



November 9th, 2015

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

The Honorable John Hickenlooper
Governor, State of Colorado
136 State Capitol
Denver, CO 80203

and

The Colorado Joint Budget Committee
200 East 14th Avenue, 3rd Floor
Legislative Services Building
Denver, CO 80203

Attached you will find the Public Safety Communications Subcommittee's (PSCS) 2015 Annual Report. Countless hours have been invested, all at a cost to the Directors, members, guests and the agencies they represent, into the meetings, discussions, and presentations, to assemble the documentation contained in this annual report. The basis of this report contains a strong recommendation for the Administration, and all elected officials in Colorado, that the PSCS recognizes that the DTRS should no longer be the sole focus of this Subcommittee. We are committed to creating partnerships and seeking membership with the plethora of public safety communications systems throughout the State so that we can work to ensure interoperability between all public safety first responders. We are committed to providing more in depth reports on those "other communications systems" in future reports.

As a result of legislation passed in 2013, a needs assessment and business plan was recently completed regarding statewide radio communications. It is extremely important that all legislators, and key officials understand that the focus of those two reports was primarily DTRS centric and little, if any, information can be gleaned from them regarding many other sovereign public safety radio communications systems. Public Safety communications is at a crossroads and serious and difficult decisions lie ahead. The model used in the past decade is no longer sustaining the critical tools of governance and funding needed by the first responders of Colorado. Local, regional, and statewide **governance with financial sustainability** must be obtained if continued effective service for responders is to be achieved.

Annual investments must be made to maintain and sustain this public safety lifeline, as the prospect for a Nationwide Public Safety Broadband Network (NPSBN) is years away, and the possibility of this resource providing reliable mission critical voice capabilities is still in question.

Since its inception the DTRS has not charged users a fee to operate on the system and this continued ability to operate at no cost to many agencies and political jurisdictions has created a sense of entitlement regarding State and local radio communications. This practice has established a false standard that must be dealt with as part of an overall reliable funding scheme. We recognize that there are no miracle funding cures or solutions that do not have shortfalls and potential discomfort for elected officials asking constituents for money through fees or taxes, and a multifaceted income model must be developed and instituted. Some additional future public safety communications related challenges that have been identified include:

- The development and implementation of the NPSBN, which will initially provide enhanced data transmission capabilities for first responders
- Building strong relationships through partnerships with all jurisdictions that provide local radio communications for Public Safety and understand their challenges with operability and interoperability with neighboring jurisdictions
- Filling gaps in radio coverage with new radio communications sites as identified in the needs assessment and business plan.

We remain available to provide further information or testimony as needed regarding the current needs of public safety communications systems and look forward to working closely with Public Safety Radio Systems governing bodies, the Homeland Security and All Hazards Senior Advisory Committee (HSAC), the Joint Budget Committee (JBC), the Colorado House and Senate, and the Governor's office to brainstorm, identify, and develop ongoing solutions in order to ensure that there remains a viable and effective public safety wireless interoperable communications tool.

Respectfully submitted on behalf of the PSCS,




Robert E. Ricketts

Kurt C. Schlegel

PSCS Chair

PSCS Vice Chair



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Public Safety Communications Subcommittee

Annual Report

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

November 9th, 2015

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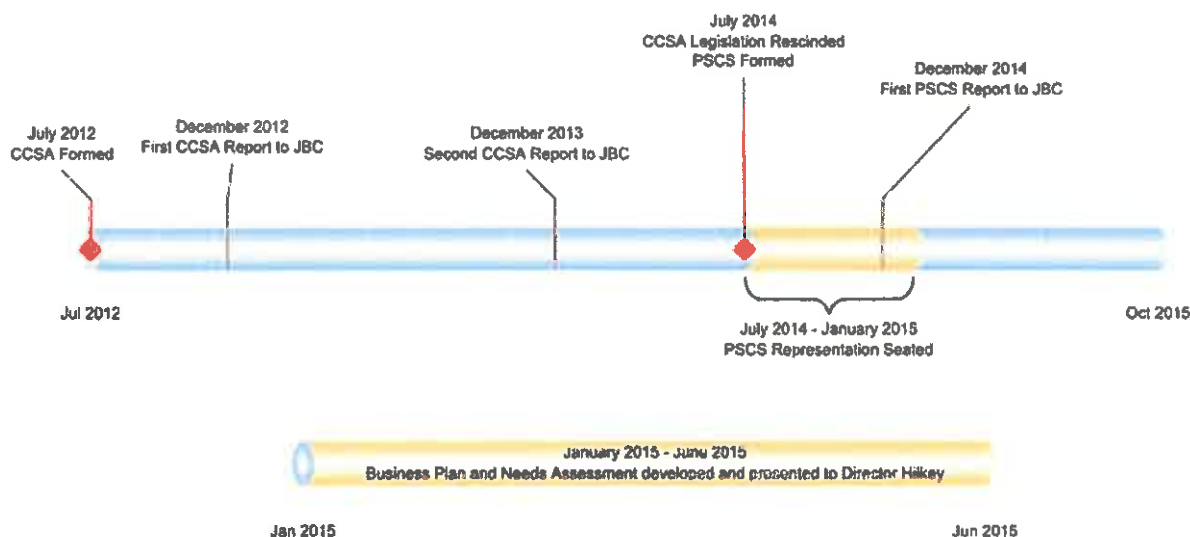
Executive Summary

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. Colorado has many systems and many system owners ranging from small local to large State wide systems that make up the public safety communications network.

The 2015 Annual Report of the Public Safety Communications Subcommittee (PSCS) will give a brief history of where Colorado has been in the past few years 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. Our recommendations will take into consideration the results of the recently completed *Needs Assessment* and *Business Plan* study funded by the C.R.S. §24-33.5-716. Additionally, we will list goals to work toward in 2016 required by this same statute.

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 a 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.



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

- Regular 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)
- Radio Technicians and Support Staff
- Training of constantly changing technology

2014 continued to be a turning point for public safety interoperable communications through legislation that established a Public Safety Communications Subcommittee (PSCS) under the Homeland Security and All-Hazard Advisory Committee. The PSCS transitioned from the original directors of the CCSA in June 2014. 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.

Accomplishments

During 2015 the transition from CCSA and its original directors continued. 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, an additional \$3.7 million is to be appropriated and placed in the Public Safety Trust Fund for DTRS System Upgrade Assurance. The Public Safety Communications Subcommittee now has an identified funding stream, through the Executive Director of Public Safety, to support its operations (e.g. outreach and educational materials, postage, etc.). Since this is an appointed volunteer group of dedicated public safety professionals that is tasked with specific duties in support of public safety communications; the continual funding of an operational budget through the Department of Public Safety to include a full time employee (FTE) will be needed in order to finish the work that has been initiated.

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. It does not address any other system in the State.

The PSCS has several specific purposes and duties as specified in legislation¹. 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:

¹ CRS § 24-33.5.1614, as amended

- Created partnerships with those other organizations and entities that represent a wide array of users.
- Maintained Outreach and Educational subcommittee to provide interoperability information to others.
- Presented at the County Sheriff's of Colorado Sheriff's and Undersheriff's Conference in June in Montrose attempted to educate users, elected officials and department heads on the issues, possible solutions and possibility for partnerships.
- The committee received regular updates to Next Generation 911 deployment and, The First Responder Network Authority (FirstNet), the Nationwide Public Safety Wireless Broadband intuitive, although this is a separate system that will not replace Mission Critical LMR for many years if at all.
- Promoted 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.
- Participated in other communications oversight groups (i.e. FCC Region 7 Regional Planning Committees).
- Assisted in the preparation, and completion of a Business Plan and a Needs Assessment. **These two documents will be living documents and will need updated on a continual basis.**
- Continued work on ISSI interoperability by forming a specific working group to facilitate the ongoing discussion and planning of implementation between various sovereign systems now and in the future.
- Assisted the Statewide Interoperability Coordinator (SWIC) in the preparation of the updated Statewide Communications Interoperability Plan (SCIP). The plan is the framework for interoperable communications across Colorado.

The PSCS also reviewed the prepared Business Plan and the Needs Assessment as outlined in legislation², then accepted the prepared documents as presented by the consultants that prepared them. However, the subcommittee did take exception to several of the conclusions and recommendations of the documents. One main exception was that the legislation indicated the documents were to be an account of current and future **public safety radio communications needs**. However, the contractor was not given the time need to provide the State of Colorado with a comprehensive assessment of our current statewide public safety interoperable communications capabilities.

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.

² CRS § 24-33.5-716, as amended

Recommendations

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

- Development of 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;
- Re-building fragile trust relationships between the different system owners regarding governance;
- Solving the lack of radio coverage;
- Solving the usage and loading concerns among the different systems; and
- Requesting funding for resource allocations for interoperable communications

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 of the conclusions and recommendations 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.

Financial

Technology, even in LMR and communications is ever evolving and therefore there exists a need for a replacement and upkeep cycle (sustainment). How do we all meet our obligations to 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?

The PSCS will evaluate the funding recommendations made by Federal Engineering and CDX Wireless in the business plan and determine how they align with the goals of the PSCS. Additionally, the PSCS will

seek the input of all system owners to determine their level of coverage, capacity, and interoperability needs so that the cost assessment can be revised to more accurately reflect the needs for everyone.

The process for establishing any additional revenue generating taxes or fees may be difficult and politically challenging, however the PSCS knows that the Colorado Legislature has tackled these issues successfully before and it recommends that the 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 this fund usage be reviewed by the PSCS to ensure that the funds are being used for the purposes designated under the statute with oversight by the HSAC.**

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) and 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.

With the formation of the PSCS and the requirement to develop a business plan for all of public safety communications, there is now some basic direction to proceed as a course of action.

Governance will be one of the many hurdles to overcome, given the fact that Colorado is a “home rule” State, whereby governmental entities have control of their own jurisdictions. Only through a concerted effort to establish agreements, partnerships and trust, can we overcome this massive hurdle.

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

- It is imperative the governance and membership structure is well suited for the PSCS. Over the next year, the PSCS will assess membership, statewide regional representation, and its position within HSAC and whether it is best served independently and not a subcommittee of the HSAC.
- 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.
- The PSCS has requested training through the Department of Homeland Security – Office of Emergency Communications (DHS OEC) via the SWIC to help facilitate developing a governance model for Colorado.
- 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.

Conclusion

Though there has been some progress made in 2013, 2014 and 2015 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 that can be accepted by ALL of the sovereign systems across Colorado and 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 its number one priority.

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/TIA³ 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.

Major Manufacturers

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

³ 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.

- 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%⁴ of the state that it serves.

Ownership

The ownership of public safety communications systems is extremely diverse and made up of the owners of systems, infrastructure and joint partnerships. (See Appendix C)

For the most part, regardless of ownership, usage of the network for interoperability is ubiquitously open to all authorized users⁵, and statewide access is available to all user agencies independent of their jurisdiction⁶.

⁴ 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.

⁵ 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.

Interoperability versus 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 another public safety agency.

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 can the equipment **interconnect or be used to communicate with an entity on another system** or in another area of the state.

Public safety communications must first be **operable** before they can be interoperable. They have to have adequate equipment which is maintained and serviceable. An ongoing sustainment plan must be developed to fund the required maintenance, replacement and upgrades to equipment to ensure operability. They must not have coverage gaps in communications, but if they do it is 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, (Law Enforcement, Fire, Emergency Medical Services, etc) can communicate with one another in times of crisis and in a mutual, coordinated effort to protect the public we serve.

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

⁶ 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.

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 NPSTC (What is this?) in the following:

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, and 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**.⁷

⁷ 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 Statutes
DHS	Department of Homeland Security
DTRS	Digital Trunked Radio System
FCC	Federal Communications Commission
FirstNet	First Responder Network Authority
FRCC	Front Range Communications Consortium
ISSI	Inter Subsystem Interface
JBC	Joint Budget Committee
LMR	Land Mobile Radio
MCV	Mission Critical Voice
MHz	Megahertz
NCRCN	Northern Colorado Regional Communications Network
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
SUA	System Upgrade Assurance
SWIC	Statewide Interoperability Coordinator

TIA	Telecommunications Industry Association
UHF	Ultra High Frequency
VHF	Very High Frequency

Appendix C

Public Safety Communications Subcommittee (PSCS) Directors

Public Safety Communications Subcommittee (PSCS) 23 - SB14-127, 24-33.5-1613, (3.3) (e)

	Director	Representation Notes
1	Gary Pasicznyk	(I)(A) Representing non-DTRS Systems (Executive Director)
2	Brian Zoril	(I)(A) Representing non-DTRS Systems (Executive Director)
3	Randy Leshner	(I)(B) Representing license Ambulance, EMS, Trauma (SEMTAC)
4	Bob Ricketts	(I)(C) Representing 9 All Hazards Regions (Executive Director)
5	Dave Hayes	(I)(C) Representing 9 All Hazards Regions (Executive Director)
6	Kurt Schlegel	(I)(D) Representing Metropolitan Fire (Colorado State Fire Chiefs' Association)
7	Tad Rowan	(I)(D) Representing Rural Fire (Colorado State Fire Chiefs' Association)
8	Vacant	(I)(E) Representing Labor Organization (Colorado Professional Fire Fighters)
9	Rodger Partridge	(I)(F) Representative of Colorado Counties (Colorado Counties, INC.)
10	(SE) Jeff Reynolds	(I)(G) Representative of Colorado DTRS (CCNC, Inc.)
11	(SW) Steve Schroder	(I)(G) Representative of Colorado DTRS (CCNC, Inc.)
12	(M) Mark Wolf	(I)(G) Representative of Colorado DTRS (CCNC, Inc.)
13	(NE) Dave Rowe	(I)(G) Representative of Colorado DTRS (CCNC, Inc.)
14	(NW) Todd Holzwarth	(I)(G) Representative of Colorado DTRS (CCNC, Inc.)
15	Paula Creasy	(I)(H) Representative of Law (Colorado Association of Chiefs of Police)
16	Holly Nicholson-Kluth	(I)(H) Representative of Law (County Sheriff's of Colorado)
17	Peter Bangas	(II)(A) CIO or designee (Governors Office of Information Technology)
17	Pam Monsees - Proxy	(II)(A) CIO or designee (Governors Office of Information Technology)
18	Don Naccarato	(II)(B) Chief of CSP or designee (CSP)
19	James Moore	(II)(C) ED of DOC or designee (Executive Director of DOC)
20	Daryll Lingst	(II)(D) ED of DOT or designee (Executive Director of DOT)
20	Elbert Hunt - Proxy	(II)(D) ED of DOT or designee (Executive Director of DOT)
21	Eric Harper	(II)(E) ED of DNR or designee (Executive Director of DNR)
21	Heather Dugan - Proxy	(II)(E) ED of DNR or designee (Executive Director of DNR)
22	Kathi Gurule	(III) Representative of Tribal Nation (Ute Tribe)
23	Vacant	(III) Representative of Tribal Nation (Ute Mountain Ute Tribe)

Appendix D

Partial Statewide Ownership List - DOES NOT INCLUDE SOVEREIGN SYSTEMS

Continued on next page

County	Site Name	State	Altitude (ft)	Frequency (MHz)	Power (W)	Bandwidth (kHz)	Modulation	Service
Sumner County	Radio Site Repetier	Colorado	7	1				
State of Colorado	Radio Site Repetier	Colorado	59	1				Coyote Pass Repetier.1
State of Colorado	Radio Site Repetier	Colorado	59	1				Coyote Pass Repetier.2
State of Colorado	Radio Site Repetier	Colorado	59	1				Coyote Pass Repetier.3
State of Colorado	Radio Site Repetier	Colorado	59	1				Coyote Pass Repetier.4
State of Colorado	Radio Site Repetier	Colorado	59	1				Coyote Pass Repetier.5
State of Colorado	Radio Site Repetier	Crags	91	1				Crags Repetier.1
State of Colorado	Radio Site Repetier	Crags	91	1				Crags Repetier.2
State of Colorado	Radio Site Repetier	Crags	91	1				Crags Repetier.3
State of Colorado	Radio Site Repetier	Crags	91	1				Crags Repetier.4
State of Colorado	Radio Site Repetier	Crags	91	1				Crags Repetier.5
State of Colorado	Radio Site Repetier	Crested	67	2				Crested Repetier.1
State of Colorado	Radio Site Repetier	Crested	67	2				Crested Repetier.2
State of Colorado	Radio Site Repetier	Crested	67	2				Crested Repetier.3
State of Colorado	Radio Site Repetier	Crested	67	2				Crested Repetier.4
State of Colorado	Radio Site Repetier	Crested	67	2				Crested Repetier.5
State of Colorado	Radio Site Repetier	Crested Butte	85	2				Crested Butte Repetier.1
State of Colorado	Radio Site Repetier	Crested Butte	85	2				Crested Butte Repetier.2
State of Colorado	Radio Site Repetier	Crested Butte	85	2				Crested Butte Repetier.3
State of Colorado	Radio Site Repetier	Crested Butte	85	2				Crested Butte Repetier.4
State of Colorado	Radio Site Repetier	Crested Butte	85	2				Crested Butte Repetier.5
Pitkin County	Radio Site Repetier	Crown Mountain	92	2				Crown Mountain Repetier.1
Pitkin County	Radio Site Repetier	Crown Mountain	92	2				Crown Mountain Repetier.2
Pitkin County	Radio Site Repetier	Crown Mountain	92	2				Crown Mountain Repetier.3
Pitkin County	Radio Site Repetier	Crown Mountain	92	2				Crown Mountain Repetier.4
Pitkin County	Radio Site Repetier	Crown Mountain	92	2				Crown Mountain Repetier.5
State of Colorado	Radio Site Repetier	Dakota	24	2				Dakota Mountain Repetier.1
State of Colorado	Radio Site Repetier	Dakota	24	2				Dakota Mountain Repetier.2
State of Colorado	Radio Site Repetier	Dakota	24	2				Dakota Mountain Repetier.3
State of Colorado	Radio Site Repetier	Dakota	24	2				Dakota Mountain Repetier.4
State of Colorado	Radio Site Repetier	Dakota	24	2				Dakota Mountain Repetier.5
State of Colorado	Radio Site Repetier	Dakota	24	2				Dakota Mountain Repetier.6
State of Colorado	Radio Site Repetier	Deer Peak	51	6				Deer Peak Repetier.1
State of Colorado	Radio Site Repetier	Deer Peak	51	6				Deer Peak Repetier.2
State of Colorado	Radio Site Repetier	Deer Peak	51	6				Deer Peak Repetier.3
State of Colorado	Radio Site Repetier	Deer Peak	51	6				Deer Peak Repetier.4
State of Colorado	Radio Site Repetier	Deer Peak	51	6				Deer Peak Repetier.5
State of Colorado	Radio Site Repetier	Deer Peak	51	6				Deer Peak Repetier.6
State of Colorado	Radio Site Repetier	Deer Peak	51	6				Deer Peak Repetier.7
State of Colorado	Radio Site Repetier	Deer Peak	51	6				Deer Peak Repetier.8
State of Colorado	Radio Site Repetier	Deer Peak	51	6				Deer Peak Repetier.9
State of Colorado	Radio Site Repetier	Deer Trail	57	1				Deer Trail Repetier.1
State of Colorado	Radio Site Repetier	Deer Trail	57	1				Deer Trail Repetier.2
State of Colorado	Radio Site Repetier	Deer Trail	57	1				Deer Trail Repetier.3
State of Colorado	Radio Site Repetier	Deer Trail	57	1				Deer Trail Repetier.4
State of Colorado	Radio Site Repetier	Deer Trail	57	1				Deer Trail Repetier.5
State of Colorado	Radio Site Repetier	Delta	51	2				Delta Repetier.1
State of Colorado	Radio Site Repetier	Delta	51	2				Delta Repetier.2
State of Colorado	Radio Site Repetier	Delta	51	2				Delta Repetier.3
State of Colorado	Radio Site Repetier	Delta	51	2				Delta Repetier.4
State of Colorado	Radio Site Repetier	Dolores	8	2				Dolores Repetier.1
State of Colorado	Radio Site Repetier	Dolores	8	2				Dolores Repetier.2
State of Colorado	Radio Site Repetier	Dolores	8	2				Dolores Repetier.3
State of Colorado	Radio Site Repetier	Dolores	8	2				Dolores Repetier.4
State of Colorado	Radio Site Repetier	Dolores	8	2				Dolores Repetier.5
State of Colorado	Radio Site Repetier	Douglas Pass	64	2				Douglas Pass Repetier.1
State of Colorado	Radio Site Repetier	Douglas Pass	64	2				Douglas Pass Repetier.2
State of Colorado	Radio Site Repetier	Douglas Pass	64	2				Douglas Pass Repetier.3
State of Colorado	Radio Site Repetier	Douglas Pass	64	2				Douglas Pass Repetier.4
State of Colorado	Radio Site Repetier	Douglas Pass	64	2				Douglas Pass Repetier.5
State of Colorado	Radio Site Repetier	Douglas Pass	64	2				Douglas Pass Repetier.6
NICKEL	Radio Site Repetier	Drake	59	3				Drake Repetier.1
NICKEL	Radio Site Repetier	Drake	59	3				Drake Repetier.2
NICKEL	Radio Site Repetier	Drake	59	3				Drake Repetier.3
NICKEL	Radio Site Repetier	Drake	59	3				Drake Repetier.4
NICKEL	Radio Site Repetier	Drake	59	3				Drake Repetier.5
State of Colorado	Radio Site Repetier	DMDC CF	8	1				DMDC CF Repetier.1
State of Colorado	Radio Site Repetier	DMDC CF	8	1				DMDC CF Repetier.2
State of Colorado	Radio Site Repetier	DMDC CF	8	1				DMDC CF Repetier.3
State of Colorado	Radio Site Repetier	DMDC CF	8	1				DMDC CF Repetier.4
State of Colorado	Radio Site Repetier	DMDC CF	8	1				DMDC CF Repetier.5
State of Colorado	Radio Site Repetier	DMDC CF	8	1				DMDC CF Repetier.6
State of Colorado	Radio Site Repetier	DMDC CF	8	1				DMDC CF Repetier.7
State of Colorado	Radio Site Repetier	Denver TX	20	1				Denver TX Repetier.1
State of Colorado	Radio Site Repetier	Denver TX	20	1				Denver TX Repetier.2
State of Colorado	Radio Site Repetier	Denver TX	20	1				Denver TX Repetier.3
ITD	Radio Site Repetier	Denver TX	20	1				Denver TX Repetier.4



