NPSTC

NATIONAL PUBLIC SAFETY TELECOMMUNICATIONS COUNCIL

National Public Safety Telecommunications Council (NPSTC)
Governing Board Meeting
San Antonio, Texas
November 13-14, 2014

November 13, 2014
Welcome, Ralph Haller, NPSTC Chair

Ralph Haller, Chair, National Public Safety Telecommunications Council (NPSTC), called the meeting to order and called the roll, establishing a quorum was present. He welcomed Jim Holthaus, the Telecommunications Industry Association (TIA) alternate representative to NPSTC's Governing Board. Mr. Haller thanked Klaus Bender, former Utilities Telecom Council (UTC) representative, for his service, and welcomed new Board representatives, Brett Kilbourne, and alternate Michael Oldak. Mr. Haller thanked Jack Doane for his service on behalf of the National Association of State Telecommunications Directors (NASTD) and the National Association of State Information Officers (NASCIO).

Marilyn Ward, Executive Director, thanked the International Association of Emergency Managers (IAEM) for providing the complimentary space for the meeting. She thanked the American Radio Relay League (ARRL) for the excellent article explaining how NPSTC works in their recent publication and the Department of Homeland Security's (DHS) Office for Interoperability and Compatibility (OIC) and Office of Emergency Communications (OEC) for providing their support to NPSTC.

On behalf of NPSTC, Mr. Haller and Seth Newberry, representing the Open Mobile Alliance (OMA), signed a Memorandum of Understanding defining the relationship between the two organizations. Frank Korinek, OMA alternate, said OMA will assist in the creation of standards for mission critical voice over broadband.

Federal Partners Update

Department of Homeland Security (DHS), Cuong Luu, Program Manager, Office for Interoperability and Compatibility (OIC): Mr. Luu, reporting on behalf of John Merrill, discussed recent work at OIC. DHS recently awarded a grant to the Association of Public Safety Communications Officials – International (APCO) to manage two programs--the Project 25 Compliance Assessment Program (CAP) and the CAPRAD [Computer Assisted Pre-coordination and Resource Database System] program. OIC and APCO are considering re-launching the CAP Governing Board. OIC will release a series of CAP bulletins to establish policy. The website has been hosted by the Federal Emergency Management Agency (FEMA), but will relocate to another site, to be determined.

OIC is supporting an LTE pilot project, working in Chicago to integrate and test broadband technology used for video surveillance and crime mapping. OIC will use lessons learned with the public safety sector to facilitate actual deployment. OIC has developed a 100-second video in its First Responders Group on how first responders and subject matter experts work together to guide the development of new

technologies based on identified needs. Mr. Luu presented a second video, VQiPS in 100 seconds, describing the work of the OIC's Video Quality in Public Safety advisory group to guide public safety on video needs.

DHS, Chris Essid, Deputy Director, Office of Emergency Communications (OEC) by teleconference: Mr. Essid thanked NPSTC for the invitation to present. OEC recently unveiled the updated National Emergency Communications Plan (NECP) that rolls out a new "emergency communications ecosystem." The work NPSTC does is critical, Mr. Essid said. While the NECP makes it clear LMR will provide mission critical voice in the foreseeable future, new drivers and needs have created a new landscape encompassing NG9-1-1, broadband, mobile apps, social media, alerts and warnings, and the public's expectations. Citizens have a lot of data to share with public safety; how do we handle that data. Much broadband is already being implemented. OEC is studying the impact and effect on the COML [Communications Unit Leader], how we incorporate the new landscape into processes and SOPs [Standard Operating Procedures], and how OEC can assist FirstNet to achieve its goals. OEC is coordinating its efforts with NPSTC, FirstNet and its Public Safety Advisory Council (PSAC), and the National Council of Statewide Interoperability Coordinators (NCSWICs).

Interoperability Discussion, John Lenihan, Chair

Chief Lenihan asked the Governing Board to approve Don Root as Vice Chair for the Interoperability Committee. Motion and Vote: Bill Brownlow, American Association of State Highway and Transportation Officials (AASHTO), moved to approve Don Root as Vice Chair, Interoperability Committee. Paul Szoc, International Municipal Signal Association (IMSA), seconded the motion. Unanimously approved.

Chief Lenihan discussed the challenges presented by digital technologies that do not interoperate with Project 25 technology. NPSTC recently updated an earlier position paper on this problem yet-to-be published. The public safety and vendor communities have worked in partnership for nearly 25 years to develop a standard for digital radios that will remove the technical barriers that have historically hampered interoperability efforts. The resulting suite of standards known as P25 has been adopted and widely implemented by public safety agencies. P25 is not the only digital land mobile radio technology available. Digital LMR technologies such as DMR, MPT1327, and TETRA are widely used outside the U.S. and hold the dominant market position in other parts of the world. Recently, some public safety and critical infrastructure agencies in the U.S. have been opting for these and other disparate technologies that are not compatible with P25. The use of incompatible equipment will create a barrier to achieving interoperability.

Despite the performance of other technologies, if they do not interoperate, it is a problem, Chief Lenihan said. The National Incident Management System (NIMS) Guide NG 0004 states: Incident communications are facilitated through the development and use of common communications plans, interoperable communications equipment, processes, standards, and architectures. For government to integrate its collective services and critical infrastructure agencies under Unified Command, all disciplines must adhere to the five recommended standards of NG 0004. One of those standards is National Fire Protection Association (NFPA) 1221 that specifies P25 equipment. Additionally, the Federal

Communications Commission (FCC) recently ruled on 700 MHz, requiring P25 digital capability on all 700 MHz interoperability channels.

Motion and Vote: Harlin McEwen, International Association of Chiefs of Police (IACP), moved to approve the amended position paper, which will have a footnote on the FCC requirement for P25 digital capability on the 700 MHz interoperability channels added. Aaron Kennard, National Sheriffs' Association (NSA), seconded the motion. Unanimously approved.

EMS Working Group Working Group, Paul Patrick, Chair: Mr. Patrick reported on the recent activities of the EMS Working Group. The group began working on EMS video requirements in November and reviewed Ebola procedures for EMS/Dispatch in October and Stateside EMS Communications Plans in September. The EMS group facilitated a training session on radiologic emergencies for the Association of State and Tribal Health Officers. Earlier they completed an EMS broadband survey on local control issues directed at EMS personnel who had a basic knowledge of LTE but not much technical understanding. The survey was designed to get raw feedback on issues only, and was not statistically significant. Highlights:

- There was confusion over the difference between emergency and immediate peril functions.
- There was keen awareness of the need for standardized priority levels at local, regional, and national levels, but a lack of consensus that a dispatcher should play a role in managing LTE priority in early stages of an event.
- Most believe a COML can manage priority changes at the scene, but a statewide network operations center (NOC) would be beneficial in helping to manage dynamic priority.
- They are aware of the difficulties involved in coordinating local, regional, state, and federal agencies.

John Wright, APCO, asked if there was a distinction between dispatchers and certified emergency medical dispatchers regarding the survey question on managing LTE priority. Barry Luke, NPSTC Deputy Director, said the EMS Working Group was asked basically whether a dispatcher in the PSAP should manage all the moving pieces. Half of those surveyed thought they should, but half said it would be too technically complex.

Common Channel Naming Working Group, Don Root, Chair: Mr. Root provided an update on the Common Channel Naming Working Group. With FCC release of the Report and Order on 700 MHz, the Working Group was reconvened to revise *APCO/NPSTC ANS 1.104.1-2010: Standard Channel Nomenclature for Public Safety Interoperability Channels*. The revision will include these changes.

- Delete original National Coordination Committee (NCC) names column from Tables 1 and 2.
- Revise/integrate "short names" from Table 3 into Tables 1 and 2.
- Add common name for Search and Rescue (SAR) use of 155.1600.
- Adopt common names for 700 MHz air-to-ground channels.
- Revise 700 MHz table to reflect other changes in 700 MHz Report and Order.
- Update Eligibility/Primary Use descriptions and Limitations columns.

Revisions will follow the American National Standards Institute (ANSI)/APCO process for ANS standard development and revisions. In response to a question about the National Interoperability Field

Operations Guide (NIFOG), Mr. Root said at the time the FCC released the 700 MHz Report, Ross Merlin, editor of the NIFOG, had already sent revisions for Version 1.6, which was to be sent to the Government Printing Office for printing. Some of the channel naming revisions were included in the NIFOG but not all. John McIntosh, Association of Fish and Wildlife Agencies (AFWA), asked about the SAR channel which is universally used for Search and Rescue in the west and whether NPSTC had considered asking the FCC to designate it for that use. Mr. Root said this has been discussed, but there are other, non-SAR users on the frequency. Chief McEwen added there has been discussion in the past, but because use of that channel is not nationwide or universal, NPSTC decided not to make that request.

Cross Border Working Group, Barry Luke, NPSTC Deputy Executive Director, and Terry LaValley, Chair, by teleconference: Mr. Luke reported the Working Group has submitted a draft white paper on the history of border issues between Canada and the United States to the Governing Board. The report provides a summary of current issues, overview of the regulatory environment, a list of cross-border interoperability excellence, and the creation of a document library. The Cross Border report will be reviewed for further feedback at the Canadian Interoperability Technology Interest Group 8 (CITIG) conference in early December, and then presented to the NPSTC and CITIG boards for formal approval, to be presented to the CANUS [Canada/US] Communications Interoperability Working Group (CIWG).

The FCC and Industry Canada (IC) issued an agreement on the use of portable radios at and across the border that covers both voice and data devices and allows radio caches across each border. The FCC and IC also have an administrative process update pending to coordinate licensing of cross border infrastructure. Existing regulatory processes will allow cross border infrastructure and both agencies will develop a way to manage the required paperwork.

Use of Montana's VLAW31 common interoperability channel designation with Canada has been expanded. Montana has asked the FCC for a waiver to allow all public safety agencies to use this law enforcement channel by all public safety agencies within the state and across the border. The Working Group would like to extend this process to other western states along the Canadian western border. In the eastern Canadian border states, public safety is working to identify a common channel to work similarly. As Mr. Luke and Mr. Christensen, IC, have researched the former and remaining channels, they have found that public safety has engineered individual processes and pre-approvals to facilitate interoperability across the borders.

Radio Interoperability Best Practices Working Group, Mark Schroeder, Chair, by teleconference: Mr. Schroder said the Working Group has developed 12 best practice statements, using a standard template to record each, which are aligned with the lanes of the SAFECOM Interoperability Continuum. The template records the best practice statement, a statement of importance, an incident use case, supporting elements, and how it relates to the continuum regarding SOPs, Governance, Technology, Training/Exercise, and Usage. The following process is followed as each Best Practice is developed.

- Idea submitted and reviewed by the Working Group and Sub Group Chairs to determine its suitability for a best practice.
- Suggestion sent to a Sub Group to create draft best practice document.
- Entire Radio IO BP Working Group reviews draft and provides input.
- Sub Group updates document based on input.

- Radio IO BP Working Group conducts final review and approves document.
- Draft Best Practice published for open comment period to entire Interoperability Committee membership.
- Copy sent to DHS-OEC and DHS-OIC to confirm consistency with NECP and other documents, including COML/COMT/COMU curriculum.
- Comments received from open comment period reviewed in Radio IO BP Working Group (or Sub Group depending on quantity of comments received).
- Full Radio IO BP Working Group approves document as a final draft.
- Final draft Best Practice forwarded to NPSTC Governing Board for review, comment, and approval. Governing Board comments may result in update cycle.

The approved Best Practice will be posted to the NPSTC website and an outreach announcement message is generated by NPSTC for broad distribution, including the SWICs and other public safety associations represented on the NPSTC Board.

In response to a question from Billy Carter, National Regional Planning Council (NRPC), who asked if the Working Group will concentrate on the use of interoperability channels and alternatives, Mr. Schroeder said the EMS Working Group is not working on technical standards. Mr. Luke said the Working Group had hoped to have a report for Governing Board approval by this meeting, but in the process of working on best practices, the Working Group has determined it would be more beneficial to bring a series of best practices to be approved and published as they are developed rather than creating a static report.

NFPA 1802 and NFPA 1221 Update, Doug Aiken, NPSTC Vice Chair, by teleconference: Chief Aiken provided an update on the status of National Fire Protection Association (NFPA) standards 1802 and 1221. John Facella joined the call to report on NFPA 1802, Standard on Personal Portable (Hand-Held) Two-Way Radio Communications Devices for Use by Emergency Services Personnel in the Hazard Zone. The objective of 1802 is to define a *minimum performance standard* for portable radios for use in firefighting in the hazard zone. The purpose of this standard is not to define interoperability issues nor to cover systems or dispatch issues which are covered in NFPA 1221. FirstNet LTE devices are being considered but may not be included in this first issuance.

Part of the impetus to create this new standard came from the San Francisco Fire Department after a dual line-of-duty death (LODD) in a residential structure in 2011. One of the contributing factors was that the portable radio speaker microphones failed in the high heat (550 to 700 deg. F) and as a result there was no distress call from the two firefighters. The NPFA committee will have primary responsibility for documents on the design, performance, testing, and certification of electronic safety equipment used by fire and emergency services personnel during emergency incident operations, and will also have primary responsibility for documents on the selection, care, and maintenance of electronic safety equipment.

This is an ambitious undertaking because it is a brand new standard. Three meetings were held in 2013, two have been held in 2014 to date, and the next meeting is scheduled for November 18-20, 2014, in Tucson. The timing of the release of this standard has not yet been determined, but it is at least a year or two away. Issues under consideration include testing, physical environment including heat and

water, user ergonomics, programmable features, intrinsically safe, audio intelligibility in both analog and digital P25 modes, SCBA interfaces, and many others.

Ms. Ward asked how this related to the work on the Intrinsically Safe (IS) standard NPSTC has already done. Mr. Facella said NFPA is not creating a new IS standard. The revised 1802 will name an existing IS standard which will become part of 1802.

Chief Aiken discussed NFPA 1221: Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems. The current standard is the 2013 edition. The 2016 edition just completed the second review and is awaiting ballot by the technical committee. The second review document will be published on the NFPA website under the "Codes and Standards" tab. NFPA Membership will vote on the new edition in Chicago in June. If adopted, the 2016 edition will be available in the fourth quarter of 2015. NFPA 1221 will cover the installation, performance, operation, and maintenance of public emergency services communications systems and facilities. It will not be used as a design specification manual or an instruction manual.

The Committee on Public Emergency Service Communication is seeking members in the interest classifications of Installer/Maintainer, Applied Research/Testing Laboratory, Insurance, Consumer, Enforcer, Labor, Manufacturer, and Special Expert. The standard includes chapters on Communications Centers.

- Communication and Signal Wiring
- Emergency Response Facilities
- Operations
- Telephones
- Dispatching System
- Computer Aided Dispatching (CAD) Systems
- Testing
- Records
- Data Security
- Public Alerting Systems
- Annex Material

Significant additions to the 2016 standard include:

- The requirements for In-Building Radio Enhancement Systems will move from NFPA 72 while the National Fire Alarm and Signaling Code will move to NFPA 1221.
- It will include pathway survivability.
- The 1221 technical committee will address significant updates to this area in subsequent editions.

Chief Aiken noted in the proposed 2013 Edition updates, if an asterisk follows the number, there is attached explanatory material in an annex. The annex material includes "should" recommendations while the individual line is a "shall." Chief Lenihan asked if there is a distinction between user and consumer. Chief Aiken said he will provide that information to Mr. Luke.

Topical Presentations

State of Texas Interoperability and Broadband Update, Todd Early, Deputy Assistant State Director, State of Texas Department of Public Safety: Mr. Early provided an overview of the state of communications in Texas. There are over 6,500 agencies in the state. Communications have evolved

from the 1930s, when Texas state and local dispatchers used radio encoders to patch disparate radio channels for emergency response incidents, to 2001, when the state established the Texas Interagency Radio Work Group which had MOUs with the Texas Departments of Public Safety, Transportation, Parks & Wildlife, Alcoholic Beverage Commission, Department of Criminal Justice, Forest Service, Youth Commission, and Sheriff's Association.

In 2003, the Texas Immediate Interoperability Plan expanded the original MOU. In April 2005 the state wrote its original Tactical Interoperable Channel Plan (TCIP), which has been modified to the 2014 current Texas Statewide Interoperability Channel Plan (TSICP) that incorporated a mobile satellite talkgroup and a statewide radio ID plan. Texas has developed a statewide subscriber allocation chart to assign radio IDs. This will become a best practice that will allow subscribers to pre-program radio IDs before a disaster to allow quick access as a situation occurs.

In 2007, Texas developed and institutionalized an annual Regional Focus Group Interoperability Survey template. Statewide Communications Interoperability Plan (SCIP) initiatives are based on input from the focus group sessions. This also provides input for their reporting to OEC. In 2009, the Communications Coordination Report was developed to provide an integrated state approach for ensuring communications coordination both prior to and immediately following a tactical and/or infrastructure event, including man-made and nature-produced emergencies.

In 2009, Texas began Round 1 of the Regional Interoperable Communications Plans (RICPs) which included regional governance and SOPs. The Regional Focus Groups provide the information reported to the Texas Legislature to discuss funding gaps, a breakdown by recipient of federal grant funds distributed by the state, and the interoperability level by county (based on Texas Interoperability Maturity Model). RICP Round 2, in 2011, focused on future system design, migration, and budget/gap analysis.

In 2012, Texas kicked off its public safety broadband education and outreach program. They applied for a statewide waiver in 2011 and received it but it was canceled as FirstNet was stood up. They are working under Special Temporary Authority (STA). Texas has continued to move forward with broadband and has worked with FirstNet in broadband demonstrations. Harris County is the first fully licensed public safety LTE system in the nation. The Spectrum Management Lease Agreement (SMLA) was signed in August 2014 and includes five key learning conditions:

- Core transition
- Data analytics [All work is based on assumptions currently so it will be exciting to provide real life data to the Public Safety Communications Research (PSCR) program.]
- Special events
- Extended mode
- Training

One of the biggest issues Mr. Early envisions is access and priority on the system. They have presented on broadband to over 5,000 stakeholders through the 24 Regional Councils of Governments.

Datacast, Bob Desourdis, Jr., Vice President for Solutions Architecture: Mr. Desourdis discussed communication gaps in broadband today, what Digital Television (DTV) datacasting is, how it works, and where it is used today. Datacasting uses the existing interoperable national television transmitters to deliver real-time broadband content to first responders. There is a server at a public television station; the server integrates the data via encrypted IP packets with regular programming and it is pushed out via multicast to receivers. There are three levels of protection: The public can't see the data, the IP packet identifier alerts the programmer that it is to be ignored, and the data is encrypted. Datacasting provides nationwide coverage using PBS satellite to PBS-affiliated stations.

Cities and states can determine local, regional, and statewide content priorities. For example, if video or floor plans of a school when there is a shooting are needed, the material is sent to the receivers who need to have it. Mr. DeSourdis said his company did a test with the Coast Guard, which received a signal from WGBH, the Boston public broadcasting station, but not from cell service. Ongoing initiatives include a Houston public safety demonstration, the continuation of the WGBH effort in Boston, a National Institute of Justice/Johns Hopkins study, a statewide helicopter video solution, PBS Consortium for public safety, and Datacast-LTE Ipv6-integration. Broadband communication gaps persist in the nation's cities. DTV datacasting provides the most resilient existing broadband infrastructure, Mr. DeSourdis said. DTV is available in most cities today. Encrypted video and voice, either streaming or as MS Windows files and data files can be datacast. PBS stations offer unique cost-sharing opportunities and the technology is complementary to FirstNet.

Datacasting can use any other existing media, such as LMR voice, for the uplink. DTV stations could be linked as a broadband two-way mesh network. Datacasting is independent of cellular or LMR infrastructure with an unlimited number of receivers – each gets same reception quality. Rural coverage exists in most regions today. There is no need to link disparate organizations' IT networks together to achieve information sharing. In response to a question about the economic model, Mr. DeSourdis said the work has been accomplished to date by grants to partner with stations for a certain amount of bandwidth. There are no contract vehicles set up for datacasting at this time. In response to a question regarding reliance on terrestrial towers, Mr. DeSourdis said if all connectivity is lost, there is no way to push data, but this could be alleviated through the use of fiber and microwave.

FirstNet NPSBN Development

FirstNet, Kevin McGinnis FirstNet Public Safety Board Member: Chief McGinnis reported that FirstNet is making substantial progress in recent months. In the area of technology, FirstNet continues to work with the PSCR on a number of issues including quality of service and preemption. Lab testing has been very positive with a number of vendors integrated into the project. There are five public safety LTE pilots running, one in Texas and at four Broadband Technologies Opportunity Program (BTOP) locations. FirstNet expects to have data on quality of service and technologies from Harris County and Colorado fairly soon. FirstNet has updated the state consultation approach. FirstNet will complete the RFP process, document the proposed build-out in the state, and determine the funding level for each state with the National Telecommunications and Information Administration (NTIA).

As of November 13, 2014, there have been six initial state consultations in Maryland, Minnesota, Oregon, Washington, Montana, and Utah. The approximate number of participants is 570 with an

average number of 81 per state. In these states, there is a recurring level of interest in affordability, rural coverage, coordination with federal agencies, geo-fencing, cyber security, deployables, tribal coverage, and use of existing assets.

FirstNet's Request for Information closed on October 27 with 122 confidential responses received. FirstNet is on social media and its website www.FirstNet.gov hosts a very active outreach and education program. The next PSAC meeting will be held on December 2, 2014.

Public Safety Advisory Committee (PSAC), Harlin McEwen, Chair: Chief McEwen said the PSAC has 40 members with a 5-member Executive Committee, 3 of whom serve on NPSTC's Executive Committee as well. He noted that Bill McCammon, representing the Metro Fire Chiefs on the PSAC, recently passed away and will be missed. His replacement will be named soon. Chief McEwen said the December 2 PSAC meeting in Norman, OK, will not be public. The next FirstNet meeting will be on December 9 and 10 in Salt Lake City, which he has been invited to attend.

Chief McEwen said he co-facilitated and attended the Identity, Credential, and Access Management (ICAM) summit, which hosted 60 people from state and local entities. They discussed who will be users from the public safety arena of the NPSBN. FirstNet is not the first group to have the challenge of identity management in a number of arenas. Users have to be managed and tracked to see who is still active in public safety, for example. They are looking at various options and approaches already in use in the federal government. The NPSBN will be different from any other network and will require screening of core people and partners. An ICAM report will be issued in the next month or so.

Spectrum Management Discussion, David Buchanan, Chair, Stu Overby, Vice Chair

FCC Report and Order 700 MHz Public Safety LMR, Stu Overby: The FCC released its Report and Order on October 24, 2014. It eliminates the December 31, 2016, deadline to transition 700 MHz from 12.5 kHz to 6.25 kHz efficiency as NPSTC requested. It re-designates the 700 MHz band secondary trunking channels for public safety aircraft voice operations as NPSTC requested, but declined to establish a Nationwide Interoperability Travel Channel. The Order allows secondary voice operations on the Data Interoperability Channel and reallocates the Reserve Channels to General Use Channels, giving T-Band public safety licensees priority on former reserves.

The Order encourages use of the P25 CAP program. Chris Lougee, Telecommunications Industry Association (TIA), said TIA has discovered some language in the Ruling that is confusing. It seems to say that manufacturers can either go through the CAP program or describe how the manufacturer meets the P25 criteria. TIA has a meeting with the FCC next week to clarify the language. The Ruling also:

- Clarifies the rules do not allow analog operation on 700 MHz interoperability channels.
- Declines to increase 2 watt ERP for mobiles.
- Adopts rules governing spectral output of signal boosters that simultaneously retransmit multiple signals.
- Adopts ERP as regulatory parameter in place of Transmitter Power Out (TPO).
- Recommends use of P25 Network Access Code (NAC) of $293 for interoperability calling channels.

- Clarifies radios must be capable of programming any of the 64 interoperability channels, but are not required to have them all programmed in each radio.

As an element of the Report, the FCC said, "We encourage the NRPC and NPSTC to identify specific Reserve Channels to support deployable trunked systems on a nationwide basis that can be incorporated into regional plans within three months from the publication of this *Report and Order* in the Federal Register." NPSTC will establish a joint Work Group with NRPC to identify eight deployable channels within 90 days. Other challenges will be to standardize on system ID for deployables and guidance to minimize interference for close spaced incidents.

- Within 6 months of Federal Register publication of the FCC Report and Order, the Regional Planning Committees (RPCs) must submit channel plans consistent with the FCC decision.
- In T-Band areas, all 24 former reserve channels are assigned to general use.
- Outside T-Band areas, former reserve channels may be designated for temporary deployable trunked systems.

700 MHz State Buildout Showing, Bette Rinehart, Editorial Review Chair: In 2002, each state and U.S. territory was granted a license for 700 MHz LMR state channels**.** By June 13, 2014, states were required to demonstrate they are providing or prepared to provide "substantial service" to one-third of their population or territory. NPSTC developed an informational letter, template, and additional materials to guide the states in their response. To date:

- 37 states filed in response to the June 13 deadline.
- 28 showings have been accepted; 9 remain pending.
- 7 states cancelled their licenses.
- 9 states (including DC) made no filing.
- 1 state and 1 territory asked for an extension of time (North Dakota, Puerto Rico).
- 1 state (Iowa) requested and received a waiver of the deadline, until 2015.
- 1 state (South Carolina) has requested a waiver of the deadline.

NPSTC Response to First Net Public Notice, Stu Overby: NPSTC engaged multiple public safety practitioners to discuss the response to the FirstNet RFI and made the following recommendations. NPSTC concurred states should utilize the FirstNet core network, even in an "opt-out" situation.

- A point of demarcation should be established.
- NPSTC recommends this occurs at the point where RAN backhaul connects to the core.

NPSTC noted clarification is needed on the definition of the core.

- "....all other network elements and functions other than the radio access network" is listed in the FirstNet definition.
- CAD system and related application servers should not be designated as the core.

FirstNet should have wide discretion to determine the range of users categorized as public safety. Both static and dynamic priority mechanisms will be required to manage the network. FirstNet should identify threshold parameters and then coordinate through the appropriate approving agency (e.g., the state). The PSAC should be consulted to help finalize any definitions. Rural should be defined by

population density. NPSTC recommends 5 to 159 persons per square mile on a county-by-county basis. This should be refined during the consultation process with each state.

RF Interference from Energy-Efficient Lighting, Barry Luke, NPSTC Deputy Executive Director: NPSTC was approached by several people who had experienced interference with from energy efficient lighting. NPSTC issued the question to the public safety community through the NPSTC Participant's Listserv which resulted in a flurry of responses and also indicated issues with other sources of interference. For example:

- An Incident Management Team operating at the Lost Fire in northern California on August 8, 2012, set up and tested all of their communications equipment. During the evening operational period, all communications failed. The source was a string of overhead fluorescent lights.
- Las Vegas, NV, reported extreme interference in the UHF band from a business using excited plasma lamps. The interference reached outside the city limits.
- Lake County, FL, reported interference to VHF and Amateur bands after installing new tower lighting on their radio sites. Texas reported the same issue.
- On October 28, 2014, the FCC cited a beauty salon in San Antonio, TX, where overhead fluorescent lighting was blocking 700 MHz signals on an AT&T Tower.
- On February 7, 2014, the FCC cited owners of a 41-story office tower in Los Angeles, CA. Night time use of fluorescent lights blocked 700 MHz signals on a nearby Verizon tower.
- Quebec, Canada, reported interference problems on their public safety VHF trunking system (138-174 MHz) from LED lighting from a variety of manufacturers creating 20 to 30 dB of interference within 100 meters of the building.

On May 2, 2012, General Electric did a voluntary recall of several models of fluorescent electronic ballasts following FCC complaints. ARRL has researched the issue and filed complaints with FCC. "Grow Lights" from certain manufacturers are causing excessive interference, and LED and CFL lighting are also an issue. As noted, FCC has issued some citations. NPSTC will continue to collect information and plans follow-up discussion with the FCC.

Mr. Haller said the FCC has certified this lighting under Part 18, Industrial and Scientific equipment, but if it is used in a commercial environment, Part 15 rules should apply. NPSTC is pursuing that idea. Mr. McIntosh said the issue has occurred in the State of Washington, where the department of Fish and Wildlife has a base station right across from what has now become an industrial marijuana factory. The issue is who is responsible to control the interference. Mr. Haller said under Part 15 rules, the offending operator has the responsibility to solve the problem. Mr. Brownlow said the Alaska Department of Transportation (DOT) issued regulations on procuring energy-efficient lighting and is writing a report.

FCC Part 22 Public Notice, Steve Devine, NPSTC Committee Support: Mr. Devine said the FCC issued a Public Notice on October 17, 2014, seeking comment on the need for more flexible Part 22 technical rules. Comments are due December 17, 2014; replies are due January 19, 2014. Some jurisdictions have used Part 22 channels to supplement Part 90 public safety channels. Public safety experience shows some flexibility is needed to do the following:

- Widen emission bandwidth to match allowed mask.
- Allow mobiles and portables certified under Part 90 to operate on Part 22 channels.

- Modify buildout requirements to consider wide-area systems that license adjacent areas to provide interference protection.

Motion and Vote: Sheriff Kennard moved to submit comments on the need for more flexible Part 22 technical rules. Paul Leary, Forestry Communications Conservation Association (FCCA) seconded. Unanimously approved.

4.9 GHz Update, Stu Overby: NPSTC filed a 4.9 GHz National Plan on October 24, 2013, in response to the FCC's Notice of Proposed Rulemaking (NPRM). The Plan includes provisions for robots, airborne video, and critical user access on a frequency coordinated basis. The FCC issued a Public Notice on October 30, 2013, requesting comments on NPSTC's National Plan Recommendations. In the meantime Comments, Replies, and ex parte communications have been submitted to the Commission. On October 16, NPSTC held a discussion with FCC staff on the uses of the channels, frequency coordination challenges, and the RPC role in channel use flexibility and coordination review. The proposed 4.9 GHz Plan awaits FCC action. The FCC may issue a FNPRM before reaching decisions.

Railroad Police Access to Interoperability Channels, Stu Overby: NPSTC's Petition, filed May 16, 2014, requests the FCC to modify rules such that bona-fide Railroad Police are eligible to license/use public safety interoperability frequencies. On May 30, the FCC released a Public Notice requesting input. Comments closed on June 30 and Reply Comments closed on July 15. They mostly supported NPSTC's Petition. Short-lines railroads oppose restricting public safety channel use relief to full-time railroad police officers, saying part-time officers have the same need. NPSTC is waiting for FCC issuance of a NPRM. Both railroad police representatives in the U.S. and Canada have participated in discussions.

Summary of NPSTC Filings, Stu Overby

Date	Filing	Topic
Anticipated Filings		
12/17/14	Comments	FCC Part 22 Flexibility Public Notice
Filings Year-to-Date		
10/27/14	Comments	FirstNet Public Notice
10/16/14	Ex Parte	4.9 GHz
7/14/14	Reply Comments	911 Indoor Location Accuracy
6/30/14	Reply Comments	Part 90 Frequency Coordinator
6/6/14	Response to GAO	Public Safety Broadband Network
5/16/14	Petition for Rulemaking	Railroad Police Eligibility
5/12/14	Comments	911 Indoor Location Accuracy
4/12/14	Ex Parte	4.9 GHz National Plan Proposal

Federal Partners Update

Federal Communications Commission (FCC), Roberto Mussenden, Attorney, Advisor, Policy and, Licensing Division, Public Safety Homeland Security Bureau (PSHSB): Mr. Mussenden provided an update on recent FCC activities, elaborating on some of the administrative issues associated with the 700 MHz ruling. He said the Commission is leaning towards issuing a FNPRM on 4.9 GHz to acquire a complete record before issuing rules. The progress of 800 MHz rebanding is significant; 99.9 percent of non-public safety systems have completed rebanding and 96 percent of public safety systems on non-border areas. On the Canadian border rebanding is 88 percent complete.

The FCC is looking at "sunny day" outages regarding the Colorado 9-1-1 failure that caused a failure in seven states and may investigate further. The Commission is in the process of reviewing nominations for service on the Task Force on Optimal Public Safety Answering Point (PSAP) Architecture (Task Force or TFOPA) to begin in December or early January. The Commission is addressing interoperability regarding the railroad police access to public safety spectrum and reviewing comments. There is no timetable for an NPRM. The FCC continues to consider waiver requests from first responders for frequencies not allocated for public safety, but the waiver request must show public safety has exhausted all potential public safety frequencies.

The Commission is exploring rules for federal and local partners and the ability to access to each other's spectrum. Chief McEwen said federal entities do not share spectrum with state and local entities, but local rules allow federal entities to operate on local channels through simple MOUs. NPSTC would like an opportunity to weigh in on that. Mr. McIntosh said this is an important issue on the forestry conservation side. There are hundreds of MOUs between federal and local agencies that are probably not legal because NTIA rules require cross-licensing. The rules are too cumbersome and do not make sense for portables and mobiles where an MOU would suffice. Mr. Mussenden said the Bureau wants to get this information out to inform the discussion.

Mr. Mussenden thanked Brian Marenco, FCC, and the IC for their work on the development of cross-border agreements. The Commission continues to look at options for T-Band relocation. Narrowbanding is going well with 90 percent of licensees compliant. Mr. Mussenden said the Commission is very grateful for the extensive outreach NPSTC provided to encourage narrowbanding compliance.

The Commission would like to circulate an R&O on telemetry channels and their use for vehicular repeaters. Mr. Root said that San Diego, CA, is beginning 800 MHz rebanding, asking if it is the intent of the FCC or TA [Transition Administrator] to provide clarity as to when U.S. agencies can start licensing and programming. Mr. Mussenden said he recently participated on a call with Mexico regarding scheduling so that clarity can be provided to U.S agencies. Regarding the NTIA/FCC frequency sharing issue, Mr. Root said when the federal interoperability frequencies for UHF/VHF were established, the FCC issued a PN that had frequencies that are no longer listed because the NTIA allocation was changed. He asked if the FCC will update the PN. Mr. Mussenden said the intent is to facilitate federal/local spectrum discussions. Mr. Haller complimented the FCC on its rollout of the wideband emission removal tool, which identifies the wideband channels and removes them.

Topical Presentations

Indoor Positioning Standards Update, Ganesh Pattabiraman, President and COO, NEXTNAV: The FCC is currently engaged in evaluating the rules for indoor location. An NPRM was released in February 2014 and the Comment and Reply cycle was completed in July 2014. The proposed rules call for high-precision two-dimensional positioning and vertical information.

- 50m – 67% of time in 2 years; 50m- 80% of time in 5 years (2D Positioning)
- 3m – 67% of time in 3 years; 3m – 80% of time in 5 years (Vertical)

Several technologies have demonstrated the ability to meet these capabilities; some were tested in Communications Security, Reliability & Interoperability Council (CSRIC III) in the indoor testbed in San Francisco, CA. The project was completed and a report issued in 2012. In June 2014, the FCC urged 3GPP and OMA to prioritize work related to indoor location. On the basis of the FCC letter, 3GPP approved the Indoor Positioning Study Item. OMA responded to the FCC indicating it would prioritize work in a similar fashion as contributions became available The Study Item will evaluate technologies and specification impacts related to Indoor Positioning, such as:

- Enhancements to OTDOA [positioning technology related to LTE].
- Enhancements to RFPM [unique fingerprint signatures].
- Terrestrial Beacon Systems [similar to GPS].

This is to be part of Release 13 of 3GPP. NextNAV is looking at two technologies, broadly classified as Radio Access Technology (RAT) Dependent (OTDOA, AFLT, UTDOA) and RAT Independent (GPS, Glonass, TBS). The Study Item on Indoor Positioning in 3GPP commenced in Oct 2014.

University of Melbourne Centre, Geoff Spring, Director of International Business Strategy, APCO Australasia via teleconference: Reporting for Mr. Spring, Mr. Wright, APCO, briefed on a project to develop a Master's Program in Emergency Management at the University of Melbourne, Australia. The CDMPS is a Research Centre established by the University of Melbourne focused on multi-disciplinary research and training on disaster management and public safety. CDMPS has established a specific focus on mission critical communications. The CDMPS expects NPSTC will be one of the primary sources of information for its research activities and would like to partner with NPSTC. The CDMPS believes there would be benefit to both NPSTC and the CDMPS from a MOU to enable information sharing and access to outcomes from research into mission critical communications together with the ability to utilize associated documentation published by both organizations. Mr. Haller said the Governing Board will consider this request at the Executive Committee meeting on Friday, November 14, 2014, and vote on this proposal.

First Responder Broadband Communications—Technical Gap Analysis, Don Chiang, OIC: Mr. Chiang briefed on the OIC request to engage the stakeholder community in the OIC broadband communications technical gap analysis task. The outcome is intended to be a shared understanding and prioritization of the technical gaps to inform the path forward. In support of OIC's mission to provide the science and technology that enables emergency communications and facilitates the seamless exchange of information to save lives and protect property, there are three goals.

Goal 1: Bridge Land Mobile Radio (LMR)/Long Term Evolution (LTE): OIC will be the interoperability and compatibility RDT&E expert that is focused on bridging LMR and broadband networks and improving LMR network efficiency.

Goal 2: Advance LTE: OIC will serve as the RDT&E liaison to first responders, enabling broadband networks to meet their requirements.

Goal 3: Accelerate Next Generation: OIC will lead RDT&E to discover and develop essential "first responder of the future" communication technologies and capabilities. The goals are to support stakeholder's requirements; leverage existing and emerging technologies, including pervasive broadband wireless communications, wearable technologies, and machine-to-machine and sensor development; identify and validate existing technical gaps; and prioritize technical gaps and align with the Next Generation First Responder APEX program. OIC considered reports from NPSTC, SAFECOM, the PSCR, and APCO as the first steps of the technical gaps identified in the chart below.

Preliminary Technical Gaps	Key Considerations
1. Identify sensors, Personal Area Network (PAN) and machine-to-machine (**M2M**) and integrate into overall capabilities	Internet-of-Things is ushering an ever-more **connected environment of devices, sensors and even automobiles** – how will the public safety community benefit from such machine-to-machine communication advancement and promote situational awareness in their daily mission?
2. Characterize push-to-talk **Service Quality** between LTE and LMR	Within an interoperable network which connects two different networks, such as LTE and LMR, it is expected to carry real-time mission critical voice traffic to and from each network. However, the LTE network is expected to have a **different signaling latency** characteristic as compared to the LMR network. How will the difference in the network latency issue impact the operation of the mission critical voice operation?
3. Enabling **Direct Mode** Communications (DMC) for LTE devices	Can DMC provide user-to-user communications supporting voice, data or video through the following: 1) **prototype** availability; 2) **increased output transmit power**; 3) advanced antenna support (multiple mobile antennas also known as **MIMO**); 4) mesh networking supporting **multi-hop** transmission; and 5) enhanced multimedia multicast/broadcast service (**eMBMS**) to deliver efficient broadcast data
4. 3D indoor Geo-location services	Existing ongoing research with 3D geo-location methodologies will soon provide first responders with indoor location and tracking capabilities. How will this key data be shared with on-scene commanders and field users to gain the ability to know the location of responders and their proximity to risks and hazards in real time?

5. Deployable LTE base station solutions	Beyond the traditional microwave and satellite links, what additional backhaul means are capable of providing the needed backhaul data connection between the public safety users and the public safety broadband network?
6. Roaming with commercial cellular broadband – voice/data/video services when there is no public safety LTE coverage	1) What are the options for commercial broadband roaming and the implications for mobile equipment design and backhaul data link; 2) What can be leveraged from existing cellular carriers' In-building small cells (e.g., infrastructure sharing); 3) Does the current commercial Push-to-Talk-over-LTE service (e.g., Verizon, AT&T) provide any best practice and lessons learned for the future interoperable public safety broadband network?
7. Identify data analytics and leverage broadband data pipes to use big data	With a nationwide broadband network (FirstNet), public safety will be provided a wireless broadband capability both to and from the field. How will this data be managed using big data analytics as to not overwhelm the first responder in the field?
8. Leveraging broadband capabilities to Enhance Data Apps and Interoperability	As the availability of wireless broadband service becomes more pervasive for first responders, the number of new bandwidth-intensive applications will no doubt accelerate to take advantage of the increased capability. Key challenges for first responders will be how many apps can be supported simultaneously at an incident response area, how to prioritize and coordinate broadband resources and, most importantly, to ensure interoperability of communications services.
9. Analyze Digital TV (DTV) Datacasting/Alternative Broadband and its role in serving public safety communications	When public safety needs to share large data files, such as building blueprints, with first responders in the field, DTV provides a potential supplemental broadband capability using idle broadcast bandwidth– and this capability becomes essential when there is LTE network outage or congestion.

Tom Sorley, Chair, Technology Committee, said several of the preliminary technical gaps are already being addressed by NPSTC's Working Groups. Mr. Overby said there are some companies working on these issues as well, asking if OIC is considering what is being done in industry. Chief McEwen noted that there is no direct mode in LTE, asking if OIC is communicating with PSCR on this. He added the commercial services carriers won't allow public safety to roam onto their networks. This is not a technical gap issue. Chief Leary said there is no service, commercial or public safety, in rural northern New Hampshire. Mr. Chiang said OIC is coordinating with PSCR and with various commercial entities.

Mr. Lougee asked for the purpose of this assessment, saying industry is already responding to gaps by listening to the needs of the marketplace. Mr. Chiang said it is to identify what technology exists and what are the unmet needs in the context of OIC's current set of projects or to develop new ones to support through grants. Mr. Luu reiterated that stakeholder needs and input are important to OIC. Mr. Luke suggested the purpose of this discussion should be in terms of what technical assistance from OIC NPSTC would like to see. Ms. Ward suggested NPSTC could create a Task Force to address some of these questions and technical gaps. For example, are these gaps prioritized appropriately? What additional technical gaps should be considered? Are any of these priorities dependent on others for success? A

form was provided to each attendee along with a request to list the top five gaps seen by public safety. Forms were completed and provided to Mr. Chiang.

Recess
The meeting recessed for the day.

November 14, 2014

Call to Order, Ralph Haller, Chair
Mr. Haller called the meeting to order and called the roll, establishing a quorum was present.

Technology Discussion, Tom Sorley, Chair, Andrew Thiessen, Vice Chair
FirstNet/NG9-1-1, Sharon Counterman, National Emergency Number Association (NENA), by teleconference, and John Wright, APCO: Mr. Wright said APCO and NENA have been tasked to develop an outreach effort for people in the field to explain the relationship between NG9-1-1 and FirstNet. LMR and broadband experts are not familiar with the NENA i3 standard and many in the 9-1-1 community are not familiar with the FirstNet proposal and are confused about the relationship between these various networks. Ms. Counterman said Roger Hixson, NENA, is developing a white paper to demystify the technology and the relationship. SAFECOM and APCO's Broadband Committee are finalizing separate, more technical reports on NG9-1-1 and FirstNet. Chief McGinnis said he is very pleased that APCO and NENA are writing this paper, saying it will help explain the relationships.

FCC PSAP Architecture Task Force, Ralph Haller: Mr. Haller said NPSTC has submitted the name of Robert Brown, State of New Hampshire 9-1-1 Information Technology Manager, for consideration to serve on this new task force. The task force members have not yet been announced. The FCC requested a report that will be due by April 30, 2015 covering:

- Optimal PSAP system and network configuration.
- Cost projections for conversion to and annual operation of optimal design.
- Comparative cost projections for annual maintenance of existing PSAPs and upgrade to NG9-1-1.
- Recommendations on ways to prevent states from diverting 9-1-1 funds.
- Whether states that divert 9-1-1 funds should be deemed ineligible from serving on FCC councils, workgroups, etc.

Broadband Working Group, Andrew Thiessen, Chair
Console LTE Report, Barry Luke, NPSTC Deputy Executive Director: Mr. Luke said the report was approved and released by NPSTC's Governing Board and released on September 30, 2014. The report defines public safety requirements for functionality and interfaces for command and control consoles connected to an LTE network. There are 54 requirements included and organized into the following categories: Network, Data Management, Location, Messaging, Priority, Security, and User Equipment. NPSTC has sent the report to the PSAC for their review.

Local Control Task Group Update, Steve Devine and Tom Hengeveld, Co-Chairs: Mr. Devine reported the Task Group is updating NPSTC's 2012 Local Control Report to reflect new knowledge. The Task

Group has 55 members from industry and public safety who are currently reviewing a comment matrix of suggestions submitted by team members and looking at new issues which were not included in the 2012 Report, including mission critical voice. The Task Group agrees that users in the field will not identify who has local control. A role, yet to be defined, will need to manage local control. The Task Group is working with other Task Groups including Priority and Quality of Service (QoS).

Priority and QoS Update, Trent Miller, John Powell, and Dave Buchanan, Co-Chairs: Reporting for Mr. Miller, Mr. Luke said this Task Group of over 60 members is also reviewing and updating the 2012 Priority and QoS Report to incorporate advancing standards and new public safety issues. They are currently reviewing a comment matrix of suggestions submitted by team members and reviewed the matrix on EMS requirements prepared by the EMS Working Group.

Deployables Update, Claudio Lucente, Centre for Security Science (CSS) and Rob Stafford, PSCR: Reporting for Mr. Lucente, Mr. Luke said Canada asked OEC to participate in this bi-national effort between Canada and the U.S. Canada needs to ensure interoperability among and between their provinces as well as with the U.S. There are almost 100 members of public safety and industry participating to define public safety requirements for deployables and deployable system categories and capabilities. The group is creating use cases currently focused on a wildfire scenario and a large-scale outdoor planned event. They are researching how deployables would be integrated into an incident and how to handle different technologies in deployables among other things. The group will deliver an interim report at the NPSTC meeting held at IWCE in March 2015.

LTE Global Standards, Andrew Thiessen, Chair: Mr. Theissen reported OMA hosted a meeting in Montreal this year to discuss the standards process for voice operations. Tetra Critical Communications Association (TCCA), TCCE, and PSCR were present. The consensus from that meeting was to do all standards development in 3GPP; OMA will finalize their work and submit it to 3GPP. There was a 3GPP meeting held in Scotland to organize the process. It was agreed that the 3GPP process should not be modified but that 3GPP should share some portion of the work with groups like OMA to speed it up. At this meeting, the participants created a new working group, SA6, within 3GPP. SA6 will be the home for public safety applications. The first SA6 meeting will be held the last week in January 2015. 3GPP Release 13 is still focused on mission critical voice PTT and Release 14 will focus on mission critical data, looking at specific services such as mission critical video. Any unfinished work from Release 13 will carry over into Release 14, both intended to be complete by 2016. Mr. Sorley said he is grateful for the public safety visibility and action, which has changed dramatically in 3GPP thanks to Mr. Thiessen and those organizations in public safety working on standards.

New Technologies, Harlin McEwen: Chief McEwen reported Morgan O'Brian, formerly of Nextel and Cyren Call, and now with Pacific Datavision, has purchased spectrum in the 900 MHz band. They are developing a new PTT broadband service used by taxi cabs and utilities, which will help the community at large to learn more about PTT and broadband. Chief McEwen said he also saw a demo of XG technology, a cognitive radio approach that uses spectrum hopping, in licensed white space, to find spectrum that is not being used and uses it. This might be a good backup for secondary communications. The technology can deliver voice and data. NPSTC should monitor these technologies

as a further means of acquiring spectrum as a backup. Ms. Ward asked if Mr. Morgan should be included in NPSTC presentations in the future. It was agreed he should be.

Mr. Haller said public safety does not have access to the 900 MHz band so any interoperability would require a bridging technology. Mr. Sorley said bridging technology might not be required because it uses IP packets. Joe Hanna, Directions, said the community is somewhat split on whether critical infrastructure should have access to FirstNet which should have priority over 900 MHz concerns

Mr. Sorley agreed it would be valuable for XG to present to NPSTC. The Technology Committee will monitor these new technologies. Chief McEwen said he also saw a demo from Mutualink, who are doing work in the bridging of voice and information. He suggested they be invited to present to NPSTC as well.

Radio Programming Compatibility Requirements Update, Dan Robinson and Ken Link, Co-Chairs by teleconference: Mr. Robinson and Mr. Link reported that Version 3 of the Programming and Management (PAM) spreadsheet tool was released on August 28, 2014. The newer version includes NIFOG channels. The Working Group held a training seminar for the State of Florida on October 30 in Brevard County to demonstrate the capabilities of the tool. The tool is generating interest in the public safety community and there was an interview in Mission Critical magazine. The Working Group is looking at video or web seminar training rather than face-to-face. Mr. Link said the community should expect bi-annual releases unless an urgent need arises. Mr. Robinson said as new releases are generated it is a challenge to update the tool. They are researching how an agency can easily import/update new material into their radios. Mr. Sorley said it would be a low cost investment with a huge payoff for someone to write a program for updating material. He said he will write a SOW to do that.

PAM Version 4, pending release, expands the channel lineup. The Working Group is continuing to receive comments and suggestions through December 1, 2014, to be evaluated for new release in first quarter 2015. They expect to create an online video and webinar on use of the tool. Ms. Ward said OEC has agreed that Pam Montanari, original chair of the Working Group and source of the perceived need in Pinellas County, FL, will train the regional coordinators on the tool. Mr. Link said OEC provides TA, asking if they could package this training as one of their TA tools. Ms. Ward said it was a good idea and asked him to contact Ms. Montanari.

Monitoring Topics, Tom Sorley: Mr. Sorley discussed the P25 CAP program, which is being reconstituted. Testing labs are lined up and OIC is reconstituting a board and steering committee to manage the program. Mr. Thiessen said he will be soliciting organizations to write a standard for the common air interface (CAI). Chief McGinnis said the re-emergence of the CAP is a positive move that will make the P25 process more user friendly. Mr. Lougee said OIC's John Merrill sat down with industry for a very positive, inclusive discussion on the P25 CAP and industry involvement in the program.

Topical Presentation

CitizenGlobal Presentation on Large Emergency Event Digital Information Repository (LEEDIR), John Powell, Investigative Technology Coordinator, Los Angeles County Sheriff: Mr. Powell reported on the creation of LEEDIR. It was developed after and because of the use of social media in the Boston

Marathon bombing to help solve the crime. The LASD began to consider the value of citizen eyewitness material from smartphones. Data is available from many sources—smartphones, news media and photojournalist professional cameras, first responder wearable/in-vehicle cameras, and social media, blogs, and websites. However collecting first observer media using cobbled-together solutions (like email, MMS, hard drives, etc.) leads to significant technical problems due to limited bandwidth and processing power/speed; media compression, corruption or complete loss; gaps in audit trails; transcoding problems; difficulty to share/distribute information; and an inability to rapidly and collaboratively analyze media

Amazon Web Services (AWS) is a cloud-computing platform that provides highly distributed server infrastructure and massive computing capacity (capable of processing virtually limitless media). Community Connect is an end-to-end first observer software platform. It is a cloud-based/mobile solution that equips public safety agencies with everything required to efficiently collect, store, analyze and share media from "first observers." It enables U.S. law enforcement and relief agencies to harness "on the scene" videos and images from virtually any "eyewitness" source, during major terrorist/criminal events and natural disasters. LEEDIR is offered free of charge for large-scale events only, that cover a 5-square mile area, involve 5,000 people or more, and host multiple disciplines. LEEDIR can:

- Address the need to acquire and access real-time video from citizen eyewitnesses during catastrophic events.
- Provide a secure, central repository for the high-speed evaluation, organization, sharing and storage of large volumes of videos and photos.
- Ensure video ownership rights for the law enforcement community.
- Process media securely as potential evidence: *Media uploaded -> original backed up -> MD5 Hashed ("fingerprint") -> Virus Scan -> Metadata (like GPS) extracted -> Audit Trail.*
- Automatically transcode media into usable format.
- Supply expandable cloud infrastructure to process virtually unlimited media.
- Offer the ability to interact with citizen eyewitnesses (who did not submit anonymously) at emergency locations to obtain specific video to assist in emergency first responder deployment.

LEEDIR offers collaborative analysis interfaces enabling multiple analysts to review content simultaneously. All data updates are in real-time between collaborators. Chat and private sharing features enable communication by multiple analysts from any location. For more information, visit www.LEEDIR.com.

Mr. Luke discussed how citizens can divert sending information and overloading the 9-1-1 centers. In Florida, they set up 3-1-1 to answer citizen questions that didn't belong in the PSAP. Mr. Powell said they are investigating that route. Mr. Sorley said the video on his phone is compressed, but if a citizen's phone doesn't allow compression, he wondered if some would some drop out because the process was taking too long. Mr. Powell said this is a technological question that has been solved. The program sends the material in chunks that are transparent to the user.

TETRA and Critical Communications Associations (TCCA), Phil Kidner, Affiliate Representative: Mr. Kidner thanked the Board for inviting him to speak, saying TCCA values its relationship with NPSTC. Both

TCCA and NPSTC believe in the importance of standards. The creation of SA6 is a fantastic opportunity to influence the creation of public safety standards. The earliest possible date for public safety user requirements to enter the 3GPP process is 2016. Following his remarks, Mr. Kidner and Mr. Newberry, OMA, signed an MOU to share TCCA and OMA documents and reference each other's specifications in the goal of harmonized spectrum in Europe and elsewhere.

Mr. Sorley asked how Mr. Kidner envisions harmonizing requirements. TETRA is happy to share any information they have. Chief Lenihan asked if TETRA can do analog communication on PTT. Mr. Kidner said it could not. Chief Lenihan said the ability to do analog in certain applications is an important capability for the user. Mr. Luke said in the U.S. some utilities and critical infrastructure are using TETRA. NPSTC is hopeful that TETRA manufacturers could build a radio that would support both direct connectivity between P25 and TETRA.

Open Mobile Alliance (OMA), **Seth Newberry, General Manager, Open Mobile Alliance Ltd.:** Mr. Newberry briefed the Board on OMA. OMA develops specifications for the application layer called service enablers. Enablers provide a standardized approach to tasks such as data gathering and transporting information from a network to a device and/or server. OMA enablers are network agnostic, meaning they are designed to be deployable over any type of network layer.

OMA also develops Application Programming Interfaces (API) to provide standardized interfaces to the service infrastructure residing within communication networks and on devices. By deploying OMA APIs, fundamental capabilities such as SMS, MMS, Location Services, Presence Services, Payment, and other core network assets are exposed in a standardized way.

OMA's work is complementary to standards bodies including 3GPP and GSMA. OMA cooperates in a formal fashion with many other standards bodies including 3GPP, GSMA, etc, with its most active cooperation with 3GPP. Many commercial telecom companies are members of OMA. There has been recent interest in PTT and allowing government agencies to participate in OMA. OMA is chartered in the United Kingdom and has created a program to allow direct government agency (GA) participation. OMA is seeing an increasing interest from governmental agencies in participating in the process of building service layer specifications. GAs often cannot participate directly in organizations with foreign legal jurisdictions because of strong confidentiality restrictions or IPR requirements. In 2014, OMA has introduced the Government Agency Participant option to allow GAs to be active in OMA. Current GA Participants include: FirstNet, UK Home Office, UK Met Office, County of Somerset, New Jersey, China Academy of Telecommunication Research (CATR) of MIIT.

OMA current work relevant to NPSTC is the work on Push-To-Talk-Over-Cellular (POC), Push to Communicate with Public Safety (PCPS), and 3GPP Release 13 Mission Critical Push-to-Talk (MCPTT). The POC-to-PCPS-to-MCPTT process is only the first industry use case relative to public safety. OMA has developed specifications for Device Management (DM) that are deployed in more than 2 billion handsets; OMA's Location protocol (SUPL) is widely deployed in smart phones; and OMA's Presence specifications are the foundation of much of the Rich Communications Suite (RCS) being deployed by operators worldwide.

Alliance for Telecommunications Industry Solutions (ATIS), Frank Korinek, Director, Strategy and Business Development, Motorola Solutions, Inc.: Founded in 1984, ATIS develops solutions that include standards, requirements, implementation guidelines, specifications, business use cases, software toolkits, and interoperability testing. ATIS is a founding Partner of 3GPP and oneM2M [Machine to Machine]. It has broad membership comprised of service providers, manufacturers, public safety (APCO, NENA, Tarrant County 9-1-1, etc.), government agencies (Dept of Commerce, DHS OEC, Dept of Justice, Public Safety Canada), software companies, etc.

ATIS is the North American Partner to 3GPP, where LTE-advanced specifications are developed and is responsible for transposing 3GPP specifications into formal North American deliverables. Public safety has been a very active topic over the past few years. A new 3GPP "Mission Critical Applications" group has recently been created (SA6). ATIS provides a venue to discuss and develop 3GPP Change Requests.

IP Transition of Public Safety Related Applications Task Force (PSRA TF). Since many key public safety applications are still based upon legacy PSTN [Public Switched Telephone Network] technologies and services, the Task Force is examining the effects of the all-IP migration on infrastructure associated with public safety and has identified relevant stakeholder organizations related to the following applications:

- Alarm circuits to local fire and police departments
- FAA circuits to towers and alarms
- Circuits that monitor railroad crossings
- Circuits for sensors at gas and power company locations
- Meter and alarming circuits related to power grid
- Circuits supporting underground communications

The Task Force will use this industry input to determine if prioritization of key applications is needed; identify if there are common issues impacting all-IP transition across industries; evaluate existing and potential solutions towards the publication of guidelines; and identify opportunities for customer education regarding the all-IP transition. ATIS would like to complete a report in the first quarter of 2015. Other ATIS programs include:

Over the Top (OTT) Citizen to Authority: ATIS Wireless Technologies and Systems Committee (WTSC) is developing a solution that will identify the technical methods by which an operator of a user access network can acquire and convey location for Non-Operator-Managed OTT citizen-to-authority emergency services.

Next Generation 9-1-1: In March, ATIS WTSC updated the standard that defines the North American emergency call handling procedures in an IMS-based origination network (including steps taken by the originating device) and routing of such calls to a terminating ESInet or to a legacy Selective Router. In 2013, ATIS published an interim text to 9-1-1 solution that allows any end user device with SMS capabilities to launch a text message communication with the relevant PSAP.

Leading a joint effort to develop solutions necessary for the interconnection of Land Mobile Radio (LMR) and LTE networks. This effort supports the National Institute of Standards and Technology (NIST) in its

objective to “accelerate the development of the capability for communications between currently deployed public safety narrowband systems and the nationwide public safety broadband network.”

CMAS solutions per the Warning, Alert and Response Network (WARN) Act and FCC. This effort, which included participation from FEMA and DHS, provides capability for CMAS-enabled devices to receive Presidential, AMBER, and life/property threat alerts (a.k.a. wireless emergency alerts).

Launched Network Functions Virtualization (NFV) Forum: This will facilitate cross-provider service interconnection, interoperability, and interworking solutions. ATIS will define and prioritize use cases where SDN/NFV capabilities are required to generate new value and address immediate challenges; integrate web scale and enterprise applications through programmable network APIs; incorporate service creation tools such as service chaining for construction of business applications; provide coordinated ATIS member contributions to open source activities to further industry objectives.

Administration Items

Future Meetings: Ms. Ward announced NPSTC’s next meeting will be at IWCE on March 20, 2015. On May 6-7, 2015, NPSTC will meet at the Office of the Chief Technology Officer (OCTO) in Washington, D.C. This meeting will be in conjunction with APCO’s Forum and Leadership Awards dinner. Ms. Ward asked APCO if they will sponsor the NPSTC meeting and they agreed. Ms. Ward asked for feedback on locations and dates for the September 2015 meeting. Mr. Kidner invited the Executive Committee to send a representative to TETRA’s meeting in Barcelona, Spain, next year.

Ms. Ward invited other Governing Board members to briefly share information on their organizations. Mr. Wright announced APCO will hold a Technology Forum in Dallas in March and its 2015 Broadband Summit is May 5 in Washington, D.C. Mike Corey, ARRL, said Hartford, CT, could be a meeting site for NPSTC. The area has direct flights and accommodations near the airport.

Adjourn Open Meeting

Rick Comerford, IAEM, moved to adjourn the meeting. Chief Szoc seconded. Meeting adjourned.