November 13, 2017

Executive Director Stan Hilkey
Colorado Department of Public Safety
700 Kipling Street #1000
Lakewood, CO 80215

Executive Director Hilkey:

Please find the attached annual report from the Public Safety Communications Subcommittee (PSCS).

Respectfully and on behalf of the PSCS,

David D. Hayes
Chair, PSCS

cc: Kevin Klein, Director, Colorado Division of Homeland Security& Emergency Management, Department of Public Safety

Public Safety Communications Subcommittee

2017 ANNUAL REPORT

State of and Potential Funding Sources for Public Safety Communications in the State of Colorado

NOVEMBER 6, 2017

Submitted By:

David Hayes
Chair, PSCS
Louisville Police Department
992 West Via Appia
Louisville, Colorado 80027

Robert E. Ricketts
Vice Chair, PSCS
El Paso County Sheriff's Office
27 E. Vermijo Ave. Room 410A
Colorado Springs, Colorado 80902

Holly Nicholson-Kluth
Secretary, PSCS
Douglas County Sheriff's Office
4000 Justice Way
Castle Rock, Colorado 80104

CONTENTS

EXECUTIVE SUMMARY

Mission critical voice and interoperable communications are essential for safe and effective public safety response from daily calls for service as well as for large-scale natural or man-made incidents. The State of Colorado and local governmental entities deploy numerous two-way land mobile radio (LMR) systems that serve state, local, federal, and tribal public safety and first responder agencies. Colorado's diverse land mass ranging from high mountain peaks to low valleys and open plains all pose unique coverage requirements. Due to this diverse land mass, no one system can be deployed. The public safety communications network is **a system-of-systems, built through many partnerships** between state, county and local owners.

The 2017 Annual Report of the Public Safety Communications Subcommittee (PSCS) will give a **brief overview** of where Colorado currently is in attempting to solve issues surrounding the large and complex matrix of what is referred to as the *Statewide Public Safety Radio System*, talk about **recent accomplishments** of this statutorily formed group, and **make recommendations** based on the extensive knowledge and expertise of the directors on the PSCS, working groups, along with other partners and experts from around the State of Colorado.

In 2016, the Public Safety Communications Subcommittee (PSCS) made several recommendations as a part of the statutory requirements. **Many** of the recommendations were not considered, thus they will again be included in this report, as they are necessary to obtain an accurate picture of the state of public safety communications in Colorado. Those recommendations are again presented in this document:

1) A Funding stream must be identified
2) The Business Plan and Needs Assessment must be funded and completed for a complete picture of all systems not just what is often referred to as the DTRS
3) The PSCS position within government be relocated directly under the Director of Public Safety or Homeland Security rather than a subcommittee of the HSAC
4) Remove the sunset provision of the current legislation in 2018

The Public Safety Communications Network position under the Office of Information Technology be moved to the Department of Public Safety or at least the Office of Personnel Administration reporting directly to an Executive Director**. Without a governance model, as well as a complete business plan and needs assessment that can be accepted by ALL of the sovereign systems across Colorado coupled with an adequate funding stream, the life of public safety communication systems for both daily operability and critical situation interoperability will be jeopardized and public safety will not be able to provide the best service for the safety of the citizens of Colorado and for first responders.**

HISTORY

In 2012 the Consolidated Communications Systems Authority (CCSA) was formed by HB 12-1224 to create a funding and sustainment mechanism that would meet the needs of the users of the Colorado Digital Trunked Radio System (DTRS). The CCSA's original focus was only with the DTRS, but early on, recognized the need for sustainment and interoperability with all radio systems operating in the state. In the 2013 annual report submitted to the Joint Budget Committee, it was the CCSA's recommendation that the HB 12-1224 be amended to **include ALL Public Safety communications systems** so that true statewide public safety, interoperable and mission critical communication would be supported through a statewide funding mechanism. In 2014 the CCSA was replaced by the Public Safety Communications Subcommittee (PSCS) through SB 14-127. The Executive Director of Public Safety is now the lead State employee as a champion for all of public safety interoperable communications. The PSCS' membership is statutorily designated and has representation from across Colorado, from the leading public safety organizations and State agencies. The common goal is operable and interoperable communications at all levels of government and across all jurisdictional boundaries.

In 2015, the PSCS also reviewed the prepared Business Plan and the Needs Assessment as outlined in legislation[1], then accepted the prepared documents as presented by the consultants who prepared them. However, the subcommittee did take exception to several portions of the documents. One main exception was that both documents were to be an account of current and future **public safety needs**. Both documents only addressed one large system in Colorado; the DTRS and did not fully address **ALL** of the public safety radio systems in Colorado. The PSCS has worked diligently in its short existence to work on the prescribed duties and responsibilities. We will continue to work on all aspects of the legislation for the benefit of public safety, the visitors and citizens across Colorado.

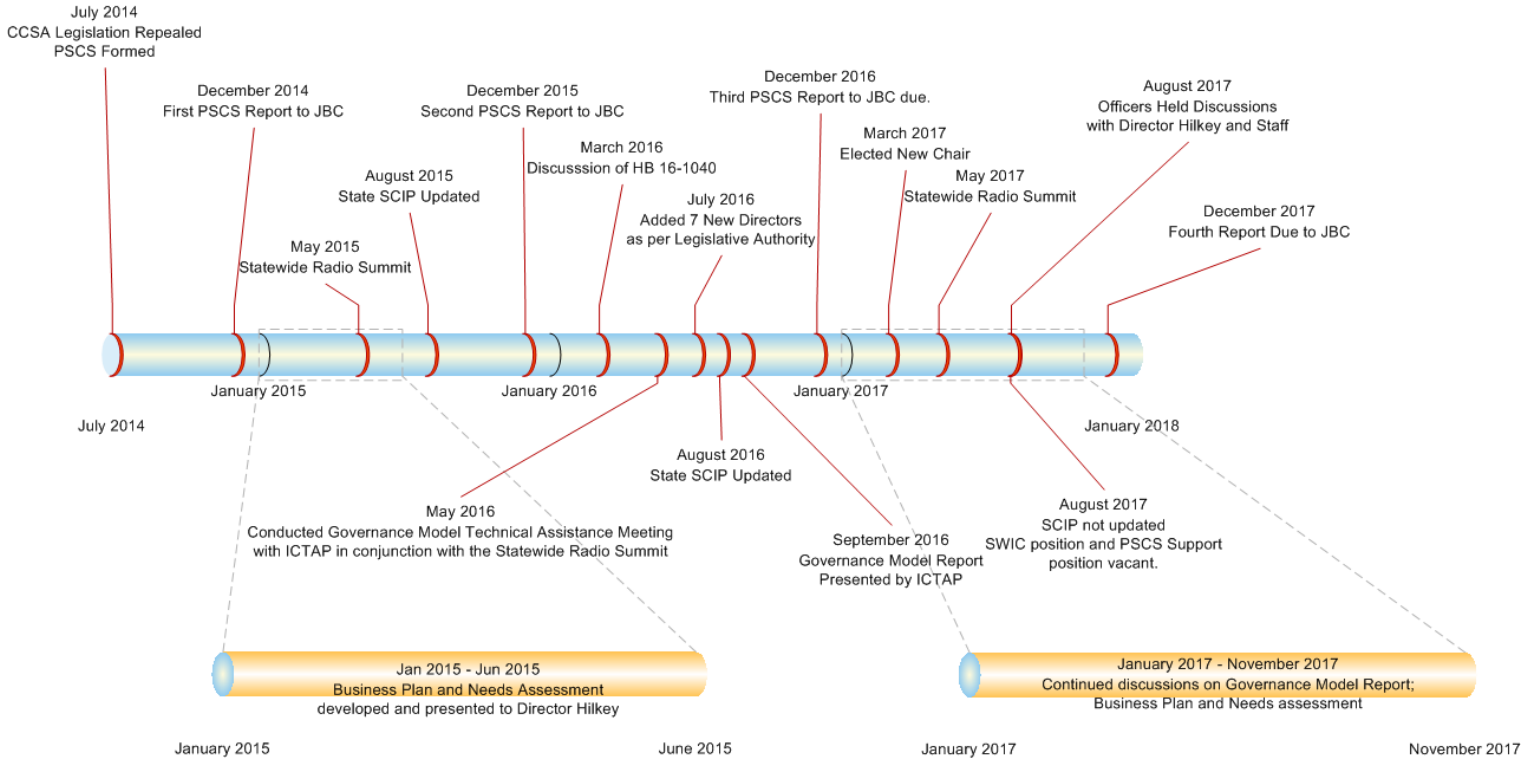
It is the position of the PSCS that completion of the Needs Assessment and Business Plan to include ALL systems in Colorado is required, and warranted in order to obtain a full and complete picture of the state of public safety communications in Colorado to assist with the goal of governance and to meet the initial goals of Senate Bill 14-127.

[1] CRS § 24-33.5-716, as amended

Though there are the varying shapes and sizes of systems across the State of Colorado, they **all** face similar issues and priorities:

- Regular Land Mobile Radio (LMR) equipment maintenance and replacement (Hardware)
- System Upgrade Assurance (SUA) program (Software)
- Acquisition of additional interoperability resources (e.g. Inter Subsystem Interface [ISSI])
- Repair and replacement of an aging microwave backhaul system
- Repair and replacement of aging radio tower sites
- Hardware and software upgrades necessitated by improvements in technology (e.g. repeaters and consoles)
- Shortage of trained Radio Technicians and Support Staff
- Training of constantly changing technology

TIMELINE



ACCOMPLISHMENTS

During 2017 the PSCS continued its work begun in 2014. Under C.R.S. § 24-37.5-506 (2.5) (a) (I) that was enacted in 2014, funding has been set aside from fiscal year 2013-2014 and each fiscal year thereafter until 2024-2025 fiscal year in the amount of $3.5 million to be placed into the Public Safety Trust Fund for use by the Governor's Office of Information Technology (OIT) to replace legacy DTRS equipment and hardware. In addition, beginning in the 2017-2018 fiscal years and continuing until the 2024-2025 fiscal year and additional $3.7 million is to be appropriated and placed in the Public Safety Trust Fund for DTRS System Upgrade Assurance.

It must be noted that $7.2 million funding, discussed above, was **only to upgrade and maintain the DTRS portion** of Public Safety Communications in Colorado.

The funds stated above do not address any other system, equipment belonging to other users, upgrade of coverage in rural areas or interoperability interface equipment in the State.

The PSCS has several specific purposes and duties as specified in legislation[2]. This report is intended to summarize the progress made on those duties and purpose.

The PSCS continues to promote interoperable communications across the State of Colorado by the following:

- Continue to create partnerships with those other organizations and entities that represent a wide array of users.
- Maintain Outreach and Educational subcommittee to provide interoperability information to others.
- The committee receives regular updates from Next Generation 911 deployment and,
- The First Responder Network Authority (FirstNet), the Nationwide Public Safety Wireless Broadband initiative, although this is a separate system that **will not** replace Mission Critical LMR for many years if at all.
- Promote cooperation between Local, Tribal, State, Federal and nongovernmental public safety agencies through an annual Statewide Public Safety Radio Summit put on by members of the PSCS to increase training and agency networking opportunities.

[2] CRS § 24-33.5.1614, as amended

- Members of the PSCS participate in other communications oversight groups (i.e. FCC Region 7 Regional Planning Committees CCNC, RMHUG, PRCC, MARCS, NCRCN, Evergreen Fire, etc.).
- Continue to review and address recommendations in the Business Plan and a Needs Assessment. **These two documents will be living documents and will need updated on a continual basis.**
- Added additional Directors to include a more diverse system representation.

In 2017, the PSCS continued it's educational and outreach task by holding the fourth annual *Statewide Public Safety Radio Summit.* The Summit is a day and a half training session that is focused on bringing public safety practitioners from both the public and private sectors to learn, network and share information.

This year's Summit was attended by approximately 200 people from Federal, State, Local, Military and Private Sector representatives. The Summit consisted of presentations from experts from across the country as well as panel discussions from local practitioners on various experiences related to operable and interoperable communications.

The Summit is coordinated by the PSCS Education and Outreach working group and is fully paid for by sponsor donations from major competing radio manufacturers and a non-profit organization.

RECOMMENDATIONS

Public Safety interoperable communications is dependent on resolving some **continuing** key hurdles:

- Maintaining the Statewide Interoperability Coordinator (SWIC) position filled within the state government.
- Agreements or processes to establish agreements, regarding the responsibilities of, usage, maintenance, ownership, and a sustainable funding source, for interoperable communications for public safety no matter what system is used;
- Fragile trust relationships between the different system owners regarding governance;
- Lack of radio coverage;
- Usage and loading concerns among the different systems;
- Training of users;
- Funding for expansion of coverage around the State.
- Resource allocations for interoperable communications; and
- Workable governance model

In 2015, the PSCS participated in developing the Public Safety Radio System-Wide Business Plan Report and the Public Safety Radio System-Wide Needs Assessment Report. A consultant was retained through the Department of Homeland Security/Office of Emergency Management to prepare the documents. The PSCS took exception to several aspects of the resulting plan and assessment, but presented it on face value as directed by the Legislature. There were several items that either generated discussion about possible future governance which result in the following initial recommendations by the PSCS Directors.

In 2016, the PSCS recommended that the Business Plan and Needs Assessment document be funded and completed for **ALL SYSTEMS** across Colorado so that there is an entire snapshot of the status of public safety communications across the state.

The PSCS still highly recommends that these documents be completed for all systems in Colorado.

FINANCIAL

Technology, even in LMR and communications is ever evolving and therefore a need exists for a replacement and upkeep cycle (sustainment). How do we, as a State, fund or set aside funding for the sustainment cycle keeping public safety communications current so that the best possible service is provided to our citizens? Here are some recommendations that were presented in the CCSA 2013 and in the 2014, 2015 and 2016 PSCS Annual Reports and are still viable options:

- **Reallocation of an existing tax set to sunset**

The State of Colorado has some ongoing as well as some "sun-setting" funds that could be made available and repurposed for capital improvements to, and ongoing maintenance of, public safety communications infrastructure. The repurposing of such a fund, or combination of funds, may be among the most viable of options to provide for the ongoing maintenance and sustainment of the infrastructure of all public safety communication systems, however, to be considered viable, such a fund would need to align with the goals of the PSCS and to the benefits it provides to public safety agencies and ultimately the citizens and industries that consume public safety services.

- **Redirection of Existing, or New, Lottery Funds**
- **Redirection of Marijuana Tax Funds**
- **Statewide Retail Sales Tax**
- **Fee on In-State Vehicle Registrations**
- **Traffic Ticket Surcharge or Additional Criminal Fines**
- **Gasoline Tax**

Other funding options recommended in the business plan include:

- Grant programs, such as the Colorado Wireless Interoperability Network (CWIN) or reuse of the Mining Trust Fund

The process for establishing any additional revenue generating taxes or fees may be difficult and politically challenging, however the PSCS recommends that the Colorado Legislature begin work to establish a dedicated and reliable funding source that will generate sufficient funds to sustain,

maintain, and upgrade ALL public safety communications systems, as needed. **The current Public Safety Trust Fund established under C.R.S. §24-37.5-506, as amended, only addresses one governmental entity and only one system. We recommend that the statute be modified so that funds would be available to all systems with a process of applying for the funds.**

The PSCS will continue to work with all its partners and all levels of government to develop strategies that meet the needs of the public safety communications system owners.

GOVERNANCE

The governance of communications systems takes several approaches. Some are governed by individual governmental entities, such as a municipality or county. Others form partnerships where the various owners of infrastructure come together to manage their respective system(s), work with other surrounding agencies and systems to promote interoperability. Many of these partnerships have been identified previously in this report, but as is demonstrated here, there is no one guiding path yet established. Through the assistance of the OEC/ICTAP, we now have recommendations on ways to proceed with creating a workable governance structure.

These recommendations were provided in the 2016 Annual Report, and still are the PSCS' recommendations in 2017.

OVERALL GOVERNANCE CHALLENGES AND RECOMMENDATIONS

PSCS POSITION WITHIN THE GOVERNMENT ORGANIZATIONAL STRUCTURE[3]

One glaring aspect of the governance recommendation is that the PSCS is buried deep within the overall state structure as a subcommittee, under an advisory committee under a state department. With that, there is an issue with communications barriers that tend to lead to communications failures through the various levels of government in order for the PSCS to be productive.

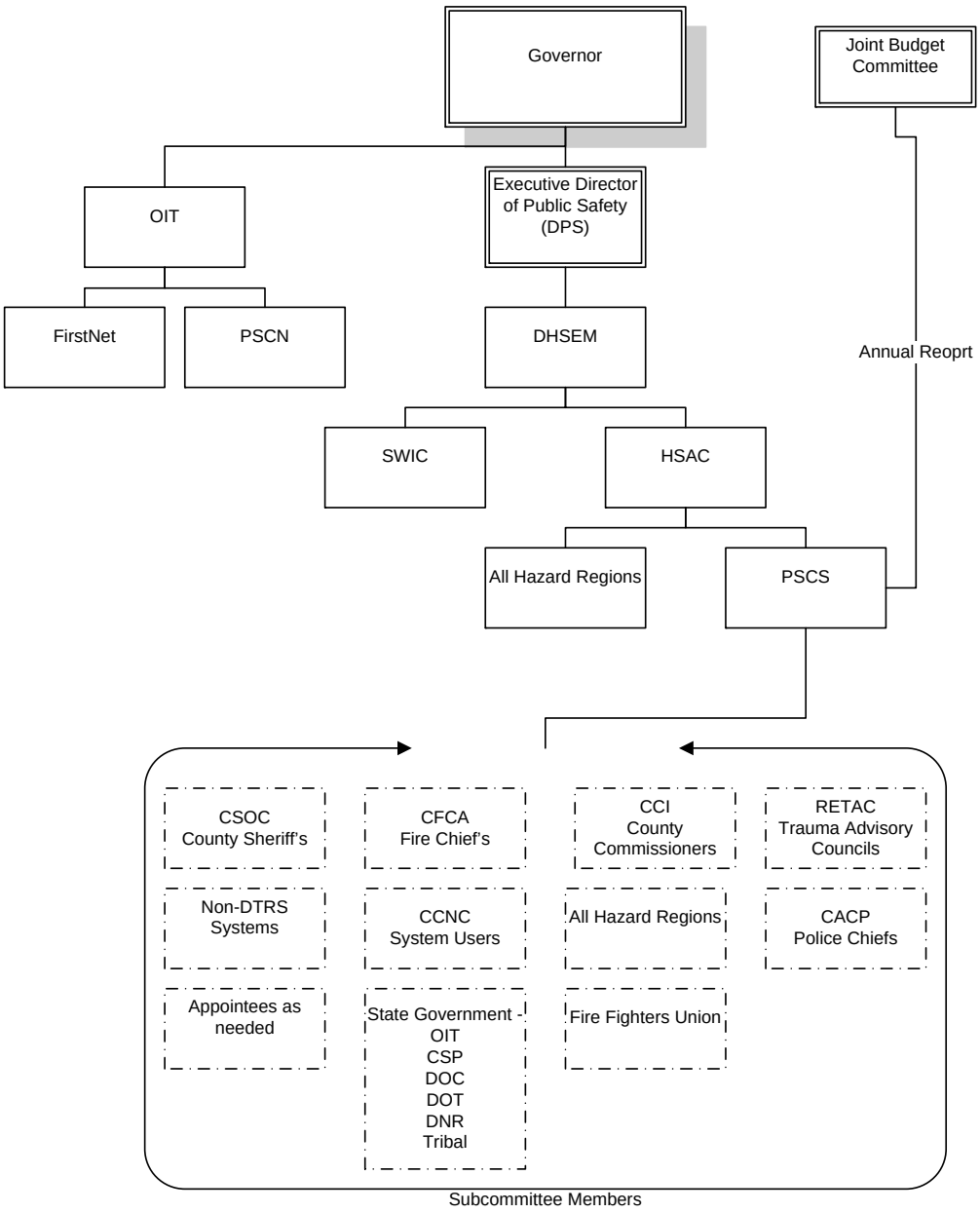
OEC/ICTAP recommends that the PSCS should be elevated directly subordinate to the Colorado Department of Public Safety or the Department of Homeland Security/Emergency Management. Since the PSCS is tasked with public safety communication matters, we would support the move to DPS instead of DHSEM, with the ability to report directly to the

[3] Ibid; pp 11-12

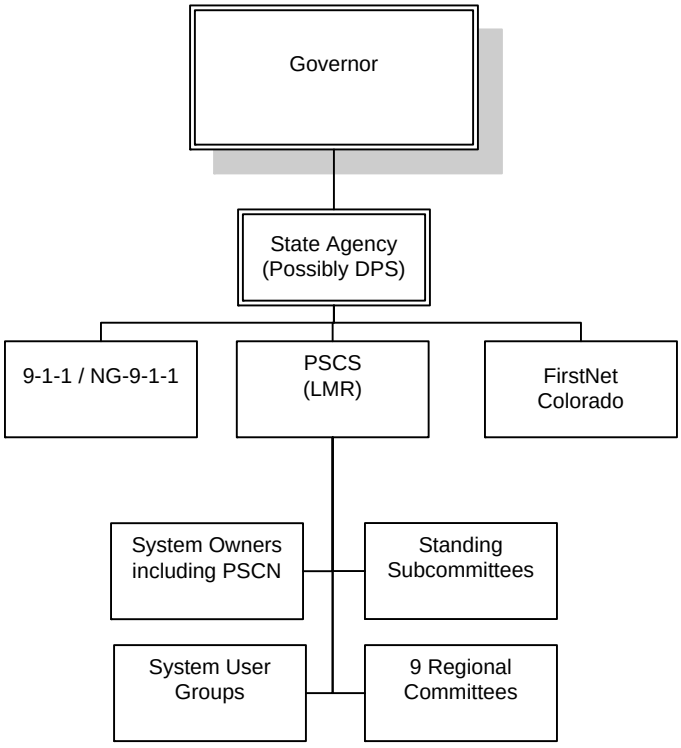
Executive Director of the Department of Public Safety. We would recommend that the SWIC also be elevated directly under the DPS to work closely with the PSCS.

Should this recommendation be adopted, then the current legislation will need to be modified to reflect the position of the PSCS within the overall governance structure.

Current Governance Placement of PSCS



OEC/ICTAP
Recommended
Governance Structure



SPARSE AND DISCONNECTED STRUCTURE[4] AND COMMUNICATIONS PATHWAYS BETWEEN PSCS, 9-1-1 AND FIRSTNET COLORADO[5]

In Colorado, there are three distinct public safety communications groups in three separate state departments. These groups are:

- PSCS – Department of Public Safety/Department of Homeland Security-Office of Emergency Management
- FirstNet Colorado – Governor's Office of Information Technology
- 9-1-1 Task Force – Department of Revenue – Public Utilities Commission

The OEC/ICTAP recommends that the three be placed under one umbrella. At this time the PSCS does not see that as a viable option due to the time it would take for each state department to weigh in on relinquishing the groups.

[4] Ibid; p12
[5] Ibid; p. 12

The PSCS recognizes the need for better coordination, communications between the three groups and will make it a priority for 2017 to facilitate a coordinated effort of communication between the three. One step will be to create a partnership with each group, very similar to the partnerships that have been created with those large system owners not specifically represented on the PSCS.

CONTINUITY[6]

The PSCS supports the recommendation to maintain the existence of the PSCS for as long as the need is there; amend the legislation as needed rather than dismantling the group and recreating it.

The main issue here is the Sunset Clause within the current legislation, the sunset date for the PSCS is **September 1, 2019.** Public Safety communications is a constantly evolving issue which cannot be adequately addressed across the diverse landscape and ownership that exists in Colorado today. The committee needs to be perpetual for as long as there is public safety communications in Colorado.

Thus the recommendation is to amend the current legislation in 2018 to remove the sunset provision, as three years is insufficient to accomplish the tasks specified in the legislation.

REPRESENTATION OF RADIO SYSTEMS[7]

The PSCS is intended to represent **ALL** public safety communications within Colorado, and not just those on specific systems. The perception across Colorado is that the PSCS is too focused on the Digital Trunked Radio System (DTRS) and not enough on issues facing other systems. The PSCS recognizes this and has taken steps even before the Governance Technical Assistance document was prepared to integrate representation from other systems.

One main issue still present was that when the *Business Plan* and *Needs Assessment* was conducted as a part of legislation, **it only focused on the DTRS** and only identified the owners and needs of that one system. Due to time constraints imposed by the legislature and the overall complexity of the project, all that could be addressed was the DTRS and not what was intended in the legislation.

[6] Ibid; p.13
[7] Ibid; pp. 13 -14

The Business Plan and the Needs Assessment needs to be funded and completed for **ALL SYSTEMS** across Colorado so that there is an entire snapshot of the status of public safety communications across the state.

The PSCS recommends funding the completion of the Business Plan and Needs Assessment to include the remaining systems and owners in Colorado.

CLARITY OF RESPONSIBILITIES[8]

In Colorado, responsibility for public safety communications varies from small self-owned (cities/towns/counties) systems to large multi-jurisdictional systems. This can be a challenge to clearly define responsibilities.

The PSCS recognizes:

- The PSCS has several statutorily named responsibilities.
- That the Public Safety Communications Network within OIT has responsibilities.
- That numerous user groups and multi-system groups (CCNC, FRCC, MARC, etc) have their responsibilities.
- That the individual system owners have their responsibilities.

In looking at the responsibilities across Colorado, we find that systems are diverse in how they interact with other systems, from the standpoint of responsibilities. There are some existing agreements, some *Memorandums of Understanding (MOU)* and some general partnership documents. But what appears to be lacking are actual *Intergovernmental Agreements (IGA)* when it comes to the sharing of resources among the diverse system and infrastructure owners. Lack of documented agreements leads to lack of clarity of responsibilities.

With that, the PSCS will, in 2018 continue to take the lead to make headway in addressing the clarity of responsibilities and how they intertwine across the state.

STAKEHOLDER IDENTIFICATION[9]

Defining all of the stakeholders across Colorado is a daunting task, but not an insurmountable one. Identifying interoperable communications governance bodies; developing a master list throughout

[8] Ibid; p.14
[9] Ibid; pp 14-15

the state, starting at the regional level; and then maintaining the list to ensure the dissemination of information are goals that can be obtained.

As previously mentioned, the *Business Plan* and *Needs Assessment* were intended to accomplish this, **but failed to complete it** by not including ALL systems across Colorado. In order to fully identify the stakeholders, the PSCS recommends that funding to complete the Business Plan and Needs Assessment be set aside to identify all stakeholders.

It should also be noted that with the lack of administrative support for the PSCS the majority of 2017 as well as the lack of a SWIC, have hindered the PSCS in moving forward in this area as well.

STAKEHOLDER ENGAGEMENT AND AWARENESS[10]

Based upon a survey conducted by OEC/ICTAP a significant number of respondents are not engaged in any of the various groups affiliated with interoperability in Colorado. The PSCS since its inception has been actively disseminating information to stakeholders through various means, but apparently it may not be reaching the intended audience.

The PSCS maintains a website where the committee's documents are readily accessible. Through a partnership with CCNC, notifications are sent via the CCNC mail server that reaches approximately 850 recipients. Attempts have been made to engage stakeholders from across Colorado. However, without participation from stakeholders, the PSCS can only do so much.

The PSCS recognizes this and will work on making the following items a priority in 2018:

- Continuing to draft documents clarifying responsibilities of the identified interoperable communications groups.
- Actively disseminate materials to as many stakeholders as possible.
- Consider creating training that includes detailed information on the governance structure of interoperable communications in Colorado.

PERCEIVED LACK OF TRUST[11]

There still is a perceived lack of trust across all levels of government across Colorado. There are bridges that need to be mended due to historical information that has influenced these feelings.

[10] Ibid; pp15-16
[11] Ibid; p. 16

Cooperation and trust are key to governance, especially when there is a lack of written agreements. Trust takes time to build and limited headway has been made in a short period of time. There still is a considerable amount of work to be done.

Thus the PSCS recommends that:

- We leverage the regionalized structure to have representation from across Colorado for information dissemination and information gathering.
- We perform more and widespread outreach across Colorado, utilizing key representatives of PSCS (possibly the SWIC) to have face-to-face contact to assist in the trust building.

REGIONAL STRUCTURE DISCONNECTED FROM PSCS[12]

The HSAC, of which the PSCS is a subcommittee, is based upon a structure of nine (9) All Hazard Regions across Colorado. The PSCS, by statute has a different structure, but includes portions of each of the All Hazard regions.

The PSCS welcomes and encourages participation from each of the All Hazard regions as well as any other interested organization. Under the current legislation, the PSCS can increase or decrease its membership as needed (except for those specified in legislation). Should an All Hazard Region designate a representative that actively will participate to represent their region, they may be considered for the Board.

The PSCS recommends that the All Hazard Regions actively participate in the PSCS so that each region is represented.

The PSCS will continue to review and discuss the recommendations of the business plan; the needs assessment and the governance assessment and make the following comments:

- It is imperative the governance and membership structure is well suited for the PSCS. The PSCS will look at ways to implement the regionalization of interoperable communications as recommended in the governance assessment and the business plan.
- The PSCS recommends that at this time, the CCNC not be absorbed by the PSCS. Rather, the PSCS will continue its partnership with CCNC and discuss how the two entities can complement each other.

[12] Ibid; pp. 16-17

- The PSCS has taken ownership of the SCIP and will work directly with the SWIC to update it annually.
- Discussion has taken place regarding the organizational structure of Office of Information Technology and the Public Safety Communications Network (PSCN) team and their relationship with the SWIC**. The PSCS recommends that the Public Safety Communications Network should reside somewhere else within State Government. Since it is a public safety network, it might be better suited within the Department of Public Safety or at least the Office of Personnel Administration, but located at a level that reports directly to an executive director.** This will ensure an accountability to and communication with the many agencies and elected officials that use the system, but especially those that rely on this system for mission critical operations in the area of first responders for public safety. It should be noted that this was a recommendation of the Public Safety Radio System-Wide Business Plan and the PSCS Directors. Also noteworthy is the fact that the Department of Personnel and Administration administers most of the agreements for the PSCN team. This would follow a national trend to move radio systems out of Information Technology so that they receive the attention their criticality requires.
- Optimally, the PSCS should be removed as subcommittee of the HSAC and codified as a separate board with reporting responsibility directly to the State's Homeland Security Advisor and to the Joint Budget Committee.
- The sunset clause of the current legislation should be totally eliminated as public safety communications across the state should remain perpetual and sustainable to ensure the safety of our citizens and responders.
- Representatives from the All Hazard Regions should actively participate in the PSCS.
- **Colorado needs to maintain a dedicated SWIC position as a full-time staff member and leverage the position to build relations not only outside of Colorado, but within all of the regions in Colorado. The majority of 2017 the State of Colorado was without a SWIC and has a track record of not being able to keep the position filled.**

CONCLUSION

Though there has been some progress made from 2013 to present day to begin to solve some of the issues facing public safety communications in Colorado, it has only just begun. Public Safety/First Responders need to be able to communicate with each other no matter what system they use, what manufacturer they select, or what frequency band they operate on. This is the true bottom line facing the complex system of systems we have here in Colorado.

Without a governance model, as well as a complete business plan and needs assessment that can be accepted by ALL of the sovereign systems across Colorado coupled with an adequate funding stream, the life of public safety communication systems for both daily operability and critical situation interoperability will be jeopardized and public safety will not be able to provide the best service for the safety of the citizens of Colorado and for first responders.

To that end the PSCS believes that a working Governance model for Public Safety Radio Systems in Colorado is still its number one priority. However; recognizes the need to find out all of the system owners and their designated representatives, continue to develop a formal inclusive contact list, and establish an effective method of communicating with those designated representatives.

APPENDIX A

TECHNICAL BACKGROUND AND DEFINITIONS

INFRASTRUCTURE

The infrastructure of Public Safety communications is comprised of:

- Radio sites (aka radio towers) that are spread out across the state and that house radio repeater equipment,
- Master sites which control the operations of the radio sites,
- Dispatch centers that interface to allow radio console positions to directly connect to the network, and
- Backhaul links ("transport links") that interconnect the sites to each other and to the master sites and dispatch centers.
- Interfacing equipment that connects disparate radio systems.

TECHNOLOGY

The technology used in public safety communications involves VHF, UHF, 700 megahertz (MHz) and 800 MHz analog and digital voice trunking as defined by the APCO/TIA[13] Project 25 standards for public safety voice communications. One key note to this is that not all public safety communications are up-to-date with the Project 25 (P25) standard. The standard is a recommended set of standards that provide for interoperability between different systems and different manufacturers.

[13] APCO is the Association of Public Safety Communications Officials, International and TIA is the Telecommunications Industry Association that adopted P25 in its Suite 102 of standards.

MAJOR MANUFACTURERS

The major manufacturers for the public safety communications across Colorado include, but are not limited to:

- Motorola Solutions
- Harris Corporation
- EF Johnson Technologies
- Tait Communications
- Kenwood Communications
- Airbus DS Communications (Formerly Cassidian Communications)

Most if not all of these manufacturers supply P25 capable equipment. The need as well as the expense is the issue for many agencies to transition to the P25 standard.

BACKHAUL AND INTERCONNECTIONS

The backhaul links that provide the interconnections primarily use point-to-point microwave technology, fiber optic cable and even telephone line (T-1) for some links. During a typical month, one system alone facilitates approximately 8.3M calls between public safety users that operate in *95%*[14] of the state that it serves.

OWNERSHIP

The ownership of public safety communications systems is extremely diverse and made up of the owners of system infrastructure and joint partnerships.

[14] The State of Colorado's advertised "baseline" coverage criteria for DTRS are 95% coverage reliability to a mobile (vehicle-mounted) radio on state highways. Local governments have provided many enhancements to these criteria and many have their own "baseline" criteria.

For the most part, regardless of ownership, usage of the network for interoperability is ubiquitously open to all authorized users[15] and statewide access is available to all user agencies independent of their jurisdiction[16].

INTEROPERABILITY VERSES OPERABILITY

Interoperability and operability often become intertwined with each other and at times misconstrued. This then tends to lead to a misconception that there are system issues and we cannot communicate with other public safety agencies.

Operability, as it relates to public safety communications, means the equipment that is used by a particular entity functions on a day-to-day basis without failing or losing communications with those on the same system.

Interoperability, again as it relates to public safety communications, means the equipment can interconnect or be used to communicate with an entity on another system or in another area of the state.

Public safety communication must first be operable before it can be interoperable. Adequate equipment must be maintained and serviceable. An ongoing sustainment plan must be developed to fund the required maintenance, replacement and upgrades to equipment to ensure operability. There must not be coverage gaps in communications, but if they do it has to be extremely minimal. Operability must be the starting point for any entity that provides services to the public. They must be able to communicate within their respective jurisdictions, regardless of size or terrain.

Once the operability is obtained, then entities are able to look at interoperability. Interoperability needs to be obtained so that we, as public safety providers of all disciplines,

[15] Authorized users must be: i) from a public safety and public service agency from a State, Tribal, County, and Local government; federal agencies; special districts; and EMS provider; and ii) eligible under Title 47 of the Code of Federal Regulations (CFR) Part 90 Private Land Mobile Radio Services §90.20 Public Safety Pool. Access to an individual system is dependent upon approval of the manager/owner of the system.

[16] Exceptions to this statement do exist wherein, by explicit agreement; certain owners allow visiting, out- of-jurisdiction users to access selected statewide mutual aid channels and talkgroups instead of those users' home talkgroup

(Law Enforcement, Fire, Emergency Medical Services, etc) can communicate with one another in times of crisis in a mutual, coordinated effort to protect the public.

Interoperability may be obtained by interconnecting the various systems, forming partnerships, sharing resources and infrastructure. Sounds easy, but it is not. Agreements need to be formed, ground rules on usage need to be established, equipment needs to be sustained, and training of personnel needs to be on-going and up-to-date.

The basic key elements, as outlined by the National Public Safety Telecommunications Council (NPSTC) are as follows:

Direct or Talk Around: This mode of communications provides public safety with the ability to communicate unit-to-unit when out of range of a wireless network OR when working in a confined area where direct unit-to-unit communications is required.

Push-to-Talk (PTT}: This is the standard form of public safety voice communications today - the speaker pushes a button on the radio and transmits the voice message to other units. When they are done speaking they release the Push-to-Talk switch and return to the listen mode of operation.

Full Duplex Voice Systems: This form of voice communications mimics that in use today on cellular or commercial wireless networks where the networks are interconnected to the Public Switched Telephone Network (PSTN).

Group call: This method of voice communications provides communications from one-to-many members of a group and is of vital importance to the public safety community.

Talker Identification: This provides the ability for a user to identify who is speaking at any given time and could be equated to caller ID available on most commercial cellular systems today.

Emergency Alerting: This indicates that a user has encountered a life-threatening condition and requires access to the system immediately and is, therefore, given the highest level or priority.

Audio Quality: This is a vital ingredient for mission critical voice. The listener MUST be able to understand without repetition, can identify the speaker, can detect stress in a speaker's

voice, and be able to hear background sounds as well, without interfering with the prime voice communications.[17]

[17] Mission Critical Voice Communications Requirements for Public Safety, National Public Safety Telecommunications Council, Broadband Working Group

APPENDIX B

ACRONYM LIST

APCO	Association of Public Safety Communications Officials
CCNC	Consolidated Communications Network of Colorado
CCSA	Consolidated Communications System Authority
C.R.S.	Colorado Revised Statues
DHS	Department of Homeland Security
DTRS	Digital Trunked Radio System
FCC	Federal Communications Commission
FIRSTNET	First Responder Network Authority
FRCC	Front Range Communications Consortium
ICTAP	Interoperable Communications Technical Assistance Program
ISSI	Inter Subsystem Interface
JBC	Joint Budget Committee
LMR	Land Mobile Radio
MCV	Mission Critical Voice
MHz	Megahertz
NCRCN	Northern Colorado Regional Communications Network
NG-911	Next Generation 911
NPSTC	National Public Safety Telecommunications Council
OEC	Office of Emergency Communications

OIT	Governor's Office of Information Technology
P25	APCO's Project 25 Standards
PPRCN	Pikes Peak Regional Communications Network
PSCN	Public Safety Communications Network
PSCS	Public Safety Communication Subcommittee
RMHUG	Rocky Mountain Harris Users Group
SUA	System Upgrade Assurance
SWIC	Statewide interoperability Coordinator
TIA	Telecommunications Industry Association
UHF	Ultra High Frequency
VHF	Very High Frequency

APPENDIX C

PSCS DIRECTORS

First Name	Last Name		Representing
Gary	Pasicznyk	Director	Non-DTRS Systems
Brian	Zoril	Director	Non-DTRS Systems
Randy	Lesher	Director	SEMTAC
Bob	Ricketts	Vice Chair	All Hazards Regions
Dave	Hayes	Chair	All Hazards Regions
Tad	Rowan	Director	CFCA (Rural)
Craig	Scherer	Director	CPFF
Rodger	Partridge	Director	CCINC
Jeff	Reynolds	Director	CCNC (SE Region)
Steve	Schroder	Director	CCNC (SW Region)
Mark	Wolf	Director	CCNC (Metro Region)
Dave	Rowe	Director	CCNC (NE Region)
Todd	Holzwarth	Director	CCNC (NW Region)
Paula	Creasy	Director	CACP
Holly	Nicholson-Kluth	Secretary	CSOC
Peter	Bangas	Director	OIT
Donald	Naccarato	Director	DPS - CSP
Patsy	Hartley	Director	DOC
Jack	Cobb	Director	CDOT
Eric	Harper	Director	CDNR
Kathi	Gurule	Director	Southern Ute Tribe
Vacant		Director	Ute Mountain Ute Tribe
Vacant		Director	Evergreen Non-DTRS
Wade	Williams	Director	Aurora Non-DTRS
Dean	Scott	Director	Boulder Non-DTRS
Erin	Green	Director	Arvada Non-DTRS
Steve	Kabelis	Director	RMHUG Non-DTRS
Matt	Mueller	Director	Denver Non-DTRS
Bill	Malone	Director	FRCC Non-DTRS
Kim	Coleman	FirstNet	FirstNet Colorado