

State of Nevada
800 MHz Committee
FCC Region 27

June 1, 2006

Federal Communications Commission

RE: Revision of Nevada, Region 27 Region Plan

FCC Docket Number 92-268

Enclosed for your review and approval is Revision One to the Region 27, Nevada, 800 MHz Plan.

Since its original approval the plan has been outdated by the growth of the State of Nevada and the changes in technology that have occurred in public safety communications. This Plan revision is intended to better align the NPSPAC 800 MHz spectrum with the needs of the public safety agencies of the State of Nevada.

The changes to this plan include the following major items;

- Correcting typographical errors in the original Plan
- Better defining eligible entities
- Acknowledging waivers previously approved by the FCC for the Region
- Update Region geographic and demographic descriptions
- Redefining the methodology used to allocate frequencies
- Re-packing the frequency allocation tables to align with actual licenses and requirements
- Emphasizing federal recommendations regarding Homeland Security and interoperability

Although the channel allocation process has changed, care has been taken to maintain the co-channel and adjacent channel separation between channels assigned within the Region and with the adjacent regions.

Concurrences from all adjacent regions are included in ATTACHMENT 10.

Should you have any questions please feel free to contact me or Mark Pallans.

Yours truly,

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State of Nevada
FCC Region 27
800 MHz (NPSPAC) Plan
(Revision 1)



REGION 27 PLAN

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SECTION 1 OVERVIEW

1.1 INTRODUCTION

This plan has been developed in accordance with Federal Communications Commission Docket 87-112, by a representative group of the Public Safety/Special Emergency Services within the State of Nevada.

1.2 SCOPE

Its scope is to provide a Public Safety radio frequency allocation process that meets the following two objectives:

1. Facilitate interoperability between communications systems to permit local, state, federal government and eligible critical infrastructure agencies and participating non-governmental organizations to coordinate their activities.
2. Ensure efficient use of the radio spectrum allocated for public safety.

1.3 BACKGROUND

In December 1983, the United States Congress directed the Federal Communications Commission (FCC) to establish a plan to ensure that the communications needs of state and local public safety agencies would be met. To help meet this congressional mandate, the FCC established the National Public Safety Planning Advisory Committee (NPSPAC) and chartered this committee to:

- (a) identify communications requirements of public safety services;
- (b) develop a scheme for efficient use of the newly allocated frequencies at 821-825 MHz and 866-870 MHz for public safety use nationwide.
- (c) develop a scheme to increase utility of existing public safety

frequencies; (d) recommend the manner in which new technologies can be applied to public safety frequencies; and

- (d) recommend guidelines to ensure compliance with the National Plan.

With open membership, NPSPAC provided the opportunity for the public safety community and other interested members of both the public sector and eligible critical infrastructure organizations to participate in the overall spectrum management approach by recommending policy guidelines, technical standards, and procedures to satisfy public safety needs for the foreseeable future.

After consideration of NPSPAC's Final Report and comments filed in Docket No. 87-112, a Report and Order was released by the FCC in December 1987 which established a structure for the National Plan that included guidelines for the development of regional plans.

The National Plan reflects the FCC's regulatory objective of maximizing spectrum efficiency and ensuring sufficient flexibility to accommodate specific communications requirements in different areas of the United States. The National Plan serves as an umbrella under which regional plans can be developed and implemented.

1.4 REGIONAL PLANNING METHODOLOGY

AUTHORITY

Authority for the Regional Planning Committee (RPC) to carry out its assigned tasks was derived from the FCC Report and Order, Docket 87-112. Participants in the formation of the RPC represent interested personnel from public safety and special emergency radio services. This section will cover the method used to create the Plan, the composition of the RPC and the intended method of administering the Plan.

The development of the Public Safety Communications Plan for Region 27 has followed the requirements of the FCC's Report and Order as issued in the matter of the General Docket. It is not the intent of this Plan to conflict with any current or future rule or regulation of the National Plan as may be applicable by Report and Order of the FCC. In such cases where conflict may exist, FCC rules and regulations shall prevail. Elements of this Plan not expressly prohibited by the FCC shall become applicable to Region 27 upon the Plan's

approval by the FCC. Should certain determinations by the FCC void any individual element of this plan, all other elements shall remain applicable.

1.5 REGIONAL PLANNING COMMITTEE

In accordance with Docket 87-112, the Associated Public Safety Communications Officers, Inc. (APCO) recommended to the FCC the appointment of a "Convener" for Nevada Region 27. Following statewide public notification of eligibles, the first meeting was held in the state capitol in Carson City. A copy of the letter of notification and list of attendees is shown in Attachments 3 and 4. A Convener for Region 27 was elected and served as committee chairperson. The state was divided into three sub-regions and three sub-regional chairpersons were elected. The committee chairperson and sub-regional chairpersons also served on the working committee. Their names and a state map depicting the sub-regions are contained in Attachment 5 and 6, respectively.

Due to the large land area of Region 27, travel distances and budget constraints precluded large-scale, joint regional meetings of all public safety eligibles, as originally planned. Therefore, in order to meet the intent of Docket 87-112 and to attain better *statewide representation*, it was necessary for the committee chairperson and the state's 800 MHz project engineer to travel to each county to hold meetings with local representatives. This proved to be more effective and *resulted in greater representation than would have occurred otherwise*. Additional meetings were also held at the state level with state agency personnel.

Using the input from these representatives, the working committee developed the initial and final stages of the plan for review. In all, 42 separate meetings were held statewide with representatives from state agencies, counties, cities, special districts, and special emergency. More than 130 public safety, special emergency, and other officials participated in the plan development process. Attachment 7 contains the names, organizational affiliations, mailing addresses, and telephone numbers of those individuals instrumental in the Plan's formation. These representatives were all considered members of the Regional Planning Committee.

The Region 27 Plan committee consists of the Region Chairman and the representative of any eligible agency attending the Region meeting.

1.6 SUMMARY OF PLAN ELEMENTS

Review of Docket 87-112 shows that four major products have been requested of Region 27 by the FCC.

They are:

- * A channeling plan showing allocation of the NPSPAC frequencies in accordance with procedures and requirements of Docket 87-112.
- * Explanation of operational issues dealing with the mutual aid channels.
- * Establishment of procedures to modify the Region 27 Plan.
- * Discussion and response to section V. Miscellaneous issues.

SECTION 2 CHANNELING PLAN

Docket 87-112 requires that a channeling plan allocating the NPSPAC frequencies be developed by each region.

As stated under III. Structure of the National Plan, section C. Common Elements of Regional Plans, the intent is to ensure that the National Plan encourages the most efficient utilization of the available spectrum and fosters interoperability between users. To accomplish this, it was necessary for the FCC to establish minimal technical standards the regional plans must follow.

In addition, requirements on how the channeling plan is developed is provided in Docket 87-112 under section IV. Implementation of the Plan, subsection C. Contents of Regional Plans, elements 5 through 9. They are:

- (5) a general description of how the spectrum is to be allotted among the various eligible users within the region;
- (6) an explanation of how the requirements of all eligible entities within the region were considered and met to the degree possible;
- (7) an explanation as to how eligible entities have been prioritized in areas where not all can receive licenses.
- (8) an explanation of how the plan has been coordinated with adjacent regions;
- (9) a detailed description of how the plan puts the spectrum to the best possible use by requiring system design with minimum coverage areas, by assigning frequencies so that maximum frequency reuse and offset channel use may be made, by using trunking, and by requiring small entities with minimal requirements to join together on a single system where possible.

2.1 ELIGIBLES DEFINED

The Region 27 Planning Committee considers all eligibles listed under Federal Communications Commission Rules and Regulations Part 90, Subparts B, and C as Region 27 eligibles. This will include Subpart B eligibles of Local Government, Police, Fire, Highway Maintenance and Forestry-Conservation, and subpart C eligibles to include medical services, rescue organizations, veterinarians, disaster relief organizations, school buses, beach patrols, and communications standby facilities.

On July 10, 1995 the Commission issued a waiver to allow the State of Nevada to implement a statewide 800 MHz Public Safety/Special Emergency Radio Service system that would share the system with Federal, State, Local Government agencies and public utilities which are not normally eligible to utilize public safety spectrum.

A copy of this waiver is included in this Plan as attachment 11.

2.2 REGIONAL PROFILE

A. Geography

The State of Nevada makes up the Region 27. It has an area of 110,540 square miles. Its geography consists of longitudinal mountain ranges with elevations from 3,000 to 12,000. These mountain ranges are nominally separated by valley floors between 20 to 50 miles wide with elevations 490 to 6,000 ft. These mountain ranges provide communications sites that average greater than 2500 ft. above average terrain (ATT). The topography varies from large desert areas with sparse foliation at lower elevations to medium forested areas at higher elevations. It is bordered on the north by Oregon and Idaho, on the east by Utah, on the south by Arizona, and on the west by California. The distance from the northern border to the southern tip is approximately 500 miles and from the eastern border to the west 408 miles. Attachment 1 contains a map showing the 17 counties and county seats.

The variations in topography and population greatly affect the public safety communications requirements and system design. The uniqueness of a given area dictates the type of system best suited for public safety and special emergency operation. This Plan and its administration and execution will reflect these considerations.

B. Population

When this plan was originally drafted the population of the State was approximately 1,100,000. The current population exceeds 2,400,000 with the highest population density in the two major urban areas of Las Vegas/North Las Vegas/Henderson in the south and Reno/Sparks/Carson City in the north. The fastest population growth is occurring in the greater Las Vegas urban area of Clark County. The 1985 Clark County population was 767,890; the current population is over 1,715,000. Washoe County, the second most populous area, had a 1990 population of 264,000 and is currently in excess of 383,400. The remainder of the state is rather sparsely populated and basically rural in nature. A statewide population projection is shown in Attachment 2.

C. Public Safety and Emergency Services

There are over 75 law enforcement agencies within the state consisting of the State agencies, County Sheriff Departments, City Police Departments, and University and School District security departments.

The Fire Service at the state and local level consists of both paid and volunteer agencies. Statewide, there are over 150 (including the Nevada Division of Forestry) fire departments. Generally, paid fire agencies operate within the urban areas while volunteer departments function primarily in the rural areas. There are also numerous private industrial and federal fire departments which are not included in the above count.

In the Special Emergency Service, there are over 72 operating ambulance agencies or companies using both land and air vehicles. A large number of these ambulance services operate under a volunteer organization, especially in the rural areas. There are 21 in Las Vegas.

There are a host of other public service organizations covering a wide variety of activities but they are too many to list. These include numerous other state and local government service agencies, such as wildlife, highway maintenance, public works, health, emergency management, too list a few.

Since much of the Nevada land area is controlled by the federal government, numerous federal agencies and the military operate extensively within the state requiring a variety of law enforcement, fire, medical, and other general services. The major federal agencies are the

Bureau of Land Management, Forest Service, Department of Energy, Navy, Army, and Air Force.

Since much of the State is rural and inaccessible the public safety agencies have working agreements with several NGO's within the State to supply facilities, equipment and manpower to supplement the State's resources.

2.3 SPECTRUM ALLOTMENT METHODOLOGY

Element 5 asks for:

A general description of how the spectrum is to be allotted among the various eligible users within the region.

Region 27 has developed the following tasks that will provide a foundation for assignment of NPSPAC frequencies.

They are:

TASKS

1. Identify and define Region 27 eligibles
2. Identify Region 27 requirements for radio spectrum. (See Element 6)
3. Identify applications the NPSPAC frequencies will support. (Element 6)
4. Review the technical standards required by Docket 87-112.
5. Evaluate how the technical standards can meet identified requirements and applications.
6. Determine spectrum requirement needed to satisfy step 5, compare spectrum requirement with FCC allotment total to determine if spectrum demand exceeds FCC allotment or results in surplus.
7. Create the required database for assignment of frequencies to eligibles within the Region.

2.4 REQUIREMENTS ASSESSMENT

Planning element (6) asks for:

An explanation of how the requirements of all eligible entities within the region were considered and met to the degree possible.

The Region 27 Planning Committee defines all eligibles under section 2.1 of this Plan.

This planning element identifies the radio spectrum requirements and the applications of Region 27 eligibles.

This was accomplished by collecting the following data on every Region 27 eligible.

1. Systems inventory to include number of portables, mobiles, base stations, and repeater stations. (See Region 27 Supplementary Information support documentation to the Region 27 Plan.)
2. Service area, or coverage requirements.
3. Functions the radio system provides.
4. Interoperability Requirements. (See Region 27 Supplementary Information support documentation to the Region 27 Plan.)
5. Geographic location of all transmitter facilities of eligible entities.

This data provided the following information on radio spectrum required by Region 27 users.

- a. Adequate radio frequencies to support radio systems coverage of a geographical area.
- b. Adequate channel capacity for both day to day usage and emergency operations.
- c. Adequate frequency reserve for systems expansion.

- d. Radio frequency support for inter/intra agency communications.
- e. Number of users having similar or overlapping coverage needs.
- f. Location of facilities that could be utilized to provide adequate public safety radio coverage throughout the State.

The applications supported by radio frequencies are:

- a. Mobile relay stations for wide area or extended coverage between mobile and portable units.
- b. Mobile and portable radio communications with local and wide area dispatch points.
- c. Paging of emergency responders.
- d. Electronic data exchange between information systems and mobile data terminals.
- e. Mobile/portable to mobile/portable operation for tactical operations support.
- f. Unit tracking and location
- g. Mobile/portable operation into the public switched network.
- h. Telemetry networks

As supported by interoperability requirements data in the Region 27 Supplementary Information support documentation to the Region 27 Plan, all eligibles in Region 27 identified interoperability and shortage of radio frequencies as the major deficiency, among Region 27 eligibles.

Interoperability is currently limited by the variety of bands, limited channel capacity, bandwidth limitation, etc.

The Region 27 planning committee has identified the above requirements, applications, and interoperability as minimum needs to be met for all eligibles. Meeting these needs will result in increased benefits for many eligibles.

In Planning Element 9, these identified minimum requirements are listed as a decision factor which affects the allocation method.

2.5 PRIORITIZATION PROCEDURES

Element (7) asks for:

An explanation as to how eligible entities have been prioritized in areas where not all can receive licenses;

At the present time in Region 27, *there is no demonstrated need to consider priorities to any significant degree* in the preparation of this plan. Sufficient 800 MHz channels exist in the allocation to satisfy the current and future requirements of all eligibles as defined in this plan.

In the event that prioritization becomes necessary, the following decision factors and point schedule shall be analyzed and applied.

Point Range

- | | | |
|--------|-----|---|
| (0-25) | (1) | spectrum usage as it applies to protection of life and property. |
| (0-15) | (2) | functional application of how the frequencies are to be used. |
| | (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) implementation schedule to include funding support.

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

2.6 ADJACENT REGION COORDINATION PROCEDURES

Planning Element 8 asks for:

An explanation of how the plan has been coordinated with adjacent regions;

Adjacent regions to Region 27 are:

- Region 3 - Arizona
- Region 5 - Southern California
- Region 6 - Northern California
- Region 12 - Idaho
- Region 35 - Oregon
- Region 41 - Utah

There are two areas of the Region 27 Plan that require coordination with adjacent regions.

The first area is the frequency allotment process. The intent of the coordination is to insure minimal interference of co-channel assignments next to regional borders. This coordination process will also insure that an eligible's radio coverage is properly engineered to avoid overlapping into the adjacent region.

The majority of this coordination is accomplished automatically through the CET Sort program that the FCC has recommended to accomplish the frequency packing. This program takes into account the radio frequencies and their assigned areas in adjacent regions during the packing program.

In addition, a copy of the completed plan has been sent to each region with a request to review and concur with its contents. The revised letters of concurrence are provided in Attachment 9

The second area of importance is guidelines surrounding usage of mutual aid channels. Public safety agencies in bordering jurisdictions must communicate with each other. Therefore it is important that mutual aid guidelines between adjacent regions, be similar. Section 3 of this plan will provide in-depth information on how this coordination will be accomplished. The State of Nevada, and the State of California have already accomplished this coordinated effort for frequencies in lower bands.

2.7 DETAILED DESCRIPTION OF SPECTRUM ALLOCATIONS

Planning Element 9 asks for:

A detailed explanation of how the plan puts the spectrum to the best possible use by:

- a. requiring system design with minimum coverage areas**
- b. by assigning frequencies so that maximum frequency reuse and offset channel use may be made**
- c. by using trunking**
- d. by requiring small entities with minimal requirements to join together on a single system where possible**

Many of these objectives are interrelated. In addition, how these objectives are addressed can be affected by the following considerations:

1. CET SORT Packing Plan
2. Current 800 MHz Trunked and Conventional Technologies
3. Current and future State and Local Government equipment loading inventories

4. Operational Concerns
5. Current communications Site locations and service areas
6. Economies of scale
7. Population growth and increased need for services

The frequency allocation committee of Reg. 27 was tasked by the Region 27 Chairman to evaluate and review data and information which deals with both Element 9 objectives and the above stated considerations.

a. REQUIRING SYSTEM DESIGN WITH MINIMUM COVERAGE AREAS

Region 27 has many eligibles with radio service coverage requirements exceeding thousands of square miles. As was recommended by the FCC for Region 27 originally utilized the CET Sort packing plan which describes the sizes of service areas used to initiate the packing procedures.

The CET Sort packing plan is a computerized program designed to achieve the best spectral efficiency possible while protecting co-channel and adjacent channels from interference. The required number of channels is allocated based upon identified needs or population density referenced to a geographical area. This program can also meet transmitting combining requirements to support common system technical requirements.

Over the years since the initial implementation of the Region 27 Plan there have been technical and geo-political changes that have made the original CET packing plan no longer applicable for much of the State of Nevada.

These changes include;

- Significant increases in population in the State
- Significant increase in the need for government services
- Significant increases in coverage area requirements
- Changes in radio technology
- Changes in transmitter combiner technology

- Digital Radios
- Requirements for wide area coverage radio systems
- The need to meet Homeland Security initiatives
- Need for more and better interoperability between organizations

Discussion

Both Element 9 objective (a), and the CET SORT Packing Plan deal with restricting system design to small service areas.

In addition information provided on the CET sort program states that the frequency sorting task being done is a geographic sort of frequencies, NOT A SYSTEM DESIGN. Therefore, the coordinates and range data tabulated should describe the geography and not necessarily be actual user antenna sites.

THIS CONCEPT HAS NOT BEEN IN THE BEST INTEREST OF REGION 27.

The CET program based its interference potential on a circular coverage pattern for proposed site. It is not in the best interest of Region 27 to simulate a circular pattern around a geopolitical region without considering the local geography.

This is because of extreme mountainous terrain, large, sparsely populated service area and high costs of communication site development. Both High-level mountaintop radio sites and lower level localized sites are required to serve Nevada State and Local governments. Average service areas can range up to 100miles or more from these sites.

The Region 27 RPC recognizes that using high-level sites makes it technically difficult to avoid overlapping coverage into adjacent regions. The CET sort program asks that an eligibles geopolitical coverage not exceed its boundary by more than three miles. The Region 27 RPC fully agrees with the intent of the CET sort program so that maximum frequency reuse will occur. However, since these established sites may support multiple cities, counties and state agency service requirements, and since Planning Element 9, part (d) requires common systems where possible, it appears that a combination of high and low level sites in a common mode of operation is beneficial to both Region 27 and the FCC. This would also mean that a geopolitical boundary does not become an issue in the frequency allocation process.

Conclusion

Region 27 Plan Amendment #1

Requiring Region 27 to utilize smaller service areas would require Region 27 eligibles to establish new communications site facilities and have a severe economic impact on Nevada's governments. Costs pertaining to power distribution, facility development, road access and development are major factors for this decision.

The RPC concluded that Region 27 should continue to be allowed to utilize large service areas when employing common systems. The original CET Sort Program could accommodate service areas of up to radius of 60 miles. The amended Allocation Plans included in Attachment 10 take into consideration both the original CET Sort Program as well as the empirical data collected by the Region Committee since the original Plan Acceptance.

Projected growth/population figures to the year 2000 indicated that Region 27 should continue using large service area coverage and meet service demand for existing eligibles, and provide future allocations for growth, without requiring the full NPSPAC allocation.

Actual growth in both southern Nevada, especially Clark County and northern Nevada in the Reno, Carson City, Lake Tahoe area has increased far beyond the projected rates of the original Plan. It is now necessary to maximize the use of the NPSPAC allocation and implement many more channels than originally anticipated.

The RPC agrees that systems implemented to serve single users, (provided that they cannot work on a common system) shall be required to minimize RF propagation outside an agencies primary area of service according to SORT guidelines. The RPC also concludes that a common system supporting multiple cities, counties and State agencies not be bounded by jurisdictional lines. Therefore, where common systems are implemented, channels allocated will be a function of a geographical area and not a particular eligible.

b. REPACKING THE NPSPAC FREQUENCY ALLOCATION PLAN

Now that the Region 27 Plan has been in use for more than 10 years it has been determined that the majority of agencies that will require new radio systems and therefore new frequencies has been virtually eliminated, the focus of this plan should be in assuring that incumbent licensees should have the capability of expanding their radio systems.

In order to accomplish this the Frequency Plan must be re-packed to minimize potential interference and maximize spectrum efficiency through frequency re-use and trunking technology. In order to accomplish this packing the following has taken place;

- All existing licensed frequencies have been entered into the Region Plan by both agency and location
- All agencies have provided the RPC with projected growth requirements and additional frequencies have been allocated based upon geographic need and interference potential.
- The RPC has set aside frequencies by geographic location and population growth projections.
- All frequency allocations have been compared to licensed frequencies in adjacent Regions to eliminate intra-Region interference issues

c. BY ASSIGNING FREQUENCIES SO THAT MAXIMUM FREQUENCY REUSE AND OFFSET CHANNEL USE MAY BE MADE

Element 9 part (b) also relates to part (a) in that the question arises, " Would a system design with minimum coverage areas provide greater frequency reuse than system design with large coverage areas.? "

Discussion

As commented on in the preceding section, small service areas are not in the best interest to Region 27. Initial analysis shows that utilization of small service areas in Region 27 results in an increase of frequencies required to obtain the needed coverage for Region 27 eligibles. This is determined through the circular coverage method used by the CET SORT Program.

Conclusion

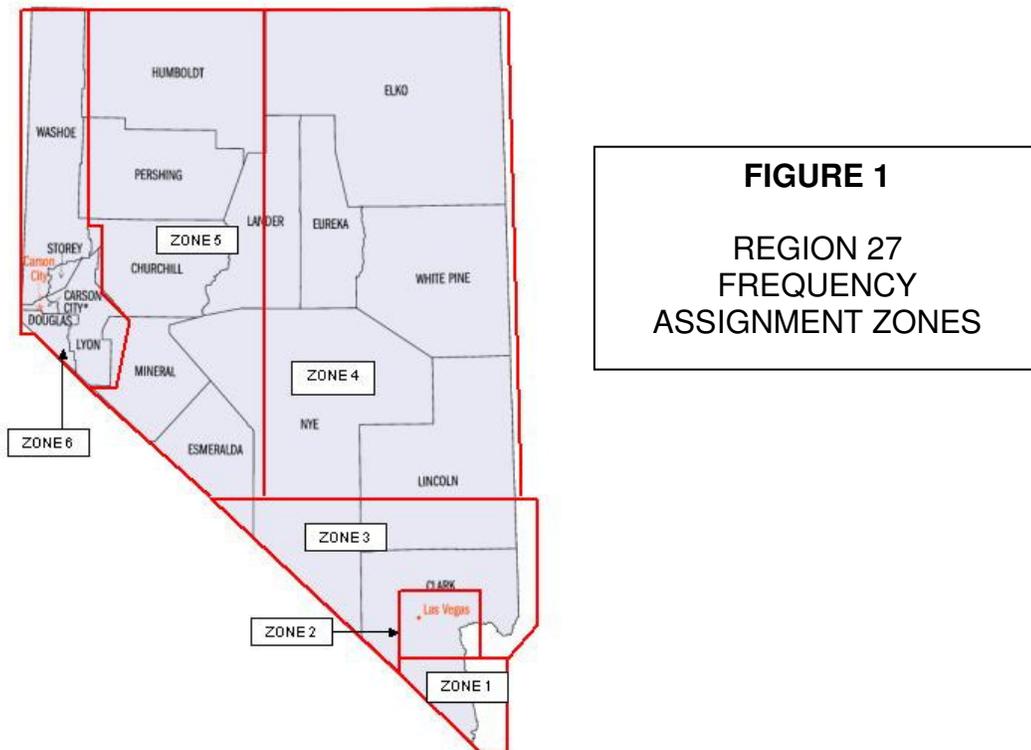
Given the limited spectral resource available for use by eligible entities, Region 27 recognizes the need to achieve maximum utilization in the assignment process. Once the service areas are defined in a Region, the CET SORT program will insure that a frequency is reused at the earliest opportunity with minimal degradation to co-channel or adjacent channel assignments. Additionally the local geography will serve as a barrier to propagation for low site systems.

Due to changes in both subscriber unit and transmitter combiner technology it is now possible to repack the available spectrum to allow for closer channel spacing. With better selectivity

in radios and with the common availability of transmitter combiners using channel spacing as close as 150 KHz, many more channels can be allocated within a given area.

With the build out of many of the radio frequencies in the NPSPAC spectrum over the past ten or more years it is no longer necessary to rely on the interference protections theorized by the original CET Sort Plan. With close coordination with adjacent regions and the availability of the FCC license database it is a simple matter to determine the location and interference potential of co-channel and adjacent channel users. This allows the use of empirical data when assigning frequencies to new users or for system expansion.

In order to maximize spectrum efficiency the State has been divided into six (6) zones as shown in **Figure 1**. Each zone will provide its own interference protection and maximum frequency reuse by allowing specific site assignments and reserving channels within the zones for projected future assignments.



d. BY USING TRUNKING

One of two stated objectives in Docket 87-112 requires the utilization of spectral efficient technologies. Trunking is mentioned as a spectral efficient technology which can meet the requirements of public safety.

Discussion

The RPC did review current 800 technologies for features and benefits to insure that in a common mode of operation, individual agencies needs and requirements were met or exceeded with 800 MHz technologies as compared to current technologies, current systems and current requirements.

A critical issue noted by the RPC is that equipment standards were never established for 800 MHz radios. Therefore the level of inter-operability (the major identified deficiency in Region 27 and major objective of Doc. 87-112) achieved between systems can vary from having total system access to being able only to talk in a simplex mode of operation. FCC decisions dealing with equipment standards stated that they are not necessary due to the interoperability channels established in DOC. 87-112.

Conclusion

Region 27 fully agrees that trunking is not only spectral efficient, but can provide features and benefits not presently available to most Nevada eligibles.

Interoperability between all levels of government and with the critical infrastructure industries is an increasing requirement of the Federal Government as well as State and Local emergency management organizations. Trunking is the most effective way for all of these entities to work together at times when cooperation is most required. Spectral efficiency is significantly enhanced by utilizing trunking technology and sharing of frequencies between these organizations.

Docket 87-112, paragraph 37 has set both the requirements and exceptions regarding trunking technologies. This plan shall follow those guidelines.

- e. **BY REQUIRING SMALL ENTITIES WITH MINIMAL REQUIREMENTS TO JOIN TOGETHER ON A SINGLE SYSTEM WHERE POSSIBLE.**

Discussion:

TECHNICAL ISSUES

The following issues interrelate and must be addressed:

a. Current 800 MHz Trunked and Conventional Technologies

The Region 27 Planning Committee was tasked with using trunking technologies and requiring small entities to join together on common systems. Therefore, the FAC did review current 800 technologies for features and benefits to insure that in a common mode of operation, individual agencies needs and requirements were met or exceeded with 800 MHz technologies as compared to current technologies, current systems and current requirements.

In order to more accurately project minimum spectrum requirements for common mode systems, current inventories showing total mobiles and portable radios in Nevada were collected and reviewed.

c. Economies of scale

Docket 87-112 does not address budgetary impact that a planning process of this type could cause. In addition, Region 27 realizes that the FCC's responsibility in this process is one of insuring spectral efficiency while meeting operational requirements. However, Region 27 is required to utilize common systems where possible. In review of current state and local government operational practices, it is observed that the multiple individual systems that are currently in place are spectrally inefficient. It is not uncommon to have multiple individual systems each supporting an average of 3 to 20 mobile/portable units. At the same time, the users of these systems complain of the lack of interoperability between these systems. Because Region 27 is tasked with requiring a common mode of operation to small eligibles, it should be noted that economies and minimal budget impact occur in common systems. In addition, features and benefits, such as interoperability, can more efficiently be offered in a common system as compared to an individual system. Therefore, it is in the interest of all users for the RPC to consider the issue of economies of common mode vs. individual mode of operation.

Conclusion

The Region 27 Committee has reviewed current service area requirements, average daily loading within a service area, and shared facilities currently in place. It has taken the number of agencies served, number of channels currently required and compared this with a common

system. If a common system is more spectrally efficient, has better interoperability and meets or exceeds an eligible requirements, then a combined system has been recommended.

In order to provide the required levels of performance for public safety entities it has been determined that, in the State of Nevada, it is of economic and design necessity to create system level partnerships with the State's primary utilities. These entities have a statewide infrastructure of sites and networks that will permit all public safety organizations to rapidly and economically implement radio systems that will serve their coverage area.

Review of 800 MHz trunked and conventional technologies show that these systems can support multiple users.

2.8 FREQUENCY REQUESTS AND ASSIGNMENTS

2.8.1 COORDINATION PROCESS

To ensure compliance with the Plan, any request for 800 MHz frequencies to be used by eligible entities will be submitted to the Region Planning Committee for review.

If approved by the RPC, the request will be returned to the applicant to be forwarded to the appropriate coordinator for frequency coordination in accordance with established procedures.

If not approved by the RPC, the request, with proper notations, will be returned to the applicant for revision and correction before being resubmitted to the Committee for further consideration and processing.

2.8.2 FREQUENCY ASSIGNMENT PROCESS

Frequency assignments will be made using the following procedure.

1. The RPC will verify the geographic coverage requirements of the applicant and assign the application to the appropriate zone within the State.

2. Frequencies for the applicant will be selected from the appropriate zone in the Allocation Chart of Attachment 10 based upon geographic location and interference protection of co-channel and adjacent channel licensees.

2.9 APPLICATION EVALUATION PROCEDURES

In order for the RPC to properly evaluate the request, all applications shall contain sufficient information to justify the frequencies requested and shall demonstrate compliance with the Plan. The information required should include the following:

A. Coordination and Licensing Application Forms

All applicants will be expected to fully and accurately complete the necessary forms. Each form shall be signed by an official of the requesting agency.

B. System Overview

A brief statement of the intended use of requested frequencies, a listing of the agency(ies) and/or departments that will utilize the system and how they will be integrated into existing emergency and non-emergency operations.

C. Existing Frequency Statement

A statement describing the disposition of existing frequencies will be required. It is expected that existing frequencies will be released for reassignment to other agencies. Any frequencies not being released as "give-ups" shall be fully justified as to why they are to be retained.

D. Service Area and Population

A map of the service area and an exhibit of the population served and projected growth trends.

E. Implementation Schedule

A timetable exhibit showing a schedule detailing the time period required to implement the proposed communication system, from funding through turn-on and final acceptance.

F. Funding Statement

A funding statement of the agency's commitment to implement the system. The funding statement, which will be a resolution or similar document from the applicant's governing body, will include the method by which the system will be funded; for example, by normal budget procedures, certificates of obligation, local bond funds, or other methods.

G. System Engineering Exhibit

All requests to the Regional Review Committee for frequencies must include specific technical data for the RRC to be able to determine proposed system operating parameters.

The system engineering exhibit must show:

1. Transmitter Output Power
2. Type of Cavities (duplexers and combiners) and associated losses
3. Type of Transmission Line and associated loss (including jumpers)
4. Antenna Model and Gain
5. Ground Elevation Above Mean Sea Level
6. Antenna Centerline AGL
7. Height Above Average Terrain of Antenna Centerline
8. Effective Radiated Power as Determined by Items 1 through 4.

H. Slow Growth

All systems in the 821-824/866-869 MHz. bands under this plan will be slow growth in accordance with Section 90.629 if the Commission's rules.

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

2.10 APPEALS PROCEDURE

If an applicant feels that his request was not given the proper consideration, that applicant may appeal the RPC's decision. The appeal process has three levels - (1) the Regional Plan Committee, (2) the Associated Public-Safety Communications Officers, Inc. (APCO) and, (3) the FCC.

The appeal must be in writing and addressed to the Chairman of the RPC. Letters of appeal should explain the reasons why the applicant feels that his request was not given fair consideration and why the RPC should reconsider the request. The applicant should also include any additional supporting documentation that will assist the RRC in reviewing the appeal. Within thirty (30) calendar days after receipt of the appeal, the RPC will perform its review of the appeal and supporting documentation and then notify the applicant in writing of its decision.

If the RPC rejects the appeal, the applicant may request an APCO review. If the applicant requests APCO assistance, the RRC Chairman shall forward copies of the appeal and supporting documents to the National APCO office and request its assistance in mediation.

In the event that an appeal reaches the FCC, its decision will be final and binding upon all parties.

SUMMARY

The Region 27 RPC has formed the following base for Reg. 27 800 MHz allocations.

- * Existing established Hi-Level sites shall be used to determine the basic packing methodology.
- * Service areas will be estimated to have a radius of 25 - 60 miles depending upon jurisdiction and site location.

- * When a common mode of operation provides maximum benefits to P.S., than frequency allocation is assigned to a geographical area and not to specific users.
- * 4 channels (1 control and 3 voice) will be the minimum allocation for a common mode system.
- * Frequency reuse/packing will be accomplished by the Frequency Allocation Table of this Plan.

2.11 CHANNEL ALLOCATIONS

A. Allocations

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 Attachment 10, or as it may be modified in the future.

SECTION 3 MUTUAL AID CHANNELS AND USAGE

3.1 NATIONAL MUTUAL AID CHANNELS

A major consideration in the National Plan is to establish the capability to provide a means of communicating between public safety agencies at all levels of government. It is evident, due to the present use within Nevada of various, non-compatible portions of the spectrum, that total interoperability cannot be accomplished in the short term.

There is an interagency communications plan in existence for the State of Nevada. A listing of the present frequencies contained in this plan is shown in Attachment 8. As new systems are implemented or a migration from present systems to the 800 MHz channels occur, it is important that this interagency communications capability be preserved. This Plan addresses this issue.

In accordance with the national band plan for 821-824/866-869 kHz, interoperability among local, state, and federal agencies during both routine and emergency operations may take place on the five (5) common National channels and/or on additional common Regional channels which may be identified in the Regional Plan.

Additionally, through the use of S-160 or equivalent agreements, a licensee may permit federal use of a non-federal communications system. Such use, other than the five common channels, is to be in full compliance with the FCC's requirements for federal government use on state and local government frequencies (Title 47 CFR, Sec. 2.103).

Normally, the 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 tactical channels may be assigned by the controlling agency at the time of the incident. Users of these channels include local, state, and federal disaster management agencies; police, fire, and providers of basic and advanced life support services. Other eligibles, such as special districts, volunteer emergency corps, Red Cross, Radio Amateur Civil Emergency Service (RACES), Amateur Radio Emergency Service (ARES), Salvation Army, etc., under the National Plan may also participate on a secondary basis in support of the preservation of life and property during an emergency. These eligibles may be called upon by the controlling agency

when specifically enrolled in a documented emergency plan of a recognized emergency management agency.

The use of automatic or operator-assisted connection of these common channels to the public switched telephone network is *prohibited*.

3.2 STATE MUTUAL AID CHANNELS

The additional state mutual aid channels, which are included in this Plan, are intended to serve specific needs of the various services. Their use will be incorporated into and governed by the Nevada Division of Emergency Management's existing Interagency Communication Plan developed by a user committee representing public safety/special emergency services in State of Nevada.

The state mutual aid channels shall be subject to a priority usage as follows:

- Priority 1: Disaster and extreme emergency operations, for mutual aid and interagency 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 4: Drills, tests, and exercises of a emergency management of disaster nature.
- Priority 5: Single agency secondary communications.

3.3 NATIONAL AND STATE MUTUAL AID CHANNEL LISTING

- 821/866.0125 MHz - Nat'l 1 - High Level Calling
- 821/866.5125 MHz - Nat'l 2 - Low Level Tactical
- 822/867.0125 MHz - Nat'l 3 - Low Level Tactical
- 822/867.5125 MHz - Nat'l 4 - Low Level Tactical

- 823/868.0125 MHz - Nat'l 5 - Low Level Tactical
- 823/868.5125 MHz - State 12 - Statewide Low Level Tactical
- 823/868.7375 MHz - State 14 - Statewide Law
- 823/868.8875 MHz - State 15 - Statewide Emergency Management
- 823/868.9875 MHz - State 16 - Statewide Fire/EMS
- 822/867.3000 MHz - State Simplex 1
- 822/867.5625 MHz - State Simplex 2 and NHP Aircraft
- 822/867.5675 MHz - State Simplex 3

800 MHz channels 12 through 16 are numerically sequenced in accordance with existing state mutual aid channels 1 through 11 already assigned for use on other bands (See Attachment 8).

3.4 LICENSING AND INTENDED USE

FCC licenses for all mutual aid channels will be coordinated by and licensed to the State of Nevada, Department of Emergency Services.

These channels are reserved for use by those agencies in need of conducting interagency communications. Incidents requiring multi-agency participation will be coordinated over these channels by the agency controlling the incident. Individual tactical channels may be designated for use by various services or disciplines 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 a declared emergency.

3.5 NATIONAL CALLING CHANNEL

The calling channel shall be used to contact other users in the Region for the purpose of requesting incident related information and/or assistance. This channel shall not be used as an ongoing working channel. Once contact is made, an agreed upon National or State tactical channel will be recommended for continued communications.

3.6 CALLING CHANNEL MONITORING AGENCIES

To ensure maximum compliance with the National Plan for use of the National Calling Channel, the RPC will encourage major 24-hour state and local agencies to develop and implement a comprehensive system of monitoring stations.

In each county (or multiple counties if a sub-region is desired), local and state agencies shall develop an implementation plan for that area. The plan shall include the location(s) and operating parameters of stations within the area. It shall also include the name(s) of the agency or agencies within the area designated as a "Monitoring Agency".

The network shall be designed so that the radio coverage of the Monitoring Agency(cies) will cover a major portion of the county or sub-region. Stations in the system may consist of control (FX1), mobile relay (FB2), or base stations (FB). Base stations operated at remote sites must be capable of reverting to the mobile relay mode upon failure the control circuit.

In addition to the Monitoring Agency, any other agency shall be permitted to operate a control station for purposes of monitoring the channel and rendering assistance as required.

3.7 RADIO CODES

Plain Language will be used on all common channels at all times. The use of radio codes, unfamiliar terms, or phrases will be minimized, unless deemed necessary for security purposes.

3.8 CODED SQUELCH

All equipment licensed to operate on the 800 MHz mutual aid channels listed in this plan shall be equipped with the National Common Tone Squelch of 156.7 HZ.

Mobile relays operating on these common channels may be equipped with additional tone or digital squelch for the purpose of selecting individual mobile relay stations, provided the National Common Tone is used on the output frequency. Such use shall be planned and coordinated with the RRC.

3.9 VOICE PRIVACY, PAGING, ALERTING, SIGNALLING

Other than Automatic Transmitter Identification System (ATIS), any paging, alerting, or signaling on these common channels is *prohibited*. In unique circumstances, encryption or voice privacy may be allowed on State tactical channels for special operations, at the discretion of the RRC.

3.10 UNIT IDENTIFICATION

Units operating on these common channels shall include their agency name and unit number as in the following example.

"Metro Police Department, this is Nye County Sheriff's Unit 123"

3.11 OPERATION IN AIRCRAFT

Use of radio equipment in aircraft on the mutual aid channels is *permitted* provided the transmitted power does not exceed 10 watts ERP and the operation conforms to all applicable FCC rules and regulations.

3.12 CROSS BAND REPEATING OR LINKING

Except for Priority 5 operation, interfacing these common channels to other public safety/special emergency systems operating in other portions of the radio spectrum is permitted in conformance with applicable FCC Rules and Regulations.

3.13 GRANDFATHERED EQUIPMENT

Radio equipment currently type accepted and in use on public safety systems in the 806-821/851-866 MHz band may operate on these common channels, provided the deviation is reduced to +/- 4.0 kHz.

3.14 FEDERAL INTEROPERABILITY

In accordance with the National Plan, interoperability among federal, state, and local agencies shall occur on the five National channels. If a need is demonstrated among federal agencies to operate on other common channels, such as those in the Nevada Interagency Communications

Plan, or channels of a single entity, such operation may occur through the use of an agreement which will satisfy the requirements of the local agency and the FCC.

SECTION 4
REGION 27 PLAN MODIFICATION

Section IV E. states that modification of the regional plans may be necessary after approval.

The following procedure has been established by Region 27 when a request is received by the RRC that cannot be addressed by the existing Region 27 plan.

1. The RPC will determine the impact to the Region 27 eligibles.
2. The RPC will develop corrective recommendations.
3. The RPC will notify Region 27 eligibles of recommended changes and request written comments where disagreements may occur.
4. Comments will be compiled and analyzed by the RRC.
5. Based on analysis of comments, a recommendation and justification for plan modification will be forwarded to the FCC for comment and required action.
6. Upon approval from FCC, the Region 27 Plan will be modified and Region 27 eligibles will be advised of changes.

SECTION 5 MISCELLANEOUS ISSUES

Docket 87-112 has required that the Region 27 Plan address the following miscellaneous issues:

1. Vacated Frequencies
2. Unused 800 MHz Frequencies
3. Use of Cellular and Mobile Satellite Services
4. Federal Agency Concerns

1. Vacated Frequencies

It is anticipated that, in all but the most unusual cases, frequencies presently utilized by a licensee will be released for reassignment to other agencies within the FCC designated radio services, e.g., fire, local government, forestry, etc. The applicant shall be required to furnish the RRC a list of frequencies to be released as "give-backs".

The RPC shall notify the Nevada APCO Frequency Advisor, who will in turn notify frequency coordinators in other radio services, of frequencies recommended for reassignment and/or release.

All giveback frequencies are to be considered for reassignment. An agency will not be able to "farm down" frequencies to other services within their political structure unless it is justified to the Regional Review Committee. Agencies failing to give back channels, as agreed, will be subject to forfeiture of their 821-824/866-869 MHz channels.

2. Unused 800 MHz Frequencies

This issue has been discussed by Region 27 eligibles. The Region 27 Plan has considered and allocated spectrum for all eligibles in the State of Nevada. Given the population growth of the State, there will be few unused 800 MHz frequencies in the

spectrum. Docket 87-112 has stated that the Federal Communications Commission through additional regulatory proceedings will address the usage of this spectrum.

3. Use of Cellular and Mobile Satellite Services

Region 27 agrees with comments made by the FCC regarding Cellular and Mobile Satellite Services.

The RRC will encourage the usage of private carriers/systems to augment connectivity into the public switched network.

4. Federal Agency Concerns

The Region 27 Plan has stated that interoperability is the greatest deficiency among Region 27 eligibles. Because of the large involvement and requirement to coordinate with Federal agencies such as USFS, BLM, and FBI daily, the current and future direction of the Federal Interdepartmental Radio Advisory Committee as compared to public safety land mobile trends, the interoperability problem will increase.

While it is true that the mutual aid channels provide a method of interoperability, it appears that the difference between public safety and Federal spectrum allocations, and the technologies that will be used in these spectrums will require multiple radios to be purchased between those agencies who require inter/intra communications. Therefore, provided Federal Regulations do not preclude usage of Public Safety systems by Federal Agencies, Federal agencies will be encouraged to utilize Region 27 systems where possible.

ATTACHMENTS

NOTE

Only new attachments related to Amendment One of the Region 27 Plan are included herein.

All other Attachments of the original Region Plan are referred to for reference only.

ATTACHMENT 9

LETTERS OF CONCURRENCE FROM ADJACENT REGIONS

ATTACHMENT 10

FCC WAIVER

Federal Communications Commission

1270 Fairfield Road
Gettysburg, PA 17325-7245

JUL 10 1995

In Reply Refer To:
7110-227

Karen Kavanau, Director
State of Nevada
Department of Information Services
505 E. King St.
Room 403
Carson City, NV 89710

This will respond to the State of Nevada's request for waiver to allow it to implement a statewide 800 MHz Public Safety/Special Emergency Radio Service system, and share the system with Federal, State and Local Government agencies and public utilities which are not normally eligible to license public safety spectrum¹. The specific entities initially would include the United States Department of Energy, Nevada Bell, and the Sierra Pacific Power Company.

The State's pleading contains six key arguments which demonstrates that its proposal is in the public interest and consistent with the requirements specified in Rule 90.151.

1. Joint use of a communication system can significantly reduce or contain cost factors that affect the tax payer and utility rate payer.
2. During disasters and emergencies there is a need for Federal, State, and Local Governmental agencies to intercommunicate as well as the need for interoperability with and between public utilities.
3. Joint use of such a system is spectrum efficient.
4. Use of the 800 MHz system will satisfy both the wireless voice and data needs of the participating entities.
5. Both government agencies and public utilities must rely more heavily on mobile communications networks as budgets are reduced.
6. The system will remain open to other agencies which have need of the coverage and interoperability provided by the system.

¹ Rule 90.621(e) permits Business and Industrial/Land Transportation users to intercategory share 800 MHz public safety spectrum when no spectrum is available in that users pool, however such users may not share a public safety system. Further, the Wireless Telecommunications Bureau recently imposed a freeze on intercategory sharing (See ORDER DA 95-741 released April 5, 1995).

The State provides strong arguments in favor its request. The Commission has received nevertheless, three objections to the proposal. Objections were filed by the Henderson Nevada Police Department², APCO International, Inc./Nevada Chapter³, and the Region 6, Review and Revision Committee⁴. The objections concern the use of frequencies available under Rule 90.617(a)(1)⁵ for the system. Those objecting voice strong concern about the use of National Plan channels for the proposed shared use system. The staff, in informally discussing the waiver with the State, advised that any use of National Plan channels for the system would require amendment of the Regional Plan and any necessary coordination with adjacent Regions. We find that requiring approval of the Regional Planning Committee prior to using National Plan channels adequately addresses the concerns raised in the three objections.

The reasons set forth by the State of Nevada justify a waiver to allow it to share its system with the agencies specified. The State and any agency that participates in the network may not in any way use the spectrum for the commercial provision of communications service. All use of the system is restricted to official activities of the State and the participants. The State will maintain the authorizations necessary for implementation of the system and as such will be the entity responsible for compliance with all rules and regulations governing licensing, construction, and operation of the system. All stations must be constructed within the guidelines prescribed by the Rules or in accordance with the implementation schedule approved by the Commission if extended implementation is authorized. This action covers stations presently licensed and all future expansions of the network provided that NPSPAC frequencies cannot be included until the Regional Plan is amended to permit such operation. Accordingly the State of Nevada's request is hereby granted subject to the conditions outlined above.

Sincerely,



Michael J. Regiec
Deputy Chief, Land Mobile Branch

cc: Rich Sheldrew
James Goff
Sandra Waide
Art McDole

² Letter from Chief of Police James E. Goff, Henderson Police Department to Riley Hollingsworth, FCC.

³ Letter from Sandra E. Waide, President APCO International Inc./Nevada Chapter to Betty Woolford, FCC

⁴ Letter from Art McDole, Chairman Region 6, Review and Revision Committee to Riley Hollingsworth, FCC

⁵ These frequencies are referred to as National Public Safety Plan Channels (NPSPAC) and are available consistent with a Regional Plan which is approved by the Commission.

ATTACHMENT 11

FREQUENCY ALLOCATION TABLES

		ZONE 1										ZONE 2																		
SITE NAME		Oatman	Bullhead City	Christmas Tree	Christmas Tree	Spirit Mtn	Searchlight	Big Horn	Whiskey Pete	Opal	Low Potosi	Black Mtn	Arden Peak	Sloan	High Potosi	Red Mtn	SNWA	McCarran	Metrocom	Clark	Mandalay	Rio	UNLV	Venetian	Sun Coast	El Cortez	400 E. Stewart	Sunrise	Brooks Ave	Angel Pk
COORDINATES		35-02-08	35-10-53	Metro 35-14-56	35-15-00	35-15-17	35-28-16	35-36-53.3	35-36-42	35-42-03	35-53-32.9	35-56-44.9	35-56-44.9	35-57-05	35-57-24.5	35-59-44	36-4-11.9	36-05-00	36-05-07	36-05-12.2	36-05-49	36-06-57.9		36-07-21.9	36-10-10.1	36-10-10.1	36-10-19.8	36-10-47	36-12-53.4	36-19-07.9
		Lon	114-31-11.8	114-44-34	114-44-39.6	114-44-47	114-55-09	115-21-20.3	115-23-28	114-53-27	115-29-42	115-02-34	115-2-34.0	115-11-31	115-29-48.4	114-51-51	114-48-47	115-08-30	115-12-10.7	115-02-58.2	115-10-45.8	115-11-12		115-10-09	115-17-34	115-08-15.6	115-08-22	114-59-53.9	115-09-47.9	115-34-31.9

FREQUENCY	FCC ID	Oatman	Bullhead City	Christmas Tree	Christmas Tree	Spirit Mtn	Searchlight	Big Horn	Whiskey Pete	Opal	Low Potosi	Black Mtn	Arden Peak	Sloan	High Potosi	Red Mtn	SNWA	McCarran	Metrocom	Clark	Mandalay	Rio	UNLV	Venetian	Sun Coast	El Cortez	400 E. Stewart	Sunrise	Brooks Ave	Angel Pk
868.4125	784																													
868.4250	785																													
868.4375	786																													
868.4500	787																													
868.4625	788																													
868.4750	789																													
868.4875	790																													
868.5000	791																													
868.5125	792																													
868.5250	793																													
868.5375	794																													
868.5500	795																													
868.5625	796																													
868.5750	797																													
868.5875	798																													
868.6000	799																													
868.6125	800																													
868.6250	801																													
868.6375	802																													
868.6500	803																													
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868.6750	805																													
868.6875	806																													
868.7000	807																													
868.7125	808																													
868.7250	809																													
868.7375	810																													
868.7500	811																													
868.7625	812																													
868.7750	813																													
868.7875	814																													
868.8000	815																													
868.8125	816																													
868.8250	817																													
868.8375	818																													
868.8500	819																													
868.8625	820																													
868.8750	821																													
868.8875	822																													
868.9000	823																													
868.9125	824																													
868.9250	825																													
868.9375	826																													
868.9500	827																													
868.9625	828																													
868.9750	829																													
868.9875	830																													

ALLOCATION METHOD
 Frequency is selected based upon geographic location within each zone
 Frequency may not be re-used in an adjacent zone
 Previously licensed or reserved frequencies are indicated by color-coded boxes at each site
 R frequencies have been selected based upon projected growth within the zone

- SNACC Licensed
- NDOT Allocated/Licensed
- RTC Licensed
- NLV Licensed
- Mutual Aid Channels
- Statewide Simplex
- SNACC Proposed
- NDOT Proposed
- NHP Aircraft
- Guard channels
- Mutual Aid Statewide
- Metro Proposed
- Reserved for local geographic use
- Utility Mutual Aid and point to point

