



PUBLIC SAFETY 800 MHz RADIO COMMUNICATIONS PLAN

Region #
FCC Gen. Docket No. #
Date of Plan Approval
Amendment Dates
Website Link

Chair Name
Address

Checklist of Items Pertaining the Plan

Could add this checklist to the template in which some of the current 800 MHz plans already have incorporated into their plans. Including this checklist is optional. An example is provided below:

REGION (#) , (State)

- 1) Cover Page – Identifying the region
- 2) Chairperson – name, address, phone number and signature.
See page(s) _____.
- 3) Committee members – name, organizational affiliation, address, phone numbers. See page(s)/Appendix _____.
- 4) Summary of major elements of the plan. See page(s)/Appendix _____.
- 5) General description of how spectrum is allotted among users.
See page(s)/Appendix _____.
- 6) Explanation of how the requirements of all eligibles are considered and met. See page(s)/Appendix _____.
- 7) Explanation of how eligibles are prioritized in areas where not all eligibles may receive licenses. See page(s)/Appendix _____.
- 8) Explanation of how the plan has been coordinated with adjacent regions.
See page(s)/Appendix _____.
- 9) Description of how the plan puts spectrum to best possible use by
 - a. Requiring system design with minimum coverage areas.
See page(s)/Appendix _____.
 - b. Assigning frequencies so that maximum frequency reuse and offset channel use may be made. See page(s)/Appendix _____.
 - c. Making sure of trunking. See page(s)/Appendix _____.
 - d. Requiring small entities with minimal requirements to join together on a single system where possible.
See page(s)/Appendix _____.
- 10) Explanation of how interoperability channels are managed.
See page(s)/Appendix _____.
- 11) “Slow Growth” language. See page(s)/Appendix _____.
- 12) Does the plan refer to **Give-Back** frequencies? If yes, give page number(s) _____.
- 13) Use the APCO sorting program. See page(s)/Appendix _____.
- 14) Appeal Process. See page(s)/Appendix _____.
- 15) Does the plan provide for regional mutual aid channels, in addition to the five (5) common channels? If so, are there guards bands for these channels.
- 16) Similar to the Generic Plan describe the formation of the committee:
 - a. Advertising – copy should be attached to legal notice, letters to the industry, etc.
 - b. Who could vote and what procedure was used after first meeting?
See page(s)/Appendix _____.

How was the final plan adopted? Was it by members attending a meeting or mail ballot? Circle one. Meeting or Ballot

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1.0 Executive Summary

An overview of the Plan and any significant changes can be documented here. This section is optional. An example is provided below:

This version of the Region (Your Region #) (Your State) 800 MHz Plan, approved by the Regional Planning Committee on _____ has been developed to capture the experience of the Regional Planning Committee since the last Plan revision in 1993 and the minor Plan revisions earlier in 2006. The main policy changes include;

- *Elimination of the Zone concept for identifying voting members and utilizing the voting membership approach used in the Region (Your Region #) 700 MHz Plan*
- *Elimination of the Filing Window concept to allow applications for channel assignments to be dealt with at any official meeting of the Committee*
- *Elimination of the county-area channel reservations and allowing any eligible licensee to apply for any channel as long as required co-channel and adjacent-channel interference protections are achieved*
- *Renaming the nationwide and statewide Interoperability channels to match nationally recognized naming conventions*
- *Creating more opportunities for simplex operations by utilizing guard channels between statewide channel assignments*
- *Clarifying approaches for deployment of Interoperability repeaters to increase functionality and avoid interference*
-

2.0 Plan Development

2.1 Scope

2.1.1 Introduction

Can insert the introduction section from your current 800 MHz plan into the new filing. An example is provided below:

When the Federal Communications Commission announced the 800 MHz allocation of reserve radio frequencies to the Public Safety Services in July 1986, they mandated that a National Plan outlining the use of public safety frequencies must be in place before any agency would receive channels from this new allocation. In November 1986, a national meeting of all interested parties was called in Washington, D.C., with The Associated Public Safety Communications Officers, Inc., (APCO) as the convener. One of the major objectives of the meeting was to determine what the national plan should consist of. In December of 1986, the Commission

(FCC) established the National Public Safety Planning Advisory Committee NPSPAC) to involve parties interested in Public Safety in the planning effort. The date for submission of a final report from NPSPAC was established as September 30, 1987. The deadline was met. The recommendations contained in the Final Report were, for the most part, accepted by the Commission. The Final Report and Order, General Docket No 87-112, was adopted by the Commission, November 24, 1987. The National Plan established planning regions covering all parts of the United States, Puerto Rico, and the U.S. Virgin Islands. The Docket noted that no assignments would be made in the 821-824 and 866-869 MHz bands until a regional plan for each of the regions had been accepted by the Commission. Forty-eight regions were identified in the final docket. Region _ (Your #) _ was identified as the _ (Your State) _ Region.

2.1.2 Purpose

Can insert the purpose section from your current 800 MHz plan into the new filing. An example is provided below:

Public safety communications has, for many years, been inadequate throughout the United States. This is as true for _ (Your State) _ as it is for any other state. Many, if not all, public safety radio users are constantly bombarded with outside interference, noise, and over-crowding. It is with these problems in mind that this Plan was developed.

This regional Plan was developed with the objective of assuring all levels of public safety/public service agencies that radio communications in the near and distant future will not suffer from the problems of the past.

The National Plan, as developed by NPSPAC, was followed very closely in all considerations for frequency allocation, re-use, turn back, regional interoperability, spectrum requirements and adjacent region operations. This Plan, with its _ (Year) _ and _ (Year) _ revisions, should provide the flexibility to accommodate the growth and changes that are occurring in public safety and public service communications operations long into the future.

2.1.3 Summary of RPC Activities

This section is optional. An example is provided below:

When the regional planning process was initiated, several methods of notification were used to invite interested parties to participate in the original development of this Plan.

Initially, the "convener" issued a mailer to (Organization 1), (Organization 1), (Organization 1), and a number of other organizations that represent the interests of entities that would be eligible to license this spectrum. A number of planning meetings were conducted throughout the state and a copy of the completed Plan was mailed to all participating members and to all the County Seats for review and comment by interested parties prior to a vote for acceptance and submittal to the FCC. The meeting and acceptance vote was conducted on May 1, 1991.

Following FCC approval of the Region (Your Region #) Plan, the Regional Planning Committee began a series of regular meetings to conduct the business of administering the Plan. Minutes of all meetings and a wide variety of support material has been accumulated and retained and can be accessed on the Region (Your Region #) web site at the following address <http://weblink.gov>. In addition to the web site, the Committee has operated an email listserver that allows any interested individual to receive all communications related to Committee activities.

2.1.4 Summary of Revisions to the Plan

This section is optional. An example is provided below:

Since the adoption and approval of this Plan in 1991, the Region (Your Region #) Regional Planning Committee had gained considerable experience in dealing with applications for frequencies covered by this Plan and the administration of the Plan. By the close of 1993 the Committee had identified several revisions needed in the Plan to improve its ability to meet the needs of public safety users in the Region. These changes make the Plan easier to read and clarify previously confusing information regarding processing of applications.

On December 15, 1993, the Regional Planning Committee held a meeting at which it approved this revised edition of the Plan. This meeting was advertised to numerous public safety agencies and bodies in the Region and prior to adoption the Committee took testimony and made final modifications to this revision. At the time of the December 15th, 1993 revision, the Regional Planning Committee expected that the revised plan would extend the expected service life of the Plan to the year 2005.

Late in 2005 the Committee recognized that there were several policy issues that needed to be altered in the Plan to

allow more efficient administration of the Plan now that the spectrum in the Plan is relatively fully deployed. Early in 2006, two administrative Plan revisions were approved by the Committee (ending the use of the Zone Representative approach and ending the use of filing windows) and consent letters for the changes were obtained from Region (Adjacent Region # and State Name 1) and Region (Adjacent Region # and State Name 2).

These revisions were forwarded to the FCC for approval and were formally approved on _____.

This full revision of the Plan incorporates those revisions as well as other policy revisions.

3.0 Implementation and Procedures

3.1 Authority

3.1.1 Regional Planning Committee

Can insert the regional planning committee section from your current 800 MHz plan into the new filing. An example is provided below:

The Federal Communications Commission, in its November 24, 1987 Report and Order applicable to Docket 87-112 noted:

The Associated Public-Safety Officers, Inc. (APCO), acting under its frequency coordination responsibilities, will be responsible for convening a meeting to initiate the planning process in each region. For each region, APCO should appoint a local convener who will be responsible for organizing and publicizing the first planning meeting... .. The convener should set a date for the initial planning meeting, allowing at least 60 days for appropriate public notifications. Parties interested in participating in the regional planning process should contact the appropriate convener.

This was accomplished in Region (Your #), with the initial meeting being held on (Date), in the (Location). At that meeting, a board-of-officers was elected, rules of order established, and certain task chairpersons appointed. All attendants were invited to take part in the development of this regional plan.

The committee consisted of representatives of the states of (State X), (State Y), and (State Z). Rather than start from square one, the trials and tribulations suffered by these pioneer groups were taken advantage of by the new Region (Your #) Planning Committee. It should come as no surprise to the reader of both plans, that plagiarism is apparent. However, as with real life day-to-day interoperability, cooperation is a necessity for survival in the public safety environment.

3.1.2 Planning Committee Formation

Can insert planning committee formation section from your current 800 MHz plan into the new filing. An example is provided below:

The process of forming the Planning Committee was conducted in the following steps:

- 1. Presentations concerning the requirements for a regional planning committee were presented and discussed at state organization meetings. At each presentation there was an opportunity for persons to place themselves and/or their agency on the mailing list.*
- 2. Letters of announcement were mailed to each major state agency radio users, those placed on the mailing list, as well as to state organizations composed of local government level public safety/public service users. Letters were also sent to all members of the (Your State) Chapter of APCO.*
- 3. Public notices were placed in (#) newspapers with state wide distribution, for the first organizational committee meeting. This first meeting was held at the (Location).*
- 4. One organization meeting was held before the chairperson was elected.*
- 5. Committee membership was left open to any person or agency with may not have been notified or decided to join the committee later.*
- 6. Vendors participation was encourage, but vendors were not allowed a vote.*

Can list the members of the committee below:

*Chairman Full Name
Address
Phone numbers*

Member Full Name
Address
Phone numbers

Member Full Name
Address
Phone numbers

3.1.3 National Inter-Relationships

Can insert the national inter-relationships section from your current 800 MHz plan into the new filing. An example is provided below:

The Regional Plan is in conformity with the National Plan. If there is a conflict between the two plans, the National Plan will govern. It is expected that Regional Plans for other areas in the country may differ from the Plan for this area due to dissimilar situations. By officially sanctioning the Plan the FCC agrees to its conformity to the National Plan. Nothing in the Plan interferes with FCC for frequency coordination in the Private Land Mobile Service but rather provides procedures that are the consensus of the Public Safety Radio Services user agencies in the Region. If there is a perceived conflict, the judgment of the FCC will prevail.

3.1.4 Federal Interoperability

Can insert the federal interoperability section from your current 800 MHz plan into the new filing. An example is provided below:

Interoperability between Federal, State and Local Government during both daily and disaster operations will primarily take place on the five National Mutual Aid Channels identified in the National Plan. Additionally, through the use of S-160 or equivalent agreements, a licensee may permit Federal use of a non-Federal communication system. Such use, on other than the five identified National Mutual Aid Channels, is to be in full compliance with FCC requirements for government use of non-government frequencies (Title 47 CFR section 2.103). It is permissible for a sub-Federal licensee to increase channel requirements to account for up to a 2% increase in mobile units, provided that written documentation from Federal agencies supports at least that number of increased units.

3.1.5 Regional Review Committee

Can insert regional review committee section from your current 800 MHz plan into the new filing. An example is provided below:

Upon approval of this Plan by the Federal Communications Commission, a Regional Review Committee will be established for the review of applications which do not fall within the states guidelines provided for in this plan, or for the settlement of disputes concerning this plan and/or its application.

This committee shall consist of the Local APCO Frequency Advisor for this region, one representative from the Police, Fire, EMS services, and a minimum representation from other eligibles is also welcome. This committee and its composition will be assured by the (Your State) APCO chapter and other Public Safety organizations. Membership on this committee will be solicited on an annual basis. Since this committee will probably not have regular business, it will be up to the Local APCO Frequency Advisor to notify the committee of problems, conflicts, or when it becomes apparent that spectrum demands will outpace available spectrum. Each member of the committee shall be furnished a copy of this plan upon their appointment or election to the committee.

Plan updates shall be accomplished by this committee. All changes or updates to the plan shall be first agreed upon by this committee and then submitted to the FCC for their review and consideration. When approved all changes shall be added to the plan with the appropriate documentation of approval.

This committee shall meet at least once annually to review the implementation of the plan. This review shall consist of examination of any and all license activity.

4.0 General Protocols for Application

The RPC should be active and the activities on-going, so the plan should be current and any changes should be documented. In doing so, need to be aware of the application filing process. Therefore, can insert an introductory paragraph here. An example is provided below:

Upon approval of the Region (Your #) Plan by the Commission, the Regional Planning Committee will be established for the purpose of reviewing of new applications, conducting an annual system implementation review,

making action recommendations to the Commission, resolving inter-regional problems, reviewing and recommending modifications and amendments (if needed) to the Plan, and to exercise general oversight of the Plan.

It is vital to the interest of (Your State) public safety agencies that the Regional Planning Committee be maintained as an active and on-going committee.

4.1 Timetable for System Implementation

This section is optional. An example is provided below:

In general terms, it is expected that eligible licensees who receive channel assignments under this plan will proceed with construction of their systems with due diligence. In general terms, this is often characterized as needing to reach certain construction and loading milestones within one year of receiving their FCC license. However, formal construction deadlines and loading requirements are defined in the FCC licensing process and are not under the control of the Regional Planning Committee.

4.2 Frequency Recall

This section is optional. An example is provided below:

The Regional Planning Committee may monitor the implementation process and if they become aware that required construction and loading milestones are not being met, the applicant will be notified of the possible consequences of not utilizing the frequencies. Further, if other eligible licenses in need of channels bring non-construction or loading discrepancies to the attention of the Committee, follow-up inquiries will be made to determine the status of construction requirements on the license. The Regional Planning Committee has the option of notifying the FCC of failures to construct or load systems so that consideration can be given to returning some or all of the channels to the pool for assignment to other eligible licensees in need of channels.

4.3 Reassignment of Frequencies

This section is optional. An example is provided below:

In lieu of a plan for the efficient reuse of frequencies in the VHF and UHF bands used by the applicant, applicants for frequencies covered in this Plan are strongly encouraged to turn back frequencies in other bands presently used by the applicant. These turned back frequencies should be returned to the FCC so they can be reassigned to agencies awaiting channels in the lower frequency bands. Many public safety agencies do not have enough frequencies to adequately provide for their

day-to-day dispatching. These needs must be provided for before less important needs can be provided for in the lower frequency bands.

It is generally inconsistent with the goals and objectives of this Region to permit the direct re-assignment of radio frequencies between agencies. All frequencies are to be returned to the FCC to be assigned where it will be of the most benefit to the public's safety. However, requirements for enhanced interoperability (through cross-band operations), mutual aid, mobile data and computing system needs, paging, and backcountry communications (where VHF or UHF spectrum may be better suited to the needs of public safety agencies), are all sufficient justification for the retention of VHF or UHF assignments. Applicants proposing to retain VHF or UHF channels shall include specific information on how retained channels are to be reused and shall make a statement to the effect that should they not be used for the intended purpose within 24 months that the channels will be surrendered.

Frequencies obtained through interservice sharing should be returned to their original service pool before non-interservice shared frequencies are turned back.

Similarly, an agency shall not be allowed to "farm down" frequencies to other services within their political structure simply to take advantage of surplus equipment.

4.4 License Application Requirements

This section is optional. An example is provided below:

The Regional Planning Committee will adopt and maintain Application Review Procedures that will specify the exact material needed in an application and the process the Committee will use to review and approve the application. These Procedures will at a minimum require that the applicant provide complete and adequate information so the Committee can assess the compliance with this Plan and the FCC rules and regulations. In addition, the Procedures will require enough information to protect present and future users of frequencies covered in this Plan from harmful radio frequency interference. All requests must be accompanied by:

- a) The latest version of FCC Form 601 – Application for Wireless Telecommunications Bureau Radio Service Authorization (or future equivalent)*
- b) The appropriate public safety frequency coordinator form(s) (e.g., for APCO, it is the APCO FDR 3 Form).*
- c) Computer-generated propagation maps showing field strength contours*

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- d) *Coordination fees (check, money order, purchase order, or credit card)*
- e) *Frequencies to be released and schedule for release*
- f) *Comprehensive justification for the number of channels requested*
- g) *Implementation schedule*
- h) *Proof of funding*

The applicant is obliged to make beneficial use of any allocated frequencies within one year of licensing. If the applicant suspects it will take longer than 1 year to deploy the system utilizing any licensed spectrum obtained through this process, §90.629 titled “Extended implementation period” allows that applicants requesting frequencies for either trunked or conventional operations may be authorized a period of up to five (5) years for constructing and placing a system in operation given they satisfy the criteria for “slow growth” outlined in §90.629. The burden of proof is on applicants seeking an extension; as such, they are obliged to supply comprehensive evidence of their justification.

Requests, without fees, may be made in a preliminary draft form to verify and justify the number of channels requested and other details.

To facilitate action, one original and one completed copy of the latest version of FCC Form 601 – Application for Wireless Telecommunications Bureau Radio Service Authorization (or future equivalent) and the field strength contours should be included.

When received, requests will be examined by the Chair and two other selected members of the Committee. When deemed appropriate, the request will be brought to the quorum of the Committee.

When the formal request is approved, the Committee Chair will forward the original completed 601, the Committee’s endorsement letter, and the payment to the applicant’s choice of frequency coordinator for frequency coordinator action and submission to the Federal Communications Commission.

There are four Commission designated frequency coordinators for 700 MHz and 800 MHz Public Safety spectrum. The Coordinators and their web sites are the:

- *Association of Public Safety Communications Officials, Inc. (APCO) at <http://www.apcointl.org/>*

- *International Municipal Signal Association (IMSA) at <http://www.imsasafety.org/>*
- *Forestry Conservation Communications Association (FCCA) at <http://www.fcca-usa.org/>*
- *American Association of State Highway and Transportation Officials (AASHTO) at <http://www.aashto.org/>*

Any questions regarding this Plan may be directed to the Chair at the telephone number or email address listed below:

Name

Region (Your Region #) - 800 MHz NPSPAC Channel RPC

Address

Telephone #(s)

Email

4.5 Application Filing Windows

This section is optional. An example is provided below:

Applications for frequencies covered by this Plan will be processed by the Regional Planning Committee at any formally called meeting of the Committee, typically monthly. Any applications received more than five (5) working days in advance of the scheduled meeting will be considered at that meeting, but final decision may be delayed until subsequent meetings if further facts or information are needed by the Committee to make a decision. Applications received five (5) working days or less before the meeting will be heard at the subsequent meeting. Further details will be defined in the Committee's Application Review Procedures document.

4.6 Criteria for Agency Prioritization

Can insert agency prioritization section from your current 800 MHz plan into the new filing, as applicable. An example is provided below.

In the event that there are applications for more than the available number of frequencies, applicants will be asked to first negotiate amongst themselves to seek a mutually agreeable solution. Should the mutually cooperative effort to reach a solution fail, the Committee shall use the following weighted criteria to assist in making its decision. These point values represent a maximum allowable value for each criterion and the actual assignment of a value will be described in detail in the Committee's Procedures.

Maximum Allowable Point value

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- (0-25) 1. *Spectrum usage as it applies to immediate need to protect of human life and property*
- (0-15) 2. *Functional application of how the frequencies are to be used. This category rates the application on its proposed ability to communicate with different levels of government and services during times of emergency.*
- (0-45) 3. *Technical application of how the frequencies are to be used applied to:*
- (0-15) a. *Service demands*
- (0-15) b. *Channel loading*
- (0-15) c. *System design (to include common system or common mode of operation vs. conventional mode)*
- (0-15) 4. *The number and ability to reassign or reuse the turn back channels. Two factors are taken into consideration: the number of channels given back and the extent of availability of those channels to others. The greater the number of channels given back, the higher the score will be. The greater the availability of the “give backs”, the higher the score will be for this factor. This point system will depend on whether the “give back” frequency is a co-channel frequency or if the “give back” frequency is a single user. The applicant shall submit a letter indicating frequency(s) being given back, authorizing signature, and date that the “give back” frequency(s) will take effect.*
- (0-15) 5. *Implementation schedule to include funding support. Two factors are taken into consideration: budgetary commitment, and planning completeness. An application that demonstrates a high degree of commitment in funding the proposed system will receive the higher score (0-25). Applications must include a timetable for the implementation of the communications system or systems and demonstrate the degree of planning completeness (0-25).*

Note: Allocations will be based on highest sum of totaled points taking all decision factors into account.

The Committee will use the results of this scoring and other information that is available to make an allocation of frequencies that best meets the overall public safety needs of the Region. Applicants should be advised that the Committee reserves the right to make partial or shared assignments where required for the efficient use of the spectrum resource.

4.7 Appeal Process

Can insert appeal process section from your current 800 MHz plan into the new filing. An example is provided below:

Throughout the frequency application process applicants will be given an opportunity to appeal decisions that caused rejection of an application. The appeal process will have two levels. The first is the Regional Planning Committee and the second is the FCC. The applicant who decides to appeal a rejection should begin the appeal process immediately. If the appeal reaches the second level, the FCC's decision will be final and binding upon all parties. The method of administering the appeal is defined in the Committee's Procedures document.

4.8 Channel Allocations

Can insert new channel allocations section here into the new filing. An example is provided below:

Subject to Plan approval by the FCC, all 800 MHz channels included in this Plan will be utilized in accordance with the agreed upon region-wide allocation table contained in this document, or as it may be modified in the future.

The frequency allocation is shown two ways, first by site name, then by channel number.

Information regarding site locations is provided in Appendix X.

An example of frequency allocation by site name is shown below:

<i>Site Location</i>	<i>Assigned Channels</i>			
<i>Site 1</i>	<i>824</i>			
<i>Site 2</i>	<i>617</i>	<i>819</i>	<i>645</i>	<i>700</i>

An example of frequency allocation by channel number is shown below:

<i>Channel Number</i>	<i>Mobile Frequency</i>	<i>Base Frequency</i>	<i>Site</i>
<i>1</i>	<i>806.0125 MHz</i>	<i>851.0125 MHz</i>	<i>Site 1</i>
<i>2</i>	<i>806.0375 MHz</i>	<i>851.0375 MHz</i>	<i>Site 2</i>
<i>2</i>	<i>806.0375 MHz</i>	<i>851.0375 MHz</i>	<i>Site 3</i>

5.0 Initial Spectrum Allocation

Can insert introductory paragraph describing purpose of initial spectrum allocation, but it is not required.

5.1 Frequency Sorting Methodology

Can insert the frequency sorting methodology section from your current 800 MHz plan into the new filing. An example is provided below:

The initial spectrum allocation for the Region was determined by a computerized frequency sorting process performed by APCO. The purpose of the computer program which assigns frequencies to specific eligibles and pools for future assignments is two-fold:

- A. The assignments must result in a high degree of spectrum efficiency, and*
- B. The assignments must result in a low probability of co-channel and adjacent channel interference.*

Since the desired output is a geographic sorting of frequencies, a method of defining geography must be part of the input. A list of the number of channels to be assigned in each geographic area is also required, along with the name of the eligible or pool. Acceptable interference probabilities are determined for the Region. Frequency assignments are then made using a computer program which satisfies the goals of spectrum efficiency and interference protection. The following narrative describes the factors and process used by the computer program.

5.1.1 Geographic Area

Can insert the geographic area section into the new filing. An example is provided below:

For the purpose of this frequency sort, a geographic area is defined as one or more circles of equal radius. To the degree practical, the circle(s) should include the entire area of the eligibles geopolitical boundary, but not exceed the boundary by more than three (3) miles. Thus, the procedure is to gather maps of sufficient detail, outline the areas to be defined, determine the coordinates and radius of the circles which define each area, and tabulate the data.

5.1.2 Blocked Channels

This section is optional. An example is provided below:

In the Region there are five mutual aid channels which must be blocked out to prevent the computer from making assignments on these channels. (Since the mutual aid channels are spaced at 0.5 MHz intervals, other Region-wide systems are spaced at 0.5 MHz and placed adjacent to the mutual aid channels. This procedure reduces the impact of blocked adjacent channels by virtue of the fact that the channel plan already has protection spacing on each side of the mutual aid channels.)

These Region-wide blocked channels are identified by FCC channel number, tabulated and they become input to the computer program.

5.1.3 Transmitter Combining

This section is optional. An example is provided below:

The computer program is designed to provide a minimum frequency separation between any two channels assigned to the same eligible at the same site. This separation is provided in order to enable more efficient combining of multiple transmitters to a single antenna. These separated blocks of frequencies also have a maximum size. That is, if the eligible has more frequencies than the maximum size of the combining block, then a second compatible block is created, and so on. Each of these parameters is adjustable in the program on a global basis. The default parameters chosen are 0.25 MHz minimum spacing and five channel blocks.

5.1.4 Protection Ratios

This section is optional. An example is provided below:

There are two interference protection ratios built into the computer program. One is for the co-channel case, the other is for the adjacent channel case. The ratios provide 35 dB Desired/Undesired signal ratio for co-channel assignments, and 15 dB Desired/Undesired ratio for the adjacent channel case. These ratios provide an acceptable probability of interference for Public Safety Services.

6.0 Spectrum Utilization

Can insert an introductory paragraph from your current 800 MHz plan into the new filing. An example is provided below:

This portion of the Plan provides a basis for proper spectrum utilization. Its purpose is to guide the Committee in their task of evaluating the implementation of radio communication systems within the Region.

6.1 Region Defined

Can insert the region defined section from your current 800 MHz plan into the new filing. An example is provided below:

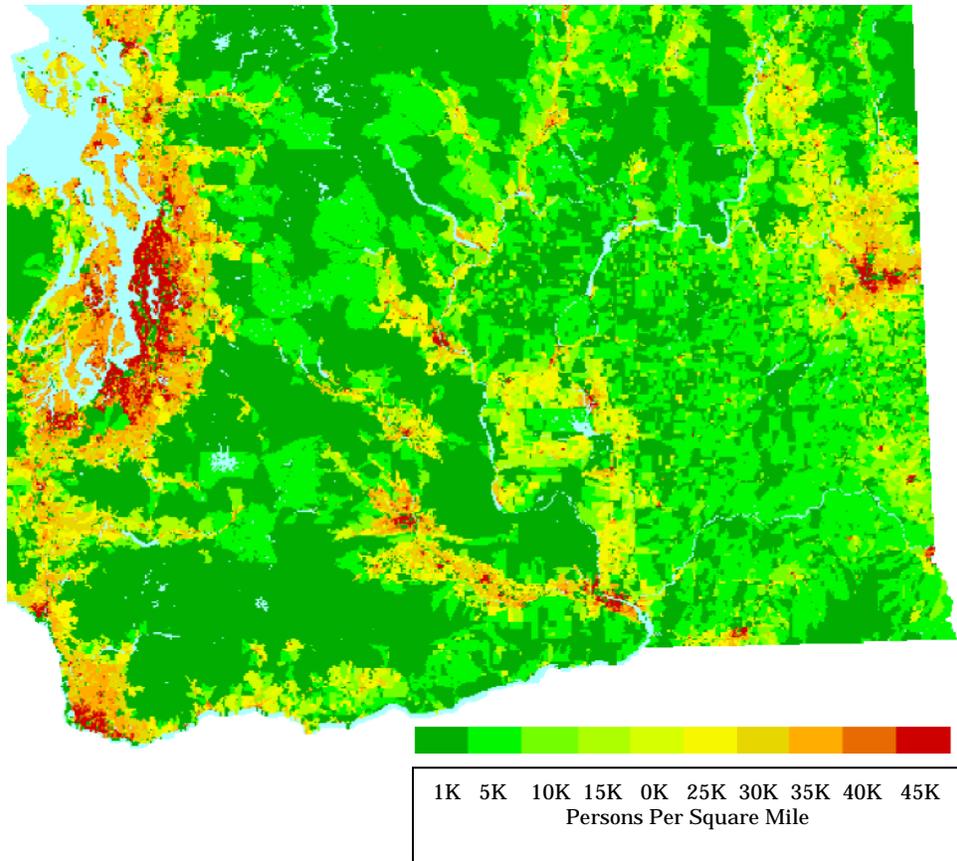
Region (#) is (state). This region is the result of definition by the Federal Communications Commission as a result of recommendations made in the National Public Safety Planning Advisory Committee

(NPSPAC) plan as submitted and approved and contained in Docket 87-112. For purposes of this plan Region ____ shall be defined as all the lands and waters contained within the boundaries of the State of ____ (state).

6.2 Region Profile (Demographic Information)

Can insert the region profile section from your current 800 MHz plan into the new filing. An example is provided below:

The purpose of this section is to provide the basis for the assignment of frequencies, and their re-use. Since the frequency allocation formula used is based on population within a county, it is necessary to provide this information within this plan. Below is the data used in the determination of frequency allocations.



6.2.1 Geographical Description

Can insert the geographical description section from your current 800 MHz plan into the new filing. An example is provided below:

There are (#) counties in (state).

The total land mass of the State is _____ square miles. The largest county is _____, with a total of _____ square miles.

6.2.2 State Population and Expected Growth Percentage

Can insert your state's population and growth rate section from your current 800 MHz plan into the new filing. An example is provided below:

The population of the State is (1990 Census) is _____. Some 60% of the populace resides in (#) of the (#) counties. Based on the (state) State Demographer's calculations, the total population for the State is expected to increase to _____ (%) by the year 2010. (See Appendix X for Census & Demographer's data).

The population per square mile (1990 & projected) is somewhat sparse in some areas of the State. (County 1), in the year 2010, is predicted to have 6.5 persons per square mile. (County 2) is predicted to have 2050 persons per square mile. This presents some problems in area coverage for radio systems in that the entire land area of any given jurisdiction must be covered. All of these conditions have been taken into consideration in the allocation plan.

6.3 Usage Guidelines

Can insert the usage guidelines section from your current 800 MHz plan into the new filing. An example is provided below:

All systems operating in the FCC Region (#) planning area having five or more channels will be required to be trunked. Those systems having four or less channels may be conventional.

The FCC in its Report and Order states, Exceptions will be permitted only when a substantial showing is made that alternative technology would be at least as efficient as trunking or that trunking would not meet operational requirements. Exceptions will not be granted routinely. Strong evidence showing why trunking is unacceptable must be presented in support of any request for exception."

Systems of four or less channels operating in the conventional mode who do not meet FCC loading standards will be required to share the frequency on a non-exclusive basis.

Public safety communications at a state level, as it impacts the Region, will be reviewed by the Committee. Statewide public safety agencies will submit their communications plans for impact approval if they

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utilize communications systems within the Region and those portions of such systems must be compatible with the Regional Plan.

The next level of communication coverage will be county/multiple municipality area. Those systems that are designed to provide area communication coverage must demonstrate their need to require such wide area coverage. Communication coverage beyond the bounds of a jurisdictional area of concern cannot be tolerated unless it is critical to the protection of life and property. If the 800 MHz trunked radio technology is utilized, the system design must include as many county/multiple municipality government public safety radio users as can be managed technically.

The county/multiple municipality agency or agencies, depending upon systems loading and the need for multiple systems within an area, must provide inter-communications between area wide systems. In a multi-agency environment, a lead agency using 800 MHz spectrum must implement the Common Channels in this band as mandated by the National Plan. Such implementation must be reviewed and approved by the Committee.

Municipal terminology in each state may be different. In order to provide a title for the next level of communications the term "Township" is used to define the level below county wide. Township communications for public safety purposes must provide only the communications needed within its boundaries. However, if the total number of radios in service does not reach minimum loading criteria for a trunked system, the township must consider utilizing the next higher system level if 800 MHz trunked radio is available in the area. As those higher level systems reach capacity, the smaller system communicators in the public safety service must then consider uniting their communications efforts to formulate one large system or forfeit use of the limited 800 MHz spectrum.

Where smaller conventional 800 MHz needs are requested, those frequencies to be utilized must not interfere with the region's trunked systems. The 800 MHz trunked radio system is to be considered the higher technology at this time and in greater compliance with FCC guidelines. The amount of interference that can be tolerated depends on the service affected. Protection of life and property shall receive the highest priority. Disruptive interference with communications involved in these services in all areas shall not be tolerated. Any co-channel interference within an authorized area of coverage will be examined on a case-by-case basis with 12db below system strength to be considered the maximum tolerable nuisance level.

A requesting applicant for radio communications in the 800 MHz public safety services in the Region will be required to provide loading criteria information for its proposed system. The provisions of this

regional plan must be used as a guide for establishing any new systems. Strict adherence to limiting area of coverage to the boundaries of the applicant's jurisdiction must be observed. Overlap or extended coverage must be minimized even where systems utilizing 800 MHz trunked radio are proposing to intermix systems for cooperative and/or mutual aid purposes.

Antenna heights are to be limited to provide only the necessary coverage for a system. When antenna locations are restricted to only the "high ground", transmitter outputs and special antenna patterns must be employed to produce the necessary coverage with the proper amount of ERP. All necessary precautions will be taken to gain maximum reuse of the limited 800 MHz spectrum. As part of this plan, distances between transmitters for co-channel reuse will not be held to seventy (70) mile separation. Separation of co-channel transmitters will be determined by the coverage needs of the applicant, natural barriers for separation, antenna patterning and limited ERP's where possible. System tests and/or propagation studies should also be provided to establish minimum distances for separation.

6.4 Technical Design Requirements for Licensing

Can insert an introductory paragraph describing the purpose for defining the technical design requirements into the new filing. An example is provided below:

The purpose of this section is to define the technical requirements necessary to assure the maximum utilization of the valuable spectrum addressed in this Plan. "System coverage area" and "service area" will be limited to the smallest geographical area necessary to provide sufficient coverage of the geo-political area of the licensee.

Agencies requesting channels under this Plan shall have their proposed system design evaluated by the Regional Planning Committee.

Agencies with service areas outside their political boundaries may request an extended service area. Such requests for extended coverage must be accompanied by written justification.

Extended service areas will not be authorized unless approved by the Regional Planning Committee. Favorable consideration will be given to those systems that are made available for use by eligibles other than the licensee.

6.4.1 Definition of Service Area

Can insert the definition of service area section from your current 800 MHz plan into the new filing. An example is provided below:

Radio System Coverage for "Service Area" is defined as the boundary where predicted signal strength falls to 40 dBu. System parameters must be modified to make sure that the location where the actual service strength falls to 40 dBu is located near the actual service area boundaries, and the signal strength must fall to 39 dBu or below at a point three (3) miles beyond this point. This usually coincides with the geo-political boundaries of the requesting agency unless an exception is granted by the Regional Planning Committee (see above).

6.4.2 Definition of Coverage Area or Area of Jurisdiction

Can insert the definition of coverage area or area of jurisdiction section from your current 800 MHz plan into the new filing. An example is provided below:

"System Coverage Area" is defined as the boundary where received signal strength falls to 40 dBu. This shall be kept as close to the service area as possible but will normally be a little larger to assure sufficient coverage of all parts of the service area.

6.4.3 System Coverage Limitations

Can insert the system coverage limitations section from your current 800 MHz plan into the new filing. An example is provided below:

System coverage shall be limited to the coverage area defined as listed above plus no more than three (3) additional miles in all directions extending from said boundaries of definition. This limitation shall assure maximum frequency reuse. The only exception to this rule shall be those applicants wishing to offer service or system use to areas outside of their jurisdictional boundaries. In these situations the applicant shall provide a proposal of said service to the Local APCO Frequency Advisor, who may request Regional Review Committee consideration, for approval.

Systems not located within the geographical center of the jurisdiction(s) for which they cover shall utilize either directional antennas or antenna/tower relationship techniques to achieve the coverage required by this plan.

6.4.4 Determination of Coverage

Can insert the determination coverage section from your current 800 MHz plan into the new filing. An example is provided below:

An applicant will be required to provide various map displays and exhibits of the proposed system coverage area to allow the Regional Planning Committee to evaluate the impacts of the proposed system on present and future licensees. The exact nature of such exhibits are defined in the Committee's Application Review Procedures document and FCC rules.

6.4.4.1 Received Signal Strength

Can insert the received signal strength section from your current 800 MHz plan into the new filing. An example is provided below:

For purposes of this plan, received signal strength shall be the determining factor which defines the actual boundary of a system. The signal level which marks the outer boundary of a system shall be 40 dBu.

6.4.4.2 Effective Radiated Power (ERP)

Can insert the ERP section from your current 800 MHz plan into the new filing. An example is provided below:

The ERP is the transmitter output power times the net gain of the antenna system. The actual formula is: ERP (w) equals Power (w) times Antilog (net gain in dB divided by 10).

6.4.4.3 Environment Type

This section is optional. An example is provided below:

The following four classifications were used to describe average terrain:

1-URBAN: Which is built-up city-crowded with large buildings or closely interspersed with houses and thickly-grown trees. This would include the downtown area of a major city.

2-SUBURBAN: Which is a city scattered with trees, houses, and buildings. This would include the downtown are of a large city.

3-QUASI-OPEN: Is an area between suburban and open areas. This includes areas outside of city limits that have few buildings and houses.

4-OPEN: Is an area where there are no obstacles such as tall trees or buildings in the propagation path or a plot of land which is cleared of anything for 300 to 400 meters ahead. This would include farm land, open fields, etc.

6.4.4.4 Antenna Design

This section is optional. An example is provided below:

The Regional Planning Committee may require both directional and down-tilt antennas designed to reduce interference to other areas as deemed advisable or as required to meet listed criteria.

6.4.4.5 Low Level Sites

This section is optional. An example is provided below:

Emphasis will be placed on the use of low level sites to allow maximum frequency reuse.

6.4.4.6 Frequency Reuse

Can insert the frequency reuse section from your current 800 MHz plan into the new filing. An example is provided below:

Careful adherence to the system technical design requirements of this Plan will allow for maximum co-channel usage within this region. Agencies requesting frequencies that have been previously licensed within this region, or an adjacent region, must show that their proposed

system will operate on an interference-free basis with any existing co-channel system. Requesting agencies must demonstrate that the proposed system will produce signal levels not to exceed 5 dBu at any point inside the service area of all existing co-channel systems. It must further be shown that this signal level is not exceeded in Counties where co-channel frequencies have been assigned in this Plan but are not yet implemented.

6.4.4.7 Adjacent Channel Design

This section is optional. An example is provided below:

Because of the close proximity of adjacent channel frequencies, adjacent channel consideration must be planned similar to that of co-channel designs. Proposed systems must be designed so signal levels will not exceed 22 dBu inside the service area of existing adjacent channel licensees or inside the county where adjacent channels are assigned by this Plan but not yet implemented.

6.4.4.8 Absolute Mileage Separation

This section is optional. An example is provided below:

In any case where the boundaries of the service areas of adjacent channel systems are separated by at least 50 miles, the interference studies as set forth in this Plan are unnecessary because of free space and terrain losses.

6.4.4.9 Base-to-Mobile Units

This section is optional and can be provided in the new filing. An example is provided below:

Signals from co-channel base stations shall not exceed 5 dB μ at any point within the geopolitical boundaries of affected users. Signals from next-adjacent-offset-channel base stations shall not exceed 25 dB μ at any point within the geopolitical boundaries of affected users.

Note that the 25 dB μ level is observed as the interference contour limit for signals from any

neighboring agency's next-adjacent-offset-channel base station(s). That is, this contour may not exceed 25 dBμ at any point within the geopolitical boundaries¹ of the applicant's users (and vice versa). Accordingly, for next-adjacent-offset-channels, this 25 dBμ contour will be allowed to touch, but not overlap the 40 dBμ service contour of the system being evaluated. However, if the applicant and all adjacent agencies are meeting the narrowband P25 – 12.5 kHz emission mask or better, the next-adjacent-offset-channel interference contour may be reduced to a 60 dBμ interference contour (thus permitting closer site spacing and increased frequency reuse). Accordingly, for next-adjacent-offset-channels, this 60 dBμ interference contour will be allowed to touch, but not overlap the 40 dBμ service contour of the system being evaluated.

An applicant agency's 40 dBμ service contour may be allowed to extend beyond its defined geopolitical boundary by 3 to 5 miles, depending on the type of environment: urban, suburban or rural (see Table 5.12), and conditioned upon the interference contour limitations outlined above relative to incumbent or proposed co-channel and next-adjacent-offset-channel users.

<i>Type of Area</i>	<i>Extension (mi.)</i>
<i>Urban (20 dB Buildings)</i>	<i>5</i>
<i>Suburban (15 dB Buildings)</i>	<i>4</i>
<i>Rural (10 dB Buildings)</i>	<i>3</i>

Table 5.12 - Extension Distance Of 40 dBμ Field Strength

These values are intended to indirectly address the specific portable coverage needs for urban, suburban, and rural areas by allowing higher powers within the geopolitical boundaries.

Control stations and mobile units of agencies granted frequencies shall limit their signals to provide a minimum of 15 dB of protection to existing base station receivers operating on adjacent channels.

¹ *Exception: For wide area regional systems such as those spanning multiple counties, the effective definition of a geopolitical boundary may extend beyond each participating agencies jurisdiction; however, the next-adjacent-offset-channels interference contour rule still applies – that is, it is allowed to touch, but not overlap the 40 dB μ service contour of the system being evaluated (and vice versa).*

6.4.4.10 Mobile-to-Base Units

This section is optional and can be provided in the new filing. An example is provided below:

Mobile units of other agencies shall limit their signals to the degree necessary to provide a minimum of 35 dB of protection to affected base station receivers operating on the same channel. Mobile units of other agencies shall limit their signals to provide a minimum of 15 dB of protection to affected base station receivers operating on next-adjacent-offset-channels.

Note that if the applicant and all adjacent agencies are meeting the narrowband P25 – 12.5 kHz emission mask or better (as with the Base-to-Mobile case above), the digital P25 receiver requirement for 60 dB Adjacent Channel Rejection (\pm 12.5 kHz offset) allows the closer spacing of adjacent channels by 35 dB.

6.4.4.11 Trunking Requirement

This section is optional. An example is provided below:

As referenced in the National Plan, trunking is mandated for any new system with more than four channels in the 800 MHz band. Request for exceptions will be considered by the Regional Planning Committee. Requests for waiver of the trunking requirement will be considered by the Regional Planning Committee after presentation of evidence by the applicant. Recommendation by the Committee to the FCC for approval of a waiver from the trunking requirement will be based on the individual merits of the presentation.

6.4.4.12 Transmitter Standards

This section is optional. An example is provided below:

Transmitters utilized on the spectrum covered in this Plan will be type accepted for operation on the 806-808/851-853 MHz band and must meet the technical standards defined in Part 90 of the Commission's Rules and Regulations.

6.4.4.13 Coded Squelch

Can insert the coded squelch section from your current 800 MHz plan into the new filing. An example is provided below:

The use of CTCSS (Continuous Tone-Coded Squelch Systems), CDCSS (Continuous Digital-Coded Squelch Systems), or other subsequently developed equivalent technology is required for use on conventional systems. The exception to the use of selective signaling is applicants who wish to make use of the statewide 'guard' channels for simplex operation. Applicants who wish to make use of these assignments are only permitted use of carrier squelch so that these simplex uses would be immediately aware of adjacent-channel carrier interference and thus avoid using the channel so as not to interfere with the primary use on the adjacent channel. Where used, system designers shall coordinate the coded squelch to enhance system discrimination between desired and undesired signals.

7.0 System Loading and Implementation Requirements

Can insert an introductory paragraph into the new filing. An example is provided below:

Agencies using frequencies in the 806-808/851-853 MHz band shall comply with loading requirements as called for in Part 90.631 of the FCC Rules and Regulations for trunked radio systems, and in Part 90.633 for conventional systems. As referenced in 90.631 and 90.633, section 90.629 shall also apply.

7.1 Conventional Systems

Can insert the conventional systems section from your current 800 MHz plan into the new filing. An example is provided below:

An agency requesting a single frequency and turning back a frequency for reassignment will not be required to meet loading requirements to obtain the new frequency. If the single frequency is not loaded within the time constraints established by the FCC for use of the slow growth channels, the frequency will be available for assignment on a shared basis. For purposes of determining compliance with conventional system loading requirements in Part 90.633 of the FCC Rules, the loading requirement is to have seventy (70) mobile stations per each channel authorized.

7.2 Trunking Systems

Can insert the trunking systems section from your current 800 MHz plan into the new filing. An example is provided below:

All systems operating in the Region having five or more channels will be required to be trunked. Those systems having four or less channels may be conventional. It is strongly suggested that any entity licensing three or more repeaters use trunking.

The FCC in its Report and Order states: "Exceptions will be permitted only when a substantial showing is made that alternative technology would be at least as efficient as trunking or that trunking would not meet operational requirements. Exceptions will not be granted routinely. Strong showings as to why trunking is unacceptable must be presented in support of any request for exception."

The loading requirement for trunked systems is to have one hundred (100) mobile stations per channel. For purposes of determining compliance with trunked system loading requirements in Part 90.631 of the FCC Rules, the term "mobile station" includes vehicular and portable mobile units and control stations. Systems that do not meet FCC loading standards can be required to share such frequencies on a non-exclusive basis. Those agencies requesting Data channels only can be required to share channels with adjacent agencies wherever feasible or limit coverage to their geographic area. Exceptions will be considered on a case-by-case basis by the Regional Review Committee.

Depending on systems loading and the need for multiple systems within an area, operators of wide area systems (including, but not limited to, designated "Monitoring Agencies") must provide for coordination between are-wide systems and "Monitoring Agencies". Single municipalities or agencies must restrict design and implementation of their system(s) to provide only the communications needed within its geopolitical boundaries. The use of trunked systems

is encouraged. However, if the total number of radios in service does not reach minimum loading criteria for a trunked system that use must consider utilizing the next higher system level if 800 MHz trunked radio is available in the area. As systems reach a capacity, the smaller system users must consider consolidating their communications systems to formulate one large trunked system.

A requesting applicant for radio communications in the 800 MHz public safety services in the Region will be required to conform to the FCC loading criteria for its proposed system. The provisions of this regional plan must be used as a guide for establishing any new systems. Strict adherence for limiting the area of coverage must be minimized, even where systems utilizing 800 MHz trunked radio systems are proposing to intermix systems for cooperative and/or mutual aid purposes.

Antenna heights are to be limited to provide only the necessary coverage for a system. When antenna locations are restricted to only the “high-ground”, transmitter outputs and special antenna patterns must be employed to produce only the necessary coverage with the proper amount of ERP. All necessary precautions are to be taken to gain maximum reuse of the limited 800 MHz spectrum.

7.3 Channel Loading Requirements

Can insert channel loading requirements section into the new filing. An example is provided below:

An agency/jurisdiction requesting a single frequency to replace a frequency currently in use that will be turned back for reassignment will not be required to meet loading requirements in order to obtain the new frequency. However, if the single frequency is not loaded to more than 50 units within three years after the license is granted, the frequency will be available for assignment to other agencies on a shared basis in the event that other frequencies meeting the criteria for assignment are exhausted. Shared use of a frequency is not interference free. Users of single frequency systems may be required to provide the Regional Review Committee “confirmation of loading” for mobiles and portables as a method of validating system loading. This exception shall apply to agencies having only one system and a single frequency. Agencies/jurisdictions requesting multiple frequencies or employing trunking technology shall comply with the loading standards as outlined below or provide a “Traffic Loading Study” that meets the criteria as outlines below.

7.3.1 Loading Tables

The previous channel loading requirements are listed below.

Emergency		Non-Emergency	
Channels	Units/Channel	Channels	Units/Channel
1-5	70	1-5	80
6-10	75	6-10	90
11-15	80	11-15	105
16-20	85	16-20	120

The current channel loading requirements is 70 subscribers for each conventional channel and 100 subscribers for each trunked channel.

7.3.2 Traffic Loading Study

Can insert traffic loading study section into the new filing. An example is provided below:

Justification for adding frequencies in the 806-808/851-853 MHz band, can be provided by a traffic loading study in lieu of loading by number of mobile, portable and control station transmitters per channel. It will be the responsibility of the requesting agency to provide a verifiable study showing sufficient air time usage to merit additional frequencies. A showing of air time usage, excluding telephone interconnect air time, during the peak busy hour greater than 70 percent per channel on three consecutive days will be required to justify additional or retain existing frequencies.

7.4 Simplex Operations

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

Simplex operations may take place on the STATEOPS channels, the ITAC and ICALL channels (when operated in a simplex mode), the identified statewide guard channels, or on other channels as may be requested by the applicant. Applicants are to request the minimum power required for effective, short range communications. Simplex channels may be licensed for mobiles or portables, temporary fixed use, and permanent fixed use consistent with the rules established by this plan.

Mobile, portable and temporary fixed operations will be reviewed by the Plan Chairperson and approved administratively. Mobile, portable, and temporary applications shall have a normal area of operation specified. Applications for simplex operations at permanent, fixed locations will be processed as any other regular application and require

committee review. Simplex operations are on a secondary basis and do not apply to channel loading criteria.

7.5 Itinerant Operations

This section is optional. An example is provided below:

Itinerant operations are permissible under the plan. National itinerant operations shall make use of the ICALL and ITAC channels only. Under normal circumstances, itinerant operations will be conducted using the assigned STATEOPS and ICALL/ITAC assignments. Where such use proves impractical, use of other channels for itinerant operations will be considered by the Committee. Itinerant applications may be for simplex operation or repeater operation.

7.6 Operation Aboard Aircraft

This section is optional. An example is provided below:

Operation from aircraft shall always use the lowest practicable power level consistent with FAA and FCC rule. Users shall be aware that operation from aircraft creates the potential for interference to co- and adjacent-channel users and that such operations should seek to minimize the impact of airborne operations on others.

7.7 Systems Designed to Serve Limited Areas of Operation

This section is optional. An example is provided below:

Applicants may request consideration of system designs which serve limited areas of operation. These areas may be a 'campus' such as a government complex, school, jail, or similar facility, or may be entirely enclosed (such as a rail or bus tunnels or enclosed parking garages). All such systems require site-specific licensing. Where such systems are intended to deliver signal to an external antenna system, normal contour showings are required by the Committee. Where such systems are designed without deliberate external radiators, no such showing is required. The Committee further strongly recommends that channels for such uses be applied for in such a way as to maximize spectrum reuse and that no wide area spectrum be assigned solely in a given area for limited service area systems unless no other spectrum is available.

7.8 Annexations And Other Expansions

This section is optional. An example is provided below:

It is well known that as cities grow, annexations occur. When an expansion of the present city limits of any city currently using an 800 megahertz system within the spectrum as herein specified occurs, it is

understood that the existing system may have to be expanded and its range increased. This is a modification and may be permitted. The increased range of the system will have to be determined at the time of modification to assure non-interference with any other existing system. Where interference is likely, the use of alternate methods of expansion, such as satellite systems, initial allocation, the rules for expansion of initial allocation, as contained in this plan, shall apply.

7.9 Coverage Area Description

This section is optional. An example is provided below:

All applicants shall provide with their applications a map showing the jurisdictional boundaries to be covered by the page system, and the calculated system coverage. This map shall display the location of the system transmitter(s), including control stations. It is recommended that a U.S. Geological Survey (USGS) Quad topographical map be used for this purpose. If not available, a high quality locally produced map or a Highway map may be substituted. Regardless of the type map used, the name of the applicant and the scale of the map shall be displayed on the map.

7.10 Give Back Frequencies

Can insert the give back frequencies section from your current 800 MHz plan into the new filing. An example is provided below:

All agencies participating in the use of the new 800 megahertz spectrum shall prepare and submit a plan for their currently licensed frequencies in the lower bands.

Agencies will be required to surrender their vacated frequencies if the following three conditions are met: (1) the new system fully replaces the functions of the old one, (2) the licensee has no other communications requirements that could be met through the use of the lower frequencies, and (3) the new system has operated satisfactorily for long enough to allow a smooth transition from former operations and to demonstrate its reliability.

The Regional Review Committee would have the freedom to consider below 800 MHz public safety bands in developing their regional plans, but the licensing of channels in these bands would continue to be conducted through existing frequency coordination procedures.

Frequencies which are to be abandoned by an agency shall not be handed down to another agency within the respective jurisdiction. Though this may seem a convenient method to re-use existing radio equipment, the reassignment must be handled through the normal process. It is recommended that any jurisdiction wishing to "hand down" frequencies to another agency submit the proper coordination

and application forms with the document of release. This will put the applicant in a better posture for reassignment of the frequency in question. It should be noted that even though this procedure is followed, there is no guarantee that particular frequency will be assigned to the requesting jurisdiction.

The time frame allowed for phrasing into 800 MHz and out of the lower currently licensed bands will be considered on a case by case basis by the review committee. Generally, one year will be considered acceptable in most cases, which two years as a maximum. Any agency requiring more than two years shall provide documents stating the reasons for the delay, and give the estimated time of completion.

7.11 Adjacent Region Considerations

Can insert the adjacent region considerations section from your current 800 MHz plan into the new filing. An example is provided below:

Coordination with adjacent regions shall be an on-going process. The following Regions are adjacent to Region (Your Region #), State of (Your State) :

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

*All of these Regions were sent copies of the Region (Your State) plan by certified mail. Refer to Appendix **X** for responses.*

8.0 Interoperability

Can insert an introductory paragraph from your current 800 MHz plan into the new filing. An example is provided below:

It is the intent of this Plan to encourage all Part 90 (B)(C) eligible agencies to implement communications capability on the National Common and Statewide Tactical channels, even if they do not license private systems on any of the frequencies covered by this Plan. It is also the intent of this Plan to retain (and use) all present Mutual Aid systems such as Law Enforcement Radio Network (LERN), On Scene Command and Control Radio (OSCCR), Hospital Emergency Ambulance Radio (HEAR), or other similar systems.

8.1 National Mutual Aid Channels

Can insert the interoperability and mutual aid channels section from your current 800 MHz plan into the new filing. An example is provided below:

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Five channels are the National Mutual Aid Channels mandated by the FCC. In general, use of these channels for mobile operation falls within the blanket licensing provisions of FCC 87-359 and Part 90 rules, and does not require individual licenses. Permanent fixed stations require individual licenses and review by the Region (Your Region #) Committee.

FCC pre-rebanding mandated frequencies to be used as Mutual Aid channels are listed below:

Channel	Frequency Pair	Frequency Designation
601	821/866.0125 MHz	National Calling Channel ICALL
639	821/866.5125 MHz	National Mutual Aid Channel ITAC-1
677	822/867.0125 MHz	National Mutual Aid Channel ITAC-1
715	822/867.5125 MHz	National Mutual Aid Channel ITAC-1
753	823/868.0125 MHz	National Mutual Aid Channel ITAC-1

FCC post-rebanding mandated frequencies to be used as Mutual Aid channels are listed below:

Channel	Frequency Pair	Frequency Designation
1	806/851.0125 MHz	National Calling Channel ICALL
39	806/851.5125 MHz	National Mutual Aid Channel ITAC-1
77	807/852.0125 MHz	National Mutual Aid Channel ITAC-1
115	807/852.5125 MHz	National Mutual Aid Channel ITAC-1
153	808/853.0125 MHz	National Mutual Aid Channel ITAC-1

8.2 National Statewide Interoperability Channels

This section is optional because not all states have statewide mutual aid channels. An example is provided below:

According to the new 800 MHz band plan, five channels are the National Statewide mutual aid tactical channels and recommended service are listed below:

Channel	Frequency Pair	Frequency Designation
116	807/852.5375 MHz	Tactical, Primarily Fire/EMS STATEOPS-1
118	807/852.5625 MHz	Tactical, Primarily Law Enforcement STATEOPS-2
120	807/852.5875 MHz	Tactical, Primarily Local Gov't, Others STATEOPS-3
122	807/852.6125 MHz	Tactical, Primarily Fire/EMS STATEOPS-4
124	807/852.6375 MHz	Tactical, Primarily Law Enforcement STATEOPS-5

8.3 Criteria for Interoperability Requirements

This section is optional. Can insert an introductory paragraph describing the criteria for interoperability requirements into the new filing.

8.3.1 Primary and Secondary Users

This section is optional. An example is provided below:

Users will be separated into the categories of primary and secondary based upon the number of channels applied for.

Primary User:

A Primary User is an agency that operates on five or more channels or operates a trunking system.

Primary Users will be required to have the capability of operating on the National Calling Channel. Wide area coverage transmitters configured as full mobile relays may be required to be installed to maximize regional coverage along with satellite receivers, as needed, to enhance the talk-in coverage. All Primary Users in the Regional Planning Area are required to operate a control station, either individually or jointly, to provide 24 hour monitoring and rendering assistance on the Calling Channel.

All licensees are encouraged to operate additional stations on the remaining four Common Channels (Working Channels). Each Primary User may be required to sponsor, individually or jointly, one or more existing or additional mobile relays on the five Common Channels in order to provide a number of working channels in an area. The frequency, placement, and coverage of these systems will be controlled by the Regional Planning Committee. The suggested guidelines for the number of required Common Channels is one Common Channel for each four trunking channels.

Secondary User:

A Secondary User is an agency that operates a non-trunking system on four channels or less. Secondary Users include any Federal, State or Local disaster management agencies, police, fire, and providers of basic and advanced life support services.

All Secondary Users shall, as a minimum, operate a control station (if a mobile relay is providing coverage to

the Secondary Users area) or a base station (half duplex is encouraged in order to communicate with portables and mobiles programmed for repeater operation) for continuous monitoring of the National Calling Channel. A Secondary User whose area is encompassed by one or more Primary Users may apply for a waiver from the Regional Planning Committee for full time monitoring of the National Calling Channel. A Secondary User that has successfully petitioned for a monitoring waiver will be required to have an installed and operational control station on the National Calling Channel.

Other public safety users such as, school buses, volunteer emergency corps, Red Cross, Radio Amateur Civil Emergency Service (RACES), Amateur Radio Emergency Services (ARES), Salvation Army, C.A.P., etc., are encouraged to participate in the use of these interoperability channels. These agencies may also choose to monitor the National Calling Channel (ICALL) but will not be required to do so.

8.3.2 Shared Trunking System

This section is optional. An example is provided below:

In the case of two or more agencies agreeing to share a trunking system; they must, as a group, meet all the above requirements of a Primary User. Each individual agency must, at a minimum, meet the Secondary User requirements.

8.3.3 Channel Counting

This section is optional. An example is provided below:

These rules apply to the use of the 821-824/866-869 MHz band. It is feasible, however, that an agency with an 800 MHz trunking system outside this band will apply for one or more additional frequencies within the 821-824/866-869 MHz band. For this reason the following counting rules are set forth:

All 800 MHz trunking channels and all 800 MHz non-trunked voice channels, whether or not in the 821-824/866-869 MHz band, will be counted to determine if an applicant for a channel in the 821-824/866-869 MHz band is a Primary User or a Secondary User.

All 800 MHz trunking channels, whether used for voice only, data only or data and voice will be counted.

8.4 Channel Assignment

Can insert an introductory paragraph from your current 800 MHz plan into the new filing.

8.4.1 National Calling Channel (ICALL)

Can insert the national calling channel section (ICALL) from your current 800 MHz plan into the new filing. An example is provided below:

The Calling Channel shall be used to contact other users in the Region for the purpose of requesting incident related information and assistance. If necessary, the calling party will be asked to move to one of the ITAC channels for continuing incident operations or other interoperability communication needs.

8.4.2 National Working Channels (ITAC-1 through ITAC-4)

Can insert the national working channels section (ITAC-1 to ITAC-4) from your current 800 MHz plan into the new filing. An example is provided below:

The remaining four Common Channels (Working Channels) are to be used primarily for coordination activity between different agencies in a mutual aid situation, or emergency activities of a single agency. Incidents requiring multi-agency participation will be coordinated over these channels by the agency controlling the incident. Individual Working Channels may be designated for use by various services on an incident basis by the controlling agency. In the event of multiple incidents requiring the use of these channels, channels shall be designated by mutual agreement between controlling agencies. In no case shall control of these channels remain with any single agency beyond the termination of the emergency.

8.4.3 State Tactical Channels (STATEOPS-1 through STATEOPS-5)

This section is optional and can be inserted into the new filing, as applicable since not all states have state tactical channels. An example is provided below:

In addition to the above FCC mandated five Common Channels, five Tactical Channels will be set aside. Fixed

base stations and fixed mobile relay stations are prohibited on these Tactical Channels. Temporary portable mobile relay stations with the minimum required power shall be permitted, except for Priority 4 usage.

Two channels are primarily intended for Fire/EMS use, two channels are primarily intended for Law Enforcement use, and the remaining channel is intended primarily for use by General Government and other eligibles. Agencies operating 800 MHz mobiles and portables are encouraged to use these channels in the simplex mode for their interoperability and other "repeater talk-around" needs, as outlined in Section D.

8.4.4 Channel Usage

Can insert the channel usage section from your current 800 MHz plan into the new filing. An example is provided below:

Plain English shall be used on all interoperability channels at all times; encrypting shall be prohibited. Units will use the unit identifiers they normally use in their own system, but will then adapt to any prescribed identifier and on-air protocols as determined by the controlling agency.

Paging, alerting, and other means of signaling on these Mutual Aid channels is prohibited.

The use of the Calling Channel for intra-system normal dispatch and routine agency operations is strictly prohibited. Normally, the five Common Channels are to be used only for activities requiring communications between agencies not sharing any other compatible communication system. Under emergency situations, one or more Working Channels may be assigned by the controlling agency for the duration of the incident.

All ten Mutual Aid channels (except as noted) are subject to a priority usage concept.

These priorities are as follows:

Priority 1: *Disaster and extreme emergency operations, for mutual aid and inter-agency communications.*

Priority 2: *Emergency or urgent operations*

involving imminent danger to the safety of life or property.

Priority 3: *Special event control activities, generally of a pre-Planned nature, and generally involving joint participation of two or more agencies.*

Priority 3a: *Drills, tests, and exercises of a civil defense or disaster nature.*

Priority 4: *Single agency secondary communications (Applies only to the five State OPS channels)*

NOTE: Secondary communications are defined as that usage required by an extraordinary number of simultaneous incidents causing a temporary overload of an agency's normal communications system, or unusual occurrences occurring on an intermittent basis, such as being unable to use the agency's normal system and needing to communicate in a simplex (Talk-around) mode for a limited time.

8.5 Requirements for Channel Capability

Can insert the requirement for channel capability section from your current 800 MHz plan into the new filing. An example is provided below:

All agencies that license frequencies from this Plan will implement, at a minimum, the following Interoperability channels in their mobile and portable radios:

ICALL, ITAC-1 thru ITAC-4 will be implemented in full repeat mode so the radio can access any of these channels if a repeater is available in the area.

Can include this section in the 800 MHz Plan as applicable since not all states have state tactical interoperability channels. STATEOPS-3 will be implemented in simplex mode on the repeater output frequency (xxx MHz). This will provide a common simplex communications path for any 800 MHz radio used in the Region.

In addition to the above required channels, licensees are also encouraged to implement as many of the other STATEOPS channels as is reasonable for their operation. For example, a fire department may also choose to put STATEOPS-1 and STATEOPS-4 on their radios and a police department may choose STATEOPS-2 and STATEOPS-5. Additionally, agencies may choose to implement the STATEOPS channels in the full repeat mode if they also operate, or participate in the operation of, a temporary mobile repeater for unique events. Agencies are also encouraged to implement the ICALL and ITAC channels on a simplex basis.

All interoperability channels shall be controlled by sub-audible (CTCSS) tone 156.7 Hz. All interoperability repeaters shall have at a minimum an input and output CTCSS tone of 156.7 Hz.

The FCC has encouraged use of the common CTCSS tone to ensure nationwide interoperability. This has created some conflicts in areas where multiple interoperability repeaters have been placed into service. The common frequency pairs and CTCSS tones create heterodyne interference where repeater access is attempted by users within range of these multiple systems. As a result, the Committee prefers that one or a combination of the following methods be utilized to provide effective deployment of the interoperability channels. Applicants will be asked to closely coordinate with the Committee as they implement their respective interoperability systems. The following summarizes the suggested approaches:

Method One – Simulcast

Perhaps the best way to get wide area coverage on a particular channel is to deploy multiple transmitters and voting receivers in a simulcast configuration. By synchronizing the signals from two or more transmitter sites the effective footprint of the channel is the composite of the footprints of the individual sites. Establishment of simulcast deployments of the ICALL or ITAC channels would likely require the cooperation of multiple jurisdictions.

Method Two – Single Repeater/Voting Receivers

A single ICALL repeater may be established which is designed to serve as much of the region as possible. Generally, this repeater would be equipped with voting receivers to enhance the ability for portable radio users to access the repeater. Monitoring agencies (normally 911 dispatch centers) could direct users to lower level working channels for extended communications.

Additionally, regions may elect to keep repeaters in a 'knocked-down' or disabled state, monitoring the repeater input frequency for calls from users requesting communications. Following such a request, the responding entity would then either shift the traffic to a working channel or could selectively enable the repeater mode of operation for the duration of the call.

Method Three – Multiple CTCSS Tones

Regional planning may provide for the fitting of a secondary CTCSS tone to each interoperability repeater, allowing for activation of single repeaters by properly equipped agency radios. Regional agencies would then be required to have both the national CTCSS as well as a CTCSS intended for regional use present in their radio programming.

9.0 Appendix I - Committee Membership List

**10.0 Appendix II - Adjacent Region Concurrence
Notice**

11.0 Appendix III - Regional Planning Committee Meeting Minutes

12.0 Appendix IV - Procedure for Determining Service Area

RECOMMENDED PROCEDURE FOR DETERMINING SERVICE AREA

1. Convert proposed BASE STATION power ERP to dB below 1 KW ERP.
2. Subtract value in step 1 from 41 dBu.
3. In look-up table 1 determine the two (2) height columns that correspond most closely to proposed BASE STATION H.A.A.T.
4. Interpolate between the listings under the two (2) columns to determine where the value in step 2 falls.
5. Read the mileage from the "MILES" column. This is the radius of the proposed service area.

EXAMPLE

The service area of a 100 watt ERP station with an antenna height above average terrain of 450 feet would be calculated as follows:

$$\begin{aligned} P(\text{dBk}) &= 10 \times \log(100) - 30 \\ &= 10 \times 2 - 30 \\ &= -10 \end{aligned}$$

$$\begin{aligned} F(\text{DbU}) &= 41 - (-10) \\ &= 51 \text{ DbU} \end{aligned}$$

From the look-up tables, 51 falls between 50.5 in the 400 ft. column and 52.9 in the 500 ft. column. The corresponding mileage would be 12.

13.0 Appendix V – Procedure for Determining Interference Protection

INTERFERENCE PROTECTION

1. Convert proposed BASE STATION ERP to DB below 1 KW ERP.
2. Subtract value in step 1 from 16 dBu.
3. In look-up table 2 determine the two (2) height columns that correspond most closely to the proposed BASE STATION H.A.A.T.
4. Interpolate between the listings under the two (2) columns to determine where the value in step 2 falls.
5. Read the mileage from the column "MILES". This value is the minimum distance between the proposed BASE STATION and the nearest point of another co-channel service area. (Service area may be obtained from the co-channel user or by calculations used in "PROCEDURE FOR DETERMINING SERVICE AREA".)

14.0 Appendix VI - Procedure for Determining Adjacent Channel Interference Protection

ADJACENT CHANNEL INTERFERENCE PROTECTION

1. Convert proposed BASE STATION ERP to DB below 1 KW ERP.
2. Subtract value in step 1 from 26 dBu.
3. In look-up table 2 determine the two (2) height columns that correspond most closely to the proposed BASE STATION H.A.A.T.
4. Interpolate between the two listings to determine where the value in step 2 falls.
5. Read the mileage from the "MILES" column. This value is the minimum distance between the proposed BASE STATION and the nearest point of the adjacent channel service area.