

5.0 COMMUNICATIONS REQUIREMENTS-INTERREGIONAL INTEROPERABILITY

5.1 General

This portion of the Arizona Regional Plan deals with the requirement for coordinated communications between the Arizona Region, and adjacent regions in the Southwest. This includes the Southern California Region, Nevada Region, Utah Region, Colorado Region, New Mexico Region, and the Nation of Mexico. The purpose is to insure compatibility in the assignment of frequencies, especially Common Calling and Tactical Channels. This plan does not replace any current VHF or UHF common channels in use by eligible agencies along the borders, but supplements them through designation of new Common Calling and Tactical Channels at 800 MHz.

5.2 Interregional Calling and Tactical Channels; Authority:

The Federal Communications Commission (FCC) in General Docket 87-112, released Dec. 18, 1987, mandated the coordination of each authorized region's activities with adjacent regions.(IV.C.50-52)

The Arizona Regional Planning Committee has implemented a set of rules dictating interregional compatibility. These rules were made after contacting all adjacent regions to determine if there was any potential conflict with their plans. However, since some of the adjacent Region Plans have not yet been approved by the Commission, future changes may be required to ensure long-term compatibility.

5.3 Southern California Region Compatibility:

The common western border along the Colorado River with California, including San Bernardino, Riverside, and Imperial counties, is the area most likely to run into conflict both in operating frequency assignment, and in interoperability channel use. Southern California has previously asked for Arizona approval of their plan. This approval has been granted, after reviewing their plan. As a result, Arizona will not assign 823/868.5125 MHz or 823/868.9875 MHz to any agency located along the California border to avoid potential interference with their Channel 6 (Law) and Channel 7 (Fire/EMS) interoperability channels.

Previously, California had been asked not to assign Arizona Region interoperability Channel 6 (821/866.0500 MHz) along the Colorado River. The latest revision of the Arizona Plan has reassigned this channel and 821/866.0500 MHz is used as a guard band and will not be assigned for use in Arizona. Arizona Region interoperability Channel 6 is now 821/866.0375 MHz and Arizona will limit its use in the border area to prevent interference with existing users in Southern California.

Arizona licensees are encouraged to utilize the nationwide five common calling/interoperability channels to intercommunicate with California licensees when joint response is required along the Colorado River. Since this entire area is considered "Rural" in the Arizona Plan, any of the interoperability channels may be utilized for any service function with California.

5.4 Other Adjacent Region Compatibility:

Arizona rural licensees are likewise encouraged to utilize the five nationwide Common Calling/Tactical Channels along the border with any other region (Nevada, Utah, Colorado, New Mexico), as local conditions require. Any service use of the interoperability channels is permitted to achieve joint communications with other regional licensees. This plan may be amended from time to time as other regional plans continue to be developed. (Refer to Appendix V for letters of concurrence from adjacent regions.)

5.5 Communications with Mexico:

All interoperability frequencies are assumed to be usable and assignable to the Mexican Border as long as there is a mutual agreement on use within the 110 Km of the border. However, this portion of the plan is subject to automatic change depending upon FCC regulation and treaty with Mexico.

Governmental police eligibles may communicate with officials from Mexico along the border in the event of an emergency or disaster. This should be done on the Common Calling and interoperability channels and only in conformance with Part 90.19c of the FCC Rules and Regulations. Sonoran authorities have been notified as to the Arizona Regional Plan for use of these frequencies.

6.0 APPLICATION PROCEDURES

Any request for frequencies between 821-824 and 866-869 MHz to be used for public safety operations (as described in Part 90 of the FCC Rules and Regulations) must be submitted to the Arizona Regional Review Committee (ARRC) for review.

SEND APPLICATION TO: ARIZONA REGIONAL REVIEW COMMITTEE

**P.O. Box 863
Phoenix, AZ. 85001**

If adequate spectrum is available, the ARRC shall review the application to determine its compliance with the Regional Plan as indicated below. If there is inadequate spectrum or the Committee anticipates a shortage, the established evaluation procedure shall be instituted. This procedure, "Evaluation Criteria", is outlined in Section 7.6.

Additionally, shared multi-agency systems will have priority consideration in accordance with the FCC Report and Order, Paragraph 37.

Also, in accordance with Paragraph 13 of the Report and Order, when it is not possible to grant requests for assignments in the new 800 MHz spectrum to everyone who is eligible, the highest priority must be given to those organizations most fundamentally involved in protection of lives and property.

If approved by the ARRC, the request for frequencies will be returned to the applicant to be forwarded to the Associated Public Safety Communications Officers (APCO) for frequency coordination. If not approved by the ARRC, the request will be returned to the applicant for revision and correction before being resubmitted to the Committee for further consideration.

The request shall contain information to justify the frequencies requested and shall demonstrate compliance with the Arizona Regional Plan. As a minimum, the request shall consist of the following:

1. Appropriate Coordination and Licensing Application Forms.
2. System Design Information.
3. Funding Statement.
4. Proposed Implementation Schedule.
5. Justification of the Number of Channels.
6. Existing Frequency Statement.
7. Statement of Understanding on Official Letterhead.
8. Frequency Re-use form. (give backs)

Version 3. May, 2001

Applicants for new frequencies in public safety allocations below 800 MHz may also apply to the ARRC. Using the criteria described in Section 8.0 of the Plan, the ARRC will assign the appropriate point total to such applications and add them in order of points to any waiting list for relinquished frequencies.

7.0 APPLICATION EVALUATION PROCEDURES

The Arizona Regional Review Committee will review and evaluate each request based on the sufficiency of the information required in the following:

7.1 System Design

A brief statement of the intended use of the requested frequencies and how they will be integrated into the existing emergency and non-emergency operations will be required. The efficiency of 800 MHz frequencies depends greatly upon the design and programming of the system itself to assist all public safety users in making all systems operate in an efficient manner. This is the reason this area is being included for review. Specific criteria regarding system parameters are in the section, "System Technical Design Requirements." (See 9.0)

Below are the different requirements for the system design. Additional detail follows, including sample calculations.

Listing of System Coverage and Service Area:

- Antenna height and power
- Definition of service area
- Calculation of service area
- Provide service area exhibit (map)
- Listing of control stations
- Frequency re-use
- Adjacent channel design
- Trunking requirements
- System loading requirements
- System engineering exhibit
 - Transmit output power
 - Type of intermodulation equipment and losses
 - Type of transmission lines and losses
 - Antenna model and gain
 - Ground elevation above mean sea level
 - Antenna centerline AGL
 - Height above average terrain of antenna centerline
 - Effective radiated power (ERP)
 - PSTN interconnect

7.2 Funding Statement

The applicant's commitment to implement the system ensures maintaining the efficient utilization of these 800 MHz frequencies. The funding statement, which will be a resolution from the applicant's

governing body, will include the method by which the system will be funded.

7.3 Implementation Schedule

The applicant will be requested to furnish a schedule detailing the time period required to implement the proposed communication system, from funding through turn-on and final acceptance. Also indicate if "slow growth" is required.

All agencies applying for frequencies in the 800 MHz bands shall submit a letter of intent from the agency's Chief Administrative Officer verifying a fiscal and engineering commitment to the implementation and construction of a radio system within the parameters listed below:

- Submit to APCO/FCC coordination request and license application.
- Issuance of the RFP - 12 months after licensing.
- Award of contract - 24 months after licensing.

The Regional Review Committee anticipates that not all agencies or jurisdictions with allotted channels in the Plan will construct systems. The Regional Review Committee also recognizes that some agencies or jurisdictions may require more channels than are allotted in the Plan. The Plan envisions and the Regional Review Committee insists on a good faith showing of the intent from all agencies and jurisdictions with allotted channels. Therefore, channels will be considered available for allocation if licensing has not been initiated or specific plans have not been filed with the Regional Review Committee. The Plan has been in effect since September 1991. The Regional Review Committee considers this sufficient time for agencies and jurisdictions to have developed a long-range plan for use of these channels and to have provided notification to the Regional Review Committee.

7.4 Justify the Number of Channels

The following criteria shall be used to justify the number of channels requested:

- Population statistics that are substantial and projected trends that indicate the growth per year.
- Statistics on numbers of radio equipped personnel in the field at one time, both currently and projected, based on population growth statistics or other qualified factors such as traffic analysis.
- The applicant's request must meet FCC rules for channel loading.

7.5 Existing Frequency Statement

The applicant will provide an explanation of how existing frequencies will be used by the applicant and

a listing of the frequencies (give backs) to be released for re-use. Time frames for the release of frequencies for reassignment should be included in the implementation schedule submitted with the request.

Commitments to release channels shall become part of the Regional Plan and released channels shall be assigned to qualified agencies in accordance with the National/Regional Plan commitments. Letters of commitment must be provided by the applicant giving up the frequencies to the ARRC. Reassignment to give back frequencies will be made part of the plan.

7.6 Evaluation Criteria

The criteria, when instituted, incorporates a filing window concept which will provide for the evaluation of all applications for available spectrum within a set time period. The evaluation is a sequence of events that will be followed in the allocation of the six-megahertz of 800 MHz spectrum. This process follows the guidelines established under the National Plan.

The allocation is placed in the frequency pool. If frequencies are available in the pool (a second iteration of the evaluation could occur if all frequencies are not allocated on the first iteration), a window-opening announcement is made. The first window period will be thirty days with late applications rejected. The second window will open upon completion of processing of applications received in the first window period. Applications are received and reviewed during the window period. The evaluation will result in the award of a score for each application. That score is the total of the points awarded in seven categories, with a maximum possible score of 1000 points.

The six categories are as follows:

1. Service (maximum score, 350 points). Each of the eligible services has a predetermined point value. That point value is multiplied by ten (10) to determine the score for the Service Category. An applicant with multiple services will be scored on the basis of the percentage that each service represents of his total system. That is, a system that is 50 percent police and 50 percent local government (school administration) would be awarded the total of 50 percent of the point value for police plus 50 percent of the point value for school administration.
2. Intersystem 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 does not rate the application on the inclusion of the mandated five common channels for interoperability. This category does rate the application on its proposed ability to communicate with different levels of government and services during times of emergency.
3. Loading/Geographic Efficiency (maximum score 200 points). Those applicants that have demonstrated that they are part of a cooperative, multi-organizational system and show Geographic Efficiency will be scored on a range of 0 to 150 points depending on the extent

of cooperation and Geographic Efficiency; the ratio of mobiles to area covered and the channel reuse potential. The ratio of mobiles to area covered measures the level of Geographic Efficiency that a system demonstrates. The higher the ratio (mobiles divided by square miles of coverage), the more efficient the use of the frequencies. An expansion of an existing 800 MHz system will be scored on a range of 0 to 50 points, depending upon the degree of expansion. A system could be an expansion of an existing 800 MHz cooperative system, and show a high ratio of Geographic Efficiency which could result in receiving the combined point value for a maximum value of 200 points.

4. **Spectrum Efficient Technology** (maximum score, 100 points). This category scores the application on the degree of spectrum efficient technology that the system demonstrates. A point value range of 0 to 100 points can be awarded for this category. A trunked system would be considered a "spectrum efficient technology" as well as any technological systems feature that is designed to enhance the efficiency of the system and provide for the efficient use of the spectrum.
5. **Systems Implementation Factors** (maximum score, 50 points). This category scores the application on two factors, budgetary commitment and planning completeness. The degree of budgetary commitment is scored on a range of 0 to 25 points. An application that demonstrates a high degree of commitment in funding the proposed system will receive the higher score. Each application will be scored on the degree of planning completeness with a range of scoring from 0 to 25 points. Applications must include a timetable for the implementation of the communications system or systems.
6. **Give backs** (maximum score, 200 points). The application is scored on two factors: 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, with a range of 0 to 100 points. The greater the availability of the "give backs", the higher the score will be for this factor, up to a maximum of 100 points. 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.

Points are totaled for each application and the applications are prioritized by the Arizona Regional Review Committee. The frequency pool is allocated and the Arizona Regional Plan is updated to reflect the frequency assignments.

System implementation is monitored by the Arizona Regional Review Committee, which determines if progress is being made. If progress is not made, the licensee is warned of the consequences of his lack of progress. If continued monitoring indicates that sufficient progress is still not being made, the Federal Communications Commission (FCC) may be notified of the non-compliance and the licensee will be notified by the FCC of pending action that may result in withdrawal of their license. The notified licensee can appeal this action or can allow the license to be withdrawn. If the allocated frequencies are withdrawn, they are added back to the frequency pool.

7.7 Appeal Process

Throughout the frequency allocation process, applicants are given the opportunity to appeal decisions, which have caused rejection of their application. The appeal process has two levels: the Arizona Regional Review Committee (ARRC) and the Federal Communications Commission (FCC). An applicant who decides to appeal a rejection should file the appeal with the ARRC within 45 days from notification of rejection. If the applicant is not satisfied with the ARRC's final decision based on the appeal, the applicant may file an appeal with the FCC. The FCC's decision will be final and binding upon all parties.

7.8 Service Point Rating

	Minimum Value	Maximum Value
Local Government		
Transit Systems	5.0	30.0
Utility Operations	5.0	30.0
School Boards	0.0	20.0
Administration	0.0	25.0
Maintenance	5.0	25.0
Security	5.0	25.0
Other	0.0	25.0
Primary Police	35.0	35.0
Fire	35.0	35.0
Highway	10.0	30.0
Forestry Conservation	10.0	35.0
Fire	15.0	35.0
Medical Services		
Hospitals	0.0	20.0
Invalid Coach	0.0	20.0
Physicians	0.0	10.0
Rescue – BLS & ALS	30.0	35.0
Physically Handicapped	0.0	20.0
Veterinarians	0.0	5.0
Disaster Relief Org.	5.0	20.0

7.8 Service Point Rating (cont.)

School Buses		
Private Under Contract	0.0	10.0
Municipal Operated	0.0	20.0
Part of OEM EVAV	5.0	20.0
River/Lake/Beach Patrols	0.0	30.0
Isolated Areas	0.0	15.0
Communications		
Standby Facilities	0.0	25.0
Repair of Facilities	0.0	25.0

8.0 EXISTING FREQUENCIES

The Arizona Regional Plan encourages the surrendering of existing frequencies in the VHF and low UHF range by applicants for the 800 MHz spectrum. The ARRC will prioritize applicants for surrendered VHF and low UHF frequencies. This committee will then recommend any available frequency for the use of the highest priority applicant. This recommendation must be consistent with the frequency's normal service category, the applicant's eligibility within that service, and the technical way in which the frequency will be used. The ARRC will recommend approval of the license application by the appropriate frequency coordinator.

The ARRC will evaluate applications based upon the criteria established in Part 47 CFR, Part 22.504 and Part 90 of the Federal Communications Commission Rules and Regulations.

8.1 General Re-assignment Philosophy

Because of the demographic and geographic makeup of Arizona, the Arizona Region Plan encourages the following general frequency usage:

- a. 150-160 MHz: For reassignment in rural, varied topography, wide area applications. Discourage long term usage in the Phoenix Metropolitan Statistical Area (MSA).
- b. 450-470 MHz: For reassignment primarily within the MSA and wide area systems. Usage at high elevations and high effective radiated power outside of the MSA, where there is a high potential for interference to those within the MSA is to be discouraged with the exception of wide area services.
- c. 800 MHz: It is felt that few existing frequencies at 800 MHz will be surrendered. Also, because of propagation characteristics and the technical criteria for frequency reuse at 800 MHz, these frequencies will be treated the same as all other 800 MHz frequencies in their assignment.
- d. Frequency usage within the MSA is to be encouraged within the 450-470 MHz and 800 MHz allocations.

8.2 Point System Overview

The Arizona Regional Plan establishes a system for assigning points in order to prioritize applications for reassignment of surrendered frequencies. A total of 575 points are possible. The components of the point total are dependent upon:

- a. Minimum antenna height above average terrain.

- b. Minimum use of effective radiated power.
- c. Minimizing coverage outside the area of operation.
- d. Use of patterned antennas.
- e. Location of the transmitter in relation to the applicant's area of operation.
- f. Frequency band in relation to the MSA.
- g. The size of the area of operation.
- h. Frequency usage as control, mobile, base, or mobile relay.
- i. The population of the political jurisdiction making the application.

8.3 Prioritizing Point System

Criterion	Methodology	Maximum Points
Antenna height above average terrain (HAAT)	Optimum HAAT divided by design HAAT times 50. (See Note 1.)	50
Effective Radiated Power (ERP)	Optimum ERP divided by design ERP times 50. (See Note 2.)	50
Coverage	Area of Operations divided by Reliable Service Area times 100. (See Note 3.)	100
Radiation Pattern	Area of Operations sector width, in degrees divided by the total sector covered by the antenna system, times 75.	30
Location	Subjective evaluation of the selected site with respect to the intended operating area.	30
Loading	1 point per unit.	70
Sharing	25 points per entity or service (Police, Fire, LG.).	100
Band Plan	VHF outside MSA. UHF inside MSA.	100 100

8.4 Band Plan

Case 1. The frequency is within the low UHF range - if the station:

<u>Criterion</u>	<u>Raw Points</u>
a. will be used primarily or wholly within the MSA,	8
b. will be used as mobile only or mobile/control,	7
c. has an area of operation less than 500 square miles,	6
d. jurisdiction serves a population fewer than 50,000,	5
e. jurisdiction serves a population more than 50,000,	4
f. has an area of operation more than 500 sq mi.	3
g. is used as base station or mobile relay,	2
h. is outside of the MSA.	1

Case 2. The frequency is within the VHF band - if the station:

<u>Criterion</u>	<u>Raw Points</u>
a. will be used primarily or wholly outside of the MSA,	8
b. will be used as mobile only or mobile/control,	7
c. area of operation is more than 500 square miles,	6
d. jurisdiction serves a population of more than 50,000,	5
e. jurisdiction serves a population of fewer than 50,000,	4
f. area of operation is less than 500 square miles,	3
g. is used as a base station or mobile relay,	2
h. is used primarily or wholly within the MSA.	1

In order to accentuate band propagation characteristics in this prioritizing process, a weighted schedule

will be used. The maximum number of raw points is 26 and the minimum number of raw points is 10. The weighted points are derived from the following schedule:

<u>Raw Points</u>	<u>Weighted Points</u>
26	100
25	95
24	90
23	85
22	80
21	75
20	70
19	65
18	60
17	55
16	50
15	45
14	40
13	35
12	30
11	25
10	20

- NOTES -

Note 1: Optimum HAAT = d times $d/2$ where HAAT is in feet and d is the distance in miles to the Operating Area limit. HAAT shall be computed in accordance with Part 90.309(a)(4) of the FCC rules.

Note 2: Optimum ERP will be that ERP which provides an Alpha of 37 dBu for VHF high band or 39 dBu for UHF at the Operating Area limit. ($\text{Alpha} = 36.6 + 20 \log f + 20 \log d$) where f is the frequency in MHz and d is the distance in miles.

Note 3: In VHF high band, 37 dBu will be used and in the 450-470 MHz band, 39 dBu will be used for computing the Reliable Service Area. Part 22.504 of the FCC's rules applies.

9.0 SYSTEM TECHNICAL DESIGN REQUIREMENTS

9.1 Coverage Limitation - Antenna Height and Power

System coverage or service area is limited to geographical boundaries in order to maintain maximum frequency reuse within the region. The intent is to restrict the area of radio coverage to the actual jurisdictional boundaries. Agencies requesting new or additional channels will have their proposed system design evaluated by the Arizona Regional Review Committee. Any agency requesting a transmitter location not centrally located within its jurisdiction must include in their request adequate justification for such placement. Transmitter placement and antenna radiation patterns must be chosen to maintain radio system coverage within the jurisdictional boundaries of the entity making the application.

Agencies with service areas outside their political boundaries may request extended system coverage. Such requests for extended coverage must be accompanied by written justification, including an Intergovernmental Agreement covering all involved parties.

Extended coverage systems will not be authorized unless approved by the Arizona Regional Review Committee. Favorable consideration will be given to those extended coverage systems, which are made available for use by eligibles other than the licensee.

A licensee may apply to utilize one of their authorized base/mobile frequencies as a point-to-point channel pair. This usage must be within the licensee's defined service area, or extended service area, if authorized. Channel loading requirements still apply to a channel used for point-to-point communications.

9.2 Definition of Service Area

Radio System Coverage for "Service Area" is defined as the boundary where predicted signal strength falls to 41 dBu. System parameters must be modified to make sure that the location where the actual service strength falls to 41 dBu is located near the actual service area boundaries, and the signal strength must fall to 40 dBu or below at a point three (3) miles beyond this point.

9.3 Calculation of Service Area

Three factors must be known to determine service area:

(1) the strength of the received signal, i.e., "received signal strength," (2) antenna height above average terrain (HAAT), and (3) the effective radiated power (ERP). Received signal strength has been defined (41dBu), leaving the other two factors that can be modified to achieve the desired

coverage. The resulting calculations determine the radius of coverage from the transmitting site. An example of these calculations is shown in the appendix.

It will be permissible for agencies requesting system authorization to determine the distance to the 41 dBu boundary on a radial-by-radial basis with a minimum of eight equally spaced radials at 45 degree intervals, beginning at true North, and plot the service area boundary based on these points. This plot should be submitted with the request for frequencies to show that radio coverage area outside the agencies' political boundary is being kept to a minimum. In any case, a minimum antenna height of 100 feet above ground elevation will be necessary to provide clearance with rooflines and tree tops. Any agency with its service area radius of eight (8) miles - regardless of the size of its jurisdiction - providing interference protection for existing co-channel and adjacent channel systems is sufficient.

9.4 Responsibility for Calculations

It will be the responsibility of the requesting agency to calculate the proposed radio coverage service area and to validate the accuracy of the calculation. It is the requesting agency's responsibility to provide accurate system parameters and determine "Height Above Average Terrain" radials as specified in 90.309(a)(4) of the FCC's Rules and Regulations.

9.5 Proposed Service Area Exhibit

An agency shall provide, along with its request for frequencies, an exhibit showing the calculated radio coverage service area and the agency's jurisdictional boundaries as well as adjacent city, town, county and state boundaries. The boundaries must be drawn to scale on a 1:250,000 USGS map or suitable scaled computer drawn maps, with a title block including the name of the requesting agency, and the following transmitter information: antenna height, height above average terrain, effective radiated power, latitude, longitude, ground elevation of each transmitting site, and the distance to the service area boundary in miles, as calculated and indicated on the map.

9.6 Control Station (Limit on Effective Radiated Power)

Control/Base stations shall conform to the radio service area 41 dBu boundary requirement.

9.7 Frequency Reuse

Careful adherence to the system technical design requirements of this Plan will allow for maximum co-channel usage within this region. Because of the close proximity of adjacent channel frequencies, planning for adjacent channels must be similar to the considerations required for co-channel system design.

An agency requesting frequencies that have been previously licensed within this region or an adjacent

region must demonstrate that the proposed system will provide, an "existing to proposed" signal margin of at least 25 dB at the closest point to the service area boundary of the existing system.

As part of this plan, distances between transmitter 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 may be provided to establish minimum distances for separation.

9.8 Adjacent Channel Design

Proposed systems must also be designed for minimum interference operation with adjacent channel licensees. The method of determination is identical to that of co-channel design as detailed elsewhere in this Plan, with the exception of the existing to proposed signal margin criteria. In the case of adjacent channel systems, this margin will be reduced to 15 dBu, except that if all adjacent agencies are meeting the narrowband 12.5 kHz emission mask, no adjacent channel protection will be required. All other calculations will remain the same.

It should be noted that the FCC has adopted technical standards for transmitters, which will reduce adjacent channel interference and permit closer geographically adjacent channel use. However, the FCC has not adopted improved receiver technical standards. It is the position of the Commission that receivers do not cause interference, nor do they threaten effective operation of the public safety network, as would substandard transmitters.

Because of the demand for limited spectrum, it is the intent of this Plan to provide efficient spectrum utilization within current technological capabilities. Agencies are encouraged to carefully consider the receiver selectivity specifications of any equipment to be purchased for use in the 821-824/866-869 MHz band. Poorly designed receivers may cause serious degradation of the system in areas using adjacent channels.

9.9 Absolute Mileage Separation

In any case where the radio service areas of adjacent channel systems are separated by at least 70 miles, or co-channel systems separated by 100 miles, the interference studies as set forth in this Plan are unnecessary because of free space and terrain losses.

9.10 Trunking Requirements

As referenced in the "National Plan", trunking is mandated for any new system with more than four channels in the 800 MHz band when located at a single transmitting site. Requests for exceptions will be considered by the Arizona Regional Review Committee for mobile data use, encryption, and telemetry stations. Other requests for waiver of the trunking requirement will be considered after presentation of evidence by the requesting agency. Approval to waive the trunking requirement will be

based on the individual merits of the presentation, and will be subject to FCC final approval.

9.11 System Loading Requirements

An agency 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. Shared use of a frequency is not interference free. Users of single frequency systems will be required to provide the ARRC "confirmation of loading" for mobiles and portables as a method of validating system loading. This required updating shall be done annually until minimum loading has been completed.

This exception shall apply to agencies, which have only one system and a single frequency. Agencies requesting additional frequencies or having multiple systems shall comply with the loading standards as outlined in the loading tables or provide a "Traffic Loading Study" that meets the criteria as listed in the loading tables.

LOADING TABLES

<u>PUBLIC SAFETY</u>		<u>LOCAL GOVT./OTHER</u>	
<u>Channels</u>	<u>Units/Channel</u>	<u>Channels</u>	<u>Units/Channel</u>
1 - 5	70	1 - 5	80
6 - 10	75	6 - 10	90
11 - 15	80	11 - 15	105
16 - 20	85	16 - 20	120

9.12 System Engineering Requirements

All requests to the ARRC for frequencies must include sufficient data for the Committee to be able to determine proposed system operating parameters and shall be considered a system engineering exhibit.

The system-engineering exhibit must show:

1. Transmitter output power.

2. Type of cavities (duplexers, combiners and isolators) their insertion losses and all other associated losses.
3. Type of transmission line and associated loss (including jumpers).
4. Antenna model, gain, downtilt, pattern plots.
5. Ground Elevation above Mean Sea Level.
6. Antenna centerline AGL.
7. Height above average terrain of antenna center line.
8. Effective Radiated Power as determined by items 1 through 4.
9. Additional "receiver only" locations.
10. CTCSS coding information on both conventional and trunked systems.

9.13 Average Elevation Exhibit

An additional exhibit showing the average elevation of the terrain of each of the eight main radials is required. If an outside source is used for the calculation of average terrain, a copy of this report may be substituted for the average elevation exhibit.

9.14 Public Switched Telephone Network (PSTN) Interconnect Use

The applicant of an 800 MHz trunked radio system may use an interconnect to Public Switched Telephone Network for systems implemented under this Regional Plan. However, the use of cellular telephones (or other telephone interconnect systems) for automatic interconnect to the Public Switched Telephone Network is recommended. Utilization of cellular telephone networks will not impact radio systems implemented under this plan.

9.15 Frequency Allocation List

The frequency allocations contained within this Plan are based on the current and projected needs and system loading through the year 2010. The basis for this frequency allocation listing was taken from a population growth study done by Mountain West Research, completed June 6, 1989. All cities in Arizona with a population above 10,000 in the 1980 Census were extrapolated using county population growth projections for the year 2010. Channel allocation per town is based on one channel per 25,000 population, with a minimum of two channels.(Appendix IV.)

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All regional systems being installed by larger entities such as Counties or State are required to allow shared secondary use of the regional system for rural users. All large area systems are encouraged to solicit participation by the rural entities to better facilitate spectrum efficiency, and to provide better communications capability for the rural users. (Refer to Appendix IV for frequency listing.)

9.16 General Standards

All authorizations under this plan shall utilize equipment that complies with all applicable technical standards of the Federal Communications Commission.

10. APPENDICES

APPENDIX I	Planning Committee Membership
APPENDIX II	ARRC Bylaws
APPENDIX III	NPSPAC Application Procedure
APPENDIX IV	Frequency Allocation List
APPENDIX V	Procedure for Determining Service Area
APPENDIX VI	Adjacent Region Concurrence
APPENDIX VII	Cellular Notifications
APPENDIX VIII	Interagency Radio System Plan

APPENDIX I - PLANNING COMMITTEE MEMBERSHIP

ORIGINAL PLANNING COMMITTEE MEMBERSHIP

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APENDIX II - ARRC BYLAWS

BYLAWS OF THE ARIZONA REGIONAL REVIEW COMMITTEE

ARTICLE I - NAME AND PURPOSE OF ORGANIZATION

The name of this organization shall be the "Arizona Regional Review Committee", abbreviated "ARRC". This committee shall exist under authority of the Arizona Regional Public Safety Plan (ARPSP), as adopted by the Federal Communications Commission (FCC) under PR Docket 91-143, on September 4, 1991.

The purpose of this committee is to function as a frequency coordinating and advisory body for 800 MHz Public Safety channels approved by the FCC under the National Public Safety Advisory Committee, known as the NPSPAC plan. This plan was adopted by the FCC on November 24, 1987. It shall also function as a coordinator and clearinghouse for reallocated channels, known as "give backs" in other Public Safety spectrum outside the NPSPAC channels. All functions of this committee shall be in accordance with the ARPSP, as amended.

ARTICLE II - COMMITTEE MEMBERSHIP

A. Composition

First election of the 11 member ARRC was conducted at an organizational meeting held on August 21, 1991. These members shall remain on the Committee until resignation, removal for cause, or the member leaves their current public safety eligible agency. Removal for cause shall require a majority vote of the quorum at an open general meeting.

B. Member Replacement

A vacancy on the Committee shall be filled through nominations at the next regular scheduled, publicized, open public meeting, and voted upon thereat. A majority of votes of the voting agencies (one vote per eligible agency) shall be required to elect to the Committee.

C. Removal for Cause

Members may be removed for cause for non-participation under the following guidelines:

1. Removal

Members will be required to attend one-half of the meetings of the Committee or their respective subcommittee through the year. Attendance at fewer than one-half of these meetings shall be cause for review of participation by the Executive Committee during its meeting prior to the July ARRC meeting.

Should the Executive Committee find that a member has not been participating at the level required the Excomm will report to the general committee at the July meeting and schedule an open public meeting to allow voting for the removal for cause of the non-participating member. Prior to this meeting the ARRC Chairperson shall correspond with the member in question, informing the member of the committee's intention to remove for cause and advising the member of the date of the meeting at which the action will take place.

2. Filling the Vacancy

The vacancy created by removal of a member for cause shall be filled, if possible, at the same open public meeting at which the removal is approved.

Nominations for the vacancy will be taken from the floor as stipulated in Article III.C.1.b.

ARTICLE III - OFFICERS OF THE ARRC

A. Composition

The officers of the ARRC shall consist of a Chairperson, Vice-Chairperson and combined Secretary/Treasurer.

B. Election of Officers

Elections shall be held annually at the regularly scheduled meeting of the ARRC in September. Nominations shall be made at the regular scheduled meeting in July.

C. Election Procedures

1. Nominations

a) Nominations Committee

A nomination sub-committee shall be appointed, with the immediate past chairperson of the ARRC as chairperson, or in the event of their unavailability, the previous past chairperson. If no past chairperson is available, the Executive Committee shall serve as the nominating subcommittee.

b) Floor nominations

Nominations may also be made from the floor at the nominations meeting. Nominees must be present at this meeting and have the commitment of their sponsor to fully participate.

2. Election Rules

The election shall be conducted openly, with a majority of ARRC quorum member votes required for election.

ARTICLE IV - OPERATING RULES OF THE ARRC

A. Meetings

Regular meetings of the ARRC shall be scheduled in coordination with the scheduled meetings of the Arizona APCO, Inc. chapter. In addition, two semi-annual meetings scheduled in conjunction with Arizona APCO shall be designated as "Open Public Meetings" with open participation from the public safety community. Each public safety entity shall be apportioned one vote at each open, public meeting. Designated alternatives and representatives shall be identified prior to the meeting.

B. Conduct of Meetings

1. Presiding

Meetings shall be conducted at the appointed time and place by the Chairperson, or in their absence, the Vice-Chairperson, or in their absence, the Secretary/Treasurer.

2. Procedural

Meetings shall be conducted according to Robert's Rules of Order.

3. Agenda

As a minimum, a financial statement shall be read to the membership, and subcommittee reports presented. Applications for NPSPAC frequencies which have been previously reviewed and approved by the appropriate subcommittees shall be voted upon, and approved by a two-thirds vote of the quorum present.

4. Quorum

The ARRC may conduct business at any publicized, scheduled meeting, with a quorum consisting of a minimum of six members present, which shall include at least one officer. Voting by proxy, with written authorization, shall be permitted.

5. Voting via Telecommunications

In special situations relating to license applications, vote by telephone and confirmed by fax or e-mail may be made provided ALL members are contacted by voice and fax or e-mail, and given a chance to respond with a vote. A two-thirds vote of all members is

required for approval of the issue. Results of the telephone/fax/e-mail vote must be recorded in the minutes of the following meeting.

ARTICLE V - EXECUTIVE COMMITTEE

A. Composition

The Executive Committee, to be known as the "Excomm", shall consist of the current Chairperson, Vice-Chairperson, Secretary/Treasurer, and immediate past Chairperson. Subcommittee chairpersons may be asked to attend meetings of the Excomm as required.

B. Meetings

Meetings shall be called a minimum of three times annually for the purpose of conducting business of the ARRC, and for review of subcommittee operations and work. The meetings shall be called and scheduled by the ARRC chairperson.

ARTICLE VI - SUBCOMMITTEES

A. Composition of Standing Subcommittees

There shall be five (5)-standing subcommittees of the ARRC. These shall include:

1. 800 MHz NPSPAC Application Review
2. VHF/UHF/800 MHz Frequency Reassignment
3. Bylaw Review
4. Nomination Recommendations (See Article III.D.1.a)
5. Regional/Interregional Interoperability Coordination

B. 800 MHz NPSPAC Application Subcommittee

1. Function

The NPSPAC Application Subcommittee shall meet at least monthly if applications are pending. The subcommittee shall make recommendations on applications in a timely manner to the ARRC for voting upon at the next regularly scheduled ARRC meeting. Evaluations shall be performed in a manner consistent with the criteria established in the Arizona Regional Public Safety Plan (ARPSP), as amended.

2. Necessary Delays

Application evaluations may be delayed if, in the subcommittee's opinion, insufficient information was provided to make a determination. In such case, the subcommittee chairperson shall draft a letter to the applicant within ten (10) days of the initial

subcommittee review, of the insufficiency, and shall request specific information necessary to make a determination. If such requested information is not provided within thirty (30) days of the mailing of such letter, the application shall be deemed defective, and returned to the applicant. Approval recommendations shall require a unanimous vote of the subcommittee members present at the evaluation meeting. Rejection of an application may be appealed within forty-five (45) days as per paragraph 7.7 of the ARPSP.

3. Mixed Frequency Applications

The subcommittee shall return applications for systems requiring both NPSPAC and non-NPSPAC frequencies with the suggestion that the applicant request only NPSPAC frequencies. The subcommittee shall actively work with the applicant agency to create a system utilizing NPSPAC frequencies.

4. Conflict of Interest

Any ARRC member shall be disqualified from evaluating and/or voting on an application submitted by their sponsor political subdivision, or non-political entity. In this case, the member-applicant shall act only as an advisor, providing necessary information upon which to make a recommendation, and shall not be considered a member of the subcommittee or the ARRC for voting purposes.

4. Approval

Recommendation of the subcommittee shall be voted upon at the next regularly scheduled meeting of the ARRC, and shall be approved with a two-thirds vote of the quorum.

C. VHF/UHF/800 MHz Frequency Reassignment Subcommittee

1. Function

This subcommittee shall meet at least monthly if applications for "give back" frequencies are pending. The subcommittee shall keep a chronological listing of agency requests for "give back" channels. Each request for channels shall be accompanied by a statement of need. A separate list shall be maintained for each primary public safety frequency band.

2. Evaluations

The subcommittee shall evaluate such applications on their merits, in conformance with the ARPSP, and make a recommendation in a timely manner to the ARRC when frequencies become available. Where there are multiple applications with relatively equal merit, the subcommittee shall give preference to the longest standing application.

3. Necessary Delays

Recommendations from the Subcommittee to the ARRC may be delayed if there is insufficient data submitted to make a determination. The same procedure shall be followed as in Article VI.B.2. If insufficient information is forthcoming, an application for a "give back" channel may be dismissed and returned to the applicant.

4. Conflict of Interest

Any ARRC member shall be disqualified from evaluating and/or voting on an application submitted by their sponsor political subdivision, or non-political entity. In this case, the member-applicant shall act only as an advisor, providing necessary information upon which to make a recommendation, and shall not be considered a member of the subcommittee or the ARRC for voting purposes.

5. Approval

Recommendation for approval by the subcommittee shall be unanimous, and shall be voted upon at the next regularly scheduled meeting of the ARRC, and shall be approved by a two-thirds vote of the quorum.

D. Bylaw Review Subcommittee

The Bylaw Review Subcommittee shall meet at least semi-annually to review any needed changes to the Bylaws, and draft such changes for presentation to the Excomm.

E. Nominations Recommendation Subcommittee

The Nominations Recommendation Subcommittee shall meet annually prior to the nominations meeting for Excomm officers, and shall present a selected slate of candidates as nominees for Chairperson, Vice-Chairperson, and Secretary/Treasurer to the ARRC membership at the nominations meeting.

F. Regional/Interregional interoperability Subcommittee

1. Meetings

The Regional/Interregional interoperability Subcommittee shall meet monthly, if there is an application for NPSPAC channels pending.

2. Common Calling/Interoperability Recommendations

The subcommittee shall make a recommendation as to whether an applicant should be required to place in service "Common Calling" and/or "Interoperability" stations as a condition of application approval. Specific recommendations shall be made in writing to

the ARRC Chairperson. Such recommendation shall be made a part of the final vote by the ARRC for approval of a NPSPAC application.

3. License Monitoring

The subcommittee shall monitor licensing activity in surrounding regions to ensure compatibility of frequency usage, and coordinate "Common Calling" and "Interoperability" installation and monitoring.

4. Border Compatibility

The subcommittee shall also monitor FCC Regulations and coordinate with the nation of Mexico to ensure compatibility of channel usage and "Common Calling" and "Interoperability" along the U.S./Arizona and Mexico border.

G. Subcommittee Chairpersons

The chairpersons of the standing subcommittees shall be appointed by the ARRC Chairperson, with concurrence of the majority of the Excomm present at a scheduled Executive Committee meeting.

H. Membership

There shall be a minimum of three (3) members on the "800 MHz NPSPAC Application Review" and "VHF/UHF/800 MHz Frequency Reassignment" standing subcommittees, including the chairperson. Other subcommittees shall consist of a chairperson and any other members the chairperson deems appropriate. Members of all standing committees may be chosen by the subcommittee chairperson, with the approval of the ARRC chairperson.

A minimum of two (2) members of the "800 MHz NPSPAC Application Review" and "VHF/UHF/800 MHz Frequency Reassignment" subcommittee, including the chairperson, are required to be in attendance at those subcommittee meetings. This shall constitute a quorum for those subcommittees.

I. Ad-Hoc Subcommittees

1. Ad-Hoc Subcommittee Creation

Ad-Hoc subcommittees may be created at any time for such purpose as the Excomm deems necessary. Ad-Hoc subcommittees shall be appointed for a specific time period, but not to exceed one year in duration.

2. Composition

Ad-Hoc subcommittee chairpersons shall be appointed by the ARRC chairperson, with

the consent of a majority of the Excomm present at a regularly scheduled meeting. An Ad-Hoc subcommittee may consist of any number of members.

ARTICLE VII - FUNDING

A. Funding Sources

The ARRC shall derive its funding indirectly from fees collected from applicants, distributed through the Arizona Chapter of APCO, Inc. In the event that such funding is not available, or is insufficient for the ARRC to carry out its assigned function, voluntary contributions may be requested from pending applications desiring assignment of frequencies.

Arizona APCO, Inc. has pledged to fund the ARRC up to \$300 per fiscal year. Funds will be made available to the Secretary/Treasurer as needed by the APCO Treasurer.

B. Unavailability of Funding

Should there be an insufficiency of funds to carry out the functions of the ARRC, all applications pending shall be submitted to APCO without a recommendation and operations of the ARRC shall cease until adequate funding becomes available.

ARTICLE VIII - MODIFICATION OF BYLAWS

These Bylaws may be modified upon a two-thirds vote of the ARRC. Written copies of the proposed Bylaw amendment shall be presented to all ARRC members at least thirty (30) days prior to the next regularly scheduled meeting. A statement of recommendation, including both a majority and minority report if necessary, from the Excomm, shall be included with the mailing.

Voting on the proposed amendment shall take place at the next regularly scheduled meeting, provided a quorum is present. The Bylaw amendment shall become effective on the first day of the following month.