PUBLIC SAFETY PSWN PROGRAM WIRELESS NETWORK

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Public Safety Wireless Network

Saving Lives and Property Through Improved Interoperability

96-861

September 14, 2001

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Magalie Roman Salas
Secretary
Federal Communications Commission
TWA325
445 Twelfth Street, SW
Washington, DC 20554

Re: Petition for Rule Making by the Public Safety Wirless Network to Promote Allocation of Spectrum for Public Safety Agencies and Other Matters to Address Communications Needs Through 2010

Dear Ms. Salas:

On behalf of the Public Safety Wireless Network (PSWN) Program and pursuant to Section 1.49 and 1.51 of the Commission's rules, 47 C.F.R. §§ 1.49, 1.51 (2000), enclosed herewith for filing are an original and six (6) copies of the PSWN Program's Petition as styled above.

Kindly date stamp the additional, marked copy of this cover letter and return it to the individual hand carrying the filing.

Should you require any additional information, please contact the undersigned.

Respectfully submitted,

Brigadier General Paul H. Wieck II
Iowa Army National Guard
Chair, PSWN Executive Committee
Spectrum Working Group

Steven Proctor
Executive Director,
Utah Communications Agency Network
Executive Vice–Chair,
PSWN Executive Committee

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Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of	)
	)
Petition for Rule Making	)
By the Public Safety Wireless Network	)
To Promote the Allocation of Spectrum	)
For Public Safety Agencies and Other Matters	)
To Address Communications Needs Through 2010	)

PETITION FOR RULEMAKING

To: The Commission

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EXECUTIVE SUMMARY

This Petition for Rulemaking (Petition) is based on the findings and conclusions provided to the Federal Communications Commission (Commission) in the Public Safety Wireless Advisory Committee (PSWAC) Final Report of September 1996 (PSWAC Report). It can be characterized as a progress report, revisiting the issues identified at the request of the Congress. The Petition examines the recommendations made by the Steering Committee at the time the PSWAC Report was submitted and recounts the actions taken by the Commission to resolve the issues that were identified. The Petition then compares the situation at the time of the report with the present status of public safety communications, noting the progress made since the report was published. Finally, the Public Safety Wireless Network (PSWN) Program offers further suggestions to achieve the goals set out in the initial PSWAC Report, as well as addressing additional issues and proposing solutions to meet the challenges that have confronted the public safety community in the interim.

The objective of the Petition, thereby, is to raise or again bring these issues to the attention of the Commission and the public so that action can by taken on them. This Petition first looks at the history of the PSWAC, its mandate and development of the recommendations summarized in its final report. The Petition briefly describes the origins of the PSWN Program and its interest in public safety communications issues. Then, the Petition reviews the WT 96–86 Docket and the actions taken since it was initiated in addressing the needs and requirements of the public safety community as demonstrated in the PSWAC Report. It also evaluates the status of the migration from analog television to digital television (DTV), which will provide

public safety agencies with some of the spectrum identified to meet the foreseeable communications demands.

In addition, the Petition embraces issues taken up by the Commission on other dockets and attempts to refocus on some issues that have not been resolved and require further consideration. It emphasizes the need for the additional 71 megahertz (MHz) of spectrum for public safety services as recommended by the PSWAC to address the remaining shortage of spectrum for high-speed data, video, and other emerging applications. The Petition requests identification and allocation of critical interoperability spectrum for public safety operations in all frequency bands. It also describes other strategies for improving spectral efficiency, including block allocations of public safety spectrum, and planning and management recommendations.

In the Petition, the PSWN Program offers a review of standards, including the Project 25 standard and migration plan that the Commission has endorsed for the 700 MHz band. The PSWN Program also discusses the establishment of various other standards by the Commission, including receiver standards, and development of a strict interference standard to ensure public safety communications and personnel do not suffer because of commercial applications and other foreseeable sources of interference.

Finally, the Petition undertakes an objective inquiry regarding the regulation and use of spectrum as it applies to public safety communications and services. The PSWN Program evaluates the advisory and management processes, and the contributions provided by state and

regional authorities in planning and direction of public safety operations. The Petition also looks at procedures that affect the public safety community and a priority access plan to help coordinate activity in emergency situations.

The PSWN Program advances this Petition to address the concerns of the public safety community and reassesses the need for protection of vital communication functions. The tragic terrorist attacks on our Nation have just underscored the criticality of these functions. The PSWN Program offers the recommendations incorporated within this document in the spirit of cooperation and assistance between the public safety community and the Commission, and anticipates that it will engender further investigation and discussion for a productive exchange of ideas. The PSWN Program looks forward to further discourse and the development of concrete plans and strategy to accomplish objectives that will benefit the public safety agencies and the people they serve, and advance the interest of public safety and better protection for all.

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I. INTRODUCTION

1. The Public Safety Wireless Network (PSWN) Program[1] hereby respectfully petitions the Federal Communications Commission (Commission) to initiate a new docket pursuant to Sec. 1.401 of Title 47, Code of Federal Regulations, et seq., addressing the remaining issues that relate to recommendations made in the Public Safety Wireless Advisory Committee (PSWAC) Final Report (PSWAC Report). The PSWN Program is concerned that, despite significant progress in a number of areas addressed in that report, important issues remain to be addressed and acted upon by the Commission. The consequences of not doing so have the potential to seriously hamper public safety communications in the first decades of the 21st century.

[1] The PSWN Program is a federally funded initiative operating on behalf of all local, state, and federal public safety agencies. The Department of Justice and the Department of the Treasury are jointly leading the PSWN Program's efforts to plan and foster interoperability among public safety wireless networks. The PSWN Program is a 10–year initiative that is an effort to ensure that no man, woman, or child loses his or her life because public safety officials cannot talk to one another.

A. Background

2. In 1993, the Congress directed the FCC to perform a study of state and local public safety spectrum requirements through the year 2010. The report submitted by the Commission on February 9, 1995, did not contain any specific conclusions or recommendations, but did advise that additional investigation was appropriate. To address U.S. House Appropriations Subcommittee concerns regarding whether the Commission's Report and Plan was an adequate response to the Omnibus Budget Reconciliation Act of 1993 (OBRA 93), the FCC and National Telecommunications and Information Administration (NTIA) leadership established the PSWAC. The PSWAC was conceived as a joint advisory committee to investigate public safety spectrum issues and to provide recommendations for fulfilling public safety wireless telecommunications needs through the year 2010.[2]

3. The PSWAC was chartered under the Federal Advisory Committee Act on June 25, 1995. The PSWAC members were communications professionals from the public and private sector who served on five distinct subcommittees, focusing on the following policy areas: Operational Requirements, Interoperability, Technology, Spectrum Requirements, and Transition. The PSWAC members were asked to examine the status of wireless communication needs of local, state, and federal public safety organizations. The committee's recommendations were to take into account the relevant concerns of public service providers, equipment manufacturers, commercial service providers, and the general public in an effort to enhance public safety capabilities.

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[2] See *Public Safety Wireless Advisory Committee (PSWAC) Final Report, September 11, 1996* at para. 1.9.

4. On September 11, 1996, the PSWAC submitted a comprehensive report detailing its recommendations on behalf of the public safety community. The PSWAC Report represented the efforts of the public safety community "to define and document its critical need for communications resources and the spectrum which will support them—now and through the year 2010."[3] The PSWAC Report summarized issues related to the development of standards and procedures that would guide the Commission in future Rulemakings to fulfill the needs of law enforcement, fire, rescue, medical, emergency management, and other functions dedicated to the protection of life and property. The primary goal of the PSWAC Report, in keeping with the intentions of the Congress, was to ensure that public safety providers would be able to implement the latest and most effective communications technology in support of their mission-critical functions.

B. Statement of Interest

5. Shortly after the submission of the PSWAC Report, the PSWN Program was established. Chartered as a joint initiative of the Department of Justice and the Department of the Treasury, the PSWN Program was envisioned as a collaboration of entities from the local, state, and federal public safety community, as well as private sector interests including manufacturers and vendors of wireless equipment. This diverse membership has successfully worked together to heighten national awareness of public safety issues and address mutual concerns with the appropriate authorities. Since then, the PSWN Program has striven to advocate the needs of the public safety community and to advise both the public and decision makers at all levels of government in its efforts to promote public safety interoperability and supplement the collective and individual capabilities of local, state, tribal, and federal public

[3] *Id.*, at page 1.

safety entities. The tragic events of September 11, 2001 have underscored the need for public safety response and coordination on a massive, unprecedented scale.

6. Many entities in both the public and private sectors urgently require new spectrum to support a variety of current and emerging wireless applications. The PSWN Program acknowledges the challenges the Commission faces and recognizes the conscientious consideration demonstrated in responding to these often-conflicting requirements and priorities. Even in petitioning the Commission for a Rulemaking, the PSWN Program is mindful of the careful balance, indicated in the PSWAC Report, between establishing rules and procedures and allowing flexibility so that public safety agencies have "substantial discretion to determine the most efficient and effective means to transmit information."[4] In the WT 96–86 docket, the Commission sought to address the many issues surrounding this complicated conversion and transition. However, regardless of the broad cross-section of public safety members who have provided comment and support, important milestones have not yet been met and the television broadcasters are in danger of not meeting the deadline for completing migration to digital television (DTV).

7. As a component of its ongoing mission, the PSWN Program considers it essential to remind the Commission of the necessity of addressing all issues covered in the PSWAC Report, noting that each one had been identified as critical to the success of public safety communications. The PSWN Program is grateful for the significant progress that the Commission, working closely with the public safety community, has made in the 5 years

[4] See *PSWAC Final Report,* at para 1.17.

since the release of the PSWAC Report. However, many of the concerns raised in the PSWAC Report have yet to be addressed to the extent necessary to meet the requirements for public safety communications.

8. Heightened use of finite spectrum resources by radio and television broadcasters, commercial cellular and personal communications service providers, private land mobile radio and commercial mobile radio system networks, wireless local area networks (WLANS), and many other wireless applications has created issues of interference and compatibility, particularly in high-density urban areas. The lack of dedicated spectrum and an absence, in many instances, of clear standards to promote cooperation among manufacturers makes interoperability among various local, state, and federal agencies' systems problematic in many situations. These include both dedicated public safety networks, as well as the commercial wireless networks used by emergency medical, fire, and rescue personnel on a subscriber basis. These systems are often widely scattered on many different frequency bands. These factors continue to make communication between these disparate groups difficult, and at times impossible, in mission-critical emergency operations, as well as daily use scenarios. New and emerging generation communications technologies remain expensive and difficult to implement, may not have clearly articulated standards, may not be compatible with legacy systems, and present their own intricacies in supplementing or supplanting deployed communications systems.

9. These issues highlight priorities that the Commission has not completely reconciled. This Petition reviews some of the Commission's rulings and orders that have

affected the ability of the public safety community to provide timely and effective services to meet present needs and those in the foreseeable future.

10. While encouraged by the allocation of 24 MHz of spectrum in the 700 MHz band, and other rulings and decisions where the Commission has been receptive to the need of the public safety community, the PSWN Program respectfully reminds the Commission that some recommendations of the PSWAC Report have not been satisfied. Thus far, the Commission has—

- Provided additional spectrum in the 700 MHz band
- Identified some interoperability spectrum below 512 MHz
- Designated the Project 25 Standard for 700 MHz interoperability channels
- Selected encryption standards for 700 MHz interoperability channels
- Authorized trunking on public safety channels
- Authorized co-equal access.

These actions have enhanced the ability of local, state, and federal public safety personnel to perform their responsibilities more safely and efficiently.

11. The public safety community still has an urgent need for consideration and action by the Commission regarding the following initiatives:

- Additional spectrum for implementation of data and video applications
- Additional interoperability channels below 512 MHz
- Receiver standards
- Interference standards

- Priority access
- Mandatory use of a national interoperability pre-coordination database.

Accomplishment of these initiatives will allow the public safety community to meet the anticipated communications needs envisioned by the PSWAC Report in 1996. Furthermore, many of these initiatives address problems that have come to light in the interim, such as interference standards, which reflect the effects of emerging technology and the real-life threat to public safety communications when new applications crowd the market and compete for limited and valuable spectrum. Having worked with public safety providers at all levels of government to address these issues, the PSWN Program is pleased to offer this Petition to reiterate public safety priorities and recommend strategies for the Commission to enable these entities to achieve the goals and carry out the responsibilities to which they are dedicated.

II. THE URGENT NEED FOR MORE SPECTRUM

A. Status of the 700 MHz Band/Digital Television Transition

12. The Balanced Budget Act of 1997 (BBA 97) directed the Commission to set aside 24 MHz in the 700 MHz band for public safety services,[5] between 746 MHz and 806 MHz. This spectrum was reallocated by the Commission in January 1998, setting aside the 764–776 MHz and 794–806 MHz bands for public safety use, following migration of former ultra high frequency (UHF) television channels 63, 64, 68, and 69 from analog to digital service. Out of this initial allocation, 2.6 MHz from the 700 MHz band has been designated for interoperability purposes. An additional 2.4 MHz of the band is also designated for state licensing.

[5] See *H.R. 2015 BBA 97(BBA 97), Sec. 3301 (a) (47 CFR 337(a)(1))– Allocation and Assignment of New Public Safety and Commercial Licenses.*

13. Although designated for public safety services, the 700 MHz band may not be available for several years due to the delay in transitioning to new DTV channels. Several important limitations were put on the use of this band to prevent the public from being denied services because of this transition. Public Law 105–33, Section 3004, established that in markets without sufficient DTV service, analog television could continue to operate after December 31, 2006:

(i) If one of the four major broadcasting networks (i.e.; ABC, CBS, FOX, or NBC) had not constructed a DTV station;

(ii) If digital to analog converters were not available; or

(iii) If less than 85 percent of all households did not have at least one television capable of receiving digital service (i.e., DTV set, set–top box, cable service).[6]

14. Thus far, the transition by broadcasters from analog to digital services is not occurring as quickly as anticipated. The cost of DTV equipment remains substantially higher than analog TV sets, and sales of DTV equipment to consumers have been very slow. Penetration quotas for DTV service in major and secondary markets still have not been met. There are no incentives for broadcasters to achieve early compliance. Hence, the December 2006 deadline remains in jeopardy. The public safety community cannot realize any advantage from this allocated spectrum unless and until these channels have been cleared. It is essential that the Commission facilitate access to the 746–806 MHz band to permit public safety users to use this band as soon as possible.

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[6] See PSWN Program Spectrum Issues and Analysis Report, *Public Safety Radio Frequency Spectrum, Digital TV Transition Status, February 2001,* at page 5.

15. For that reason, any efforts by the Commission to encourage and reward incumbents in that spectrum band to migrate before December 31, 2006, would significantly benefit the public safety community. As the PSWN Program has observed, a number of compelling proposals have been offered by various groups regarding potential schemes whereby incumbent commercial broadcasters would vacate the 700 MHz band earlier than the statutory mandate.[7] Without advocating the merits of any particular plan, the PSWN Program notes that such band clearance initiatives would improve the commercial viability of the band and would have the secondary benefit of allowing public safety to begin using its spectrum sooner than the 2006 deadline. Such additional time could be spent testing equipment and processes in advance of deployment so that technical and practical considerations could be resolved without potentially endangering users in the field. Many steps could be taken to motivate completion of this process by the conclusion of 2006. First, the Commission could promote commercially sponsored voluntary band clearing agreements.[8] Secondly, the Commission could issue a mandate to require all new televisions sold in the United States to be digitally capable. Finally, the Congress could set the December 31, 2006, as a firm date for the end of analog transmissions on channels 60–69.[9] Any of these actions would not only free up the spectrum for public safety use, but for commercial use as well.

16. The current allocations in the 700 MHz band do not provide sufficient bandwidth to support other necessary requirements for public safety services such as broadband data and

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[7] See *PSWN Program Ex Parte Letter, WT 99–168*, June 2, 2000, at page 2.

[8] See *3rd Report and Order (R&O), WT 99–168,* at paras. 54–56.

[9] See *Letter of Former FCC Commissioner Kennard to Honorable Ernest Hollings,* January 19, 2001, at pages 2–3.

video.[10] These and other non-voice applications, using current and emerging technology, require a combination of wider channels and higher throughput.

B. Identification and Allocation of Additional Spectrum

17. While the 24 MHz of spectrum allocation under BBA 97 is acknowledged as a positive step within the public safety community, it has only addressed a fraction of the spectrum needs identified by the PSWAC Report, which recommended that the Commission provide a total of 97.5 MHz of additional spectrum for public safety services to meet the current and foreseeable requirements for wireless communications through the year 2010. This means that a total of 73.5 MHz of spectrum is still needed. Approximately 71 MHz is still required to meet the need for emerging high-speed data and video applications, while the remaining 2.5 MHz is required for interoperability. The PSWN Program is confident that the Commission will undoubtedly continue its active pursuit relative to the *additional* 73.5 MHz required for public safety use as outlined within the PSWAC Report.

18. The PSWN Program notes that the greatest spectrum need of public safety wireless communications is for bandwidth to support low-speed data, high-speed data, and video. These capabilities, incorporating the latest technologies, would allow local law enforcement, fire, and emergency management service personnel to employ the quickest and most informed approach in performing their mission.

19. The PSWN Program has submitted comments to the Commission recommending

[10] See *International Association of Chiefs of Police (IACP) Reply Comments, WT 00–32*, at page 2.

the 4.9 GHz band as appropriate for these emerging technologies.[11] More recently, other parties have submitted comments to the Commission recommending the assignment of the band for public safety wireless communications operations.[12] The PSWN Program endorses such an allocation of spectrum to help meet the public safety community's growing needs. As others submitting comments to that docket have pointed out, "Although unlicensed consumer oriented broadband technologies are on the horizon in the nearby 5 GHz band, public safety agencies cannot rely on unlicensed spectrum for our mission critical applications. We must have dedicated spectrum and systems that assure the safety of our personnel via immediate priority access, uninterrupted transmissions, and guaranteed coverage and reliability. The proximity of this unlicensed band to the proposed public safety 4.9 GHz allocation allows us to leverage such standards based broadband technologies and yet have the dedicated, reliable, secure, and enhanced featured broadband solution that we require."[13] By allocating this broadband spectrum for public safety, the Commission will enable those agencies and services to support three emerging applications:

(a) Personal Area Network/ Vehicular Area Network (PAN/VAN) systems

(b) WLAN systems for on-scene and Incident Command System responses

c) Wireless fixed "hot spot" locations for high-speed public safety intranet file downloading and uploading of large data, image, and video files.[14]

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[11] See *PSWN Program Reply Comments to NPRM, WT 00–32*, at pages 3, 4.

[12] See, e.g., *4.9 GHz Allocation to Public Safety: Motorola White Paper for Submission to FCC, WT 00–32,* July 31, 2001.

[13] City of Detroit Department of Police, *Ex Parte Letter, WT 00–32,* Aug. 7, 2001, at page 2.

[14] See, e.g., *4.9 GHz Allocation to Public Safety: Motorola White Paper for Submission to FCC (Motorola White Paper), WT 00–32,* July 31, 2001, at page 2.

C. Block Allocations of Public Safety Spectrum

20. The PSWAC Report called for the Commission to allocate blocks of spectrum for use by public safety entities. The PSWAC Steering Committee stated that "...the current method of allocation, focused primarily on narrow banding, does not provide the Public Safety community the flexibility of selecting or obtaining the most spectrally efficient technology to meet user defined requirements."[15] The PSWN Program asserts that the Commission should designate larger blocks of spectrum to optimize its uses and improve efficiencies, as was also maintained in the PSWAC Spectrum Requirements Subcommittee Summary.[16]

21. The Federal Law Enforcement Wireless Users Group (FLEWUG) supported the revised adoption of the Public Safety National Coordination Committee's (NCC) proposed band plan that was configured so that four 6.25 kHz channels could be aggregated into 25 kHz.[17] The PSWN Program notes that the third Memorandum of Opinion and Order (MO&O) provides for such aggregation into the band plan.[18] The PSWN Program agrees that this plan would allow for more efficient and economical use of the 700 MHz band with less interference between interoperability channels, or with adjacent general use or reserve channels. This same principle would apply to management of future allocations as well.

22. For effective use of the public safety spectrum, there should be block allocations to accommodate wideband channel needs. The PSWN Program requests these block allocations

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[15] See *PSWAC Final Report,* at para 2.2.3.
[16] *Id.,* at para. 4.4.14.
[17] See *FLEWUG Reply Comments to 4th Notice of Proposed Rulemaking (NPRM), WT 96–86,* at paras. 16, 17.
[18] See *3rd M, O & O,* at para. 28.

because they would help consolidate future public safety communications in a few key bands, generate complementary market forces, and allow for the implementation of advanced technology. The PSWN Program is well aware that it would be both fiscally and physically impossible to move all public safety wireless communications to a single band of spectrum. However, large block allocations would support the deployment of new technologies that require greater bandwidth to transmit large amounts of critical data at highly efficient rates.[19] Low-speed data, high-speed data, and video require substantially greater bandwidth per channel then voice transmissions, and public safety agencies will increasingly require these new technologies to successfully complete their missions. Dedicating larger blocks of spectrum is the only way to effectively implement these technologies. Block allocations enhance the ability to dedicate common channels to interoperability, allowing agencies to communicate more easily in emergency situations or in day-to-day activities. Finally, the block allocations will allow different technologies and more agencies to use on the same bandwidth. Therefore, the block allocations create a larger consumer market and greater technological flexibility that would generate more competition.

D. Additional Spectrum for Public Safety Interoperability Across Multiple Bands

23. Although the Commission has allocated spectrum for interoperability in the 700 MHz band, the public safety community needs additional spectrum to enable multiple agencies to coordinate responses quickly and efficiently. Because the 2006 DTV transition

[19] See *PSWAC Final Report,* at para. 4.2.41.

deadline is a conditional one, some incumbent broadcasters may *never* be required to clear this spectrum. This circumstance would leave agencies in many densely populated urban areas, where public safety services are most critical, such as Los Angeles, CA, and Dallas, TX, without sufficient resources to communicate.[20] Many areas are already experiencing deficiencies in spectrum, and even with access to the 700 MHz band interoperability channels, cannot meet current needs, much less the foreseeable communications requirements for the next decade.

24. The allocation of additional interoperability spectrum is important primarily because of the emergence of new, innovative, life-saving technologies that will likely require greater bandwidth to function optimally. As mentioned by the Commission within its Second Notice of Proposed Rulemaking (NPRM),[21] there are presently four recognized types of public safety interoperability communications: voice, data, image/high-speed data (image/HSD), and video. Until recently, the primary focus of spectrum allocation for interoperability has traditionally been voice. The emergence of viable technologies within the remaining types of public safety interoperability communications demonstrates both promise and a greater requirement for bandwidth. The PSWN Program implores the Commission to take into consideration all viable and potential technological applications as it helps shape the public safety community's response to the protection of individuals and property in the course of emergency response measures.

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[20] See *PSWN Program Ex Parte Letter*, *WT 99–168*, June 2, 2000, at page 2.
[21] See *2nd NPRM, WT 96–86,* at para. 46.

25. Again, the PSWN Program reasserts the urgent need for additional interoperability spectrum to be allocated for use by public safety entities in all bands. The bands that have been allocated for public safety agencies and organizations are dispersed throughout the spectrum. The drive to promote interoperability is further undermined by an insufficient number of nationwide interoperability channels to aid agencies involved in responding to multi–jurisdictional incidents. In turn, planning must also encompass providing solutions to public safety dilemmas confronting those agencies involved with initiatives requiring the assistance and cooperation of other sovereign nations at our borders.

26. Another critical action that the Commission took to facilitate interoperability in the 700 MHz band was establishing two nationwide calling channels.[22] These calling channels, created on the recommendation of the NCC, create a critical nationwide link in public safety communications by enabling one agency to hail another. The Commission specified that the designated calling channels would be subject to monitoring 24 hours a day, 7 days a week and would be managed at the state or regional level, noting concurrence with comments submitted by some of the parties contributing to this docket.[23] This is an example of the type of planning and communications coordination that needs to occur for public safety operations below 512 MHz.

27. The PSWN Program has long asserted that interoperability is the key to effective public safety communications. The majority of public safety agencies' wireless radio systems are located below 512 MHz. While the PSWN Program appreciates the efforts of the Commission in designating 2.6 MHz of spectrum for interoperability in the 700 MHz band, the

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[22] See *4th R&O; WT 96–86*, at paras. 65–68.
[23] *Id.*, at footnote 163, page 24.

PSWAC Report identified a requirement for 2.5 MHz of interoperability spectrum in the bands below 512 MHz.[24] The PSWN Program notes that the Commission has recently designated some interoperability frequencies between 150 MHz and 512 MHz.[25]

28. The PSWN Program encourages the Commission to respond to this critical shortfall in this new Rulemaking and respond to the conclusion reached earlier that "separate interoperability channels are needed in the Public Safety Pool below 512 MHz."[26] The PSWN Program recommends an allotment of an additional 1.8 MHz for interoperability to fully meet the present need for these frequencies. This action will allow existing services to fully use the potential for coordinating disparate agencies and systems, and exchanging information more efficiently.

E. Spectrum Planning and Management

29. To successfully plan and manage spectrum dedicated to interoperability will take a coordinated, nationwide effort. This is ably demonstrated by the NCC's initiative to develop rules for use of the 2.6 MHz of spectrum dedicated for interoperability in the 700 MHz band. As with the PSWAC, by convening experienced personnel familiar with all of the intricacies of day-to-day operations, mutual aid situations, and task force events, the Commission could properly develop the regulations and coordination necessary for interoperability. The PSWN Program respectfully reminds the Commission that this extensive planning must continue to fully use the benefits of interoperability while maximizing spectral efficiency.

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[24] See *PSWAC Final Report*, at para. 2.2.1.
[25] See *3rd R&O, WT 96–86,* at paras. 82–94.

30. The PSWN Program continues its unqualified support of the Commission's establishment of the NCC to serve as an advisory body.[27] The NCC has played an important role during its 4-year mandate in developing operational plans and integral standards, as well as providing a vital forum to a broad cross-section of interested parties relative to the use of the 700 MHz spectrum designated for interoperability.[28] The PSWN Program further encourages the Commission to continue to rely upon and use the expertise and experience of the NCC in setting standards and developing further Rulemakings.

31. Within the NCC Charter, the Commission indicated a number of NCC responsibilities relative to forming necessary building blocks to interoperability management. These responsibilities include an operational plan to achieve interoperability; technical standards for interoperability and network integration; and recommendations for trunking on interoperability spectrum, policies to advise regional planning, and other matters relative to deploying interoperable public safety systems.[29] Because of this direction and through interaction with the Commission as well as other collaborators, the NCC has laid the groundwork and guidelines for the successful planning and managing of future interoperability bands.

F. Migration Plan to 6.25 kHz

32. As the identification, development, and usage of spectrum continue to develop, so will the mandate for more efficient use of this finite resource. The PSWN Program notes the Commission has retained the data efficiency requirement of 4.8 kilobits per second (kbps) per

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[26] See *3rd R&O, WT 96–86*, at para. 84.
[27] See *1st R&O; WT 96–86*, at paras. 90–94.
[28] See generally, *PSWN Program Submission for NCC Membership, WT 96–86*.
[29] *Id.*, at para. 7.

6.25 kilohertz (kHz).[30] Although equipment compatible with the 6.25 kHz standard is not yet commercially available in the 700 MHz band, manufacturers are developing hardware to comply with this objective. The Commission's promotion of efficiency will have the far–reaching effect of driving the market to meet this need and will assure its widespread acceptance and usage. Moreover, the PSWN Program concurs with the Commission that upholding the 4.8 kbps per 6.25 kHz standard mandates the most efficient parameter for narrowband data throughput.[31]

33. The PSWN Program also wishes to reemphasize its continuing support of the 6.25 kHz channel migration plan submitted to the Commission by the Association of Public Safety Communications Officials–International, Inc. (APCO). The PSWN Program incorporates by reference previous comments we have filed and comments submitted by other members of the public safety community, to the Commission's Fifth NPRM, WT Docket 96–86.[32] Although this five-step, 21-year plan has been criticized as being too slow, it provides realistic goals and milestones for achieving migration of the general use channels in an orderly, deliberate manner. With proper planning, it will not need to be revisited with the next wave of technological breakthroughs. In addition, it will potentially allow for pooling of public safety resources to take advantage of economies of scale in purchasing upgraded equipment and access to cutting-edge applications providing new capabilities. The PSWN Program notes that this plan also offers backward compatibility—making it possible to use legacy equipment that will not be able to employ 6.25 kHz channel bandwidths—emphasizing that at present, no such equipment has yet been developed for use in the 700 MHz public safety band. Because the cost of transition to new

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30 See *4th R&O, WT 96–86*, at para. 72.

31 See *4th NPRM, WT 96–86*, at paras. 50–51.

32 See, e.g., *PSWN Program Reply Comments to 5th NPRM, WT 96–86*, at paras. 5–6; *FLEWUG Reply Comments to 5th NPRM, WT 96–86*, at para. 4.

technology is often prohibitive, it is important that the standard that is ultimately agreed upon is compatible with developing technology and resists the premature obsolescence of existing systems.

III. STANDARDS

A. Project 25 Standard

34. The change from the systems deployed today to technology that meets the Commission's goal of 6.25 kHz capability to improve spectrum efficiency will not be achieved overnight. The Project 25 Phase I standard that the Commission has adopted for the 700 MHz interoperability channels will allow for a smooth transition to reach that goal.[33] In its First R&O the Commission stated, "Clearly, if interoperability is to be achieved on these channels, a single standard must be selected to ensure equipment compatibility." The Commission appropriately sought comment regarding whether choosing a single standard "locked in" the technology of today thus precluding emerging technologies.[34] After significant comment by a broad cross–section of the public safety community, the Commission determined that the American National Standards Institute (ANSI) approved Project 25 standard should serve as the digital standard. Equipment manufacturers will share this standard in developing equipment to create true "unit-to-unit" interoperability.

35. The Commission stated in its First R&O, "...digital modulation technology is a very important factor in optimizing efficiency of spectrum use, and as such it will be a key

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[33] See *4th R&O, WT 96–86,* at paras. 69–78.
[34] See *1st R&O, WT 96–86,* at para. 111.

technology for the future of land mobile radio."[35] As a result of the determination that digital modulation serves as the primary interoperability spectrum parameter, the Commission solicited comment regarding which digital standard should be applied. The Commission's reasonable apprehension at precluding future technologies was taken into account by APCO's migration, which ensures forward compatibility from the present 12.5 kHz technology to the Commission's 6.25 kHz per channel efficiency parameter. Moreover, the Commission appropriately determined that sufficient opportunity for industry development existed, thereby negating any concern that relative technology evolution might be stunted.

36. The Commission weighed the likely rigors of establishing a digital standard and ultimately determined that digital modulation was more responsive to emerging technologies, outweighing the costs of evolving relative systems and infrastructures. The Commission recognized that as technologies emerge, the cost of maintaining analog systems that will interact with evolving systems would actually be cost prohibitive. Therefore, the Commission determined that all public safety equipment within the 700 MHz band must be designed to use digital modulation as its primary modulation mode.[36] As the last several years of development have verified, industry solutions have unquestionably moved public safety technologies into the digital age.

37. The PSWN Program is compelled to point out that many public safety entities, especially in rural and less affluent communities, are simply without the resources to upgrade

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[35] See *1st R&O, WT 96–86,* at para. 109.
[36] See *1st R&O, WT 96–86,* at para. 110.

their systems, as this technology would require.[37] Until technology replacement costs can be met or reduced, all new equipment used in current public safety spectrum should have the capacity to send and receive both analog and digital signals.

B. Receiver Standards

38. The PSWN Program supports the Commission's requirement for Regional Planning Committees (RPC) to establish reference values for adjacent channel selectivity, spurious response attenuation, and intermodulation rejection in their plans.[38] Furthermore, the PSWN Program supports the Commission's decision that the NCC recommend receiver standards "for the nationwide interoperability channels as established for the recommendation of the interoperability modulation standard...[and] the scope of parameters (*e.g.* sensitivity, selectivity, dynamic range, durability characteristics) that need to be included in the receiver standards."[39] This action will allow entities to establish a reference point for interference analysis.

39. The FLEWUG has been a strong supporter of receiver standards for public safety equipment to protect licensees from harmful interference.[40] The PSWN Program also advocates this position. The FLEWUG has also agreed with the National Public Safety Telecommunications Council (NPSTC) that the establishment of receiver standards for the

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[37] See PSWN Program Information Brief, *A Priority Investment for America's Future Safety, September, 1999,* at page 5, citing the PSWN Program Land Mobile Radio Replacement Cost Study, June 1998. At the time of publication of that report, it was estimated that the replacement cost of existing public safety radio systems was "at least $18.3 billion."

[38] See *1st R & O, WT 96-86,* at para. 132.

[39] *Id.,* at para. 121.

[40] See *FLEWUG Reply Comments to 2nd NPRM, WT 96–86,* at para. 21.

interoperability spectrum is necessary.[41] Such standards would help reduce possible harmful interference in the public safety bands and increase reliability and interoperability of all public safety radios. The PSWN Program recommends that the Commission should err on the side of caution, and fashion a standard that will be sufficient to protect public safety operations and personnel from any degree of interference, in any location, and for any duration.

C. Interference Standards

40. The real danger that exists because of interference with public safety operations cannot be exaggerated. The media have reported numerous cases of officers wounded in the line of duty and unable to call for help because their radios were "drowned out by a torrent of information age services."[42] Such incidents are rapidly becoming a tragically familiar, and unnecessary, story. In its Fourth R&O, the Commission found insufficient evidence of adjacent channel interference and therefore no overriding urgency that would compel adoption of guard channels on either side of the interoperability channels. Consequently, the Commission adopted a band plan that allows four contiguous 6.25 kHz channel pairs to be aggregated into a single 25 kHz block.[43] The PSWN Program notes that since the Fourth R&O, significant research has been performed by members of the Telecommunications Industry Association (TIA) verifying "the potential for significant interference to interoperability users from other users on adjacent general use channels in the same geographic area if the interoperability channels are not protected by a 6.25 kHz guard channel, i.e., if the 12.5 kHz is not centered within the 25 kHz

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41 *Id.*, at para. 20.

42 See, e.g., *USA Today*, "*Cellphones Drowning Out Police Radios,*" March 12, 2001, at pages 1, 2. See also the *Oregonian*, Oregonlive.com, "*Emergency calls crowded out,*" August 5, 2001.

43 See *PSWN Program Petition for Reconsideration (PSWN PFR), WT 96–86,* at para. 11.

assignment with a 6.25 kHz guard channel on either side."[44] The PSWN Program encourages the Commission to review and incorporate recommended values set forth in the PSWN Program's ex parte filing attaching the TIA's interference analysis for 47 C.F.R. § 27.53.[45]

41. A critical requirement for public safety operations in any band is sufficient protection from interference. In the 700 MHz band, there is still a need for protection to prevent a situation similar to that experienced by public safety users in the 800 MHz band.[46] The Commission needs to provide protection to public safety so that no lives are lost or property damaged because public safety personnel cannot communicate.[47] NPSTC has further suggested that the Commission adopt, as a standard, the position of "Zero Tolerance of Interference to Public Safety" from commercial users.[48] The PSWN Program fully supports this measure to ensure that public safety operations remain a paramount interest.

42. The PSWN Program also reiterates its support of NPSTC's Petition for Reconsideration, WT Docket No. 99–168, to amend the Commission's rules governing protection from interference of public safety communications in the 700 MHz band. The Commission has reversed its initial service rules, which had originally limited high-power base stations to the lower portion (747–762 MHz) of the commercial spectrum in the 700 MHz

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44 *Id.*, at para. 13.

45 See generally, *PSWN Program Ex Parte Letter, WT 96–86, June 12, 2001.*

46 See Best Practices Guide for Avoiding Interference Between Public Safety and Commercial Wireless 800 MHz Communications Systems.

47 See *the National Public Safety Telecommunications Council Petition for Reconsideration (NPSTC PFR), 2nd R&O, WT 99–168,* at pages 10–11.

48 *Id.*, at page 10.

band.[49] Since that time, Motorola, NPSTC, the NCC, the TIA, and many other members of the public safety community have submitted studies and comments to the Commission. All the evidence supports the conclusion that under the revised service rules, high-power commercial transmitters present an almost certain and widespread threat of interference to vital public safety operations, as has been well-documented in the 800 MHz band. The PSWN Program recommends establishing strict standards on co-channel and adjacent channel interference, out-of-band emissions, and limits on effective radiated power to curb this problem.

IV. REGULATION AND USE OF SPECTRUM

A. Advisory and Spectrum Management Functions of Regional Planning Committees and State Interoperability Executive Committees

43. The PSWN Program advocates an active NCC role in concert with RPCs and State Interoperability Executive Committees (SIEC) relative to resolving regional disputes, national oversight of planning processes, administering interoperability spectrum in the 700 MHz band, and promulgating uniform guidelines for the development of interoperability and mutual aid plans.[50] The PSWN Program urges the Commission to continue its support of SIECs to oversee the development of interoperability at the state level.[51] The SIEC is best positioned to develop the State Interoperability Plan to coordinate operations between emergency medical, fire, forestry, general government, law enforcement, and transportation agency personnel. While at present SIEC development has only been encouraged in the 700 MHz band, expanding the duties of SIECs and RPCs to include management of other public safety spectrum would be a

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[49] *Id.*, at page 8.
[50] See *PSWN Program Submission for NCC Membership; WT 96–86,* at para. 25.
[51] See *4th R&O, WT 96–86,* rel. January 17, 2001, at paras. 12–13.

valuable leveraging of assets. This action would capitalize on the states' knowledge of their own internal processes and shared experiences with these issues in other bands.

44. The PSWN Program continues to support the Commission's finding that administration of interoperability spectrum can and should occur at the state level through representative bodies such as SIECs.[52] Moreover, the PSWN Program echoes the Commission's determination that SIECs handle administration of the interoperability channels through Memoranda of Understanding between the SIEC and the licensee.[53] However, the PSWN Program recommends that the Commission not mandate a single "one size fits all" approach.[54] As was pointed out by the PSWAC Steering Committee, different public safety agencies have different needs and require the flexibility of tailored solutions to meet their unique requirements.[55] The PSWN Program believes that the Commission's recent decision on the 700 MHz band to allow such flexibility is the correct choice [56] and should be emulated in other public safety bands.

B. Priority Access System

45. Within its Fourth NPRM, the Commission requested comment on the NCC's recommendation for a four-level access priority scheme for interoperability channels. The PSWN Program maintains its endorsement of a priority access scheme because it allows for responsive, certain delegation of finite spectrum for public safety uses on all interoperability

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52 *Id.*, at paras. 12–14.
53 See *PSWN Program Comments to the 4th NPRM; WT 96–86,* at para. 12.
54 *Id.*, at para. 14.
55 See *PSWAC Final Report,* at paras. 1.4, 1.23–1.26.
56 See *4th R&O, WT 96–86*, at paras. 12-13.

spectrum bands. Level 1 priority would be given for response to disasters. Level 2 priority would be appropriate in emergencies where imminent danger to life and property exists. Level 3 priority would be for special event control, in cases of planned and foreseeable occurrences such as demonstrations or parades. Level 4 is the default priority, for supporting secondary communications by a single responding agency.[57] The PSWN Program therefore recommends the Commission apply the NCC's recommended approach, also suggested in the PSWAC Report,[58] which included a proposal to establish a nationwide channel to disseminate information to the public and media.[59]

C. Interoperability Pre–Coordination Database

46. In light of the Commission's determination not to mandate use of a pre–coordination database (PCDB), the PSWN Program and other parties have filed a Petition for Reconsideration asking the Commission to reexamine its decision. The response from the Commission is still pending.[60] As originally proposed by the NCC, the National Institute of Justice (NIJ) would fund this database, which would be administered and maintained by the Public Safety Frequency Coordinators, as part of the pre–established licensing process.[61] The PSWN Program cannot overstate the value and necessity of such an initiative to manage use of public safety spectrum. The database would require all users to register their operations and provide a mechanism to quickly reference and evaluate frequency use and prevent interference. Only by requiring its use, will this database become a successful and authoritative asset to the

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[57] See *4th NPRM, WT 96–86*, at paras. 36–38.
[58] See *PSWAC Final Report,* at para. 4.1.21.
[59] *Id.*, at 4.1.14.
[60] *See PSWN Program Petition for Reconsideration, 4th R&O, WT 96–86,* at paras. 3–6.
[61] *Id.*, at paras 3–5.

public safety community for planning purposes. The mandated use of the database would also help ease technical impediments to interagency cooperation and allow swift resolution when interference issues inhibit public safety communications. The PSWN Program therefore recommends the Commission reconsider its ruling that the pre–coordination database should be voluntary and instead mandate this valuable resource in both the 700 MHz band and all future interoperability bands.

V. CONCLUSION

47. As always, the PSWN Program is grateful for the opportunity to provide comments and present the interests of the public safety community, and we request the full and thorough consideration of the Commission in response to our recommendations. The PSWN Program further acknowledges the contributions made by other public safety entities in preparing this Petition and submits these recommendations with the goal of bringing the public safety community's concerns to the top of the Commission's agenda. The PSWN Program is certain that the Commission will continue to place a priority on the issues affecting the interests of public safety operations, will address the expressed concerns in a constructive manner, and will advance the cause of assuring the integrity of these invaluable services. The PSWN Program hopes that the urgency of the public safety community's needs will receive prompt, swift, active support from the Commission to fulfill the public safety community's essential communications requirements for the new century.

Respectfully submitted,

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Chair, PSWN Executive Committee
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Steven Proctor
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Executive Vice–Chair,
PSWN Executive Committee

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)
	)
Petition for Rule Making	)
By the Public Safety Wireless Network	)
To Promote the Allocation of Spectrum	)
For Public Safety Agencies and Other Matters	)
To Address Communications Needs Through 2010	)

I, Richard N. Allen, Senior Associate, Booz·Allen & Hamilton Inc., 8283 Greensboro Drive, McLean, Virginia, 22102–3838, hereby certify that on this date I caused to be served, by first-class mail, postage prepaid (or by hand where noted) copies of the Public Safety Wireless Network Program's *Petition for Rulemaking to Promote the Allocation of Spectrum for Public Safety Agencies and Other Matters To Address Communications Needs Through 2010,* the original of which is filed herewith and upon the parties identified on the attached service list.

DATED at Fair Oaks, Virginia this 14th day of September, 2001.

Richard N. Allen

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