

A map/picture of your region is sufficient



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# PUBLIC SAFETY 700 MHz RADIO COMMUNICATIONS PLAN

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Region #  
Date of Plan Approval  
Amendment Dates  
Website Link

Chair Name  
Address  
Phone Number(s)

## Public Safety 800 MHz Radio Communications Plan

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|      |   |    |
|------|---|----|
| 1.0  | Scope.....  | 1  |
| 1.1  | Introduction.....   | 1  |
| 1.2  | Purpose .....   | 1  |
| 1.3  | Regional Plan Summary .....                               | 1  |
| 2.0  | Regional Planning Committee Leadership.....               | 2  |
| 3.0  | Regional Planning Committee Membership .....              | 3  |
| 4.0  | Regional Profile.....                                     | 3  |
| 5.0  | Notification Process .....                                | 4  |
| 6.0  | Regional Plan Administration.....                         | 5  |
| 6.1  | Operations of the Regional Plan Committee .....           | 5  |
| 6.2  | Technical Subcommittee .....                              | 6  |
| 6.3  | Interoperability Subcommittee.....                        | 6  |
| 6.4  | Administrative Subcommittee.....                          | 7  |
| 6.5  | Procedure for Requesting Spectrum Allotments .....        | 7  |
| 6.6  | Procedure for Frequency Coordination .....                | 11 |
| 6.7  | Adjacent Region Spectrum Allocation and Coordination..... | 12 |
| 6.8  | Mexico Border Issues .....                                | 12 |
| 6.9  | Canadian Border Issues.....                               | 12 |
| 7.0  | System Design/Efficiency Requirements.....                | 13 |
| 7.1  | Interference Protection .....                             | 13 |
| 7.2  | Spectrum Efficiency Standards .....                       | 13 |
| 7.3  | Orphaned Channels .....                                   | 14 |
| 8.0  | Allocation of Narrowband “General Use” Spectrum .....     | 15 |
| 8.1  | Introduction.....   | 15 |
| 8.2  | Low Power Secondary Operations.....                       | 16 |
| 8.3  | Low Power Channels.....                                   | 16 |
| 8.4  | System Implementation.....                                | 18 |
| 8.5  | Priority for Receiving Spectrum Allocations .....         | 20 |
| 8.6  | Channel Loading .....                                     | 21 |
| 8.7  | Wideband Data.....  | 21 |
| 8.8  | Dispute Resolution – Intra-Regional.....                  | 22 |
| 9.0  | Interoperability Channels .....                           | 22 |
| 9.1  | Introduction.....   | 22 |
| 9.2  | Tactical Channels.....                                    | 23 |
| 9.3  | Deployable Systems .....                                  | 23 |
| 9.4  | Monitoring of Calling Channels .....                      | 24 |
| 10.0 | Applicant Requirements and Evaluation .....               | 24 |
| 10.1 | Introduction.....   | 24 |
| 10.2 | Application Requirements .....                            | 25 |
| 10.3 | Evaluation Matrix Point System.....                       | 25 |
| 10.4 | Application Processing.....                               | 28 |
| 11.0 | Process for Handling Unformed Regions.....                | 29 |
| 12.0 | Future Planning.....                                      | 29 |
| 12.1 | Database Maintenance .....                                | 29 |
| 12.2 | Inter-Regional Dispute Resolution Process .....           | 29 |
| 13.0 | Certification .....                                       | 30 |
|      | Appendix A – By-laws .....                                | 31 |
|      | Appendix B - Committee Membership List.....               | 32 |
|      | Appendix C – List of Counties/Cities in the Region .....  | 33 |

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## Public Safety 800 MHz Radio Communications Plan

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|  |    |
|--|----|
| Appendix D - Sample Cover Letter to Adjacent Regional Chairs .....                               | 34 |
| Appendix E - Adjacent Region Concurrence Notice.....   | 35 |
| Appendix F – Regional Planning Committee Meeting Minutes .....                                   | 36 |
| Appendix G – Interoperability Channel MOU Template .....   | 37 |
| Appendix H – Region (your region #) Channel Allotments .....                                     | 39 |
| Appendix I – DTV Transition .....  | 40 |
| Appendix J – (Your State) SIEC Plan .....  | 52 |
| Appendix K – 700 MHz Interoperability/Channel Nomenclature .....                                 | 53 |
| Appendix L – Inter-Regional Coordination Procedures and Resolution of Disputes<br>Template ..... | 55 |

## 1.0 Scope

### 1.1 Introduction

**This section is optional. An example is provided below:**

*This is the second major planning thrust for Region (your region #). The first was to meet the Federal Communications Commission (FCC) requirements for the NPSAC spectrum. This planning thrust was precipitated by the establishment of the 700 MHz public safety band.*

*The FCC announced the allocation of 24 MHz in the 700 MHz radio spectrum subsequent to the Public Safety Wireless Advisory Committee (PSWAC) report that established need requirements throughout the country. Interoperability within and among public safety and public service providers was identified in the PSWAC report as a basic minimum essential requirement.*

*Subsequent to the PSWAC the FCC established a Federal Advisory Committee called the National Coordination Committee (NCC). The NCC was created to address interoperability, technology, and implementation issues to be considered for the 700 MHz spectrum. The FCC required that a Regional Plan outlining the use of public safety radio frequencies be complete and approved of by the FCC before any agency within a region would receive channels from this new allocation. The Regional (your region #) Plan conforms to the NCC planning guidelines. The Region (your region #) Plan committee's membership represents a cross-section of public safety and public service users. A Region Planning Committee membership list is contained in Appendix (B).*

### 1.2 Purpose

**This section is optional. An example is provided below:**

*The purpose of the Regional Plan is to insure that maximum public benefit is derived from use of the 700 MHz spectrum by eligible agencies. Further, the plan was developed to guide eligible entities through the application process and provide an equitable means of settling disputes concerning frequency allocations should they arise.*

### 1.3 Regional Plan Summary

**This section is optional. An example is provided below:**

*First, Region (your region #) is defined as the entire State of (your state here or the sub-section of the state(s) included in the Region). The broad classifications of entities eligible to apply for spectrum are defined in accord with NCC definitions. Next, to garner their*

*participation in and support of the planning process, an attempt was made to contact all eligible agencies. These attempts are documented. The authority by which the Regional Planning Committee undertook these planning efforts is reviewed. A discussion follows of the process by which the initial spectrum allocation was made. Finally, a detailed discussion of the application process is given. This includes guidelines for spectrum use, application requirements, the application review process and dispute resolution. Also included is a discussion of the future planning process.*

*The Region (your region #) Committee accepts the Computer Assisted Pre-Coordination Resource and Database (CAPRAD) database initial allocation based on population density and call volume by county. It has been noted by the committee that this allocation closely matches the description of Designated Statistical Areas by the US Department of Management and Budget Bulletin. The Committee will use the CAPRAD database when allocating frequency resources in Region (your region #).*

*Interoperability guidelines and usage must be in accordance with the requirements of the State Interoperability Executive Committee (SIEC). Any conflict between the interoperability rules for National Calling and Tactical channels in this plan and SIEC guidelines, the SIEC guidelines will prevail.*

## **2.0 Regional Planning Committee Leadership**

**This section is required. An example is provided below:**

*At the time of transmittal of this Plan to the FCC, the following individuals serve in leadership roles in the Region (your region #) Regional Planning Committee (RPC):*

|                             |                          |
|-----------------------------|--------------------------|
| <i>Regional Chairperson</i> | <i>Full Name</i>         |
|                             | <i>Agency Department</i> |
|                             | <i>Address</i>           |
|                             | <i>Phone numbers</i>     |
|                             | <i>Email:</i>            |

|                                  |                          |
|----------------------------------|--------------------------|
| <i>Regional Vice-Chairperson</i> | <i>Full Name</i>         |
|                                  | <i>Agency Department</i> |
|                                  | <i>Address</i>           |
|                                  | <i>Phone numbers</i>     |
|                                  | <i>Email:</i>            |

|                           |                          |
|---------------------------|--------------------------|
| <i>Regional Secretary</i> | <i>Full Name</i>         |
|                           | <i>Agency Department</i> |
|                           | <i>Address</i>           |

*Phone numbers*

*Email:*

*Regional Treasurer*

*Full Name*

*Agency Department*

*Address*

*Phone numbers*

*Email:*

*From time to time, as described in the RPC By-Laws (Appendix “A”), these positions will be subject to re-election. At any such time that one of these four positions changes, the Chair will be responsible for taking the following actions:*

- Providing notice to the FCC of the changes*
- Providing notice to the NPSTC Support Office of the changes*
- Modifying the Region (your region #) web site (www.email address.com) to reflect the changes. (if available).*

*Such changes will not be considered Plan modifications, and will not require that this document be reissued to the FCC for public notice and comment cycles*

### **3.0 Regional Planning Committee Membership**

*This section is required. An example is provided below:*

*Membership in the Region (your region #) Regional Planning Committee is open to any interested party. Committee Officer requirements, voting procedures and membership attendance requirements are listed in the Region (your region #) Planning Committee by-laws, which can be found in Appendix “A”. Appendix “B” of this plan lists all of Region (your region #) initial members, their agency/affiliation and voting status.*

### **4.0 Regional Profile**

*This section is required. An example is provided below:*

*Region (your region #) encompasses the entire state of (your State), consisting of (#) counties. An alphabetical list of the individual counties can be found listed in **Appendix “C”**.*

*The State(s) of (your State) has/have) diverse geography and a varied population base. Ground elevations in (your State) vary from 70 meters AMSL in (this location) to 500 meters AMSL in (this location).*

*(A description of the terrain, demographics breakdown by area, county, user agencies, and other related regional information can be included here).*

*The population of (your State) is 8.9 million people (January 2001). Over 50 percent of this population is concentrated in (this location) and (that location). These two large metropolitan areas are made up in part or all of 35 counties. These areas are adjacent to both Region (your adjacent region #) and Region (your other adjacent region #) and require (your State) to obtain frequency coordination with both Regions when attempting frequency allotments in these densely populated areas.*

*Region (your region #) (State of (your State)) has (x) adjacent regions. They are as follows:*

*State X, Region #,  
State Y, Region #,  
State Z, Region #.*

*In previous NPSPAC 821 MHz frequency allotments, spectrum amounts disproportionate to population densities were allocated due to differing methodologies used in adjacent NPSPAC Regions and the timing of adjacent regions plan approval. This resulted in a minimum number of channels available for Region (your region #), particularly in (this area and that area). In the 700 MHz band, county allotments for both narrowband and wideband channels have been developed based on population densities relative to adjacent Regions.*

### **5.0 Notification Process**

**This section is required. An example is provided below:**

*The notification process for the RPC meetings was primarily accomplished through e-mail. The original meeting included a notice published in the (could be your State's Register or online website), as well as notification to the (organization name). Subsequent e-mails were distributed to all attendees and re-distributed to e-mail lists of interested persons. At the time of this 700 MHz planning process, the metro area 800 MHz system was completed and put into operation. (User agency #1) was also working to implement a statewide 800 MHz system. As part of these efforts, radio communications issues were at the forefront for most Public Safety agencies. Meeting notes were taken at each meeting (see Appendix "F").*

*The Division of Homeland Security and Emergency Management (HSEM) is a division of the (user agency). A member of the HSEM attended the initial meeting. The Department of Transportation maintains and operates the communications system for the Department of Public Safety. The Department of Transportation has been an integral part of the planning process.*

*The meetings were originally scheduled for the second Wednesday of each quarter at 10:00 am. The day was changed to the second Tuesday of the quarter, beginning July, 2002, due to a conflict with regularly scheduled*

*meetings involving members of the Metropolitan Radio system. The meetings were moved to different locations around the State, to encourage participation by agencies in other parts of the State. The meetings were also available throughout the State at the District Offices through a state-wide video-conferencing system. Regardless of the location of the “live” meeting, participation was typically limited to a core group of attendees from in and around the Metropolitan Area. As the process progressed, the “live” meetings were held in (this location), but we continued to broadcast them throughout the state, with limited participation at the remote sites.*

## 6.0 Regional Plan Administration

### 6.1 Operations of the Regional Plan Committee

**This section is required. An example is provided below:**

*This committee will use Robert’s Rules of Order to conduct meetings. All decisions will be by clear consensus vote with each Public Safety Agency having one vote. The meetings are open to all persons and a public input time is given for anyone to express a viewpoint or to have input to the planning.*

*Workgroups may be formed as needed to work on specific issues. For the initial planning three workgroups were formed – writing group, spectrum planning group and operations group. Workgroups are intended to work on details of specific issues and make recommendations to the full committee. Any changes to the Regional plan must be voted and approved by the full Regional Plan Committee. Workgroups are open to any who want to participate. The Chair of the Regional Plan Committee appoints the Chair for each workgroup.*

*A minimum of one meeting per year will be held of the full committee. This will be announced and advertised 90 days in advance by the Committee Chair. Normal time for this meeting will be in January each year.*

*Beginning two years after Federal Communications Commission approval of this Regional Plan, the Chair shall call a meeting of the Committee to elect a Chair, Vice Chair and Secretary to serve for two years. There is no limit to the number of terms that may be served.*

*If the Chair is unable to serve a complete term the Vice Chair will serve as Chair until the next election meeting. If both the Chair and Vice Chair are unable to serve their full terms one or the other should strive to call a special meeting of the Committee to elect replacements. If for some reason, neither the Chair nor the Vice Chair can call the special meeting; the State or any County within the region may call for a special meeting, giving at least 90 days notice, to elect replacements.*

## 6.2 Technical Subcommittee

**This section is optional. An example is provided below:**

*The primary responsibility of the Region (your region #) Technical subcommittee will be to review applications from agencies within the region for conformance to plan requirements. The Technical subcommittee will have access to the National Public Safety Telecommunications Council (NPSTC) Computer Assisted Pre-coordination and Resource Database System (CAPRAD) pre-coordination database system, and will review and recommend approval of applications, as they are received in the system. Applications approved by the RPC will be forwarded to the selected coordinator, then to the FCC for licensure. The membership of this committee will consist of the Technical subcommittee chairperson, the Interoperability subcommittee chairperson and three other members of the RPC selected by the RPC chair. Membership of the Technical subcommittee will be determined at the annual meeting.*

*The Technical subcommittee duties are as follows:*

- *Review applications for compliance to the Region (your region #) Plan,*
- *Review appeals, applicant clarifications and applicant presentations,*
- *Recommend approval or denial to the RPC Chair,*
- *Maintain coordination with FCC certified frequency coordinators and advisors,*
- *Update CAPRAD.*

## 6.3 Interoperability Subcommittee

**This section is optional. An example is provided below:**

*(Your State) has created a State Interoperability Executive Committee (SIEC) to oversee interoperability channels. The (your State) SIEC intends to include at least one member of the Region (your region #) RPC on its committee. The Region (your region #) interoperability subcommittee will serve as liaison with the (your State) SIEC and assist in the statewide interoperability planning process.*

*The Interoperability subcommittee duties are as follows:*

- *Work with the (your State) SIEC in the development of a statewide interoperability plan,*
- *Load interoperability channel assignments in CAPRAD,*
- *Review application interoperability plans for conformance to the SIEC plan.*

## 6.4 Administrative Subcommittee

**This section is optional. An example is provided below:**

*The Administrative subcommittee is responsible for monitoring adherence to the Region (your region #) Plan. The membership of this committee shall consist of the Interoperability subcommittee chairperson and three other members of the RPC selected by the RPC chairperson. Membership of the committee will be determined at the annual meeting. The committee will remain in place permanently to resolve inter-regional issues and recommend regional plan changes to the FCC.*

*The Administrative Subcommittee duties are as follows:*

- *Annually review and update the Region (your region #) Plan as necessary,*
- *Monitor various system(s) implementation progress,*
- *Communicate with applicants to determine if implementation of their systems is in accordance with provisions of their applications,*
- *Make recommendations to the RPC on applicants that fail to implement systems,*
- *Make recommendations to resolve inter-regional issues,*
- *Maintain coordination with neighboring RPC's.*

## 6.5 Procedure for Requesting Spectrum Allotments

**This section is required. An example is provided below:**

*A. Upon FCC approval of this Plan, Region (your region #) will announce to the region that 700 MHz public safety channels are available in the Region and that channels have been assigned to pool allotments to counties within the Region. All available methods will be used to notify public safety entities of channel availability in the Region. All requests will be considered on a first come, first served basis. Region (your region #) supports the National Coordination Committee Pre-Assignment Rules and Recommendations, and will use these guidelines as a template to determine if an application submitted to the Regional Planning Committee meets Regional Planning standards. It is recommended that applicants familiarize themselves with these recommendations prior to submitting applications for Region (your region #) 700 MHz public safety system implementation.*

*Other consideration taken into consideration for determination of priority of application will be:*

- *Users who are involved in the protection of life and property,*

- *Multi-agency shared systems that multiple agencies agree to construct a common infrastructure (i.e. State, City, County, and others),*
- *Large agencies with multiple divisions constructing a common system for all to use (i.e. a large city or county with multiple divisions),*
- *Trunked use of the frequencies,*
- *Approved funding to construct the system using the 700 MHz frequencies,*
- *A statement of the future intentional actions of any currently licensed channels that will be replaced by a new 700 MHz system, and how it may benefit other agencies in the State by releasing these channels back into the Public Safety pool.*

*Agencies will need to fully document technical information, sites, tower heights, area of coverage, ERP of transmitter sites, along with any other technical information required for RPC subcommittee review and coordinator review. Agencies are expected to construct systems with maximum signal levels in their coverage area and minimum signal levels in co-channel user's coverage areas. Coverage area in the context of this plan will be defined as the geographical boundaries of agency(s) served by the system plus eight miles. The RPC realizes that radio signals don't stop at political borders. Our attempt is to maximize the use of the frequencies by packing as many users as possible per channel.*

*In order to maintain accurate records in the CAPRAD database, applicants will provide Region (your region #) with physical copies of their application along with associated documentation for Regional Planning Committee review. The Regional Planning Committee will enter the FCC 601 form into the CAPRAD database before the application is forwarded to the FCC certified coordinators*

*In general and unless otherwise noted, the Region (your region #) Regional Planning Committee will adhere to the published National Coordination Committee Implementation Guidelines for 700 MHz Public Safety Regional Planning Committees.*

***B.** When applying for new 700 MHz channels, the Regional Planning Committee looks forward to 700 MHz applicants working with neighboring agencies to promote and continue the establishment of interoperability within their community and allow for the equitable distribution of existing spectrum allocations to promote efficient frequency use when applying for 700 MHz spectrum. Region (your region #) expects applicants to be cognizant of the fact that moving to the 700 MHz band may create a degree of isolation between themselves and neighboring agencies, and Region (your region #) looks forward to working with these applicants on a case-by-case basis on how to*

*maintain spectrum availability in their area, while continuing to promote interoperable communications.*

*C. To request channels from Region (your region #), a full application package must be submitted to the Regional Planning Committee in physical written form for entry by Region (your region #) personnel in the CAPRAD database <http://caprad.nlectc.du.edu/login/home>.*

*The application must include:*

- An FCC Form 601,*
- A short description of the proposed system,*
- A justification for the additional spectrum,*
- An interference prediction map using the current version of TIA/EIA TSB 88 guidelines, Maps showing all interference predicted in the proposed system,*
- Documents indicating agency-funding commitments sufficient to fund the development of the proposed system(s)*
- An indication as to when they will migrate from their existing system to the new system.*

*D. The Chair will distribute the request to all other agencies with allotments in the plan for review and approval electronically. Absent a protest, the Regional Planning Committee will approve the application and submit it through the CAPRAD database to the applicant's preferred FCC-certified frequency coordinator for processing. This process meets the requirements of Rule 90.176 (c).*

*The CAPRAD database will reflect the approved application and place the channels for the proposed system in "pre-license" status.*

*E. Allocation Disputes: An agency may protest a proposed system within 30 calendar days of the original distribution. Protests will only be considered if the allocation does not conform to plan criteria or objecting agency or the Chairperson can show harmful interference is likely based on the information submitted by the agency requesting the new allocation. If an agency with pre-licensed/Region approved co-channel or adjacent channel allocations objects to a proposed allocation due to concerns about potential interference, the objecting agency may request field tests be done to confirm or refute interference potential.*

*The completion of these field tests will be required for Regional application approval. Any costs associated with field tests or any other requirement to obtain Region (your region #) plan approval is the responsibility of the agency submitting application to Region (your region #).*

*The parties involved must resolve the allocation dispute and notify the Region Chair within 14 calendar days. If the parties involved cannot resolve the allocation dispute within that timeframe, then a special full Committee meeting will be scheduled to consider and vote on the protest. If approved, the application will be submitted through the CAPRAD database to the applicant's chosen FCC-certified frequency coordinator for processing.*

**The following section is optional. An example is provided below:**

***F. Lower Power "Campus Eligible" General Use Channels:*** *In the implementation of 700 MHz public safety spectrum throughout Region (your region #), there may be opportunities for increased channel reuse when developing radio systems for "campus" type operations. Examples of those who may capitalize on this opportunity include hospitals, stadiums, malls or places of public gathering, public universities, transit systems and ports. While these channels have been designated in county pool allotments with proper designations, they do not enjoy the benefits of countywide channels in that they are not cleared for usage over a wide area. In many instances, facilities require a smaller or more specific geographical coverage area than assumed in the initial channel packing plan and may be able to be reused more efficiently. These "campus" type systems also, in many cases, require in-building or confined space/tunnel radio coverage or communications along a linear pathway, such as a maintenance or right of way. Public safety channels can be allotted to this type operation in a region and can lead to effective system development, along with increased spectral efficiency, if power levels and Area of Protection (AOP) of the area are taken into account in system planning. These parameters must be established appropriate to the area of coverage. In order to facilitate this effective method of system implementation, channels have been identified in certain areas of Region (your region #) that may be utilized in a smaller service area. These channels are NOT eligible to be utilized throughout the county they are allotted to and the following criteria must be adhered to when requesting channels from Region (your region #) for operations of this type:*

*The 50dBu service contour of the proposed system must not exceed an area more than 2 miles from the proposed service area. When this 2-mile distance extends to an adjacent region, the applicant must obtain concurrence from the adjacent region. Reduced external antenna height, along with reduced ERP, directional antennae, distributed antenna systems, radiating "leaky coax," are all tools that should be utilized in the development of these type systems. Region (your region #) will ensure the development of these type of systems will in no way interfere with co-channel or adjacent channel users within Region (your region #) or Region (your region #)'s adjacent regions. The Chairperson, or a majority of the members of the region, has the authority to request and require engineering studies from the applicant*

*that indicate no harmful interference will be introduced to any co-channel or adjacent channel existing user prior to application approval. For 12.5/25 kHz co-channel assignments, the 50dBu service contour of the proposed stations will be allowed to extend beyond the defined service area for a distance no greater than 2 miles. An adjacent/alternate 12.5/25 kHz channel shall be allowed to have 10 its 60 dBμ (50,50) contour touch, but not overlap the 40dBμ service (50,50) contour of an adjacent/alternate system being protected. Evaluations should be made in both directions to ensure compliance. The approval of systems utilizing county allotment channels labeled “Campus”, are subject to approval of the Region (your region #) 700 MHz regional planning committee. They are the final authority on parameters associated with “campus” type operations.*

*If Region (your region #) receives an application for low power fixed use and the proposed service contour encroaches onto an adjacent region prior to the channel allotted to the region being implemented in a specific system, the application must be modified so the service contour does not encroach into the adjacent region **or** the applicant must supply the Region (your region #) 700 MHz Regional Planning Committee with written concurrence from the adjacent region permitting the original design.*

### **6.6 Procedure for Frequency Coordination**

**This section is required. An example is provided below:**

*Before applicants submit an application to one of the FCC recognized frequency coordinators, the application must be reviewed at a frequency meeting of the Regional Planning Committee. The Committee will review the application to ensure it complies with all elements of the Regional Plan. This will NOT be a review to ensure the application form meets FCC requirements for filing.*

*The applicants must submit a copy of the FCC application and supporting documents to the Regional Plan Chair. An interference prediction map must be included in the documentation. TIA/EIA TSB88-A (or latest version) guidelines will be used to produce the interference map. The map must show all interference predicted using TSB88-A guidelines. Any agency with co-channel or adjacent channel allotments may request field tests of signal levels to verify interference signal levels. Agencies must be prepared to conduct these field tests if a request is made.*

*The frequency meetings will be held as needed to review applications. The FCC certified frequency coordinators will be notified of the meetings.*

## **6.7 Adjacent Region Spectrum Allocation and Coordination**

This section is required. An example is provided below:

*Region (your region #) shares borders with (your adjacent region x, your adjacent region y, your adjacent region z). Region (your region #) will coordinate channel allocations with all its bordering regions by using the CAPRAD database. This tool will ensure adjacent state notification as well as FCC Certified Frequency Coordinator notification.*

*The Chair will send final draft copies of this plan to the conveners or Chair, as appropriate, to each adjacent region. Adjacent regions should be able to satisfy voice and narrowband data requests along their border areas with Region (your region #). If any region has problems satisfying requests in an adjacent area, the (your State) RPC pledges to work with this region or any of the other surrounding regions to resolve any issues on a case by case basis.*

## **6.8 Mexico Border Issues**

This section is required only if Mexico Border Issues are applicable to your Region. An example is provided below:

*Region (your region #) shares a border with Mexico. The Counties of (county x, county y, county z) are impacted by border spectrum agreements. State of (your State) spectrum use is also impacted in those counties. Region (your region #) requests input to the FCC for any spectrum sharing agreements with Mexico. Any agreement that impacts allotments to these counties will impact the entire allotment plan for Region (your region #). Region (your region #) is willing to assist the FCC in any way in working out spectrum sharing agreements with Mexico in order to provide minimum impact to Region (your region #). Agencies with jurisdictional areas located 120 km (75 miles) of the Mexican border should note the following conditions without an agreement with Mexico; Public Safety licenses are granted subject to the conditions as set forth in 47 C.F.R. § 90.533. Public Safety transmitters operating within 120 km or 75 miles of the Mexican border must accept any interference that may be caused by operations of the UHF television broadcast transmitters in Mexico and that conditions may be added during the term of the license if required by the terms of the international agreements between the United States and government of Mexico, as applicable, regarding the non-broadcast use of the 764-776 MHz and 794-806 MHz bands.*

## **6.9 Canadian Border Issues**

This section is required only if Canadian Border Issues are applicable to your Region. An example is provided below:

*Region (your region #) shares a border with Canada. The County of Boundary is impacted by any border spectrum agreements. State of (your State) spectrum use is also impacted in those counties. Region (your region #) requests input to the FCC for any spectrum sharing agreements with Canada. Any agreement that impacts allotments to Boundary County will impact the entire allotment list for Region (your region #). Region (your region #) is ready to help the FCC in any way in working out spectrum sharing agreements with Canada with minimum impact to Region (your region #). Agencies located in the Border area with Canada should note the following conditions. Public safety licenses are granted subject to the conditions as set forth in 47 C.F.R. § 90.533. Public safety transmitters operating within 120 km or 75 miles of the Canadian border must accept any interference that may be caused by operations of UHF television broadcast transmitters in Canada and that conditions may be added during the term of the license if required by the terms of the international agreements between the United States and the government of Canada, as applicable, regarding the non-broadcast use of the 764-776 MHz and 794-806 MHz bands.*

## **7.0 System Design/Efficiency Requirements**

### **7.1 Interference Protection**

**This section is required. An example is provided below.**

*The frequency allotment list will be based on an assumption that systems will be engineered on an interference-limited basis, not a noise floor-limited basis. Agencies are expected to design their systems for maximum signal levels within their coverage area and minimum levels in the coverage area of other co-channel users. Coverage area is normally the geographical boundaries of the Agency(s) served plus a three to five mile area beyond.*

*Systems should be designed for minimum signal strength of 40 dBμ in the system coverage area while minimizing signal power out of the coverage area. TIA/EIA TSB88-A (or latest version) will be used to determine harmful interference assuming 40 dBμ, or greater, signal in all systems coverage areas. This may require patterned antennas and extra sites compared to a design that assumes noise limited coverage.*

### **7.2 Spectrum Efficiency Standards**

**This section is optional. An example is provided below:**

*Initial allotments will be made on the basis of 25 kHz channels. To maximize spectrum utilization, prudent engineering practices and*

*receivers of the highest quality must be used in all systems. Given a choice of radios to choose from in a given technology family, agencies should use the units with the best specifications. This plan will not protect agencies from interference if their systems are under-constructed (i.e; areas with the established service area having minimum signal strength below 40 dBu), or the systems utilize low quality receivers. The applicant's implementation of prudent engineering practices will be encouraged by the Regional Planning Committee at all times.*

*It is the eventual goal of the FCC and the public safety community for radio equipment to meet the requirement of one voice channel per 6.25 KHz of spectrum. When applying for channels within Region (your region #), the applicants should acknowledge the deadline for converting all equipment to 6.25 kHz or 6.25 kHz equivalent technology is 12/31/2016. For narrowband mobile data requests, one mobile data channel will consist of two (2) 6.25 kHz channels/one (1) 12.5 kHz channel. Narrowband 6.25 kHz channels can be aggregated for data use to a maximum bandwidth of 25 kHz. As 6.25 kHz migration evolves, an agency that creates any "orphaned" 6.25 kHz channels should realize that these channels would be allocated to nearby agencies requesting channels to maintain consistent grouping and utilization of 25 kHz blocks within the region.*

*Region (your region #) encourages small agencies to partner with other agencies in multi-agency or regional systems as they promote spectrum efficiency and both small and large agency capacity needs can be met. Loading criteria can also be achieved in multi-agency systems that will allow greater throughput for all agencies involved than that which could be achieved individually.*

### 7.3 Orphaned Channels

**This section is optional. An example is provided below:**

*The narrowband pool allotments with Region (your region #) will have a channel bandwidth of 25 kHz. These 25 kHz allotments have been characterized as "Technology Neutral" and flexible enough to accommodate multiple technologies utilizing multiple bandwidths. If agencies choose a technology that requires less than 25 kHz channel bandwidth for their system, there is the potential for residual, "orphaned channels" of 6.25 kHz or 12.5 kHz bandwidth immediately adjacent to the assigned channel within a given county area.*

*An orphan channel may be used at another location within the county area where it was originally approved, if it meets co- and adjacent channel interference criteria. Region (your region #) will utilize "county areas" as guidelines for channel implementation with the area of Region (your region #). The definition of "county area" in this*

*plan is the geographical/political boundaries of a given county, plus a distance of up to 10 miles outside of the county.*

*If the channel, or a portion of a channel, is being moved into a “county area” that is within 30 miles of an adjacent region, Region (your region #) will receive concurrence from the affected region. By extending the “county area” by a designated distance, it is anticipated this will increase the possibility that orphaned channel remainders will still be able to be utilized within the “county area”, and reduce the potential for channel remainders to be forced to lay dormant and used with a county channel allotment. These movements will be documented on the National Public Safety Telecommunications Council CAPRAD database.*

*If the “orphaned channel” remainder does not meet co-channel and adjacent channel interference criteria by moving it within the “county area” as listed above, and it is determined by the region that the “orphaned channel” cannot be utilized in the region without exceeding the distance described in the “county area” listed above, Region (your region #) will submit a plan amendment to the FCC to repack the channel to a location where its potential use will maintain maximum spectral efficiency. This FCC plan amendment will require affected region concurrence.*

*When in the best interest of public safety communications and efficient spectrum use within the Region, the Region (your region #) Regional Planning Committee shall have the authority to move orphan channel allotments, and/or co-/adjacent-channel allotments affected by the movement of orphan channels, within its “county areas”, which are defined above. This is to retain spectrum efficiency and/or minimize co-channel or adjacent channel interference between existing allotments within the region utilizing disparate bandwidths and technologies.*

## **8.0 Allocation of Narrowband “General Use” Spectrum**

### **8.1 Introduction**

**This section is required. An example is provided below:**

*The Region (your region #) Technical Subcommittee recommends that allotments be made on the basis of one 25 KHz channel for every two (2) voice channel requests and one 12.5 KHz channel for each narrowband data channel request. This recommendation is approved by the full Committee and is part of this plan. Allotments will be made in 25 KHz groups to allow for various digital technologies to be implemented. All agencies requesting spectrum during the initial filing*

*window (see Section “6.5”) will be allocated channels if plan requirements are met. Agencies using Frequency Division Multiplexing (FDMA) will be expected to maintain 12.5 KHz equivalency when developing systems and will be required to utilize BOTH 12.5 KHz portions of the 25 KHz block. In most cases, this will require the geographic separation of each 12.5 KHz adjacent channel. In order to promote spectrum efficiency, Region (your region #) will ensure that systems allocated 25 KHz channel blocks will utilize all of the channel and not “orphan” any portions of a system designated channel (See Section “7.3”).*

### **8.2 Low Power Secondary Operations**

*This section is required. An example is provided below:*

*To facilitate portable operation by any licensee, and to provide channels for such operation without impacting the use of primary channels, certain low power secondary use will be permitted. Any public safety entity otherwise licensed to use one or more channels under this Plan may receive authorization to license any additional channel for secondary use, subject to the following criteria:*

- All operation of units on such authorized channels will be considered secondary to other licenses on both co-channel and adjacent channels,*
- No channels on, or adjacent to, those designated in the Plan for wide area operation and/or mutual aid use will be authorized,*
- Channels will be authorized for use in specific areas only, such areas to be within the licensees authorized operational area,*
- Maximum power will be limited to 6 watts ERP,*
- Use aboard aircraft is prohibited,*
- Applications for channels may be submitted to the Committee for consideration at any time and must be accompanied by a showing of need. The Committee may select and authorize licensing of these secondary use channels after consideration of potential interference to co-channel and adjacent channel allotments, allocations and licensees. Authorization may be granted for use of any suitable channel, without prior allotment or allocation to the requesting agency,*
- In the event the channels authorized for low power secondary operation are needed by others during any window opening for reassignment, no protection will be afforded to the licensed secondary user, and they may be required to change frequencies or surrender licenses to prevent interference to primary use channels.*

### **8.3 Low Power Channels**

*This section is required. An example is provided below:*

*The FCC in the 700 MHz band plan set aside channels 1 - 8 paired with 961 – 968 and 949 – 958 paired with 1909 – 1918 for low power use for on-scene incident response purposes using mobiles and portables subject to Commission-approved regional planning committee regional plans. Transmitter power must not exceed 2 watts (ERP).*

*Channels 9 –12 paired with 969 – 972 and 959 – 960 paired with 1919 – 1920 are licensed nationwide for itinerant operation. Transmitter power must not exceed 2 watts (ERP).*

*These channels may operate using analog operation. To facilitate analog modulation this plan will allow aggregation of two channels for 12.5 kHz bandwidth. On scene temporary base and mobile relay stations are allowed (to the extent FCC rules allow) with an antenna height limit of 6.1 meter (20 feet) above the ground. However, users are encouraged to operate in simplex mode whenever possible. This plan does not limit use to only analog operations, these channels are intended for use in a wide variety of applications that may require digital modulation types.*

*In its dialog leading up to CFR §90.531 allocating the twenty-four low power 6.25 kHz frequency pairs (of which eighteen fall under RPC jurisdiction), the Federal Communications Commission (FCC) suggested that there is a potential for multiple low power applications, and absent a compelling showing, a sharing approach be employed rather than making exclusive assignments for each specific application because low power operations can co-exist [in relatively close proximity] on the same frequencies with minimal potential for interference due to the 2 watt power restriction.*

*Whereas advantages exist in not making assignments, the reverse is also true. If, for example, firefighters operate on a specific frequency or set of frequencies in one area, there is some logic in replicating that template throughout the region for firefighter equipment. If there are no assignments, such a replication is unlikely.*

*In seeking the middle ground with positive attributes showing up both for assignments and no assignments, we recommend the following regarding assignments associated with the eighteen narrowband channels for which the RPC's have responsibility.*

- *Channel #'s 1-4 and 949-952 are set aside as generic channels for use by public safety agencies operating within Region (your region #), and the complementary channel #'s 961-964 and 1909-1912 are set aside as generic channels also for use by public safety agencies including GPS differential correction telemetry for*

channels 961-964 and 1909-1912 likewise operating within Region (your region #).

- Channel #'s 5-8 are designated as Fire Protection channels for licensing and exclusive use by the Fire Protection discipline, and the complementary channel #'s 965-968 are set aside as Law Enforcement channels also for licensing and exclusive use by the Law Enforcement discipline.
- Channel #'s 955-956 are set aside as Fire Protection channels for licensing and exclusive use by the Fire Protection discipline, and the complementary channel #'s 1915-1916 are set aside as Law Enforcement channels also for licensing and exclusive use by the Law Enforcement discipline.
- Channel #'s 957-958 are set aside as Fire Protection/Law Enforcement channels for licensing and use by the Fire Protection and Law Enforcement disciplines, and the complementary channel #'s 1917-1918 are set aside as Fire Protection/Law Enforcement.

*Simplex operations may occur on either the base or mobile channels. Users are cautioned to coordinate on scene use among all agencies involved. Users should license multiple channels and be prepared to operate on alternate channels at any given operational area.*

### 8.4 **System Implementation**

*If your region is NOT affected by interference potential from existing television stations operating in the 700 MHz spectrum, can insert the following section into your 700 MHz Plan. An example is provided below:*

*(Your region name) will not be affected by interference potential from existing television stations operating in the 700 MHz spectrum. A notification, in writing, has already been issued to secondary television station operators / licensees of the intended use of 700 MHz spectrum in (your region name) (APPENDIX "X"). This allows for an applicant to have an immediate review of their application package and, when approved, meet intended construction timeframes identified within the application submittal.*

*After allocation of channels (Section 6.5) the agency must release a System RFP and sign a contract with a vendor within one year of the channel allocation. If an agency does not implement in the timeframes specified, that agency's allotment may be removed from the allotment list. An Agency may file a request with the Region Chair for an extension of time to implement. The request should include all details*

*describing why the agency has not implemented and a new implementation schedule. The Committee Chair will advertise this request and set a date for the full committee to vote on the request. If no request for extension is received or the Committee votes not to extend implementation, the Committee Chair will advertise this action and set a filing window to give other agencies a chance to request an allotment of that spectrum.*

*Should system implementation not begin within two (2) years or if projected planned channel loading is not attained within four (4) years after granting of license, the channels will be returned for re-allotment to others. A one (1) year extension may be supported by the RPC, if it can be shown that circumstances are beyond the control of the applicant. The applicant will be responsible for contacting the FCC to request an extension. Applicants must be acting to the extent of their power to implement the project within their authority.*

*System implementation will be monitored by the RPC Technical subcommittee who will be responsible for determining the progress being made on the implementation of a system. Monitoring of systems implementation by the subcommittee will take place on one (1) year intervals. If progress is made and the system is ultimately implemented the system can be determined “complete”. If progress is not made, the licensee will be advised in writing that they are in default of their plan and the Region (your region #) plan and the consequences of their lack of progress. The Implementation subcommittee will inform the RPC and PW frequency coordinator of the situation. The (the subcommittee name that handles this situation) subcommittee will continue to monitor the progress of any system determined in default and if progress is still not being made the subcommittee will inform the RPC and recommend informing the FCC of the lack of progress. The licensee in default can appeal this action or can allow the license to be withdrawn. If the authorized frequencies are withdrawn they will be returned to the frequency allotment pool for future use.*

**If your region IS affected by interference potential from existing television stations operating in the 700 MHz spectrum, then you can insert the following section into your 700 MHz Plan. An example is provided below:**

*TV station (name of TV station), located in (TV station location) utilizes analog TV channel (TV channel #). Channel (TV channel #) is adjacent to 700 MHz public safety allocations and the frequency sort in the (name of specific location of the Region) area of Region (your region #) will include channels that can co-exist with TV channel (TV channel #) and channels that cannot to prepare for implementation when the (name of TV station) has left the band. The Region (your region #) Regional Planning Committee will utilize NCC Implementation*

*Subcommittee documentation titled **Appendix X “DTV Transition”** that will provide the criteria which will be used, per FCC rules, to protect existing TV stations from land mobile use on 700 MHz public safety channels. All other areas in Region (your region #) (State of (your State)) are capable of immediately implementing systems using any 700 MHz public safety channels. With no restrictions in implementation due to incumbent co-channel broadcasters in the region, implementation of systems will adhere to guidelines in FCC rule 90.529 (b) and (c). An Agency may file a request with the Regional Chairperson for an extension of time to implement. The request should include all details describing why the agency has not implemented and a new implementation schedule. If necessary, the Regional Chairperson will call a special meeting to determine if the allotment should be extended or if the agency should reapply to the committee for another allotment.*

### **8.5 Priority for Receiving Spectrum Allocations**

**This section is required. An example is provided below:**

*Priority for channel allocations will be made on a first come first served basis. Cooperative multi-agency system implementations will be given priority over non-shared single agency systems.*

*When applying for the new 700 MHz channels, the RPC expects applicants to relinquish any amount of any currently used spectrum and make that spectrum available for use by other agencies in (your region name) upon beneficial use of an implemented 700 MHz radio system. This currently licensed spectrum may be in any public safety band.*

*Agencies with a primary voice communication system operating under a NPSPAC band 800 MHz license, which are requesting 700 MHz channels for system expansion, are not asked to relinquish this spectrum but will be asked to include this spectrum that is already licensed into the loading requirements for a radio system as defined in this plan. The reason for this requested inclusion is that most, if not all, radio equipment developed for the 700 MHz band is expected to be also capable of operation on any existing 800 MHz NPSPAC licensed systems already in use and will likely to be include in justification of the loading of NPSPAC channels. Without this inclusion, it would theoretically be possible for an agency to double its frequency spectrum allocations by applying for an equivalent number of 700 MHz channels, for each 800 MHz channel that it has already licensed and justified loading criteria for, and reuse the same mobile or portable users for both bands, to both planning committees, in (your region name). Although separated in FCC rules and regulations, Region (your region #) will work with NPSPAC planning committees to attempt to*

*make the most efficient use of spectrum for Public Safety in Region (your region #).*

*Agencies are encouraged to relinquish frequencies that will no longer be used as soon as possible in accordance with FCC rules and regulations.*

*The number of channels an applicant should retain would be an amount required to provide minimum interoperable communications to surrounding jurisdictions. In order to promote the interests of agencies that will benefit from an applicant submitting a request for 700 MHz spectrum, it is requested that the applicant submit a list of all channels and licenses held on existing public safety channels, and those channels that will be expected to be unlicensed when full beneficial use of 700 MHz channels are realized. The RPC will only distribute this information, and not decide if it is sufficient or not. It must be stressed that the Region (your region #) Regional Planning Committee supports and promotes multi-agency systems that allow for regional/wide area coverage within the region.*

### 8.6 Channel Loading

**This section is optional. An example is provided below:**

*The RPC recognizes the FCC's increased focus on spectral efficiency standards versus absolute loading of each 700 MHz frequency assignment. It is however, the goal of the RPC to encourage efficient utilization of each frequency channel irrespective of bandwidth and therefore encourages the following:*

- Each applicant for a trunked system should design their system for a minimum of 70 mobile and portable radios for each 12.5 kHz voice channel that will be placed in service within five (5) years of the initial plan approval date.*
- Single conventional channels should be designed for a minimum load of 70 radios per 12.5 kHz channel. Mobile, portable, data, and control stations will all be considered within this count.*

*Channel loading will eventually be required to change to 70 units per 6.25 kHz channel, when further narrowband technologies are available and when the FCC requires that 6.25 kHz is identified as a single voice channel (vs. 12.5 kHz at this time).*

### 8.7 Wideband Data

**This section is optional. An example is provided below:**

*At this time, wideband data can only be considered if a FCC waiver is obtained.*

### 8.8 Dispute Resolution – Intra-Regional

**This section is required. An example is provided below:**

*In the event an agency disputes the implementation of this Plan or the Federal Communications Committee approval of this Plan or parts of this Plan, the agency must notify the Chair of the dispute in writing. This section does not apply to protests over new spectrum allocations (see Section “6.5”). The Chair will attempt to resolve the dispute on an informal basis. If a party to the dispute employs the Chair, then the Vice Chair will attempt resolution. In such cases, the Chair shall be deemed to have a conflict of interest and will be precluded from voting on such matters. If after 30 days the dispute is not resolved, the Chair (or Vice Chair) will appoint a Dispute Resolution Committee consisting of two members from the State of (your State name) governmental agencies and at least five members from different counties in Region (your region #). That committee will select a Chair to head the committee and a secretary to document the proceedings.*

*The Regional Plan Chair (or Vice Chair) will represent the Region in presentations to the Dispute Resolution Committee. The Committee will hear input from the disputing agency, any effected agencies and the Region Chair. The Committee will then meet in executive session to prepare a recommendation to resolve the dispute. Should this recommendation not be acceptable to the disputing agency/agencies, the dispute and all written documentation from the dispute will be forwarded to the National Regional Planning Oversight Committee, a subcommittee of the National Public Safety Telecommunications Committee (NPSTC) for review. As a last resort, the dispute will be forwarded to the Federal Communications Commission for final resolution.*

## 9.0 Interoperability Channels

### 9.1 Introduction

**This introductory paragraph section describing the purpose of interoperability channels is optional. An example is provided below:**

*The ability for agencies to effectively respond to mutual aid requests directly depends on their ability to communicate with each other. (Your region name) is subject to many natural disasters and mutual aid is common among agencies. This Plan seeks to facilitate the communications necessary for effective mutual aid.*

*The State of (your State name) will administer the 700 MHz interoperability channels via the State Interoperability Executive Committee (SIEC) under National Coordination Committee's (NCC) guidelines. The Region (your region #) 700 MHz Regional Planning Committee will work with the (your State name) State Interoperability Executive Committee and (x number) members of the Region (your region #) 700 MHz Regional Planning Committee will participate in the (your State name) State Interoperability Executive Committee (SIEC) and they will represent Region (your region #). If at any time the State SIEC is unable to function in the role of administering the interoperability channels in the 700 MHz band, then this committee will assume this role and notify the FCC in writing of the change in administrative duties.*

### 9.2 Tactical Channels

*This section is required. An example is provided below:*

*Region (your region #) will not set aside additional channels for interoperability use within the region. It is anticipated the sixty-four FCC designated interoperability channels (6.25 KHz) will be sufficient to provide interoperability (voice and data) within Region (your region #).*

*All mobile and portable units operating under this Plan and utilizing 700 MHz channels must be programmed with the minimum number of channels called for either in NCC guidelines or as the (your State name) State interoperability Executive Committee specifies. The channel display in these radios will be in accordance with the NCC guidelines that have common alphanumeric nomenclature to avoid any misinterpretation of use within Region (your region #). The (your State name) SIEC is the final authority on the interpretation of the distribution of the 700 MHz interoperability channels.*

### 9.3 Deployable Systems

*This section is required. An example is provided below:*

*This Plan strongly supports use of deployable systems, both conventional and trunked. Deployable systems are prepackaged systems that can deploy by ground or air to an incident to provide additional coverage and capacity on interoperability channels. This will minimize the expense of installing extensive fixed infrastructure and recognizes the difficulty of providing complete coverage of the region due to environmental constraints.*

*Agencies should have conventional deployable systems capable of being tuned to any of the interoperability tactical channels. Those agencies that are part of a multiagency trunked system and commonly provide mutual aid to each other are encouraged to have trunked deployable*

*systems that operate on the tactical channels designated by the FCC for this use. The SIEC will develop the operational details for deploying these systems.*

*It is expected that the tactical channels set aside for trunked operation will be heavily used by deployable systems. Therefore, the tactical channels cannot be assigned to augment general use trunked systems.*

### **9.4 Monitoring of Calling Channels**

*This section is required. An example is provided below:*

*700 MHz licensees will be responsible for monitoring interoperable calling channels. The SIEC will develop operational guidelines for this function. Appendix "K" will include NCC documents that display required Interoperability guidelines.*

## **10.0 Applicant Requirements and Evaluation**

### **10.1 Introduction**

*This section is required. An example is provided below:*

*The applicant evaluation criteria established in the NCC process, and as further defined in this plan, will be followed for approval. All requests will be considered on a first come, first served basis. In cases, where specific frequency allotments are required by numerous applicants at the same time, the applicant evaluation matrix point system will be utilized to determine the successful applicant. In all cases, area of coverage, technical requirements, and channel loading criteria will be applied. Exceptions may apply upon unique circumstances, after review and approval by the RPC. Deviations from FCC rules are not to be approved unless a fully justified waiver request has been presented to the RPC. The Region (your region #) "Technical" subcommittee will evaluate and process applications within thirty (30) days after notified of receipt by CAPRAD.*

*The matrix has been prepared to enable consistent evaluation of plans and applications. Variations within the parameters of this plan and submitted applications and/or plans may require extensive evaluation. Therefore, it shall be responsibility of the RPC to evaluate each situation on its own merit.*

*Each applicant for a trunked system shall certify that a minimum of 70 field radios for each 12.5 kHz channel will be placed in service within five (5) years of the initial plan approval date. If that is not the case, then less than fully loaded channels shall be returned to the allotment pool and the licensee shall modify their license accordingly.*

*Conventional channels shall be loaded to 70 mobile units per channel. Where an applicant does not load a channel to 70 radio/subscriber units, the channel will be available for assignment to other licensees. Mobile, portable and control stations will be considered as mobile units.*

### **10.2 Application Requirements**

**This section is required. An example is provided below:**

*Each application must contain the following:*

- *FCC ULS 601 Form(s),*
- *Explanation of the systems future growth for all agencies involved in the system, including how the system will be loaded and what equipment type and quantity is planned to be purchased to load the system,*
- *Explanation of the budget commitment for the proposed system,*
- *State of compliance the applicant's agency will conform with interoperability requirements of the SIEC plan,*
- *Any documentation that identifies intended radio channels the agency/entity will be abandoning through the FCC licensing processes, after full beneficial system use of allocated 700 MHz channels, for informational purposes only, and the benefit of other Entities with Region (your region #).*
- *Documentation that will assist the evaluation of the application against the Point Matrix system identified in Section "10.3".*

*RPC the application will be forwarded to the Applicant's designated coordinator for technical review and any appropriate information will be uploaded to CAPRAD. Upon approval by the coordinator the Applicant may submit to the FCC for licensure. Any conflicts encountered during the licensing process, after Regional approval, the application will be returned to the RPC for resolution with the applicant.*

### **10.3 Evaluation Matrix Point System**

**This section is required but not to this level of detail. An example is provided below:**

*Region (your region #) will use a point system to determine approval priority of competing applications within the region. The maximum total points that can be achieved are 800 points. The applications receiving the highest point total will receive approval for the channels. Seven categories will be evaluated.*

*Where applicable, such as in multiple disciplines shared systems, the points for all agencies utilizing the system are included in the total.*

**1. Service and Use (Maximum score 300 points)**

| <u>Service</u>                                      | <u>Points</u>     |
|---|-------------------|
| <i>Local</i>  | <i>10</i>         |
| <i>County</i>                                       | <i>10</i>         |
| <i>State</i>  | <i>10</i>         |
| <i>Federal</i>                                      | <i>10</i>         |
| <br><u>Use</u>                                      | <br><u>Points</u> |
| <i>Criminal Justice/Law Enforcement/Crisis Mgmt</i> | <i>50</i>         |
| <i>Fire/EMS</i>                                     | <i>50</i>         |
| <i>Special Emergency</i>                            | <i>40</i>         |
| <i>Emergency Management</i>                         | <i>40</i>         |
| <i>Forestry Conservation</i>                        | <i>30</i>         |
| <i>Highway Maintenance</i>                          | <i>30</i>         |
| <i>General Government</i>                           | <i>20</i>         |

*Maximum Total 300*

*Environmental protection will fall in the “Special Emergency” category and shall be considered for tasks that directly reduce contamination to the air, water or ground by chemicals or waste materials.*

**2. Interoperability Communications (Maximum score 100 points)**

*The application is scored on the degree of interoperability that is demonstrated, with a range of points from 0 to 100. This category will not rate the application on the inclusion of interoperability channels, but on its proposed actual ability to communicate with different levels of government and services during a time of emergency.*

*Each applicant is encouraged to have direct mobile-to-mobile communications among these radio type functions; local, state and federal in the criminal justice, fire/EMS, special emergency, emergency management, forestry, highway maintenance and general government. All applicants will start with 100 points and points will be deducted based upon their lack of intersystem communications. No points will be deducted if a plan or system has not yet been developed within their areas of service.*

- Ten (10) points will be deducted for each radio service type function in which the applicant lacks intersystem communication, if direct mobile-to-mobile does not exist.*

- *Five (5) points for each radio service that the applicant lacks direct mobile-to-mobile communications.*

### 3. **Loading (Maximum score 150 points)**

*Those applicants who have demonstrated that they are part of or developing cooperative, multi-agency, systems will be scored on a range from 0 to 150 points depending upon the extent of the cooperative system.*

|  |                         |
|--|-------------------------|
| <i>Mutli-agency trunked, fully loaded, system</i>  | <i>101 – 150 points</i> |
| <i>Trunked system, fully loaded, single agency</i> | <i>76 – 100 points</i>  |
| <i>Mobile data channel fully loaded/channel</i>    | <i>76 – 100 points</i>  |
| <i>Conventional system fully loaded/channel</i>    | <i>0 – 75 points</i>    |

*Expansion of existing systems will be evaluated as to the aforementioned category they are in. Any system less than fully loaded will have its score multiplied by the proportion:*

*Fully loaded/channel is a 12.5 kHz channel with 70 radio units. Control channels shall be considered as data channels. Plans submitted to the RPC shall stipulate the number of voice communication channels and the number of data channel(s). These points will only be assigned to fully loaded systems that are planned and identified with the application package submittal.*

### 4. **Spectrum Efficiency (Maximum score 50 points)**

*The applicant will be scored on the degree of spectrum efficient technology that the system demonstrates. A trunked system will be considered a spectrum efficient technology as well as any technological systems feature that is designed to enhance the efficiency of the system and improve the efficient use of spectrum.*

#### *Spectrum efficiency points*

|  |                  |
|--|------------------|
| <i>Trunked or equally high efficient technology</i>  | <i>50 points</i> |
| <i>Conventional system using data</i>                | <i>50 points</i> |
| <i>Technologies that increases system throughput</i> | <i>50 points</i> |

### 5. **System Implementation Factors (Maximum score 100 points)**

*This category scores the applicant on two factors, budgetary commitment and plan completeness. The degree of budgetary commitment is scored on a range from 0 to 50 points based on*

*the RPC's evaluation of commitment demonstrated through documentation by the applicant and its funding source entity. A high degree of funding commitment will receive a higher score. Applicants will also be scored on the degree of plan completeness on a range from 0 to 50 points. Applicants must submit a timetable for the implementation of the system. Applicants should be aware of the requirements outlined in "Slow Growth Plan" portion of this plan and the FCC rules.*

*Multi phase project with funds committed to all phases 50 points  
Multi phase project plan completed for all phases 50 points*

*Applicants with less than complete funding commitment and/or incomplete plans will have their point score reduced accordingly. Resolutions, legislation, or other such documentation from governing entities shall be submitted with applications to support financial commitment.*

### **6. System Density (Maximum score 100 points)**

*Each applicant's System will be scored on the level of geographic efficiency for requisite communications coverage, for the applicant's jurisdictional area served or regional area served under agreement with other Agencies and/or defined communication requirements. Scoring will be based upon the defined radio coverage area of the application, and the Entity's jurisdictional area or required communication support areas. Region 3 recognizes that each Entity may not be required (by System or network users) to provide radio System communication support for all jurisdictional boundaries or areas that are supported by that Entity. This evaluation is to only weigh the efficiency of the System being applied for, against the required areas for communication support based on System user requirements or other Entity Systems licensed or applied for. Scores are based on the ratio multiplied by 100 with the maximum not to exceed 100 points.*

*Percentage of System operational area for applicant's jurisdictional area of responsibility for communications support  
 $\times 100 =$  \_\_\_\_\_*

## **10.4 Application Processing**

**This section is required. An example is provided below:**

*All applications will be processed in the most expeditious manner possible by the RPC. After Region (your region #) approval, the applications will be sent to the coordinator requested by the applicant.*

*All documentation required by the designated coordinator selected in this process will be available through the CAPRAD system. Subsequent to coordination approval the FCC will grant the license(s) to the applicant.*

### **11.0 Process for Handling Unformed Regions**

*This section is required. An example is provided below:*

*The (name of the committee created to handle coordination with adjacent Regions) Subcommittee recommends that all Regions use the following pre-planning methodology to facilitate coordination with adjacent Regions. This procedure will provide a spectrum allotment for adjacent Regions that do not immediately form a Committee.*

*Counties or other geographic subdivisions within 70 miles of the Regional border need to share spectrum with the adjacent Region(s). The sharing indicated is inherent in the NPSTC Packing Program, as it views all counties nationwide as separate entities while ignoring state borders. With all criteria being equal, this ensures all counties are provided sufficient spectrum in accordance with their surrounding counties. The appropriate ratio of channels shall be allotted to counties in adjacent regions based upon each county's population. A 25 kHz building block will be used to distribute spectrum between the regions. A description of the demographics of the affected border areas shall be included.*

*The requirements for adjacent region concurrence will require a waiver if the adjacent region has not yet formed. The Region filing the Plan must use the pre-planning procedure outlined above. The waiver request must be filed concurrently with the Plan and contained in the cover letter.*

### **12.0 Future Planning**

#### **12.1 Database Maintenance**

*This section is required. An example is provided below:*

*The CAPRAD pre-coordination database has developed channel allotments in each county area within (your Region name) using criteria such as current population, 2010 Census data, height above average terrain (HAAT) and public safety use curves generated by the Public Safety Wireless Advisory Committee (PSWAC) to provide spectrally efficient frequency allotments. Region (your region #) will continue to use the CAPRAD pre-coordination database for other 700 MHz spectrum as it becomes available.*

#### **12.2 Inter-Regional Dispute Resolution Process**

*This section is required. An example is provided below:*

*In the event that a dispute arises between Region (your region #) and an adjacent Region or Regions, regarding spectrum allocations or implementation, which cannot be resolved within 60 days, the parties to the dispute will request a hearing by the National Regional Planning Oversight Committee.*

*All (total # of adjacent regions) adjacent Regions have signed the Region (your region #) dispute resolution. See Appendix "J" for details and Inter-Regional Dispute Resolution Agreements signed by the adjacent Regions.*

### **13.0 Certification**

**This section is required. An example is provided below:**

*I hereby certify that all planning committee meetings, including subcommittee or executive committee meetings were open to the public. A summary of the deliberations of the Committee pursuant to adopting this Plan can be found in Appendix "F", Meeting attendance, agendas and other events.*

(Chairperson Name)

(Date)

Chairperson, Region (your region #)

## **Appendix A – By-laws**

*Information for this section may be taken from your Region's 800 MHz Plan and be inserted in this 700 MHz Plan, as appropriate*

## **Appendix B - Committee Membership List**

*Information for this section may be taken from your Region's 800 MHz Plan and be inserted in this 700 MHz Plan, as appropriate*

## **Appendix C – List of Counties/Cities in the Region**

*Information for this section may be taken from your Region's 800 MHz Plan and be inserted in this 700 MHz Plan, as appropriate*

## **Appendix D - Sample Cover Letter to Adjacent Regional Chairs**

Chair Region \_\_\_\_\_  
Address

Dear \_\_\_\_\_

Attached is the final 700 MHz Regional Plan for Region (your region #). Please review and respond within 60 days of receipt. For your convenience, I have attached a sample Adjacent Region Concurrence letter that you can use to formally acknowledge your Regions approval of Region (your region #)'s Plan. If you have any questions, do not hesitate to contact me.

I have also attached an Inter-Regional Dispute Resolution Agreement that must be signed by you and must accompany my Regional Plan when filed with the FCC. As we have discussed, this agreement simply formalizes the process we will use to ensure concurrence to any frequency allocations in our region borders and the steps we will take to resolve any disagreements.

Thank you for your time and attention to this matter.

Sincerely;

(Chairperson Name)  
Chair, Region (your region #)

## **Appendix E - Adjacent Region Concurrence Notice**

*Information for this section may be taken from your Region's 800 MHz Plan and be inserted in this 700 MHz Plan, as appropriate*

## **Appendix F – Regional Planning Committee Meeting Minutes**

*Information for this section may be taken from your Region's 800 MHz Plan and be  
inserted in this 700 MHz Plan, as appropriate*

## **Appendix G – Interoperability Channel MOU Template**

### *On State Interoperability Executive Committee Letterhead*

TO: (signer of application and title)  
(agency name)

FROM: (name), State Interoperability Executive Committee Chairperson

DATE: (mm/dd/yyyy)

SUBJECT: Memorandum of Understanding for Operating on the 700 MHz Interoperability Channels

This memorandum of understanding (hereafter referred to as MOU) shall be attached to the application when submitting it. By virtue of signing and submitting the application and this MOU, (agency name) (hereafter referred to as APPLICANT) affirms its willingness to comply with the proper operation of the Interoperability (interoperability) channels as dictated by the State Interoperability Executive Committee (here after referred to as SIEC) as approved by the Federal Communications Commission (hereafter referred to as FCC) and by the conditions of this MOU.

The APPLICANT shall abide by the conditions of this MOU which are as follows:

- To operate by all applicable State, County, and City laws/ordinances.
- To utilize "plain language" for all transmissions.
- To monitor the Calling Channel(s) and coordinate the use of the Tactical Channels.
- To identify inappropriate use and mitigate the same from occurring in the future.
- To limit secondary Trunked operation to the interoperability channels specifically approved on the application and limited to channels listed below.
- To relinquish secondary Trunked operation of approved interoperability channels to requests for primary conventional access with same or higher priority.
- To mitigate contention for channels by exercising the Priority Levels identified in this MOU.

The preceding conditions are the primary, though not complete, requirements for operating in the interoperability channels. Refer to the Region Plan for the complete requirements list.

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## Public Safety 700 MHz Radio Communications Plan

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### Priority Levels:

1. Disaster or extreme emergency operation for mutual aid and interagency communications;
2. Emergency or urgent operation involving imminent danger to life or property;
3. Special event control, generally of a preplanned nature (including Task Force operations)
4. Single agency secondary communications (default priority).

To resolve contention within the same priority, the channel should go to the organization with the wider span of control/authority. This shall be determined by the State Interoperability Executive Committee or RPC for the operation or by the levels of authority/government identified in the contention.

For clarification purposes and an aid to operate as authorized, any fixed base or mobile relay stations identified on the license for temporary locations (FCC station class FBT or FB2T, respectively) shall remain within the licensed area of operation. Similarly, vehicular/mobile repeater stations (FCC station class MO3) shall remain within the licensed area of operation. Federal agencies are permitted access to interoperability channels only as authorized by 47 CFR 2.102 (c) & 2.103 and Part 7.12 of the NTIA Manual.

Any violation of this MOU, the Region Plan, or FCC Rule shall be addressed immediately. The first level of resolution shall be between the parties involved, next the State Interoperability Executive Committee or RPC, and finally the FCC.

\_\_\_\_\_  
(typed or printed name of authorized signer)  
\_\_\_\_\_  
(authorized signer identified above and consistent with application)  
\_\_\_\_\_  
(date)  
\_\_\_\_\_  
(agency name)  
\_\_\_\_\_  
(agency address)  
\_\_\_\_\_  
(agency address)  
\_\_\_\_\_  
(agency address)  
\_\_\_\_\_  
(agency address)  
\_\_\_\_\_  
(signer's phone)  
\_\_\_\_\_  
(signer's email address, if available)

## **Appendix H – Region (your region #) Channel Allotments**

*Information for this section may be taken from your Region's 800 MHz Plan and be inserted in this 700 MHz Plan, as appropriate*

## Appendix I – DTV Transition

### DTV transition

#### Frequency Availability through the DTV Transition

*4.1.1.1.1 On August 14, 1996, the FCC released a Sixth Further Notice of Proposed Rule Making in the digital television (DTV) proceeding. A portion of the spectrum recovered from TV channels 60-69 when DTV is fully deployed "could be used to meet public safety needs."<sup>3</sup> By Congressional direction in the Balanced Budget Act of 1997, the FCC reallocated 24 MHz of spectrum to Public Safety services in the 764-776 MHz and 794-806 MHz bands. The statute required the FCC to establish service rules, by September 30, 1998, in order to start the process of assigning licenses. The rules that the FCC established by September 30, 1998, "provided the minimum technical framework necessary to standardize operations in this spectrum band, including, but not limited to: (a) establishing interference limits at the boundaries of the spectrum block and service areas; (b) establishing technical restrictions necessary to protect full-service analog and digital television service during the transition to digital television services; (c) permitting public safety licensees the flexibility to aggregate multiple licenses to create larger spectrum blocks and service areas, and to disaggregate or partition licenses to create smaller spectrum blocks or service areas; and (d) ensuring that the new spectrum will not be subject to harmful interference from television broadcast licensees"<sup>4</sup>.*

In April 1997, the FCC assigned a second 6 MHz block of spectrum to each license (or permit to construct) holders of full power, analog, television broadcast station (NTSC) in order to construct a digital television station (DTV). Secondary low power television stations (LPTV), secondary translators and boosters (TX), mutually exclusive applications for new stations, and application filed after a cut-off date did not receive a second 6 MHz allotment for DTV. The FCC established about a 10 year timeline for those stations with a DTV assignment to construct a DTV station, cease NTSC transmissions, and return one of the two 6 MHz blocks of spectrum to the FCC. Target date for the end of analog television (NTSC) transmission was set for December 31, 2006.

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<sup>3</sup> Advanced Television Systems and Their Impact Upon the Existing Television Broadcast Service, MM Docket No. 87-268, *Sixth Further Notice of Proposed Rule Making*, 11 FCC Rcd 10,968, 10,980 (1996) (*DTV Sixth Notice*).

<sup>4</sup> FCC 98-191, 1st R&O and 3rd NPRM on WT Docket No. 96-86 *Operational & Technical Requirements of the 700 MHz Public Safety Band*, para.4.

Congress provided several market penetration loopholes (>85% households served, all 4 major networks converted, etc) allowing NTSC operations to continue past the December 31, 2006 date. While there are over 100 NTSC full power stations in this band, there are also about 12 DTV assignments. The DTV assignments might continue operations past the December 31, 2006 date for two reasons. 1) They must find a suitable channel below channel 60 to move to, which may be their own NTSC assignment. They may not be able to find another allocation until other NTSC stations have ceased operations and returned a channel below 60 to the FCC. Or, 2) their license does not expire until after 2006 (most are licensed into 2007 or 2008).

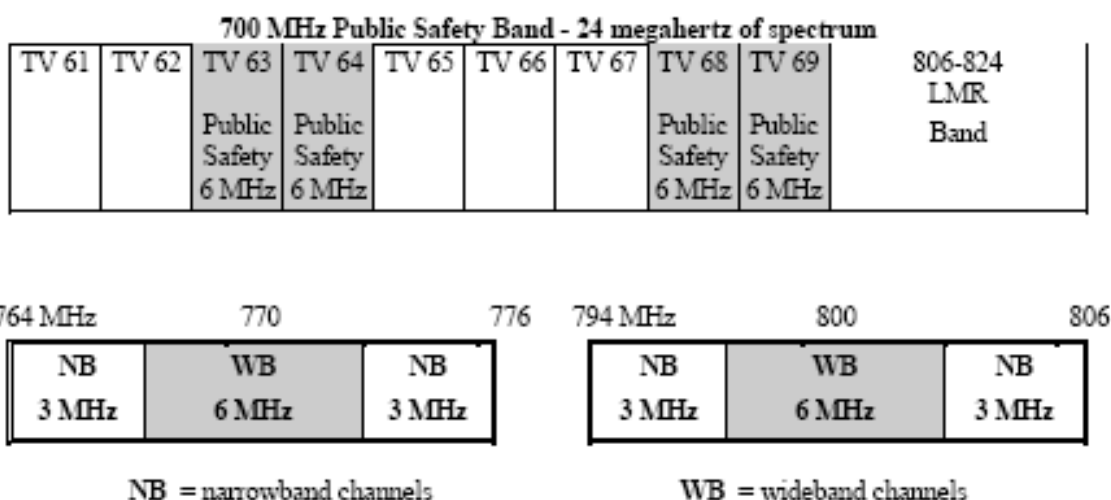
### **Protection of Public Safety from future TV/DTV Stations**

Public safety base and mobile operations must have a safe distance between the co-channel or adjacent TV and DTV systems. This typically means that a co-channel and adjacent channel base and mobile system cannot operate in areas where TV stations already exist. The public safety systems that will operate in the 700 MHz band for some locations in the U.S. and its possessions must wait until the transition period is over and the TV/DTV stations have moved to other channels before beginning operations. In other areas, channels will be available for public safety operations. During the transition period, public safety stations must be acutely aware of the TV allocations for both TV and DTV stations. The FCC wants the number of situations where the public safety licensee has to coordinate its station with the existing TV stations kept to a minimum. The Commission's decisions in the reallocation of spectrum to DTV implemented two requirements, which will help public safety systems to protect TV/DTV stations and reduce the number of coordination's. The first requirement is that full power UHF-TV stations can no longer apply for channels 60-69 or modifications in channels 60-69, which would increase the stations' service areas, which creates a known environment for public safety licensees. The second requirement is that since only existing TV station licensees can apply for DTV channels, the applicants and their proposed locations are already known.

Also, the low power TV stations and translators already on channels 60-69 are secondary and must cease operations if they cause harmful interference when a primary service, like land mobile, comes into operation. The secondary Low Power TV stations already on channels 60-69 cannot apply for the new Class A protection status.

## Public Safety 700 MHz Radio Communications Plan

### Spectrum Overview



The FCC designated 764-776 MHz (TV Channels 63 and 64) for base-to-mobile transmissions and 794-806 MHz (TV Channels 68 and 69) for mobile-to-base communications. In addition, base transmit channels in TV Channel 63 are paired with mobile channels in TV Channel 68 and likewise that base channels in TV Channel 64 are paired with mobile channels in TV Channel 69. This provides 30 MHz separations between base and mobile transmit channel center frequencies. This band plan was suggested because of the close proximity of TV Channels 68 and 69 to the 806-824 MHz band, which already contains the transmit channels for mobile and portable radios (base receive).

Mobile transmissions are allowed on any part of the 700 MHz band, not just the upper 12 MHz. This will facilitate direct mobile-to-mobile communications (*i.e.*, not through a repeater) that are often employed at the site of an incident, where wide area communications facilities are not available or desired. Allowing mobile transmissions on both halves of a paired channel is generally consistent with FCC rules governing use of other public safety bands.

#### Non-uniform TV Channel Pairing

There are currently geographical areas where, either licensed or otherwise protected full-service analog or new digital, television stations are currently authorized to operate on TV Channels 62, 63, 64, 65, 67, 68, and 69.<sup>5</sup> During the DTV transition period, an incumbent TV station occupying one or more of the four Public Safety channels (63, 64, 68, 69) or the three adjacent channels (62, 65, 67) may preclude pairing of the channels in accordance with the band plan defined above. Therefore, to provide for cases where standard pairing is not practicable during the DTV transition period, the FCC will allow the RPCs to consider pairing base-to-mobile channels in TV Channel 63 with mobile-to-base channels in TV Channel 69 and/or base-to-mobile channels in

<sup>5</sup> See *Reallocation, Notice of Proposed Rule Making*, 12 FCC Rcd at 14,141, 14,177-78 and 14,182-83.

TV Channel 64 with mobile-to-base channels in TV Channel 68. Because such non-standard channel pairing may cause problems when the band becomes more fully occupied, the FCC expects the RPCs to permit such non-standard channel pairing only when absolutely necessary, and the FCC may require stations to return to standard channel pairing after the DTV transition period is over. However, the FCC will not permit non-standard channel pairing on the nationwide interoperability channels in the 700 MHz band because of the need for nationwide uniformity of these channels.

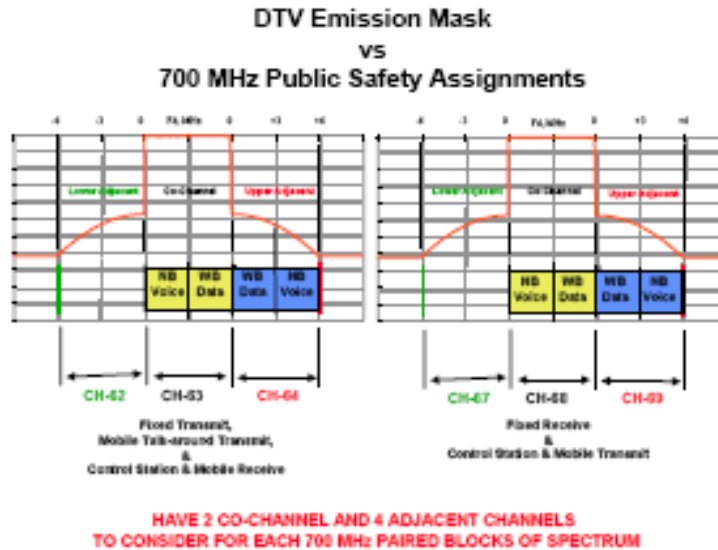
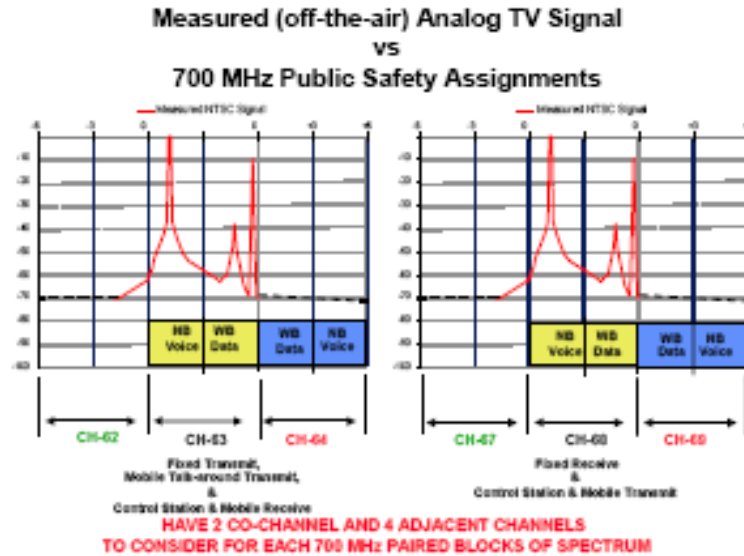
At least three issues must be considered before deciding upon non-uniform channel pairing:

- 1) Preliminary analysis, looking at current incumbent TV stations, shows few geographic areas where non-uniform pairing allows early implementation of 700 MHz systems. As DTV Transition progresses, and TV stations vacate the band, this situation might change.
- 2) If interoperability channels must be uniform, operation on I/O channels will be blocked until all incumbent TV stations are cleared, even though General Use channels may be implemented earlier.
- 3) If I/O channels must follow uniform pairing, and general use & reserve channels can be implemented using non-uniform pairing, narrowband voice subscriber equipment must operate on 3 different channel pairings - 39 MHz (764-767 paired with 803-806 MHz), 30 MHz, and 21 MHz (773-776 paired with 794-797 MHz). Likewise, there will be 3 different channel pairing for wideband channels. No vendors have volunteered to build equipment & systems for non-uniform pairing, yet.

### **TV/DTV Protection**

During the DTV Transition period, public safety must consider all co-channel and adjacent channel TV and DTV stations within about a 160 mile radius.

For public safety channel pair 63/68, public safety must consider six TV/DTV channels - co-channels 63 and 68, as well as, adjacent channels 62, 64, 67, and 69.



For public safety channel pair 64/69, public safety must consider five TV/DTV channels; co-channels 64 and 69, as well as, adjacent channels 63, 65, and 68.

It may only take one TV/DTV station to block operations on one, the other, or both public safety channel pairs. For a public safety system at 500 watts ERP and 500 ft HAAT, co-channel TV stations can block a 120 mile radius and adjacent channel TV/DTV stations can block a 90 mile radius.

Since base stations transmitters are located only on channels 63 and 64, LMR mobile only TV/DTV protection spacing on channels 68 and 69 may be shorter than LMR base TV/DTV protection on channels 63 & 64.

### TV/DTV Protection Criteria

Public safety applicants can select one of three ways to meet the TV/DTV protection requirements: (1) utilize the geographic separation specified in the 40 dB Tables of 90.309; (2) submit an engineering study to justify other separations which the Commission approves; or (3) obtain concurrence from the applicable TV/DTV station(s).

### 90.309 40 dB D/U Tables

The FCC adopted a 40 dB desired (TV/DTV) to undesired (LMR) signal ratio for co-channel operations and a 0 dB desired/undesired (D/U) signal ratio for adjacent channel operations. The D/U ratio is used to determine the geographic separation needed between public safety base stations and the Grade B service contours of co-channel and adjacent channel TV/DTV stations. The D/U signal ratio is used to determine the level of land mobile signals that can be permitted at protected fringe area TV receiver locations without degrading the TV picture to less than a defined picture quality. In other words, the D/U signal ratio indicates what relative levels of TV and land mobile signals can be tolerated without causing excessive interference to TV reception at the fringe of the TV service area.

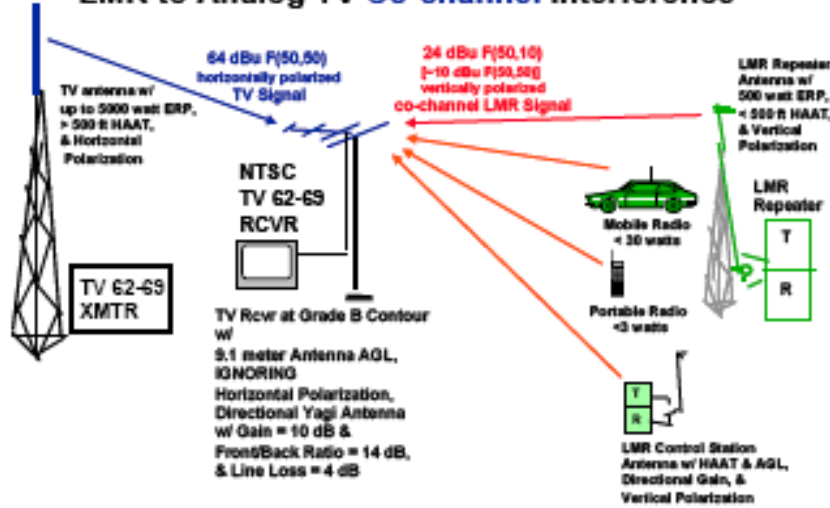
Desired and undesired contours are not quite the same thing. Desired analog TV contours are defined as F(50,50), meaning coverage is 50% of the places and 50% of the time. Undesired land mobile or interference contours are defined as F(50,10). For Digital TV, the desired contours are defined as F(50,90), while the undesired land mobile contour are still F(50,10).

Land mobile and analog TV services have successfully shared the 470-512 MHz band (TV Channels 14-20) within a 50 mile radius of eleven major cities since the early 1970's based upon providing a signal ratio of at least 50 dB between the desired TV signal and undesired co-channel land mobile signal (D/U signal ratio) at a hypothetical 88.5 km (55 mi) Grade B service contour and an adjacent channel D/U signal ratio of 0 dB at the same hypothetical Grade B service contour. These separation distances also protected the land mobile systems from interference from the TV stations. In 1985, recognizing that 50 dB D/U was too conservative, the FCC proposed to expand land mobile/TV sharing to other TV channels and proposed that the geographic separation requirements for co-channel operations be based on a D/U signal ratio of 40 dB rather than 50 dB. That proceeding was put on hold pending completion of the DTV proceeding, which has now been completed. In the 470-512 MHz band, the FCC also relied on minimum separation distances based on the various heights and powers of the land mobile stations (HAAT/ERP separation tables) to prevent harmful interference.

Since this simple, yet conservative, method was successful, the FCC decided to use this same method, the 90.309 HAAT/ERP Separation Tables, to administer LMR to TV/DTV receiver protection criteria for the services in the 700 MHz band.

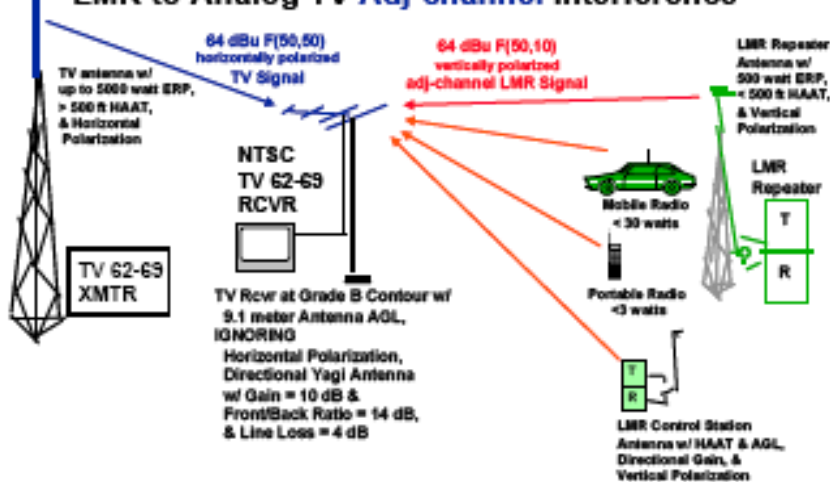
Co-channel land mobile base station transmitters are limited to a maximum signal strength at the hypothetical TV Grade B contour 40 dB D/U below desired 64 dBu F(50,50) analog TV signal level, or 24 dBu F(50,10). The FCC adopted a 0 dB D/U signal ratio for adjacent channel operations. Adjacent channel land mobile transmitters will be limited to a maximum signal of 64 dBu F(50,10) which is 0 dB D/U below the TV Grade B signal of 64 dBu F(50,50) at the TV station Grade B contour of 88.5 km (55 miles). A typical TV receiver's adjacent channel rejection is at least 10-20 dB greater than this level, which will further safeguards TV receivers from land mobile interference.

#### LMR to Analog TV Co-channel Interference



4.2

#### LMR to Analog TV Adj-channel Interference



The equivalent ratios for a DTV station's 41 dB F(50,90) desired field strength contour are land mobile 17 dB F(50,10) contour for co-channel and land mobile - 23 dB F(50,10) contour for adjacent channel.

The Tables to protect TV/DTV stations are found in Section 90.309 of the Commission's rules. These existing Tables cover co-channel protection based on a 40 dB D/U ratio using the separation methods described in Section 73.611 of the Commission's rules for base, control, and mobile stations, and for adjacent channel stations for base stations based on a 0 dB D/U ratio.

However, the original considerations in 470-512 MHz band under Section 90.309 were different in that mobiles were limited in their roaming distance from the base station (less than 30 miles) and mobiles were on the same TV channel as the base station.

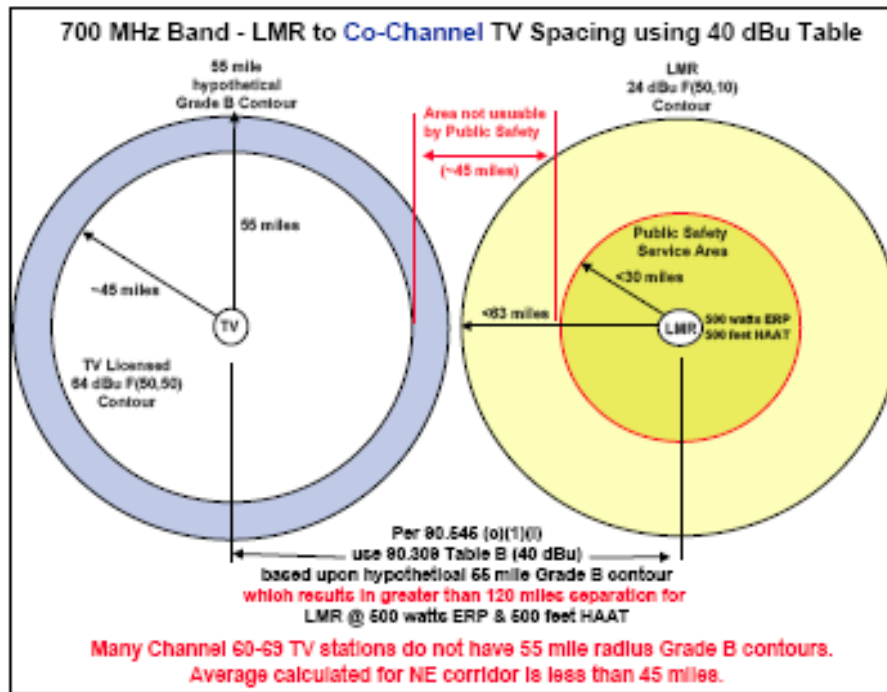
Control and mobile stations (including portables) are limited in height (200 ft for control stations, 20 ft for mobiles/portables) and power (200 watts ERP for control stations, 30 watts for mobiles, 3 watts for portables). Mobiles and control stations shall afford protection to co-channel and adjacent channel TV/DTV stations in accordance with the values specified in Table D (co-channel frequencies based on 40 dB protection for TV and 17 dB for DTV) in § 90.309.

Control stations and mobiles/portables shall keep a minimum distance of 8 kilometers (5 miles) from all adjacent channel TV/DTV station hypothetical or equivalent Grade B contours (adjacent channel frequencies based on 0 dB protection for TV and -23 dB for DTV). This means that control and mobile stations shall keep a minimum distance of 96.5 kilometers (60 miles) from all adjacent channel TV/DTV stations.

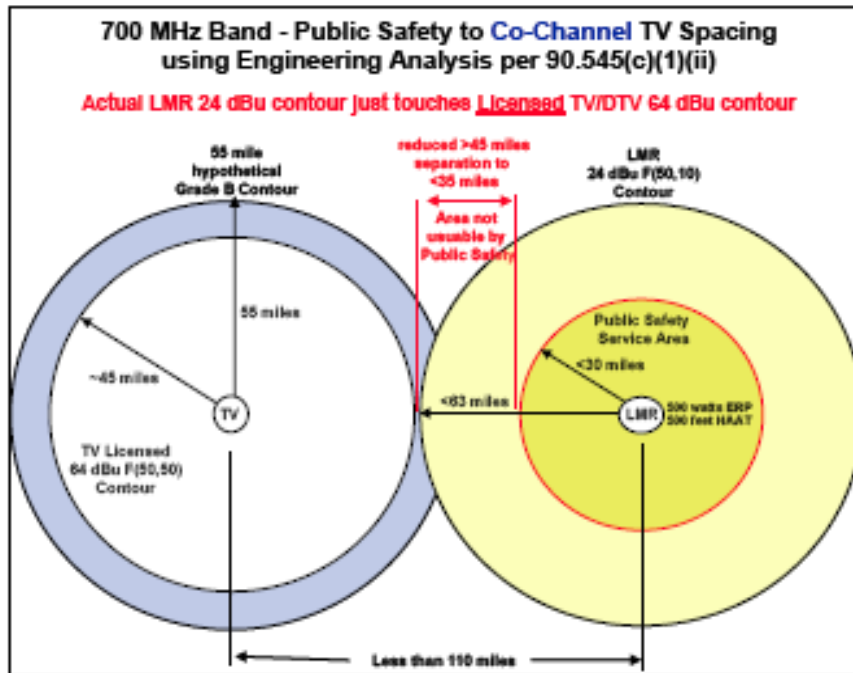
Since operators of mobiles and portables are able to move and communicate with each other, licensees or coordinators must determine the areas where the mobiles can and cannot roam in order to protect the TV/DTV stations, and advise the mobile operators of these areas and their restrictions.

### **Engineering Analysis**

Limiting TV/land mobile separation to distances specified in the 40 dB HAAT/ERP Separation Tables found in 90.309 may prevent public safety entities from fully utilizing this spectrum in a number of major metropolitan areas until after the DTV transition period ends. Public safety applicants will be allowed to submit engineering studies showing how they propose to meet the appropriate D/U signal ratio at the existing TV station's authorized or applied for Grade B service contour or equivalent contour for DTV stations instead of the hypothetical contour at 88.5 km.

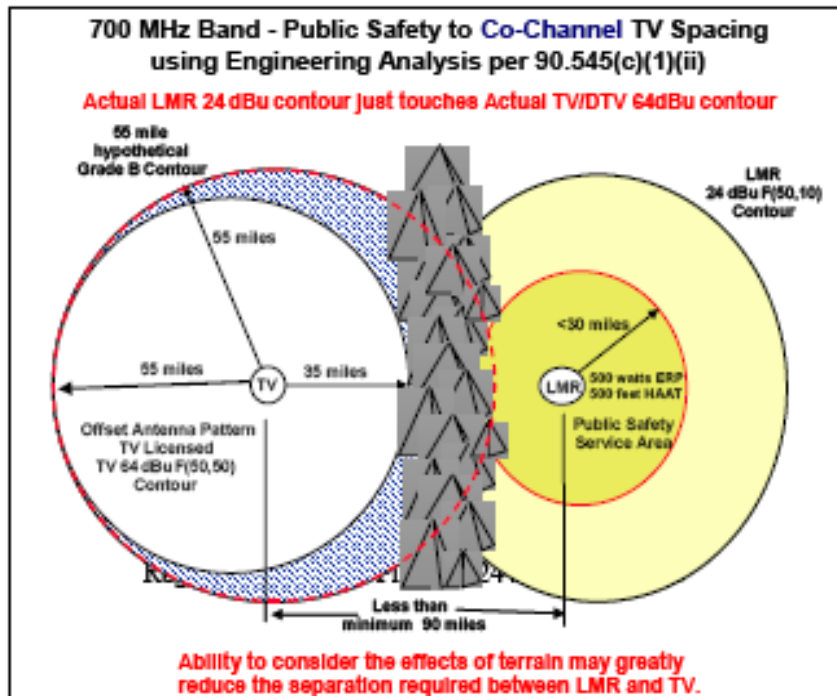


This would permit public safety applicants to take into account intervening terrain and engineering techniques such as directional and down-tilt antennas in determining the necessary separation to provide the required protection. Public safety applicants who use the engineering techniques must consider the actual TV/DTV parameters and not base their study on the 88.5 km hypothetical or equivalent Grade B contour. If land mobile interference contour does not overlap the TV Grade B contour (or DTV equivalent), then engineering analysis may be submitted to the FCC with the application.



4.3

4.4 This method is most useful with lower power TV stations whose Grade B contours are much smaller than the hypothetical 55 mile (88.5 km) Grade B contour or have directional patterns.



Ability to consider the effects of terrain may greatly reduce the separation required between LMR and TV.

*4.5 Note that 100 ft AGL limitations on 700 MHz control stations is much higher than the 100 ft AGL limitation used at UHF. Limiting control station antenna height and/or ERP may greatly reduce land mobile to TV contour spacing.*

Also, note that analysis for TV/DTV receivers uses 30 ft (10 m) antenna height whereas, analysis for land mobile subscribers uses about a 6 ft (2m) antenna height.

### TV/DTV Short-spacing

*4.6 Public safety applicants will also be allowed to "short-space" even closer if they get the (written) approval of the TV stations they are required to protect. Public safety applicants need to determine the station's intended market area vs its hypothetical Grade B contour area. Alternately, the TV/DTV station may be short-spaced against another TV/DTV station, limiting their area of operation, but does not affect LMR operations.*

*4.7 Instead of each agency negotiating with a TV/DTV station individually, they may want to combine into a single group or committee and negotiate together.*

### TV/DTV Height Adjustment Factor

*4.8 In order to protect certain TV/DTV stations which have extremely large contours due to unusual height situations, such as a television station mounted on top of Mount Wilson near Los Angeles, California, the FCC incorporated an additional height adjustment factor which must be used by all public safety base, control and mobile stations to protect these few TV/DTV stations and afford the land mobile stations the necessary protection from the TV/DTV stations. The equation necessary to calculate the additional distance from the hypothetical or equivalent Grade B contour is found in the rules section 90.545(c)(2)(iii).*

## CANADIAN AND MEXICAN BORDER REGIONS

The FCC typically takes one of two approaches. They either postpone licensing of land mobile stations within a certain geographic distance (e.g., 120 km (75 miles)) of Canada and Mexico, or permit interim authorizations conditioned on the outcome of future agreements. Because international negotiations can take many months or even years to finalize, the FCC took the later approach and adopted certain interim requirements for public safety licenses along the Canada and Mexico borders, providing that the licenses are subject to whatever future agreements the United States develops with the two countries.

Nevertheless, existing mutual agreements with Canada and Mexico for the use of these bands for UHF television must be recognized until further negotiations are completed. The US negotiated an agreement with Mexico of DTV operations near the US/Mexican border in July 1998. The US just negotiated an agreement with Mexico of DTV operations, and limited non-broadcast operations on 746-806 MHz, near the US/Canadian border in September 2000. Existing agreements recognize existing TV and/or DTV allotments and planning factors within a specified distance of the border. The Canadian Letter of Understanding also acknowledges that US plans to use 746-806 MHz for non-broadcast purposes and provides planning criteria (40 dB D/U) to protect Canadian TV/DTV receivers.

Additionally, public safety facilities within the United States must accept interference from authorized channel 60-69 TV transmitters in Canada and Mexico in accordance with the existing agreements. Since the locations of the Canadian and Mexican analog TV assignments and DTV allotments are known, the public safety applicants can consider the levels of harmful interference to

expect from Canadian and Mexican TV/DTV stations when applying for a license. Both Canada and Mexico have been informally notified that the Commission has changed its allocated use of TV channels 60-69, and the Commission will discuss the possibility of mutually compatible spectrum use with Canada and Mexico.

This Region (your region #) 700 MHz Regional Planning Committee report is a documentation of the Region (your region #) 700 MHz process. Every item in this document has been reviewed and is pertinent to public safety 700 MHz implementation in Missouri and in accordance with plans for allowing 700 MHz channels to be used in (your region's name) adjacent states of (adjacent state x, adjacent state y, adjacent state z). We look forward to working with the regional planning committees in these states to better the potential for public safety to have the tools available to complete their mission of protecting life and property in their respective states.

Regards,

(Chairperson Name)

Chairperson, Region (your region #) Regional Planning Committee  
(Chairperson Department)

(Date)

## **Appendix J – (Your State) SIEC Plan**

*Information for this section may be taken from your Region's 800 MHz Plan and be inserted in this 700 MHz Plan, as appropriate*

## Appendix K – 700 MHz Interoperability/Channel Nomenclature

**Table of 700 MHz Interoperability Channels**

For Specific Uses/Services

\* - Mandatory

| 16 CHANNEL SETS   | DESCRIPTION  | LABEL  |
|-------------------|--|--------|
| Channel 23 & 24   | General Public Safety Services (secondary trunked) | 7TAC58 |
| Channel 103 & 104 | General Public Safety Services (secondary trunked) | 7TAC62 |
| Channel 183 & 184 | General Public Safety Services (secondary trunked) | 7TAC66 |
| Channel 263 & 264 | General Public Safety Services (secondary trunked) | 7TAC70 |
| Channel 39 & 40   | Calling Channel *                                  | 7CAL59 |
| Channel 119 & 120 | General Public Safety Service *                    | 7TAC63 |
| Channel 199 & 200 | General Public Safety Service                      | 7TAC67 |
| Channel 279 & 280 | Mobile Data  | 7DAT71 |
| Channel 63 & 64   | Emergency Medical Service                          | 7EMS60 |
| Channel 143 & 144 | Fire Service                                       | 7FIR64 |
| Channel 223 & 224 | Law Enforcement Service                            | 7LAW68 |
| Channel 303 & 304 | Mobile Repeater *                                  | 7MOB68 |
| Channel 79 & 80   | Emergency Medical Service                          | 7EMS61 |
| Channel 159 & 160 | Fire Service                                       | 7FIR65 |
| Channel 239 & 240 | Law Enforcement Service                            | 7LAW69 |
| Channel 319 & 320 | Other Public Service *                             | 7TAC73 |
| Channel 657 & 658 | General Public Safety Services (secondary trunked) | 7TAC74 |
| Channel 737 & 738 | General Public Safety Services (secondary trunked) | 7TAC78 |
| Channel 817 & 818 | General Public Safety Services (secondary trunked) | 7TAC82 |
| Channel 897 & 898 | General Public Safety Services (secondary trunked) | 7TAC86 |
| Channel 681 & 682 | Calling Channel *                                  | 7CAL75 |
| Channel 761 & 762 | General Public Safety Service *                    | 7TAC79 |
| Channel 841 & 842 | General Public Safety Service                      | 7TAC83 |
| Channel 921 & 922 | Mobile Data  | 7DAT87 |
| Channel 641 & 642 | Emergency Medical Service                          | 7EMS76 |
| Channel 721 & 742 | Fire Service                                       | 7FIR80 |
| Channel 801 & 802 | Law Enforcement Service                            | 7LAW84 |
| Channel 881 & 882 | Mobile Repeater *                                  | 7MOB88 |
| Channel 697 & 698 | Emergency Medical Service                          | 7EMS77 |
| Channel 777 & 778 | Fire Services                                      | 7FIR81 |
| Channel 857 & 858 | Law Enforcement Service                            | 7LAW85 |
| Channel 937 & 938 | Other Public Services*                             | 7TAC89 |

### **Project 25 Common Air Interface Interoperability Channel Technical Parameters**

Certain common P25 parameters need to be defined to ensure digital radios operating on the 700 MHz Interoperability Channels can communicate. This is analogous to defining the common CTCSS tone used on NPSPAC analog Interoperability channels.

#### **Network Access Code**

In the Project 25 Common Air Interface definition, the Network Access Code (NAC) is analogous to the use of CTCSS and CDCSS signals in analog radio systems. It is a code transmitted in the pre-amble of the P25 signal and repeated periodically throughout the transmission. Its purpose is to provide selective access to and maintain access to a receiver. It is also used to block nuisance and other co-channel signals. There are up to 4096 of these NAC codes. For ease of migration in other frequency bands, a NAC code table was developed which shows a mapping of CTCSS and CDCSS signals into corresponding NAC codes. Document TIA/EIA TSB102.BAAC contains NAC code table and other Project 25 Common Air Interface Reserve Values.

The use of NAC code \$293 is required for the 700 MHz Interoperability Channel NAC code.

#### **Talk group ID**

In the Project 25 Common Air Interface definition, the Talk group ID on conventional channels is analogous to the use of talk groups in trunking. In order to ensure that all users can communicate, all units should use a common Talk group ID.

Recommendation: Use P25 default value for Talk group ID = \$0001

#### **Manufacturer's ID**

The Project 25 Common Air Interface allows the ability to define manufacturer specific functions. In order to ensure that all users can communicate, all units should not use a specific Manufacturer's ID, but should use the default value of \$00.

#### **Message ID**

The Project 25 Common Air Interface allows the ability to define specific message functions. In order to ensure that all users can communicate, all units should use the default Message ID for unencrypted messages of \$00000000000000000000.

#### **Encryption Algorithm ID and Key ID**

The Project 25 Common Air Interface allows the ability to define specific encryption algorithms and encryption keys. In order to ensure that all users can communicate, encryption should not be used on the Interoperability Calling Channels, all units should use the default Algorithm ID for unencrypted messages of \$80 and default Key ID for unencrypted messages of \$0000. These same defaults may be used for the other Interoperability channels when encryption is not used.

Use of encryption is allowed on the other Interoperability channels. Regional Planning Committees need to define appropriate Message ID, Encryption Algorithm ID, and Encryption Key ID to be used in the encrypted mode on Interoperability channels.

## **Appendix L – Inter-Regional Coordination Procedures and Resolution of Disputes Template**

### **I. INTRODUCTION**

- a. This is a mutually agreed upon Inter-Regional Coordination Procedures Agreement (Agreement by and between the following 700 MHz Regional Planning Committees,  
[List Regions Here].

### **II. INTER-REGIONAL COORDINATION AGREEMENT**

- a. The following is the specific procedure for inter-Regional coordination which has been agreed upon by Regions (your region #), X, X, XX, XX, XX, XX, and XX which will be used by the Regions to coordinate with adjacent Regional Planning Committees.
  - i. An application-filing window is opened or the Region announces that it is prepared to begin accepting applications on a first-come/first-served basis.
  - ii. Applications by eligible entities are accepted.
  - iii. An application-filing window (if this procedure is being used) is closed after appropriate time interval.
  - iv. Intra-Regional review and coordination takes place, including a technical review resulting in assignment of channels.
  - v. After intra-Regional review, a copy of those frequency-specific applications requiring adjacent Region approval, including a definition statement of proposed service area, shall then be forwarded to the adjacent Region(s) for review. This information will be sent to the adjacent Regional, chairperson(s) using the CAPRAD database.
  - vi. The adjacent Region reviews the application. If the application is approved, a letter of concurrence shall be sent, via the CAPRAD database, to the initiating Regional chairperson within thirty (30) calendar days.
    1. Dispute Resolution

1) If the adjacent Region(s) cannot approve the request, the adjacent Region shall document the reasons for partial or non-concurrence, and respond within 10 (Ten)-calendar days via email. If the applying Region cannot modify the application to satisfy the objections of the adjacent Region then, a working group comprised of representatives of the two Regions shall be convened within thirty (30) calendar days to attempt to resolve the dispute. The working group shall then report its findings within thirty (30) calendar days to the Regional chairperson's email (CAPRAD database). Findings may include, but not be limited to:

- a. Unconditional concurrence;
- b. Conditional concurrence contingent upon modification of Applicant's technical parameters;  
or
- c. Partial or total denial of proposed frequencies due to inability to meet co-channel/adjacent channel interference free protection to existing licensees within the adjacent Region.

2) If the Inter-Regional Working Group cannot resolve the dispute, then the matter shall be forwarded for evaluation to the National Plan Oversight Committee (NPOC), of the National Public Safety Telecommunications Council (NPSTC). Each Region involved in the dispute shall include a detailed explanation of its position, including engineering studies and any other technical information deemed relevant. The NPOC will, within thirty (30) calendar days, report its recommendation(s) to the Regional chairpersons via the CAPRAD database. The NPOC's decision may support either of the disputing Regions or

it may develop a proposal that it deems mutually advantageous to each disputing Region.

- vii. Where adjacent Region concurrence has been secured, and the channel assignments would result in no change to the Region's currently Commission approved channel assignment matrix. The initiating Region may then advise the applicant(s) that their application may be forwarded to a frequency coordinator for processing and filing with the Commission.
- viii. Where adjacent Region concurrence has been secured, and the channel assignments would result in a change to the Region's currently Commission approved channel assignment matrix, then the initiating Region shall file with the Commission a *Petition to Amend* their current Regional plan's frequency matrix, reflecting the new channel assignments, with a copy of the *Petition* sent to the adjacent Regional chairperson(s).
- ix. Upon Commission issuance of an *Order* adopting the amended channel assignment matrix, the initiating Regional chairperson will send a courtesy copy of the *Order* to the adjacent Regional chairperson(s) and may then advise the applicant(s) that they may forward their applications to the frequency coordinator for processing and filing with the Commission.

### III. CONCLUSION

- a. IN AGREEMENT HERETO, Regions (your region #), X, XX, and XX do hereunto set their signatures the day and year first above written.

Respectfully,

[All signatures to agreement]

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Date: \_\_\_\_\_