

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

In the Matter of )  
 )  
Spectrum Policy: )  
 )  
Solicitation of Public Comment ) ET Docket No. 02-135  
by the Spectrum Policy Task Force )  
 )  
 )  
To: The Commission )

**COMMENTS OF  
Statewide Wireless Network  
New York State Office for Technology  
6C Executive Park Dr.  
Albany, NY 12203-3716**

July 8, 2002

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## **I. Introduction**

1. These comments from the Statewide Wireless Network, under the New York State Office for Technology, present the views and concerns of the State of New York with regard to FCC ET Docket No. 02-135. This Solicitation of Public Comment is an effort by the Commission to address the need to improve and enhance its spectrum policies as we continue forward in the 21<sup>st</sup> century. We applaud the Commission for creating a forum to address the changes necessary to update and improve upon its spectrum policies.
2. The New York State Office for Technology, on behalf of the State of New York, is in the process of procuring a new Statewide Wireless Network (SWN) for State, Federal and Local governmental entities that operate within or in the proximity of New York State's geographic borders. SWN will provide an integrated mobile radio communications network that will be utilized by both Public Safety and Public Service agencies in New York State. It will provide a digital, trunked architecture that will offer both voice and data capabilities. It will be used in day-to-day operations, as well as for disaster and emergency situations, to more effectively and efficiently coordinate the deployment of all levels of government resources to such incidents. It will also enhance international coordination along the US/Canadian border, and will play a critical role in supporting the homeland defense efforts within and immediately surrounding the State of New York.
3. Although the intent of this proceeding is admirable, the State of New York feels strongly that the timeline for submitting comments under this Notice was too short<sup>1</sup>, especially in

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<sup>1</sup> See Request for Extension filed by New York State Office for Technology, June 24, 2002, and subsequent denial by the Chief, Office of Engineering and Technology, released July 2, 2002, DA 02-13558.

light of the two other major Public Safety proceedings<sup>2</sup> which have the same deadline for comment as this Notice. The Commission should be more flexible in the future when multiple proceedings that impact the same radio service category are due simultaneously.

4. As will be noted later within this document, this Task Force would benefit from an analysis of the material provided under these other public safety proceedings, since they are directly relevant to the questions posed within this Notice.
5. Within these comments are references to the Public Safety Wireless Advisory Committee (PSWAC) Final Report<sup>3</sup>. The Task Force should carefully study the public safety needs identified in the PSWAC Subcommittee Final Reports; in particular: Annex A, pp. 76 (150) - 81 (155)<sup>4</sup> and Annex B, pp. 82 (156) - 112 (186)<sup>5</sup> of the Operational Requirements Subcommittee Final Report; Appendix B, p. 79 (269)<sup>6</sup> and Appendix C, pp. 80 (270) - 84 (274)<sup>7</sup> of the Technology Subcommittee Final Report; and Appendix C, pp. 65 (671) - 79 (685)<sup>8</sup> and Appendix D pp. 80 (686) - 105 (711)<sup>9</sup> of the Spectrum Requirements Subcommittee Final Report. Given the short time frame available to the Spectrum Policy Task Force, this review should be a priority.

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<sup>2</sup> WT Dockets 02-55, and 00-32. On June 28, 2002, WT Docket 02-55 was extended until August 7, 2002.

<sup>3</sup> FINAL REPORT OF THE PUBLIC SAFETY WIRELESS ADVISORY COMMITTEE TO THE FEDERAL COMMUNICATIONS COMMISSION, Reed E. Hundt - Chairman, AND THE NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION, Larry Irving - Assistant Secretary of Commerce for Communications and Information, September 11, 1996

<sup>4</sup> Included herewith as Appendix 1.

<sup>5</sup> Included herewith as Appendix 2.

<sup>6</sup> Included herewith as Appendix 3.

<sup>7</sup> Included herewith as Appendix 4.

<sup>8</sup> Included herewith as Appendix 5.

<sup>9</sup> Included herewith as Appendix 6.

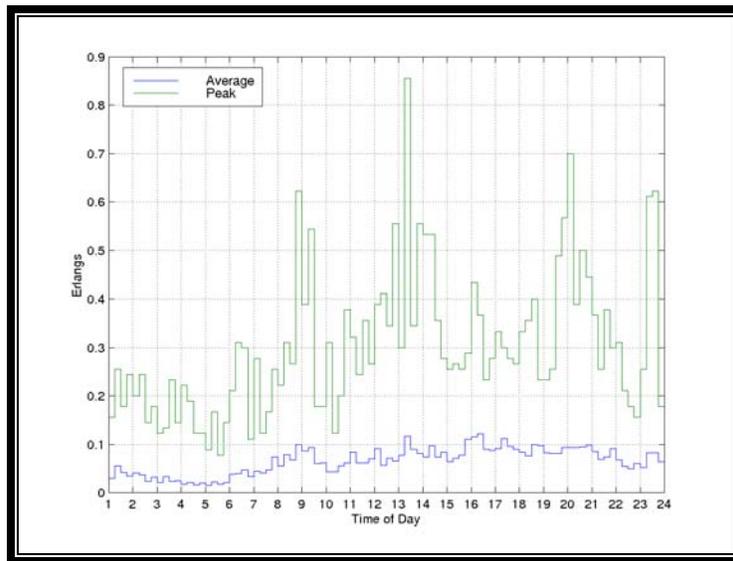
## **II. *HOW CAN SPECTRUM USE, CONGESTION AND DEMAND BE ACCURATELY MEASURED AND PREDICTED?***

6. During the course of the SWN project, New York State has collected and analyzed data on millions of voice and data transmissions in order to characterize both the profiles and loading levels of various public safety services under diverse conditions<sup>10</sup>. Public Safety communications can be thought of as having two main components, the "static" loading due to periodic and known operational processes (such as shift changes, roll call, etc), and "incident-driven" loading caused by quasi-random events.
7. Although incident-driven loading appears random in character, it is often highly correlated with other processes, such as rush hour traffic, time-dependent crime statistics, etc. With regard to the incident-driven random component, the spectrum needs of Public Safety are problematic to measure, since they typically peak during incidents that are difficult, if not impossible to predict. Making these measurements even more difficult is the fact that Public Safety currently operates across a wide range of frequencies with heavy utilization of High and Low Band VHF, UHF, and 800 MHz, often with little or no interoperability and intercommunications between these bands.
8. Some examples of single-channel, peak and average loading levels are shown in the following Figures, both as a function of time of day, and over the course of multiple days<sup>11</sup>. While the average loading levels are relatively small (approximately 0.05 Erlangs), the peak levels are quite extreme, rising at times to over 0.85 Erlangs - approximately the upper limit on what is achievable on a single radio channel. This clearly shows that, although an Erlang metric can be recorded, the actual user's needs are

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<sup>10</sup> Ranging from "quiet" to Disaster conditions.

not captured by these measurements - since a necessary level of Grade of Service (blocked/delayed communications probability) has often not been maintained during the measurements<sup>12</sup>. Therefore, Public Safety networks must be designed to provide sufficient "worst-case" capacity. The Commission's loading rules<sup>13</sup> have long prevented Public Safety from realizing the resources necessary to effectively serve the Public to the highest degree possible.

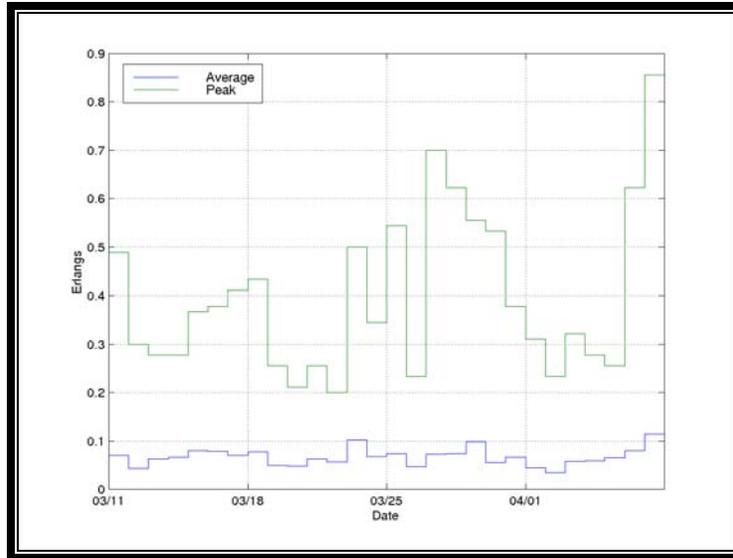


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<sup>11</sup> Overlapped fifteen-minute windowing was applied when generating these profiles

<sup>12</sup> In other words, as the user's needs for airtime increase (for example in an emergency situation), the amount of airtime that is actually available decreases as the channel resource is quickly consumed.

<sup>13</sup> For example: §90.313(a)(1) requires a **maximum** channel loading of 50 mobiles per channel in the Public Safety Pool for 470-512 MHz; while for 806-824/851-869 MHz, §90.631(b), for trunked operations, requires a **minimum** of 70 mobiles per channel or 100 per channel + one channel, and §90.633(b), for conventional operations, requires a **minimum** of 70 mobiles per channel for exclusivity {emphasis added}, Compare this to PSWAC - see Appendix 6, Section 5 .



9. In terms of predicting spectrum needs, the Public Safety community (including equipment Manufacturers) has already expended a significant effort both in investigating and documenting these matters. The Task Force should analyze the PSWAC Final Report, including the Subcommittee Final Reports contained therein. The Task Force, at an absolute minimum, needs to review the following material from this Report and its Appendices: *Appendix A - Operational Requirement Subcommittee Final Report*, *Appendix B - Technology Subcommittee Final Report*, and *Appendix D - Spectrum Requirements Subcommittee (SRS) Final Report*. In particular, Appendix D of the SRS Final Report, “Public Safety Wireless Communications User Traffic Profiles and Grade of Service Recommendations”, 13 March 1996, prepared by Dr. Gregory M. Stone, INS/CECOM, United States Department of Justice, Immigration and Naturalization Service Headquarters Radio Services Section, pp. 80 (686) - 105 (711)<sup>14</sup> should be carefully studied by the Task Force. Command of this material is essential to understanding the spectrum needs of Public Safety.

<sup>14</sup> Included herewith as Appendix 6.

10. The SRS analysis of spectrum needs through the year 2010 was based on very aggressive spectrum efficiencies, which have not been achieved in the market place to date. Given the lag between product availability and general use, it is reasonable to expect that the need for additional spectrum by Public Safety will be greater than predicted.

### **III. Interference Protection**

11. In reference to the Task Force Inquiries relating to interference protection, we direct the Task Force to our comments and the comments of others under the recent NPRM - *Improving Public Safety Communications in the 800 MHz Band and Consolidating the 900 MHz Industrial/Land Transportation and Business Pool Channels*, WT Docket No. 02-55. The primary focus of this NPRM is to alleviate interference within the 800 MHz band. Not only will the Task Force find comment on means to avoid and or resolve interference, but they will also discover instances and examples of where past policy decisions have led to wide ranging and large-scale interference between services. The issue of power limits at service area boundaries, out of band emission levels, receiver standards, and spectral purity are all raised and commented upon within this proceeding. Reply Comments under this Docket should serve to provide further information on these issues.

### **IV. Spectrum Efficiency**

12. The State of New York understands that spectrum efficiency is a problematic issue to address. The State only notes that when measuring spectrum efficiency, care must be taken to ensure that similar quality of service metrics are employed.

13. For example, one measurement of spectrum efficiency may be the number of voice channels (or voice "slots", "paths", etc) per unit occupied bandwidth. However, care must be taken that when comparing the spectrum efficiencies of different technologies that:
  - a. The spectrum efficiency must be referenced at similar voice quality levels;
  - b. The voice quality metric needs to be evaluated on a consistent channel or channel model; and
  - c. The spectrum efficiency must correspond to some level of spectral purity or out-of-band emission (OOBE) level.
  
14. Alternatively, a measure of spectrum efficiency may be one that measures data rates per unit bandwidth. In this case:
  - a. The data rates must correspond to only payload data, and not error detection and correction (EDAC), addressing, or media access control (MAC) overheads;
  - b. The data rates must be referenced to either similar corrected BER levels or to error free reception within a consistent channel or channel model; and
  - c. The spectrum efficiency must correspond to some level of spectral purity or OOBE level(s).

## **V. Public Safety Communications**

15. In reference to Public Safety Communications, we again direct the Task Force to our comments, and the comments of others filed under the recent NPRM - Improving Public

Safety Communications in the 800 MHz Band and Consolidating the 900 MHz Industrial/Land Transportation and Business Pool Channels, WT Docket No. 02-55. Reply comments under this Docket should serve to provide further illumination of these issues.

16. We further direct the Task Force to the continuing proceeding, WT Docket 00-32, IN THE MATTER OF THE 4.9 GHZ BAND TRANSFERRED FROM FEDERAL GOVERNMENT USE, with comments on it's SECOND REPORT AND ORDER AND FURTHER NOTICE OF PROPOSED RULE MAKING.
17. Finally, we direct the Task Force also to the PSWAC<sup>15</sup> report, whose analyses and recommendations were the culmination of a year's effort, and represent the needs, concerns, and recommendations of Public Safety projected out to the year of 2010. In particular, the focus of that report was to determine and present the amount of spectrum that needed (and still needs) to be dedicated for the support of Public Safety operations. This report's conclusion on spectrum needs has not diminished, and in fact, in light of the recent terrorist attacks upon the US, the Public Safety community has taken on the additional role of the front line for homeland defense. Although some progress has been made to free additional spectrum for Public Safety<sup>16</sup>, thus far both the U.S. DTV Plan and the current border arrangements with Canada and Mexico appear to have significant negative impact on this additional spectrum in New York State.

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<sup>15</sup> id

<sup>16</sup> WT Docket 98-86, The Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Communication Requirements Through the Year 2010

16. The State strongly opposes any policy that would attempt to time-share Public Safety spectrum with non-Public-Safety or commercial entities. Through the National Public Safety Telecommunications Council (NPSTC), the State is an active participant in the Software-Defined-Radio (SDR) Forum, and as such, tracks the capabilities of current Software radios, as well as those expected to be available in the near future. Through this involvement, the State notes that the ability to intelligently time-share Public Safety spectrum with other services is not a capability that appears to be practically deployable without some degradation to Public Safety Operations, either in terms of interference, or call blocking. Ideally the availability of Public Safety spectrum to commercial interests could be "locked-out" in times of crisis, but the logistics of employing such functionality reliably can quickly prove prohibitive.

## **VI. International Issues**

19. The State has long felt that the Commission needs to develop better avenues for dealing with international coordination issues. The State has petitioned the Commission to work toward a harmonization of the 700 MHz band between the US and Canada, but has yet to receive any substantive response in regards to this issue<sup>17</sup>.
20. Spectrum harmonization is an issue that spans both the public safety and economic realms. With regard to public safety, the need to police and control our respective borders is now more important than ever. A critical resource to meeting this objective is

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<sup>17</sup> See *New York State's Analysis of the Canadian DTV Transition Allotment Plan and Recommendations*, presented as part of the record to the FCC Public Safety National Coordination Committee at its San Francisco, CA meeting on January 28, 2000 - Appendix 7. A subsequent, more detailed recommendation, dated August 28, 2000, was submitted by our consultant to the FCC Chairman, Secretary, and Chief, Planning & Negotiations Division, International Bureau. (Cover letter - Appendix 8.)

harmonized public safety spectrum, which facilitates both coordination and interoperability between the law enforcement agencies of both countries. With regard to economics, free trade and tourism revenues depend upon homogenous communications services between neighboring countries. Furthermore, standards-based technologies drive the growth of the telecommunications industry, as well as local and national economies. Without a similar harmonization of the spectrum resources utilized by these standards, the technologies and services cannot flourish, and those aspects of the respective economies suffer as a result.

21. We are living in a global community, with intertwined economies and nearly identical requirements for the protection of our people. The commission needs to work to develop policies that reflect a broader North American outlook.

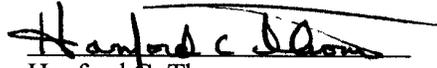
## **VII. Conclusion**

22. New York State recommends that the Commission review specific parts of the PSWAC Final Report, in particular the cited pages included in the appendices of this filing. We further recommend that the Commission learn from the current 800 MHz interference problems and apply engineering considerations to channel allocations so that problems, now recognized in WT Docket 02-55 can be prevented in the future. The Commission must take positive steps to:

- increase spectrum efficiency,
- to more rapidly make channel reallocation happen, and
- to negotiate a timely solution for harmonized spectrum utilization along our international borders,

so that more useable spectrum can be made available as soon as possible.

Respectfully Submitted,

  
Hanford C. Thomas  
Director

July 8, 2002

Statewide Wireless Network  
New York State Office for Technology  
6C Executive Park Dr.  
Albany, NY 12203-3716  
Tel: (518) 489-2400  
FAX: (518) 469-3831