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Federal Communications Commission
WASHINGTON, D.C. 20554

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

In the Matter of)
)
The 4.9 GHz Band Transferred)
from Federal Government Use)

WT Docket No. 00-32

To: The Commission

JOINT COMMENTS OF CINERGY CORPORATION
AND CONSUMERS ENERGY COMPANY

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EXECUTIVE SUMMARY

Cinergy Corporation, a multi-state gas and electric utility, and Consumers Energy Company, the fifth-largest combined gas and electric utility in the United States, need licensed broadband spectrum to provide public safety services efficiently and effectively. Critical infrastructure industries, such as Cinergy and Consumers, would use the 4.9 GHz band for essentially the same applications identified by Public Safety entities in their comments and *ex parte* communications. In addition, the broadband applications of critical infrastructure industries, especially utilities, would improve homeland security and protect the lives and property of the public. Thus, the FCC's reasoning for granting 50 MHz of spectrum in the 4.9 GHz band for Public Safety also support the extension of eligibility to critical infrastructure industries entities, including utilities such as Cinergy and Consumers.

Because critical infrastructure industries are similarly situated to Public Safety entities, Cinergy and Consumers believe that the FCC should adopt an eligibility standard for the 4.9 GHz band to include utilities. A broad eligibility standard would also be consistent with the definitions of "Public Safety" in the Communications Act, would advance the public interest by maximizing spectrum efficiency and reducing equipment costs, and would accord with the changed circumstances following the events of September 11, 2001.

Cinergy and Consumers also believe that the FCC should adopt licensing and service rules for the 4.9 GHz band to complement the eligibility standards and proposed operations. In particular, the FCC should encourage fixed operations, such as the wireless fixed "hot spot" location devices necessary for Public Safety and critical infrastructure

industry monitoring activities. The FCC should also prohibit unlicensed and commercial use of the 4.9 GHz band because they do not provide the immediate availability, ubiquitous coverage, flawless reliability, or other features that are essential to the critical communications of Public Safety entities and critical infrastructure industries. Finally, Cinergy and Consumers oppose the delegation of licensing authority over the band to states or Regional Planning Committees because it would impose an unnecessary layer of regulation.

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Cinergy Corporation ("Cinergy") and Consumers Energy Company ("Consumers"), through their undersigned counsel, submit these Comments on the *Further Notice of Proposed Rule Making* in the above-captioned matter pursuant to Section 1.415 of the Federal Communications Commission's ("Commission" or "FCC") rules.¹ In this proceeding, the FCC seeks comments on the establishment of eligibility standards as well as licensing and service rules for the 50 MHz of spectrum in the 4940-4990 MHz band ("4.9 GHz band") that it allocated for use in support of Public Safety.

As discussed in greater detail below, Cinergy and Consumers applaud the FCC's proposal to allow utilities to license broadband spectrum at 4.9 GHz to carry out their public safety services in an efficient and effective manner. In particular, critical infrastructure entities, especially utilities like Cinergy and Consumers, are similarly situated to traditional Public Safety entities in terms of their proposed applications, duties to protect lives and property, and lack of

¹ In re the 4.9 GHz Band Transferred from Federal Government Use, WT Docket No. 00-32, *Second Report and Order and Further Notice of Proposed Rule Making*, 17 F.C.C. Rcd. 3955 (2002) [hereinafter *Second Report and Order and FNPRM*].

existing broadband spectrum. To accommodate critical infrastructure industries, the FCC should determine eligibility for a license using the more inclusive definition of "public safety radio services" contained in section 309(j)(2). The FCC should also permit fixed operations, prohibit unlicensed and commercial use, and decline to delegate licensing authority over this spectrum to states or Regional Planning Committees.

I. INTRODUCTION

A. Background

In its *Second Report and Order*, the FCC allocated 50 MHz of spectrum in the 4.9 GHz band for fixed and mobile services.² Despite its tentative conclusion not to reserve this band for Public Safety use, recent events convinced the FCC to designate this band in support of Public Safety.³ In particular, the FCC reasoned that "a public safety designation will enable responders to carry out critical and urgent missions in a way that ensures more effective and efficient service to their communities and provide a safer environment for emergency responders."⁴ The FCC also "believe[s] that this decision aligns with new national priorities focusing on homeland security, and will ensure that agencies involved in the protection of life and property possess the communications resources needed to successfully carry out their mission."⁵ Finally, the FCC noted its statutory obligation "to promot[e] safety of life and property through the use of wire and radio communication"⁶

² *Id.* ¶ 9.

³ *Id.* ¶ 23.

⁴ *Id.*

⁵ *Id.* ¶ 1, 23.

⁶ *Id.* ¶ 23 (quoting 47 U.S.C. § 151).

After deciding to permit Public Safety operations on the 4.9 GHz band, the FCC issued this *FNPRM* requesting comment on the appropriate eligibility standards for this band. The FCC also seeks comment on licensing and services rules.

B. Cinergy's and Consumers' Interest in the Proceeding

Cinergy is one of the largest diversified energy companies in the United States and is the parent company of Cincinnati Gas & Electric ("CG&E") and PSI Energy, Inc. ("PSI Energy"). These operating companies serve a combined total of 1.5 million electric and 455,000 gas customers in Ohio, Indiana, and Kentucky. While CG&E provides service in a 3,000 square mile service area surrounding metropolitan Cincinnati, PSI Energy's service territory covers 22,000 square miles, or approximately two-thirds, of Indiana.

Consumers, the principal subsidiary of CMS Energy, is Michigan's largest electric and natural gas utility and one of the nation's largest combination utilities. Consumers provides electric and natural gas service to more than 6 million of the state's 9.5 million residents in all 68 counties of Michigan's Lower Peninsula, an area which constitutes approximately 31,000 square miles. Consumers is the fifth-largest combined gas and electric utility in the United States.

To facilitate their internal communications, and to monitor their power generation and distribution systems, in these vast service territories, Cinergy and Consumers operate extensive private land mobile and microwave communications systems. They use these systems for two-way radios, private paging, electric and gas distribution system control and data acquisition, generation control, generation scheduling and dispatch, electric system protective relaying, mobile data to field service trucks, electrical feeder lockout alarms, meter reading, voice communications, and data network communications.

These systems provide a radio communication link with thousands of field employees on a daily basis. In this regard, the ability of utility employees to communicate at all times is essential in light of their frequent work with high voltage electrical wires, natural gas lines with pressures up to 600 pounds per square inch, and other potentially hazardous features of the operational infrastructure. Thus, with both voice and data capabilities, these private radio systems allow field employees to respond to customer needs and to communicate with each other while coordinating inherently hazardous work.

Wireless communications systems are fundamental to Cinergy's and Consumers' utility operations. Power utilities supply the core resources – gas and electricity – that permit modern society to function. Because industrial, business, and domestic operations depend on the availability of electric and gas power, Cinergy's and Consumers' utility services impact the lives of virtually everyone within their service territories. In addition to these customers, utilities are also responsible for providing electricity and gas to critical facilities, including hospitals, military installations, and public safety agencies. Simultaneously, utilities must ensure the safety of the field crews maintaining their infrastructure and delivering electricity and gas safely and efficiently to customers. Thus, wireless communications are essential to enable Cinergy and Consumers to keep their systems functioning on a 24-hour-a-day, 7-day-a-week basis to avoid power outages that could deprive large areas and populations of electricity and gas services.

The 4.9 GHz band could enhance the ability of Cinergy and Consumers to perform their public safety services in a more efficient and effective manner. Because of this opportunity to improve upon their public safety services, Cinergy and Consumers are interested in the FCC's *FNPRM* concerning the development of eligibility standards as well as licensing and service rules to govern this band.

II. UTILITIES AND PUBLIC SAFETY USERS ARE SIMILARLY SITUATED WITH RESPECT TO THEIR BROADBAND SPECTRUM REQUIREMENTS

The reasoning underlying the allocation of 50 MHz of 4.9 GHz spectrum for traditional Public Safety use also supports the extension of eligibility to critical infrastructure entities, including utilities like Cinergy and Consumers. Cinergy and Consumers agree with the FCC that users of public safety radio services could use this spectrum for the same purposes as traditional Public Safety users.⁷ As discussed in greater detail below, Cinergy and Consumers could use this broadband spectrum "to provide essential services to the public at large" by performing their critical public safety service of maintaining its infrastructure and delivering gas and electricity in a more efficient and effective manner.⁸

In addition, critical infrastructure industries are a key component of the federal government's homeland security initiatives and protect the lives and property of the public. The FCC noted that "[t]he very nature of the services provided by these entities involve potential hazards whereby reliable radio communications is an essential tool in either avoiding the occurrence of such hazards, or responding to emergency circumstances."⁹ The FCC also observed that "such entities need reliable communications in order to prevent or respond to disasters or crises affecting their services to the public" and "that in the course of their duties, these entities will need to interact with the traditional public safety service providers."¹⁰

A. Utilities Require Broadband Spectrum for Their Mission-Critical Communications

⁷ *Id.* ¶ 33.

⁸ *Id.*

⁹ *Id.*

¹⁰ *Id.*

In the *FNPRM*, the FCC predicted that the 4.9 GHz band could provide a spectrum home for localized broadband systems with coverage areas of 1 to 1,000 meters.¹¹ Specifically, the FCC stated that licensees could use the 4.9 GHz band for three types of emerging broadband applications: (1) Personal Area Network ("PAN") and Vehicular Area Network ("VAN") systems; (2) Wireless Local Area Network ("WLAN") systems; and (3) wireless fixed "hot spot" location devices.¹²

The comments and *ex parte* communications filed by Public Safety entities and manufacturers in this docket reveal that the proposed Public Safety uses for the 4.9 GHz band mirror the proposed uses that utilities outlined in an industry report over four years ago.¹³ They also coincide with the proposed uses that the National Telecommunications and Information Administration ("NTIA") identified in its January 2002 Report on current and future spectrum needs of utilities and other critical infrastructure industries.¹⁴ These reports concluded that "there is considerable interest within the utility community to implement wireless video and

¹¹ *Id.* ¶ 26; Motorola, *4.9 GHz Allocation to Public Safety: Motorola White Paper for Submission to FCC* 11 (July 31, 2001) [hereinafter *Motorola White Paper*].

¹² *Second Report and Order and FNPRM*, 17 F.C.C. Rcd. 3955 ¶ 24.

¹³ UTC, Utilities Spectrum Assessment Taskforce, *Final Report* (June 30, 1998), filed in Reply Comments of UTC, RM-9267 (July 16, 1998) [hereinafter *USAT Final Report*].

¹⁴ Marshall W. Ross and Jeng F. Mao, Current and Future Spectrum Use by the Energy, Water, and Railroad Industries, Response to Title II of the Departments of Commerce, Justice, and State, the Judiciary, and Related Agencies Appropriations Act, 2001 Pub. L. 106-553, U.S. Department of Commerce, National Telecommunications and Information Administration 3-3 (Jan. 30, 2002) [hereinafter *NTIA Report*]. Although the USAT found "considerable interest," it may have underestimated the broadband needs of utilities because it issued its *Final Report* in June 1998. The American Water Works Association also believes that the *USAT Final Report* underestimated the spectrum needs of utilities because of recent "industry trends and the current pace of telecommunications technology development and implementation." *NTIA Report* at 4-10. Despite its shortcomings, however, the *USAT Final Report* provides some insight into the broadband applications favored by utilities.

wideband data in the future," such as those used in connection with PAN and VAN systems, WLAN systems and wireless fixed "hot spot" locations devices.¹⁵

1. PAN/VAN

PAN and VAN systems "are wireless links between a portable or mobile transceiver and devices such as headsets, portable computing devices, video cameras, thermal imagers, and 3D locators."¹⁶ This technology permits "short range wireless networking of radios, accessories and video/imaging cameras" for instant, ad hoc, localized coverage around the employee or vehicle.¹⁷ By integrating the transceiver into a helmet or belt, licensees could enable hands-free operation, high-quality voice transmissions, and continuous status/telemetry reporting.¹⁸ These systems could also network to two-way radios in order to allow the relaying of dispatch voice and video transmissions.¹⁹

Utilities require localized coverage around the employee or vehicle. Field crews would complete their repair and maintenance work on the power grid more safely, efficiently, and effectively if they could use hands-free, voice-activated communications or could quickly transfer data or video images. In particular, Cinergy and Consumers note that broadband applications would help field crews coordinate their work while pulling electrical lines or

¹⁵ *USAT Final Report* at 2; *NTIA Report* at 3-21 through 3-23.

¹⁶ *Second Report and Order and FNPRM*, 17 F.C.C. Rcd. 3955 ¶ 24; see Ex parte Comments of Major County Sheriffs' Association 1 (Apr. 20, 2001) [hereinafter *Major County Sheriffs' Ex Parte*].

¹⁷ *Motorola White Paper* at 2, 6, 9; Comments of Motorola 3 (Apr. 26, 2000) [hereinafter *Motorola Comments*]; Comments of APCO 7 (Apr. 26, 2000) [hereinafter *APCO Comments*]; Comments of Major Cities Chiefs Association 2 (Dec. 18, 2000) [hereinafter *Major Cities Chiefs Comments*]; Comments of International Association of Chiefs of Police 2 (Dec. 18, 2000) [hereinafter *IACP Comments*]

¹⁸ *Motorola White Paper* at 7, 16.

¹⁹ *Motorola Comments* at 5.

repairing gas pipelines. During these activities, members of a field crew are often separated by several hundred yards and need broadband communications to coordinate their efforts safely.

2. WLAN/On-Scene and Incident Control

The WLAN system is a localized system that "enable[s] simultaneous voice duplex, high-speed data and full motion video transfers between emergency workers at an incident scene and command center personnel using mobile computers."²⁰ Motorola also stated that licensees could deploy WLANs as extensions of their wired LANs in buildings or campuses.²¹ Commenters noted that WLANs could provide full motion video for remote controlled robotics in hazardous operations or terrorist situations as well as for monitoring employees to allow on-scene decision making.²² WLANs could also permit continuous status/telemetry reporting and "wireless uploads of videos, images, and reports" from individuals or vehicles to the command center.²³ Public Safety commenters specifically noted that this broadband spectrum would permit the implementation of geographic positioning, automatic vehicle location, report transmission, electronic messaging, monitoring emergencies, and accessing data repositories.²⁴

Utilities have a demonstrated need for WLAN communications systems. The *NTIA Report* determined that WLAN connectivity is a developing technological trend for utilities,

²⁰ *Second Report and Order and FNPRM*, 17 F.C.C. Rcd. 3955 ¶ 24; *Motorola White Paper* at 2, 10-11; *APCO Comments* at 7; *Major Cities Chiefs Comments* at 2; *Major County Sheriffs' Ex Parte* 1.

²¹ *Motorola Comments* at 3; Reply Comments of Motorola 8 (May 17, 2000) [hereinafter *Motorola Reply Comments*].

²² *Motorola White Paper* at 7; *APCO Comments* at 7; *Major County Sheriffs' Ex Parte* at 2; Comments of Federal Law Enforcement Wireless Users Group 4 (Apr. 26, 2000) [hereinafter *FLEWUG Comments*]; *IACP Comments* at 2.

²³ *Motorola White Paper* at 16; *Major County Sheriffs' Ex Parte* at 2.

²⁴ *FLEWUG Comments* at 3-4 ¶ 7; Ex Parte Comments of National Public Safety Telecommunications Council 2 (Aug. 2, 2000) [hereinafter *NPSTC Ex Parte*].

finding that wideband data and wideband video "could have increasing roles in the control and monitoring of an energy provider's operational infrastructure."²⁵ Although WLAN systems permit only short-range communications, utilities could connect these systems to fixed microwave and fiber optic links to enable broadband transmissions from remote locations to headquarters.

Utilities require WLAN connectivity for on-scene and incident control efforts that they organize from a mobile command center. "This mobile office would provide instantaneous voice, data, and video access to other utility personnel, various utility data repositories, personnel from other utility related disciplines and commercial networks."²⁶ The mobile office would also enable field crews to transmit and receive incident-specific data and intelligence, including information about hazardous materials, weather and atmospheric conditions, and environmental/equipment conditions.²⁷

Wideband data and video capabilities offered by the 4.9 GHz band are necessary for day-to-day operations as well as emergency situations. The *NTIA Report* noted that "these rapidly emerging technologies could enhance the efficiency of an energy provider's daily operations and its ability to deal with emergency conditions where it is important to communicate the complex and often dynamically changing details of an emergency situation to others in the command or worker/supervisory chain."²⁸ This capability will allow "command and control personnel and other mobile workers [to] monitor, perform decision-making and provide assistance based on the

²⁵ *NTIA Report* at 3-21 through 3-22.

²⁶ *USAT Final Report* at 8.

²⁷ *Id.* In some situations involving hazardous materials, local Public Safety officials will request support from the local utility, which is often the only local source of equipment and personnel capable of responding to such hazards.

²⁸ *NTIA Report* at 3-21; *see USAT Final Report* at 10.

video transmission."²⁹ "Video systems are invaluable tools to public service entities responding to catastrophic events, such as train derailments, tornadoes, hurricanes, and terrorist attacks."³⁰

Cinergy's and Consumers' field crews could use wideband data and video for day-to-day maintenance and repair activities. WLAN systems would also enable field workers to remain mobile while reporting maintenance issues on a real-time basis, thus facilitating a quick response. For example, field workers could communicate with the command center while they are perched on a pole top thirty feet above the ground repairing an electrical line.³¹ Because repairs in these situations are often complex, dynamic, and dangerous, the worker must remain in constant contact with the command center. With broadband capabilities, however, a crew member could transmit real-time video images to the command center, illustrating the exact extent of the damage and enabling supervisors to develop appropriate repair procedures without the worker having to leave the pole top.

While Cinergy and Consumers currently use their land mobile communications systems to accomplish this task, this method has several limitations. For example, the worker must verbally explain the extent or type of damage and answer questions. Real-time video would allow supervisors at the command center to see exactly what the workers see and guide them through the repair process. Thus, the multimedia applications permitted by broadband spectrum would allow utilities to engage in these types of activities in a more efficient and effective manner.

²⁹ *USAT Final Report* at 12.

³⁰ *NTIA Report* at 3-21; *see USAT Final Report* at 10.

³¹ In addition, the use of the 4.9 GHz band for day-to-day operations increases spectral efficiency because the band would not lie fallow during non-emergency situations.

WLAN systems would also permit the transmission of complex or voluminous data between the field and a command center, increasing the efficiency of field inspection and maintenance operations. For example, the *USAT Final Report* noted that utility field crews may need to transmit "a digital image of a critical circuit element, construction detail or possible safety situation" to facilitate repairs to the power grid.³² The use of a broadband system would accelerate the transmission of this information, while simultaneously permitting duplex voice transmissions. This capability will help to protect the integrity of the power grid and gas pipelines and prevent the escalation of minor problems, which could disrupt service.

Utilities could also use WLAN communications in this band in emergency situations. For example, the *USAT Final Report* noted that real-time video "would greatly enhance a utility's ability to expedite damage assessment . . . [by] provid[ing] accurate assessments of damage location and ensur[ing] proper crew and vehicle deployment."³³ In its comments to the FCC on the *NTIA Report*, Cinergy noted the advantages of installing video systems to monitor substations from remote locations.³⁴ As noted earlier, a utility could connect a WLAN system to its existing microwave or fiber optic link at a substation to enable the transmission of real-time video feeds from individual cameras to the command center at the substations and then through the dedicated broadband microwave or fiber link to headquarters. If an outage occurs, personnel could check on the substation from miles away and analyze the problem prior to sending crews to the site. Broadband systems would enhance efficiency by informing the utility of the problem

³² *USAT Final Report* at 9.

³³ *Id.* at 10; *NTIA Report* at 3-22 (finding that real-time video will permit utilities "to make accurate damage assessments and deploy[] repair crews accordingly").

³⁴ Comments of Cinergy Corporation, In re Request for comment on NTIA Report on Current and Future Spectrum Use by the Energy, Water, and Railroad Service Industries; NTIA Docket No. 010327080-1080-01, DA 02-361 11 (Mar. 6, 2002).

before it dispatches work crews to the site, enabling it to send the right personnel with the proper tools and parts to fix the problem quickly.

In addition to day-to-day maintenance and emergency situations, utilities require broadband applications for dangerous operations, such as those involving nuclear facilities. "[H]azardous material containment may only be accomplished with remote equipment supported by robotics. The operation of this equipment will be heavily dependent upon wireless data connectivity and the ability to guide these devices via video support."³⁵ In particular, the *USAT Final Report* states that "[f]ull motion, generally short distance (up to 1000 meters), video transmissions from the robotic device to a local control site is required to support such robotic activities." The *USAT Final Report* also noted that "repairs to sensitive areas of a nuclear power plant or emergencies[] require real-time video."³⁶ Utilities would transmit this full-motion video "from the incident scene to either an incident command post or to a remotely located emergency operations center."³⁷ As the Public Safety commenters and the FCC noted in the current proceeding, these types of short data and video transmissions are exactly what the 4.9 GHz band will offer licensees.

3. Wireless Fixed "Hot Spot" Location Devices

Wireless fixed "hot spot" location devices "provide automatic high-speed . . . intranet file downloading and uploading of very large data, image[,] and video files and predetermined locations[] as well as critical information transfer to and from . . . vehicular computers in the

³⁵ *USAT Final Report* at 9, 11.

³⁶ *Id.* at 11.

³⁷ *Id.*

immediate vicinity of a "hot spot" transceiver."³⁸ Although the "hot spot" is geographically limited, commenters envision the deployment of fixed transceivers at numerous locations throughout their service area.³⁹ These "hot spots" could allow licensees to download maps and building layouts on their way to the incident scene.⁴⁰

The *NTIA Report* discussed the importance of transmitting wideband data and wideband video to remote locations beyond the command center.⁴¹ Utilities anticipate the need to download or upload information to and from remote locations. Like traditional Public Safety entities, utilities will frequently need to download maps from central data repositories. For example, field crews could use a real-time Geographic Information System, which combines general map data with system specific infrastructure, to display "the precise location of transmission towers, transformers, company buildings, etc. on a street map."⁴² Using the Geographic Information System, field crews could pull up discrete landmarks from a remote computer database and display them graphically on their portable computer screens.⁴³ Cinergy has previously expressed its desire to transmit such data to its service trucks in order to provide work crews with pole line records, maps, and other records while they are in the field.⁴⁴ With the increasing complexity of our nation's interconnected power grids, and the dynamic changes

³⁸ *Second Report and Order and FNPRM*, 17 F.C.C. Rcd. 3955 ¶ 24; *APCO Comments* at 7; *FLEWUG Comments* at 4; *IACP Comments* at 2.

³⁹ *Motorola White Paper* at 10.

⁴⁰ *Id.* at 7; *FLEWUG Comments* at 3-4 ¶ 7.

⁴¹ *NTIA Report* at 3-21 through 3-22.

⁴² *USAT Final Report* at 10.

⁴³ *Id.*

⁴⁴ Supplemental Comments of Cinergy Corporation, In re Request for Comment on Energy, Water, and Railroad Service Providers' Spectrum Use Study, NTIA Docket No. 010327080-1080-01 5 (Oct. 12, 2001).

in system parameters, it is critical for all field crews to have up-to-the-minute records of utility infrastructure.

B. Proposed Utility Broadband Applications Will Also Implement Homeland Security Measures and Protect the Lives and Property of the Public

The broadband applications proposed by Cinergy and Consumers would also enhance the federal government's homeland security efforts and protect the lives and property of citizens. While Public Safety commenters stated that these communications would serve as "a lifeline for the individuals performing their routine work, which is in a highly dangerous environment,"⁴⁵ employees are also subject to several risks to perform their public services and enhance homeland security.

As described above, Cinergy, Consumers, and other power utilities supply the core resources – gas and electricity – required by every key infrastructure entity. Because industrial, business, and domestic operations depend on the availability of electric and gas power, Cinergy and Consumers' utility services impact the lives and property of virtually everyone within their service territories. Cinergy and Consumers are also responsible for providing electricity and gas to hospitals, military installations, public safety agencies, and other critical facilities throughout their service territories. These broadband communications also ensure the safety of Cinergy's and Consumers' field crews and permit their infrastructure to deliver electricity and gas safely and efficiently.

In addition, since the events of September 11th, broadband spectrum requirements have increased substantially because of the immediate need for secure communications. Because

⁴⁵ *NPSTC Ex Parte* at 3; *see Major County Sheriffs' Ex Parte* at 1; *Major Cities Chiefs Comments* at 2; Public Safety Wireless Advisory Committee, *Final Report to the FCC and the NTIA* 3 (1996) [hereinafter *PSWAC Final Report*]