

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

In the Matter of)	
)	
Request by the City of New York for)	WT Docket No. 06-150
Waiver of the Commission's Rules to)	
Deploy a Public Safety Interoperable)	PS Docket No. 06-229
Broadband Network in the 700 MHz)	
Band)	
)	
)	
)	
)	

PETITION FOR WAIVER

**Respectfully Submitted on behalf of:
The City of New York**

By:

Paul J. Cosgrave
Commissioner,
New York City Department of Information
Technology and Telecommunications/
New York City Chief Information Officer

New York City Department of Information
Technology and Telecommunications
75 Park Place, 9th Floor
New York, NY 10007
(212) 788-6633

June 8, 2009

TABLE OF CONTENTS

I.	SUMMARY OF REQUEST	1
II.	BACKGROUND	6
	A. NEW YORK CITY WIRELESS NETWORK (NYCWIN).....	7
	B. LEVERAGING EXISTING INFRASTRUCTURE.....	8
III.	BROADBAND NETWORK CAPABILITY	9
IV.	LOCAL NETWORK CONTROL.....	11
V.	NETWORK UTILIZATION.....	13
VI.	NETWORK STANDARDS.....	14
VII.	MISSION CRITICAL VOICE PROOF OF CONCEPT.....	16
VIII.	RELATED COMMISSION ACTIONS.....	18
IX.	D BLOCK SPECTRUM.....	20
X.	INTEROPERABILITY.....	21
XI.	LICENSING.....	23
XII.	CONCLUSION.....	24

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

In the Matter of)	
)	
Request by the City of New York for)	WT Docket No. 06-150
Waiver of the Commission’s Rules to)	
Deploy a Public Safety Interoperable)	PS Docket No. 06-229
Broadband Network in the 700 MHz)	
Band)	
)	

PETITION FOR WAIVER

I. SUMMARY OF REQUEST

1. Pursuant to Section 47 C.F.R. § 1.925(b)(3), the City of New York (“City”) respectfully submits this waiver request for authority to deploy and operate an advanced broadband wireless network dedicated to the City’s police, fire, emergency medical and other public safety services on the 763-768/793-798 MHz band segment. The network would be deployed, managed and maintained under the supervision of the New York City Police Department.

2. The Federal Communications Commission’s (“Commission’s”) grant of this request would allow the City to commence deploying a robust broadband data network in the 700 MHz band; and would enable a proof-of-concept demonstration, as well as the potential deployment of a converged mission critical voice and data network by the City in the near future.

3. Specifically, a grant of this waiver request would allow the City to commence planning for the deployment of a 700MHz broadband network, which would provide portable and in-building coverage for public safety users. In this respect, the 700MHz broadband network would complement, or be an “overlay” to, the existing 2.5GHz New York City Wireless Network (“NYCWIN”), which currently provide ubiquitous “in-street” broadband data coverage throughout the City’s five boroughs.

4. The City, including the New York City Police Department, has filed numerous comments with the Commission regarding the 700MHz public safety broadband proceedings.¹ Although the City recognizes that it is not within the Commission’s authority to allocate the 700MHz D-Block spectrum to public safety at this time, such an allocation would greatly improve the City’s ability to deliver true fourth generation (“4G”) broadband services to first responders. We, therefore, continue to urge the Commission to support efforts to persuade Congress to allocate the D-Block to public safety communications.

5. The City believes that a converged broadband wireless network, supporting both mission critical voice and data, and using a common technology platform deployed on a common frequency band, holds great promise as the ultimate solution to public safety communications interoperability. Therefore, as noted, if this Petition is granted the City would pursue a proof-of-concept demonstration, to test the capability of a 4G broadband wireless network to support mission critical voice, as soon as practical.

II. BACKGROUND

¹ See NYPD Comments and NYPD Reply Comments filed in response to the *Second Further Notice of Proposed Rulemaking*, WT Docket 06-150,PS Docket 06-229, and the *Third Further Notice of Proposed Rulemaking*, WT Docket 06-150,PS Docket 06-229

6. New York City, with a population exceeding 8 million citizens, is among the most densely populated areas of the nation. The City's five boroughs comprise approximately 300 square miles of land, and are bordered by 600 miles of shoreline. The skyscraper canyons of Manhattan and of downtown Brooklyn combined with the suburban areas of Staten Island, eastern Queens and the Rockaways and the surrounding waterways present a varied and challenging radio frequency environment for effective wireless communications. The massive transportation infrastructure for highway, rail, subways, airports and harbors heighten this challenging communications landscape.

A. NEW YORK CITY WIRELESS NETWORK (NYCWiN)

7. In 2006, the City contracted to have a municipal public safety wireless broadband data network constructed on 10MHz of leased spectrum in the 2.5GHz band. The Network, NYCWiN, employs Universal Mobile Telecommunications System (UMTS) – Time-Division Duplexing (TDD) cellular technology. Such internationally available, open standard TD-CDMA technology emphasizes high-speed mobile applications. NYCWiN was designed to be first and foremost a public safety broadband data network to support the “in-street” requirements of the City's public safety responders and public service agencies. Deployed consistent with public safety standards, it provides a resilient network capable of delivering real-time information to the field. The network is comprised of approximately 400 sites, with redundant and diverse backhaul from each site. NYCWiN maintains two Network Operations Centers (“NOCs”) staffed 24 hours per day, 7 days per week. Each site is equipped with a minimum of 24 hours of backup power monitored by the NOCs.

B. LEVERAGING EXISTING NETWORK INFRASTRUCTURE

8. NYCWiN was not intended primarily to provide in-building coverage. A complementary, or “overlay” network on the 700 MHz band would provide the broadband coverage that is urgently needed by public safety first responders in the City of New York who perform many of their job functions inside of buildings and in other confined areas. Additionally, inasmuch as 4G wireless commercial networks will soon be widely deployed on the 700 MHz band, relatively low cost end-user devices will likely become available in conjunction with such commercial network deployments.² In summary, the addition of a 700MHz overlay would provide:

- Enhanced “in building” coverage as described in the proposed rules contained within the Third FNPRM.³
- Additional network capacity and throughput.
- Access to low cost 700 MHz end user devices.

III. BROADBAND NETWORK CAPABILITY

9. Spectrum efficiency is enhanced through the use of broadband network technology. Commercial wireless network operators are financially motivated to be as spectrally efficient as possible; and, in this regard, share the Commission’s goal of advancing spectrum efficiency. Throughout the history of commercial wireless network deployments, which spans more than twenty years, there has been a continuous effort to advance spectrum efficiency. The lesson to be learned from their experience is that increasing channel size (broad-banding) rather

² See *Third Further Notice of Proposed Rulemaking*, WT Docket 06-150,PS Docket 06-229; ¶ 114

³ See *Third Further Notice of Proposed Rulemaking*, WT Docket 06-150,PS Docket 06-229; ¶ 114; Appendix C, p192 (4); p194 Table 3.

than reducing channel size (narrow-banding) leads to more efficient use of scarce spectral resources.

10. Fourth generation broadband wireless networks incorporate the latest modulation techniques designed to maximize the utilization of the radio channel by exploiting both the time domain and the frequency domain simultaneously. Maximum spectrum efficiency in 4G networks is achieved using 20MHz channels for uplink and downlink. The City's view is that to realize true 4G data speeds for our public safety users, and to accommodate both voice and data applications on a single network, separate 10MHz uplink and downlink channels will be required. For this reason, the City has urged both Congress and the Commission to allocate the entire 20 MHz of available 700MHz spectrum to individually licensed public safety agencies.⁴ Recognizing, however, the need for Congressional action to address the D-Block spectrum segment, this waiver seeks authority for the City of New York to operate a broadband network on the 763-768/793-798 MHz band.

IV. LOCAL NETWORK CONTROL

11. Public safety agencies respond to millions of incidents each year; virtually all of these incidents are local or regional in nature. We urge the Commission to permit regional and/or local public safety entities to be licensed on the 700 MHz spectrum, as envisioned by Congress. To further postpone the deployment of local or regional networks is not in the public interest. The City believes that the needs of our public safety agencies would best be served by allowing the City to deploy a 700 MHz overlay to the existing NYCWiN broadband data network. The

⁴ Comments and Reply Comments of the New York City Police Department, November 3 and November 8, 2008, set forth in WT Docket 06-150 and PS Docket 06-229. Testimony of Deputy Chief Charles F. Dowd, Commanding Officer, Communications Division, New York City Police Department and Testimony of Commissioner Paul J. Cosgrave, New York City Department of Information Technology and Telecommunications, July 30, 2008 before the Federal Communications Commission, *Public Hearing*, Public Safety Interoperable Communications, 700 MHz Band.

700 MHz broadband network that the City proposes to deploy would be interoperable with existing public safety radio networks by utilizing IP Gateways, as described in the Third FNPRM.⁵ In addition, the City's 700MHz broadband network would be interoperable with future 700 MHz public safety networks by conforming to national technology standards. These standards would include a common air interface, roaming capabilities and auto registration.⁶

12. Allowing localities to deploy 700 MHz public safety broadband networks in advance of a nationwide deployment would preserve local control for jurisdictions willing to build such networks. Nationwide interoperability can be ensured by stipulating that any early network deployments adopt the same technology platform as the nationwide network, and that mutual roaming agreements be established between "early" deployed local networks and any subsequently deployed national or regional network(s).

V. NETWORK UTILIZATION

13. New York City intends to make the proposed 700 MHz broadband network available to all agencies that fall within the statutory definition of public safety, as set forth in 47 USC 337(f)(1). Preemptive priority access to the network would be given to "first responders." The initial users of the 700 MHz broadband network would be the New York City Police Department and The New York City Fire Department, including the Emergency Medical Command. As the capacity of the 700 MHz broadband network grows, the network user base would be expanded to include all public safety eligible users that currently access the existing NYCWiN network.

⁵ *Third Further Notice of Proposed Rulemaking*, WT Docket 06-150,PS Docket 06-229; ¶ 114; Appendix C, p203 §90.1405

⁶ *Third Further Notice of Proposed Rulemaking*, WT Docket 06-150,PS Docket 06-229; ¶ 108

VI. NETWORK STANDARDS

14. New York City's 700 MHz broadband network would meet the technical specifications that the Commission proposed in its *Third Further Notice of Proposed Rulemaking*⁷ in this proceeding. The City would ensure that the 700 MHz broadband network would be capable of being integrated into any national or regional network(s) that may subsequently be developed under the Commission's rules. The City would further ensure that the 700 MHz broadband network would be brought into complete conformance with any subsequent rules issued by the Commission governing interoperability.

15. The network that the City proposes to construct would be based upon the Long Term Evolution ("LTE") technology platform; which we believe will emerge as the nation's dominant 4G wireless standard. The network would be a cost effective overlay utilizing existing NYCWiN communications infrastructure, built to rigorous public safety survivability standards. As noted, the City would establish mutual roaming agreements between this network and any nationwide 700 MHz network. In the unlikely event that the LTE technology platform deployed by the City differed from the technology platform ultimately chosen for a nationwide network, the City would revise its network to the nationwide technology platform to ensure interoperability.

VII. MISSION CRITICAL VOICE PROOF OF CONCEPT

16. In the Third Further Notice of Proposed Rulemaking, the Commission wisely proposed that Voice over Internet Protocol ("VoIP") and Push-to-Talk ("PTT") voice capabilities be required elements of the proposed 700 MHz broadband Public Safety network.⁸ The City believes that the technology to deliver VoIP and PTT voice capabilities on commercial

⁷ See *Third Further Notice Of Proposed Rulemaking*, WT Docket 06-150,PS Docket 06-229; released September 25, 2008

⁸ *Third Further Notice of Proposed Rulemaking*, WT Docket 06-150,PS Docket 06-229; ¶ 106, 110, 115; Appendix C, p189, §27.1305(a) (4); Appendix C, P203, §90.1405.

broadband networks exists today; and that near-term technology advances will permit mission critical voice over 4G wireless networks, such as the 700 MHz broadband network that, through this petition, the City requests permission to construct. When technology evolves to the point that the City's requirements for mission critical voice communications can be met, the City could opt to migrate such voice communications to the 700MHz broadband network rather than support two wireless public safety networks – one for voice and one for data.

17. Accordingly, if this waiver request is granted, the New York City Police Department intends to conduct a proof-of-concept demonstration of mission critical voice capability on the 700MHz broadband network at the earliest feasible date.

VIII. RELATED COMMISSION ACTIONS

18. In April 2007, the Commission issued a Report and Order and Further Notice Of Proposed Rulemaking re-designating the 700MHz public safety wideband spectrum to broadband spectrum and linking this spectrum to the winner of the D-block auction, with the provision that the D-block auction winner enter into a public-private partnership and construct a nationwide shared commercial/public safety broadband network to public safety reliability and availability standards.⁹

19. The failure of the D-Block auction to generate a winning bid necessitated a modification of the proposals presented in Second Further Notice of Proposed Rulemaking. On September 25, 2008, the Commission released its Third Further Notice of Proposed

⁹ See *Report and Order and Further Notice Of Proposed Rulemaking* WT Docket 06-150, CC Docket 94-102, WT Docket 01-309, WT Docket 03-264, WT Docket 06-169, PS Docket 06-229, WT Docket 96-86; Adopted April 25, 2007

Rulemaking¹⁰, proposing the creation of a nationwide interoperable broadband wireless network for public safety entities.

IX. D-BLOCK SPECTRUM

20. The City urges that the D-Block spectrum be made available directly to public safety nationwide. Understanding that the Commission cannot unilaterally allocate the D-Block spectrum without Congressional approval, the City respectfully requests that the Commission support our efforts to petition Congress to undertake such allocation to public safety. If the D-Block spectrum is ultimately licensed directly to public safety entities, these licensees would be able to form partnerships with commercial wireless network operators or other public safety eligible licensees. We believe that localities should be permitted to license, own and operate their own networks, and have the option to enter into public-private partnerships. Allocating the D-Block spectrum directly to public safety would allow for greater flexibility to implement network solutions tailored to local requirements. Furthermore, these networks would be interoperable to the extent that they deploy a technology utilizing a common air interface, establish roaming agreements, and interconnect to adjacent 700 MHz broadband public safety networks. In addition, the allocation of the D-Block spectrum to public safety would add sufficient capacity to facilitate the potential migration of mission critical voice to converged voice and data networks when the technology permits.

X. INTEROPERABILITY

21. Data interoperability can only be achieved if public safety agencies agree to use a suite of mutually acceptable data applications during incidents requiring a multi-agency

¹⁰ *Third Further Notice of Proposed Rulemaking*, WT Docket 06-150, PS Docket 06-229

response. New York City stands ready to utilize common data applications that are agreed to nationally for the purposes of data interoperability. Public Safety users, equipped with compatible wireless devices, which roam into the City would be granted access to New York City's 700 MHz broadband network, provided that their credentials have been pre-registered on the network. Such users' network priority level would be determined by their credentials. This mechanism would be used to provide New York City network access for both public safety roamers from other early network deployments as well as for public safety users of the nationwide network once it is deployed. The City anticipates that reciprocal agreements would allow public safety roamers from the City to access 700MHz public safety broadband wireless networks deployed in other jurisdictions in a like manner.

22. Allowing the City to deploy a private municipal 700MHz public safety network would not preclude regional or national interoperability. Regional interoperability would be achieved by adapting the dominant emerging 4G wireless technology (which, as noted, we believe will be LTE), operating within the same spectrum band and interconnecting our backbone network with adjacent public safety broadband networks as they are deployed. In a similar fashion, nationwide interoperability could be achieved by linking regional networks, and establishing reciprocal roaming agreements with other public safety 700 MHz broadband networks, enabling users with the proper credentials to access any deployed 700 MHz Public Safety broadband network in the nation.

XI. LICENSING

23. As the Commission has chosen to license a single entity, the Public Safety Broadband Licensee ("PSBL"), the City would work with the PSBL in establishing an agreement

whereby the PSBL continues to hold the nationwide license but grants New York City and other early deployed networks the rights normally granted to the licensee in a “sub-license” agreement. The City has been in discussions with the current PSBL, the Public Safety Spectrum Trust (“PSST”), whose representatives have expressed to us that they are amenable to such an arrangement. The City recognizes that any such agreement is subject to the Commission’s approval.

XII. CONCLUSION

24. For the reasons set forth in this document, the City of New York requests a waiver of the Commission’s rules allowing the construction of a 700 MHz wireless broadband network, as an overlay to the existing NYCWIN network, for the beneficial use of all City public safety agencies, to be interoperable with existing public safety radio networks through the use of IP gateways, and with similar 700MHz public safety networks as they are deployed. We also request permission to conduct a proof-of-concept demonstration of the mission critical voice capabilities of the 700 MHz broadband network at the earliest technically feasible date. The City respectfully requests that the Commission act promptly on this petition.

25. Although it is the City’s intention to seek full licensing rights for both the 700 MHz D-Block and the 700MHz public safety spectrum segment (758-768/788-798 MHz, combined) through Congressional action, the City recognizes that the Commission currently has authority only to grant a waiver for the 10MHz of Public Safety Broadband Spectrum licensed to the PSST. The City respectfully urges that the Commission support our efforts in petitioning Congress to allow the Commission to allocate the 700 MHz D-Block spectrum to be directly to public safety.

Respectfully submitted,

/s/

THE CITY OF NEW YORK

**New York City Department of Information
Technology and Telecommunications**

75 Park Place
New York, NY 10007
(212) 788-6633

Paul J. Cosgrave
Commissioner/New York City CIO

New York City Police Department

1 Police Plaza
New York, NY 10038
(646) 610-6765

Charles F. Dowd
Deputy Chief, Commanding Officer
Communications Division

Fire Department, City of New York

9 MetroTech Center
Brooklyn, NY 11201
(718) 999-1715

John Coloe
Chief of Communications

June 8, 2009