to provide consistency throughout the country.
4. Make changes to the ICS structure, relative to the communications function. The group proposed making the Communications component its own section and the Communication Unit Leader (COML) position, a section chief.
5. Look at splitting the task list for the COML by administrative and technical functions, and then assign the function as two positions.
6. Create a separate communications specialist position within the ICS Communications Unit for each public safety discipline (Police, Fire, EMS).
7. Institutionalize the COML position in agencies so that Incident Commanders are well aware of the value the position brings to managing critical incidents under ICS.
8. Develop and implement a COML standard of training, performance, deployment, and responsibilities for all-hazards events.
9. Establish specific funding mechanisms for training personnel assigned to the COML position in agencies.

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Maintaining Interoperability during 800 MHz Reconfigurations

By Brad Barber

Maintaining public safety radio systems during normal day-to-day activities can often be challenging. Doing so during periods of intense activity – hurricanes, school shootings, floods, terrorist events, bank robberies, earthquakes, etc. – is even more challenging. Planning to maintain communications systems operability and interoperability while also rebanding those systems during the 800 MHz band reconfiguration process may be the most challenging task public safety system operators have ever faced.

The Hampton Roads Approach

The Hampton Roads region in Virginia encompasses some of the most highly interoperable communities in the United States. The cities of Chesapeake, Hampton, Newport News, Norfolk, Suffolk, and Virginia Beach along with York and James City Counties have established a rich network of formal and informal interoperability agreements. The capabilities and functionality provided by these agreements are critical to the day-to-day and emergency communications for each entity in the region and cannot be compromised during or after the reconfiguration process.

Early in the rebanding process these entities, working together as part of the Hampton Roads Trunked Users Group (HRTUG), recognized the need to coordinate their rebanding efforts at the regional level. The City of Virginia Beach acts as the lead agency for this effort, securing funding for the regional coordination effort as an amendment to their Planning Funding Agreement (PFA) and processing the deliverables associated with the planning effort. HRTUG is the interoperability coordination committee providing oversight and guidance to Federal Engineering, the lead engineering consulting firm, which manages overall regional coordination efforts. Some of the lessons learned from these efforts are outlined below.

Key Planning Questions

- **Who?** – Who talks to you? Who do you talk to?
- **What?** – What channels and/or talkgroups are used? What are the technical limitations? What equipment is used to connect disparate systems?
- **When?** – Multiple agencies= multiple schedules.
- **Where?** – Ensure comparable RF coverage is provided before, during, and after reconfiguration.
- **How?** – How will current levels of interoperability be maintained before, during, and after reconfiguration?

Define the Environment

One of the first and most important steps in managing regional coordination efforts is to determine the levels of interoperability that exist among the entities. While there may be formal agreements in existence, there are also many informal arrangements, developed over time, which facilitate both daily and emergency public safety and public service communications. To determine the extent and nature of these interdependent links considerable effort will be needed to investigate them and determine how they will affect the regional rebanding process overall. In addition to shared talkgroups used by multiple entities, other mutual aid communications resources such as conventional 800 MHz channels and National Public Safety Planning Advisory Committee (NPSPAC) mutual aid channels may also emerge as key components of the region's communications capabilities. Widespread use of the national NPSPAC mutual aid channels and other conventional 800 MHz channels in the region adds another layer of complexity to the rebanding efforts as operational plans for use of these channels during the reconfiguration efforts must be modified and updated as these efforts proceed to ensure that all agencies are operating on the correct channel(s) during an event.



NPSPAC Mutual Aid

The reconfiguration of the national NPSPAC mutual aid channels presents other technical challenges as well. Ensuring that other 800 MHz users that are providing or receiving mutual aid assistance can communicate with your agencies during rebanding will likely necessitate the use of both old and new NPSPAC national mutual aid frequencies throughout the end of Wave 4 rebanding. In the case of certain memory-limited subscribers, this may prove difficult or even impossible to accomplish. Additionally, each entity must evaluate how it will accommodate communications with dispatch centers on the old and new channels. Often, back to back base/repeater combinations are proposed but this solution requires significant analysis as well to determine the viability of the solution in each individual case.

NPSPAC Mutual Aid (MA) Base Station Issues

- Use loaned equipment from Sprint Nextel?
- How will repeater functionality be controlled by dispatch?
- How will loaned equipment be maintained for duration of project?
- Will existing sites support additional channels - power, space, transport, tower loading?
- What new intermodulation issues are created?

Project Scheduling

Each entity involved in the regional effort will be negotiating and executing separate agreements with Sprint Nextel to plan and ultimately reconfigure their specific systems. This causes each entity to move through the process at different paces depending upon the size and complexity of their systems. In order to effectively coordinate these multiple projects, it is imperative to identify each critical path item in the overall effort. For example, if some entities have already completed planning while others involved are just beginning, the analysis of the suitability of replacement frequencies by the entities just beginning to plan becomes the first dependency for the entities that have completed planning and are ready to begin reconfiguration.

Cutover Coordination

When each entity in a region is interlinked and interoperable with its neighbors, the reconfiguration of one system obviously affects and must be coordinated with all of the other affected users. Regional cutover plans executed during rebanding must incorporate all the critical path items mentioned above. Not surprisingly, communications and proper planning among the participants is vital to the overall success of the project.

Critical Path Issues

- Finalize interoperability environment.
- Complete frequency analysis for replacement channels.
- Determine regional NPSPAC MA approach.
- Finalize regional talkgroup/conventional programming guidelines.
- Plans must adapt to operational requirements and emergencies - hurricanes, tornadoes, floods.

Other key items in a successful regional cutover coordination plan are:

- The proposed order and timing of subscriber reconfigurations.
- The testing process to confirm proper programming of affected subscriber radios.
- The proposed order and timing of trunked and conventional system retunes.
- The testing process to confirm proper retuning of affected systems and infrastructure components.

While the process of regional or multi-system coordination of 800 MHz rebanding may seem daunting, there are resources available to public safety system operators to help with the process. The 800 MHz Transition Administrator (TA) has published an updated Mutual Aid and Interoperability Fact Sheet and continues to conduct periodic web-based seminars on the various facets of the rebanding process. Additionally, the TA also has a Public Safety Outreach Team to assist public safety entities with these types of issues directly. If you'd like to contact the TA for more information on the Public Safety Outreach team members in your area you can contact the TA by phone at (888) 800-8220 or via email at comments@800TA.org.

Perhaps most importantly, on January 8, 2007, the FCC released an order allowing the exchange of information between public safety licensees in regards to both Frequency Reconfiguration Agreements and Planning Funding Agreements. Information sharing and mutual aid are an integral part of the public safety world and this recent decision only enhances the opportunities for each of us to learn from others.

Brad Barber is a Senior Consultant for Federal Engineering.



public safety requirements and standards through a mechanism providing public safety participation. The extent of public safety access must entail daily operational use by a range of agencies.

Assure an Adequate Funding Base for a Nationwide Network—Any nationwide broadband network must be uniform in design and deployment. It must be available to all agencies, otherwise it will divide and not unite. Financing cannot be based on false visions of commercial participation, federal monies, or hope. Relying on public safety agencies paying for the network will fall short. It will leave out agencies that cannot afford to participate. Wideband data systems will be a necessary option, especially in the absence of a fully funded national broadband network.

Accommodate Incumbent 700 MHz Systems and Border Operations—Restructuring the 700 MHz band must accommodate and not strand the financial commitments to deploy infrastructure and equipment on the voice and data channels in reliance on the Commission’s rules. It must also provide border agencies adequate protection.

Recognize the Critical Value of the 700 MHz Voice Channels—Public safety’s 700 MHz narrowband voice channels, particularly when used in conjunction with the 800 MHz channels, are crucial to interoperability, which is overwhelmingly voice driven.

Resolve the Legal Questions Relating to Commercial Access to the Public Safety Segment—Any proposal allowing commercial services to use the 24 MHz committed by law to public safety must resolve the legality of such access and address the technical challenges to ensure that broadband operations do not interfere with public safety operations. Public safety entities must have unconditional access to public safety allocated spectrum and any non-public safety use of that spectrum must be subject to “ruthless preemption” at any time for any reason as determined at the sole discretion of public safety.

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10. Encourage training and SOPs that call for deploying COML early in an incident.
11. Expand the communications-specific parts of standard ICS training.
12. Develop ICS training specific to the dispatch function.
13. Conduct cross-discipline ICS training and promote federal support to do so.
14. Encourage ICS and NIMS training for the private sector and non-public safety technical personnel involved in critical incidents.
15. In order to enhance the communications function in the ICS structure, managing the communications component of an incident should be part of the ICS basic curriculum, to include the value, importance, and structure of communications in incident response.

Conclusion

In today’s efforts by public safety agencies to manage critical incidents in their communities, a critical success factor that is often talked about at debriefings is the communications component. It is important that agencies plan ahead and manage the technology and structure necessary to communicate effectively. The recommendations in this article are well founded by practitioners who have been involved first hand in the many types of significant incidents that happen throughout the country. It is their belief that the recommendations agreed upon in this Summit will strengthen the communications function in the ICS structure, and they are hopeful that many of them will be instituted in the future.

James D. Reutlinger is a Public Safety Technology Specialist with SEARCH, a multifaceted organization focused on helping identify and solve the information management challenges facing state and local justice and public safety agencies.



REGULATORY UPDATE

During this quarter, major Federal Communications Commission (FCC) activity centered on the proceedings to address final decisions regarding the structure of the 700 MHz band and to establish auction and service

rules for the remaining 60 MHz of unlicensed spectrum. In late April, the Commission released a Further Notice of Proposed Rulemaking (FNPRM) relating to the 700 MHz band. Within the range of issues addressing commercial use of the spectrum, the following are the most prominent for public safety:

Broadband Only—The Commission proposes to redesignate the wideband spectrum in the 700 MHz public safety segment to broadband use consistent with a nationwide interoperability standard and to prohibit wideband operations on a going forward basis. It would relocate and consolidate the 700 MHz public safety spectrum with the narrowband channels placed at the top of the public safety allocation and the broadband spectrum located at the bottom of the public safety allocation.

Eliminate Guard Bands and Place in Commercial Service—Relocating the public safety narrowband channels means that the four MHz of spectrum in the existing Guard Band B Block is no longer needed. These channels would be consolidated with the rest of the commercial spectrum. This relocation negatively affects public safety border operations as narrowband operations will be blocked by existing Canadian TV broadcasters. Canada has no existing plans to move broadcast operations off these channels. The Commission proposes a temporary easement of 1 MHz for public safety broadband use in the adjacent commercial block, which would allow agencies to conduct narrowband operations until Canada broadcast operations transition from channels 64 and 69. The proposal does not recognize that public safety systems would have to transition to new narrowband channels at costs to be absorbed by the agency. More significantly, the easement defeats the objective that the 700 MHz band reflect region and statewide interoperability as border agencies will be on different voice channels than agencies beyond the border zone.

Frontline—The Commission seeks comment on Frontline Wireless LLC’s proposal that the upper portion of the Upper 700 MHz Commercial Services Band be designated a 10 MHz “E Block” for a commercial licensee. The licensee would be required to construct and operate a nationwide, interoperable broadband network for sharing with the national public safety licensee, providing broadband service in the lower portion of the 700 MHz public safety spectrum. The details of the network would be specified in a Network Sharing Agreement negotiated by the “E Block” licensee and the national public safety licensee. The E Block licensee would be responsible for managing and operating the broadband network, and would be permitted to collect a reasonable network management fee. It would be required to provide priority access to public safety broadband operations during times of emergency on E Block spectrum.

Comments were due on May 23, 2007. The Commission is expected to make decisions during June. The positions of NPSTC and other interests can be found in the FCC’s online Electronic Comment Filing System under proceedings WT Docket No. 06-150, CC Docket No. 94-102, WT Docket No. 01-309, WT Docket No. 03-264, WT Docket No. 06-169, PS Docket No. 06-229, and WT Docket No. 96-86.



NPSTC’s Executive Director, Marilyn Ward, testifies before Congress.

Project 25 Phase Two Decisions Announced: The Back Story

By Craig Jorgensen

For nearly 9 months, detailed and complex Project 25 discussions have been underway to find the best way to meet the capacity needs of large and very large public safety users who operate in densely populated urban areas with little or no available spectrum. At the P25 meetings in April 2007, the P25 Steering Committee focused on two potential solutions and subsequently selected the 2-slot, 12 kilobit per second (kbps) Time Division Multiple Access (TDMA) proposal. These new Phase 2 extensions will be compatible with and enhance our existing P25 suite of standards. When completed, they will provide backward compatibility with the P25, Phase 1 platform as well as allow for a possible migration path to a 4-slot TDMA platform, if P25 users determine that option is needed.

The selected proposal represents both the majority of the work performed within the Telecommunications Industry Association (TIA's) TDMA Harmonization working group and the interim agreements made within that process. The harmonization process began as an effort to adopt the best individual parameters from all of the submissions we received. Two proposals were submitted to the P25 Steering Committee and forwarded to the P25 APCO Project 25 Interface Committee (APIC) TDMA Task Group for further consideration. As a result of their review and consideration, we determined we needed to find a methodology to harmonize the various perspectives of the proposals.

The APIC side of the P25 dual-track process is designed to work through core issues before documents and proposals are sent to the standards side of the process, the TIA Standards Committees. Within that process, decisions made by the Task Groups and Working Groups are forwarded for approval, acceptance, rejection, or modification to the APIC Committee as a whole, which is comprised of both users and product providers. Decisions made in the APIC environment are then forwarded on to the P25 Steering Committee for review, approval, rejection, or modification.

Representatives of our users, industry, and the P25 Steering Committee worked through the processes, issues, and questions that arose about the two primary proposals trying to find an optimal, composite performance level that was embodied in both proposals. Historically, the Steering Committee works for an extremely high level of agreement before they will approve a proposal. In January 2007, the P25 Steering Committee advised both APIC and the

TDMA Task Group that we expected consensus by April 2007 or we would select the proposal that we felt best fit public safety's long-term needs. Obviously, at the top of that list was the need to be able to solve spectrum shortage problems and meet the Federal Communications Commission (FCC) spectral efficiency mandate.

On April 27, 2007, the Steering Committee spent the better part of the day reviewing the opposing technical proposals, one based on the harmonized effort and one based on the preferred platform of other TIA partners. Both addressed public safety's short-term needs to meet the FCC legal requirements and both embodied concepts that would provide equivalent or nearly equivalent coverage to today's P25, Phase 1 standardized technology. In the end, the P25 Steering Committee decided our best solution to resolve current regulatory problems, improve audio quality, and to ensure we had adequate flexibility in the future was to reject a 9.6 kbps proposal and to accept a 12 kbps proposal that we feel will give us a better, more flexible, unobstructed path to the future.

The Project 25 Steering Committee is confident they have made the correct decision for the correct reasons and, while we understand not everyone may agree, we have taken steps to further clarify our desire to work within the TIA process, with our partners in TIA. However, in the unlikely absence of consensus in a reasonable amount of time in the TIA process, we are prepared to move forward with a suite of APCO Project 25 Standards that would be developed in cooperation with the National Institute of Standards and Technology (NIST).

I believe the public safety community can be extremely proud of the professional and ethical work our partners in industry perform for us. They have all been very forthright and candid, but they have all said before our decision and since our decision that they will continue to support the process. We recognize each company has a customer base that requires them to respond with products they want and that doing so does not constitute either a failure of the process or an indication of their support. On the contrary, it indicates the strength of both the process and, more importantly, the users we work for to be able to buy the technology they believe is best for their individual needs. I remain confident that will be P25-compliant technology.

Craig Jorgensen is the Project Manager for Project 25/34.

NPSTC's Governing Board: Changes at the Top

Glen Nash Steps Down as Technology Committee Chair

In June 2007, NPSTC's Governing Board officially recognized the departure of Glen Nash, long-time Chair of the Technology Committee. In March, Mr. Nash reported that he was resigning his role due to a job promotion and expanded responsibilities as Supervising Telecommunications Engineer, Engineering Services Section, State of California.

NPSTC's Chair, Vincent Stile, commended Mr. Nash for his years of service to public safety that includes over 34 years experience in the design, installation, and maintenance of land mobile radio and fixed microwave communications systems used by state agencies. For the past 20 years, he has been responsible for management of the state's spectrum resources, frequency coordination, and station licensing and he has represented the state on



Glen Nash

regulatory matters related to radio spectrum. Sean O'Hara said he had worked with Mr. Nash for a long time, as Vice Chair to the Technology Committee and as part of the Project 25 committees. He commended Mr. Nash for his work, saying, "He has reached out and touched public safety."

"Glen's willingness to share his deep understanding of the technical and operational aspects of public safety communications has been invaluable," said Robert Gurss, Director of Legal & Government Affairs, Association of Public-Safety Communications Officials (APCO).

Mr. Nash is one of a select group of Past-Presidents of APCO, a Fellow in the Radio Club of America, and a Senior Member of the Institute of Electrical and Electronic Engineers. He has been providing valuable input and advice to important policymaking bodies on behalf of public safety for many years. Mr. Nash served as the Chair of the Technology Subcommittee of the National Coordination Committee from 1999-2003. He also served on the National Task Force for Interoperability, the National Public Safety Planning Advisory Committee, Project 25, Project MESA, the 800 MHz Regional Planning Committees for Regions 5 and 6, and the Emergency Broadcast System Advisory Committee.

Tom Sorley Elected New Technology Committee Chair

Tom Sorley, Deputy Director of the Radio Communication Services, Information Technology Department, Houston, Texas, was unanimously elected to replace Mr. Nash as Chair. Mr. Sorley is currently leading the city of Houston's efforts to implement a new, state-of-the-art radio communications system. The project encompasses approximately 20,000 users and is estimated to cost between \$100-150 million.



Tom Sorley

Mr. Sorley has represented NPSTC on the Software Defined Radio Forum, and is an APCO Florida Past President and current APCO Executive Council member. NPSTC is proud to have him as a member of the leadership team.

NPSTC Honors Larry Miller for his Service

The former American Association of State Highway and Transportation Officials (AASHTO) representative to the Governing Board, Larry Miller was part of the original team that formed NPSTC and served for over 25 years as both an advocate for public safety telecommunications issues and as an administrator in public safety telecommunications as State communications officer and communications manager for the West Virginia Office of Emergency Services and Department of Transportation in 1979, where he was responsible for the management and operation of a statewide wireless telecommunications system. Mr. Miller served as AASHTO Frequency Coordination Manager from 1990 until 2006.

Chief Harlin McEwen Will Represent IACP on Governing Board

Chief Harlin R. McEwen, Vice Chair, NPSTC, announced in March 2007 that he would not seek re-election to NPSTC's Executive Committee. NPSTC is pleased to announce that Chief McEwen will continue to provide his valuable expertise as a representative of the International Association of Chiefs of Police (IACP) to the Governing Board.

Chief McEwen, winner of the DeMello award last year, participated on the Public Safety Wireless Advisory Committee and as a member of the Steering Committee of the FCC Public Safety National Coordinating Committee and was a leader in creating NPSTC.



RPCs

NPSTC's RPC Committee Offers Training Opportunities ...

By Richard Reynolds

NPSTC's Regional Planning Committees (RPC) Committee has been providing first class training sessions at the NPSTC quarterly meetings for the last 6 months and will continue to do so. These opportunities provide Computer Assisted Pre-coordination and Resource Database System (CAPRAD) refresher training and training on propagation modeling techniques that have been offered to all 55 RPC officers and their active voting members across the country at no cost to the attendees.

Over 2 years ago, the NPSTC Governing Board created its fourth standing committee to provide a voice to the nation's Regional Planning Committees. The NPSTC RPC Committee now has 10 active Committee members and several active Working Group members who provide direction that is representative of the 55 nationwide RPCs in matters related to the 700 MHz and 800 MHz bands for which they are responsible.

The most recent training session to be held on June 11, 2007, at the NPSTC meetings in Denver, Colorado, promises to be heavily attended and offers the most diverse selection of training events on the agenda to date.

Training begins at 8:00 a.m. with a session on TIA TSB-88 Based Frequency Coordination for RPCs, an introduction into the art of using advanced spectrum management techniques from TSB-88 and beyond to efficiently and accurately manage 700 MHz spectrum within the RPCs. The discussion will also provide an overview of how these are put into practice in Regions 8, 30, and 55. Following this session is a discussion of the Joint Coordination of Narrowband, Wideband, and Broadband Systems.

The training will also include a discussion of short spacing TV prior to the DTV transition, a regulatory update, an 800 MHz rebanding roundtable discussion, and update on CAPRAD.

As you can see, this is a fast-paced, action-packed agenda with plenty of information for those who just have to know. If you were one of the RPC attendees at the November training session in Long Island, New York, and found this format for training to be helpful and beneficial, we would ask that you please spread the word in your own region to encourage other RPC committee officers and voting members to attend the next training session. It is only through your continued participation that we will be able to continue offering these training sessions.

In closing, I would offer any of the RPC Committee members reading this article the opportunity to attend the next training sessions at no cost to you. If interested, please send your request to travel@npstc.org for assistance in making your travel arrangements to the next NPSTC RPC training.

Richard Reynolds is Chair of NPSTC's RPC Committee.



The Interoperability Formula: An RPC's Perspective

By John Johnson

Television shows like *Numb3ers* and a daughter studying Calculus 2 at the University of Memphis made me start wondering if there could be a mathematical formula for effective interoperability. So while stuck in traffic driving into the radio communications office in Nashville one morning, the answer came to me. $I = (2P + 2T) \times R$, where I equals effective interoperability. In order to understand the formula, we will have to break it down one letter (factor) at a time.

The first "P" stands for Planning. "Failure to plan is planning to fail" is a saying I have heard many times in Emergency Management. Planning should involve various public safety disciplines and levels of government, critical infrastructure operators, and the amateur radio community. Planning should incorporate how to integrate interoperability into the daily emergency response system, identify the mutual aid channels in the area, incorporate the interoperability channels, standardize channel names, and fit into the National Incident Management System (NIMS) and Incident Command (IC) structure.

The second "P" stands for Policy. Whether we are referring to a good governance policy or Standard Operating Policy (SOP), these policies are a must. These policies must govern when to request, how to request, how to deploy, how to operate and, just as important, how to deactivate. A good governance policy on the front end can resolve many problems down the road.

The first "T" stands for Training. Let's face it, radio systems are not becoming easier, they are more complex. Radio communications training must become as important as firearms training, EMT/Paramedic recertification training, or any other required annual training. During times of emergency, crisis, and disaster, our training is what we rely upon. So do not wait for the disaster to strike to read the manual, get the device off the shelf, and have a training session. NIMS/ICS training, technical training on equipment, and (hopefully soon) Communications Unit Leader training are other essential training elements. Practice and exercises are the other essential components of training.

The second "T" stands for Technology. This is the part of the formula that many focus on because it is something money can buy. Booths at trade shows are overflowing with the words "Interoperability Solution." Vendors call to

make appointments to show us their answers to interoperability. I believe advances in technology drew us away from interoperability and the use and importance of mutual aid channels. Technology can be a "tool in our tool box" and certainly help us to be interoperable again, but technology alone is not the answer.

This brings me to the final factor, the "R" factor. In the interoperability formula, all the factors (2P and 2T) are multiplied by the "R"

factor. The R factor is Relationships. We must establish and build working relationships within our own disciplines and across disciplines. We must develop good relationships with our city and county counterparts, with our counterparts across the state lines, those

on the federal side, volunteers, and our suppliers and vendors. The relationship factor is the most important part of the formula. Without the "R" factor, we can build the most reliable communications system, we can get all the grant funding in the world, we can get all the technology in the world, but if we can not learn how to get along with each other and work with each other, interoperability is never going to go forward. Planning, policy, training, technology, and, most importantly, building relationships must all come together to foster effective interoperability.



John Johnson is the RPC Committee's Regional Representative for the Gulf Coast.

Managing Narrowband, Wideband, and Broadband Technologies: NPSTC Guidelines for Regional Planners *By Sean O'Hara*

The demand for broadband has created a need for us (public safety folks) to restructure our own spectrum allocations in order to support wider bandwidth channels. Over the last several years, this has led to a tremendous amount of activity on behalf of the public safety community and the organizations that represent them. Especially pressing has been the need to communicate their changing needs to the FCC and to seek effective and creative solutions for getting these needs met. The spectrum that is at the center of all this activity is the commercial and public safety upper 700 MHz band allocations.

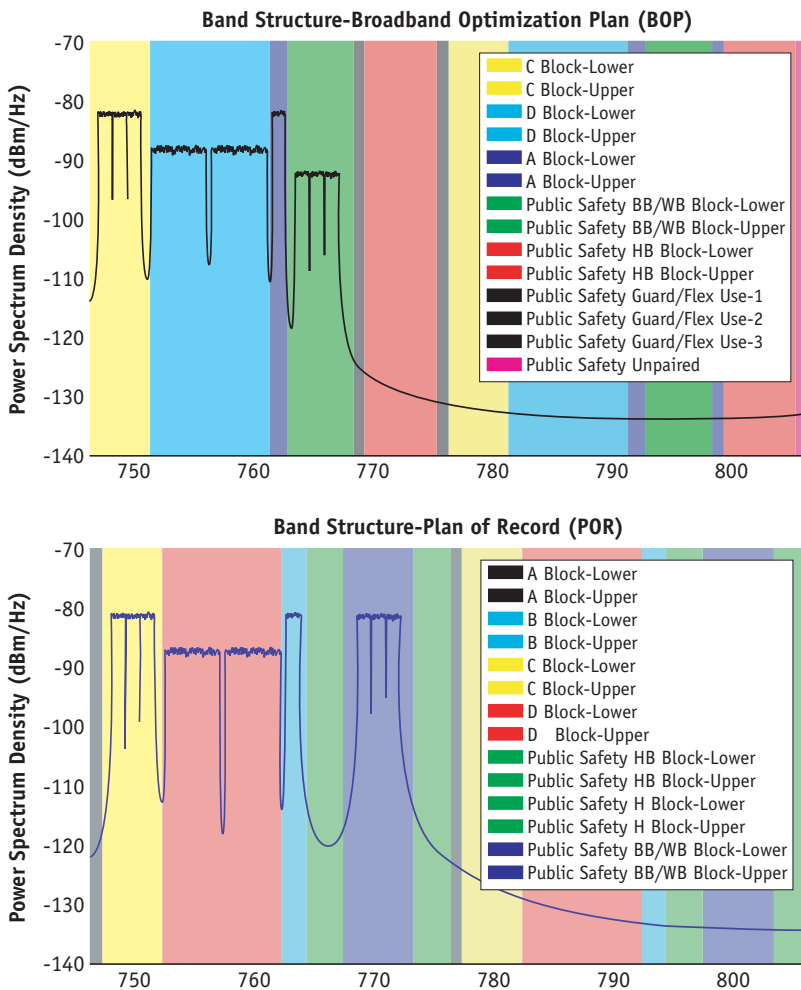


Figure 1: A Changing 700 MHz Band

The debate on how best to structure and manage the 700 MHz allocations to support these diverse needs is far from over, but two events are certain; (1) the 700 band will be structured, and (2), public safety will need to manage the coexistence of narrowband (NB), wideband (WB), and broadband (BB) operations. Figure 1 illustrates how the band is evolving under just one of the many band proposals.

Limited Spectrum Requires Effective Management Strategies

Due to these diverse needs and new technologies, 700 MHz spectrum will need to be deployed for more flexible use and with a greater variety of bandwidth configurations. As a result of this, system planners and Region Planning Committees (RPCs) have had to start to adapt to new techniques and requirements for spectrum management. These include not only a more detailed tile-based approach (as opposed to contours) to coordination, but also new rules and techniques for managing technology coexistence across the entire 700 MHz allocation. This whole process has gotten quite complicated and we clearly have an immediate need to manage these issues. If not managed effectively, interference will result, regional capacity will drop, and deployment flexibility will not be achievable. Figure 2 shows an example of a county where 700 MHz broadband cellular-like operations need to coexist with 700 MHz narrowband mission-critical voice communications.

NPSTC Provides Guidance

NPSTC has stepped up to provide assistance to the RPCs by helping introduce these techniques and requirements for handling coordination and coexistence of diverse 700 MHz technologies. Included in these resources will be a document containing guidelines for managing inter-and intra-technology coexistence within the 700 MHz spectrum resources. These guidelines were developed through collaboration with industry as well as public safety and include significant input from the Regional Planning Committees who have already invested considerable time in these areas.

NPSTC will be making this available in the summer of 2007. These final guidelines will be written so they can be adapted by the RPCs without them having to

continued on page 13

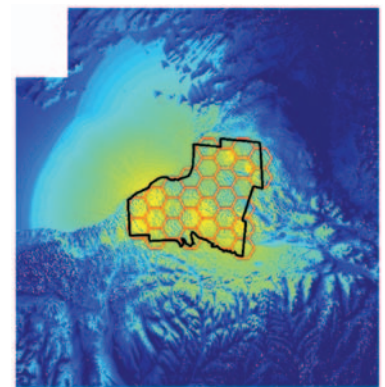


Figure 2: Mixed Use of Narrowband and Broadband within a County



STECs

Statewide Communications Plans are Key for Interoperability

In late March, NPSTC was proud to co-sponsor an important workshop on statewide planning for public safety communications interoperability with the National Governors Association (NGA) Center for Best Practices. The purpose of the workshop, supported by Department of Homeland Security (DHS's) Office of Interoperability & Compatibility (OIC) SAFECOM program, was to provide guidance to states on developing and adopting a statewide emergency response communications interoperability plan.

Interagency communication problems have been identified in every major incident over the last 10 or more years. The next round of federal grant dollars requires states to develop statewide communications plans that include counties, cities, and local districts. National guidelines for statewide planning require prior planning that helps to ensure that grant funds are spent on specific solutions in accordance with those plans.

SAFECOM recommends that states, through their governors, other state and local policymakers, and local emergency responders, use a statewide strategic planning process that gathers the perspectives of all emergency responders. By using a practitioner-driven approach that involves local, tribal, state, and federal stakeholders, a strategic plan will be developed to meet the needs of end users who are more likely to adopt such a plan.

SAFECOM has published criteria for statewide interoperability plans, designed to assist states in meeting fiscal year 2006 Homeland Security Grant Program requirements, which requires that all states develop and adopt a statewide communications interoperability plan by December 2007. The criteria provide an opportunity for partnership among local, tribal, state, and federal entities, states SAFECOM's guidance. Each has a critical role to play in the development of a strong statewide, locally driven interoperability plan that has the best chance of success for improving interoperability.

The detailed criteria checklist is organized by ten major components of the statewide interoperability plan, including—background and preliminary steps, strategy,

methodology, governance, technology, SOPs, training and exercises, usage, funding, and implementation. The statewide interoperability plan criteria are available on the SAFECOM website. A template document, *A Statewide Interoperability Planning Guidebook*, posted on the SAFECOM website, <http://www.safecomprogram.gov>, provides explanations of the criteria and guidance on how to write the Plan as well as a recommended outline for states to apply to their statewide plans.

Coming Soon

NPSTC is pleased to announce a new initiative headed by the Statewide Interoperability Executive Committee (SIEC) Working Group that should be accessible by the end of the summer, called NIIX or the National Interoperability Information Exchange. NIIX will comprise a database that houses statewide plans for the local community. These plans are a requirement to receive federal grant dollars from the Public Safety Interoperability Grants (PSIG), administered by the Commerce Department. States will be contacted as the system is created for user input.

Guidelines for Regional Planners continued from page 12

develop their own. They will contain:

- Coordination procedures,
- Deployment recommendations (power flux limits, minimum desired level targets, etc), and
- Interference mitigation procedures.

In addition to the Coexistence Guidelines themselves, NPSTC has been and will continue to provide training sessions for regional planners. First held at the NPSTC meetings earlier this year, these training sessions include both tile analyses-based frequency coordination techniques, and managing and coordinating NB, WB, and BB operations – both between public safety and between public safety and commercial operations. Keep an eye out on the NPSTC website, www.npstc.org, for the latest schedule on these training sessions, and contact Mark Schroeder, Chair, RPC Committee, Software, Tools, and Training Working Group, for additional information and/or resources that are available.

Sean O'Hara is a member of NPSTC's Technical Support Team and Broadband Task Force.



Member SPOTLIGHT

AAHSTO: From Horseless Carriages to Transportation Fusion Centers

By William Brownlow

Our world was rapidly changing in 1914. War had broken out that summer in Europe with the assassination of Archduke

Ferdinand and his wife, Sophie, in Sarajevo. As hostilities started in Europe, America responded by increasing production to meet the demand for war materials. With the growing economy, Americans were beginning to buy more “horseless carriages” and the demand on our roads and highways increased. It was in this environment that 14 state highway engineers met in Atlanta, Georgia, to discuss the creation of an association to address the unique concerns of the public officials responsible for “getting America out of the mud.” Those 14 state highway engineers called on all their colleagues to attend the new association’s first official meeting the following month in Washington, DC. There, 36 engineers and directors agreed to form the American Association of State Highway Officials (AASHO) as a forum to address highway issues and to promote state priorities at the national level.

That meeting set the tone for the association’s voice, vision, and values in the decades since, seen in AASHO’s first formal action to approve a legislative proposal authorizing participation of the federal government in highway construction. That proposal laid the groundwork for the historic Federal Aid Highway Act of 1916. Since then the association has built on that state-federal relationship to strengthen and sustain our national highway and transportation system, including the advocacy of landmark federal legislation that launched the Interstate system in 1956.

Recognizing the changing role of transportation and the need to better represent the five primary modes of transportation—surface, air, water, rail, and public, AASHO became the American Association of State Highway and Transportation Officials in 1973. Under AASHO leadership, each state has developed emergency plans for the evacuation of cities and towns. These evacuation plans are often used to clear crowds from major sporting or cultural events. Under the Intelligent Transportation Systems umbrella, AASHO is working with many different public and private agencies in providing real-time traveler’s information from remote weather information stations, traffic cameras, and traveler information radio stations across the country.

Today, state departments of transportation operate most of the nation’s major airports, its passenger rail systems, ports, and ferries. Until recently, many state police agencies were under their respective state Department of Transportation (DOT) providing for the safety of the traveling public. State DOTs operate fire departments and police operations at many facilities including airports, rail centers, and ports. DOT personnel are called upon to provide the muscle needed to rescue people from floods, mudslides, brush and forest fire areas, and those trapped by snow and blizzards. Police, fire, and EMS units everywhere rely on their local DOT operations personnel to open and keep open the roads, bridges and tunnels under all kinds of conditions.



AASHO is on the cutting edge of public safety communications technology by building “fusion” centers housing traffic control, emergency operations, public safety answering points, and dispatch centers in a single, integrated facility sharing the wealth of information available from the DOT network of road sensors and cameras with police, fire, and emergency management agencies. Working with other standards organizations, AASHO is writing and testing the standards used for a nationwide network integrating low-power vehicular and roadside transceivers. Not only will VII, or Vehicle Infrastructure Integration, make our roads and streets safer, it will allow emergency responders to automatically receive information regarding traffic and roadway conditions within their immediate area. This network also allows changing traffic signals for emergency vehicles giving them the green light as they respond to an emergency.

AASHO, through its Special Committee on Wireless Technology (SCOWT) and predecessors has been involved in radio frequency communications and associated systems since 1953. AASHO has served as the Federal Communications Commission’s certified frequency coordinator for the Highway Maintenance Radio Service since 1983. AASHO is certified to coordinate the shared Public Safety Pool including the 700 and 800 MHz band Public Safety frequencies.

William Brownlow represents AASHO on NPSTC’s Governing Board.

NPSTC 700 MHz Broadband Questionnaire

By Emil Olbrich, Joe Ross, and Andrew Thiessen

The NPSTC Broadband Interoperability Working Group is working to determine which broadband standard or standards should be supported to achieve national interoperability. The group created and commissioned a web-based 700 MHz Broadband Questionnaire to identify user needs and requirements—the first major step in understanding which solutions are required to meet the national public safety needs. The 25-question assessment was launched on January 22, 2007, and closed on February 28, 2007. Specific care was made to assure that only public safety personnel responded to the survey, and an additional push towards the end of February resulted in responses representing more than 300,000 public safety users. A broad cross-section of public safety segments submitted responses; however, law enforcement and major cities were under represented. This may impact some results as these groups are expected to be significant broadband users.

The results show that there is an overwhelming need for interoperable broadband data and an urgent need to develop interoperable solutions. Respondents indicated that they plan to provide broadband access to 48 percent of all users in the next 5 years; 96 percent of all respondents want broadband capability. Only 27 percent of users have broadband access today, indicating a significant pent-up demand and growth in public safety broadband usage. More than 90 percent of all respondents rated broadband interoperability as “somewhat important to critical”

with three-fourths of respondents indicating it was “important, very important, or critical.” Finally, the majority of respondents (56 percent) are likely to build/operate their own 700 MHz broadband network; almost all were willing to build shared networks; and 22 percent anticipate deployment within the next 4 years. Despite this



great need, there are critical hurdles for adoption—the cost of current commercial services, the cost of wide area public safety solutions, and the lack of wide area broadband spectrum.

The most important data applications were Automatic Vehicle Location (AVL), Geographic Information System (GIS) services, field reporting, and email. Cell phones were the most used wireless device cited by respondents by a fair margin; however, future use was evenly distributed between ruggedized and non-ruggedized Personal Digital Assistants (PDAs), and laptops, cell phones, AVL, and Mobile Data Terminals (MDTs). Most respondents wanted peer-to-peer (direct mode) to be an optional requirement in devices. Direct mode applications that were of interest included text messaging and file transfers.

Interoperability is essential to managing the limited resources—spectrum and money—for public safety. Standards will be critical to deliver interoperability between public safety users, commercial users, and commercial networks as needed. No single system specification document exists for manufacturers or public safety to reference and build broadband systems that meet user needs and requirements and delivers the needed national interoperability. The Broadband Interoperability Working Group is leveraging these questionnaire results to develop this specification and to assist in the evaluation of 700 MHz broadband technologies. This evaluation will allow public safety to make a technology selection, which ultimately will provide the needed specifications for more affordable nationwide interoperability.

Emil Olbrich, Joe Ross, and Andrew Thiessen are members of the Broadband Interoperability Working Group.

IMPORTANT DATES 2007

DATE	EVENT	LOCATION
July 31-August 4	P25	Baltimore, MD
August 4-9	APCO	Baltimore, MD
August 16-22	IMSA	Louisville, KY
August 23-25	IAFC	Atlanta, GA
September 10-12	SDR Forum	TBD
September 24-26	NPSTC	Washington, DC
September 27-30	AAHSTO	Milwaukee, WI
September 30	FCCA	Charleston, SC
September 30	NASCIO	Tucson, AZ
November 12-14	NPSTC	Atlanta, GA

Publication Information

npstc spectrum is the newsletter of the National Public Safety Telecommunications Council (NPSTC). Our goal is to promote greater interoperability, cooperation, and information exchange between local, state, and federal public safety agencies nationwide. Funding for the NPSTC newsletter is provided by the Department of Homeland Security, SAFECOM Program. *npstc spectrum* is published quarterly. We welcome questions, comments, and story ideas. Please contact the Support Office at 866.807.4755 or by email at info@npstc.org.

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