

**DISCUSSION DRAFT TO PROVIDE FUNDING FOR
THE CONSTRUCTION AND MAINTENANCE OF
A NATIONWIDE, INTEROPERABLE PUBLIC SAFE-
TY BROADBAND NETWORK AND FOR OTHER
PURPOSES AND ON H.R. 4829, THE NEXT
GENERATION 911 PRESERVATION ACT OF 2010**

HEARING

BEFORE THE

SUBCOMMITTEE ON COMMUNICATIONS,
TECHNOLOGY, AND THE INTERNET

OF THE

COMMITTEE ON ENERGY AND
COMMERCE

HOUSE OF REPRESENTATIVES

ONE HUNDRED ELEVENTH CONGRESS

SECOND SESSION

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**DISCUSSION DRAFT TO PROVIDE FUNDING
FOR THE CONSTRUCTION AND MAINTENANCE OF A NATIONWIDE, INTEROPERABLE PUBLIC SAFETY BROADBAND NETWORK AND FOR OTHER PURPOSES AND ON H.R. 4829, THE NEXT GENERATION 911 PRESERVATION ACT OF 2010**

THURSDAY, JUNE 17, 2010

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON COMMUNICATIONS, TECHNOLOGY,
AND THE INTERNET,
COMMITTEE ON ENERGY AND COMMERCE,
Washington, DC.

The Subcommittee met, pursuant to call, at 10:05 a.m., in Room 2322 of the Rayburn House Office Building, Hon. Rick Boucher [Chairman of the Subcommittee] presiding.

Members present: Representatives Boucher, Gordon, Rush, Eshoo, Inslee, Weiner, Castor, McNerney, Waxman (ex officio), Stearns, Shimkus, Terry, Blackburn, and Barton (ex officio).

Also present: Representative Harman.

Staff present: Amy Levine, Counsel; Roger Sherman, Chief Counsel; Tim Powderly, Senior Counsel; Pat Delgado, Chief of Staff; Shawn Chang, Counsel; Greg Guice, Counsel; Sarah Fisher, Special Assistant; Laurance Frierson, Intern; Alex Reicher, Intern; Bruce Wolpe, Senior Advisor; Will Carty, Professional Staff Member, CTCPC; and Neil Fried, Counsel, Telecommunications.

OPENING STATEMENT OF HON. RICK BOUCHER, A REPRESENTATIVE IN CONGRESS FROM THE COMMONWEALTH OF VIRGINIA

Mr. BOUCHER. The subcommittee will come to order. Today the subcommittee will consider the steps that Congress can take to facilitate the creation of a nationwide, interoperable broadband network for the public safety community. As the terrorist attacks on 9/11 and the natural disasters such as Hurricane Katrina have starkly revealed, there are serious obstacles that prevent fire, police, and rescue personnel from one locality from communicating with first responders from other localities when they converge on the scene of a disaster. In some instances, fire police and rescue personnel in a single locality may lack a means of interoperable communications, one with another. There is a widely understood

need to create a fully interoperable first responder network but as of today that network remains a goal. It is not a reality.

On a bipartisan basis, the members of this committee are determined to address this challenge and take the steps that are necessary from a legislative perspective in order to make that first responder network a reality. In bipartisan cooperation our staffs have assembled a discussion draft of legislation that spells out those necessary steps. Our focus this morning is on that discussion draft. The largest single challenge to creating the first responder network is identifying and obtaining the funding that is needed for the buying, the installation, the operating, and the maintaining of the equipment that will provide broadband communications.

The National Broadband Plan assembled by the FCC estimates that cost to be between \$12 billion and \$16 billion over a 10-year period. The discussion draft directs that the D Block be auctioned and that the proceeds from that auction and the auction of several other spectrum blocks be applied to the build out and the upkeep costs of the first responder network. The draft authorizes general fund appropriations to cover any shortfall between the costs of the network and the auction proceeds for the D Block and those other areas of spectrum that would be auctioned. A strong federal government role in funding the network build out as detailed in the discussion draft will be essential if a true nationwide network is to be realized.

In rural areas, in particular, the localities will have great difficulty affording the build out costs in the absence of federal government financial participation in funding those costs. The bipartisan legislative draft acknowledges and accommodates that reality. The discussion draft also recognizes the 24 megahertz of 700 band spectrum that is already held by the public safety community. This current spectrum holding was deemed adequate by the FCC's analysis for the nationwide broadband first responder network that we now need to realize. Some, however, have proposed a different path forward than the bipartisan staff discussion draft. They would give the D Block to public safety to be combined with public safety's existing spectrum holdings.

The most significant shortcoming from that auction is that it would not provide the funding that is necessary for building out public safety's network. While some contend that public safety could lease parts of the D Block to commercial entities and apply the revenue from the leases to the build out, maintenance, and operational costs, I question whether sufficient revenue from leasing could be realized, particularly in rural areas to assure the funding of the network costs, and it is the rural build out cost that may prove most challenging for local governments to fund on their own. The option of giving the D Block to public safety would also require that Congress find offsets for the D Block's value. While we don't know with certainty what value the Congressional Budget Office would assign to the D Block current estimates place it between \$2 billion and \$3 billion. That is money Congress would have to identify and acquire before a single penny could be spent on constructing the network.

We have a historic opportunity to make our Nation more secure and give first responders a crucial tool they urgently need, and I

urge all members to keep this goal in mind as we consider and determine how best to proceed. I expect that we will receive thoughtful analysis on those questions from today's witnesses. We will also at today's hearing consider H.R. 4829, the Next Generation 911 Preservation Act of 2010, which was introduced by our committee colleagues, Ms. Eshoo of California, and Mr. Shimkus of Illinois. This measure would reauthorize the enhanced 911 Act of 2004 and facilitate the migration of today's enhanced 911 emergency communication systems to IP-based systems known as Next Generation 911 that could support multi-media communications including text, e-mail, and video.

I want to thank our committee colleagues for bringing this thoughtful measure before us. It will be considered as a part of today's hearing. Thanks to our witnesses for being here today. I look forward to your thoughtful analysis, and I also want to say thank you to the members of this subcommittee on both sides of the aisle who have participated in a bipartisan fashion in putting forward the discussion draft of the Public Safety Broadband Act of 2010. That concludes my opening statement, and I am pleased now to recognize the ranking Republican member of our subcommittee, the gentleman from Florida, Mr. Stearns.

[The information follows:]



Bipartisan Staff - Discussion Draft Summary
THE PUBLIC SAFETY BROADBAND ACT OF 2010
Committee on Energy and Commerce

The Public Safety Broadband Act of 2010 would require the development and implementation of technical requirements to ensure interoperability as well as fund the construction, maintenance, and operation of a nationwide broadband network for public safety.

Title I: Achieving Interoperability

To ensure that public safety broadband communications are interoperable throughout the United States, the legislation specifically provides for the following:

Emergency Response Interoperability Coordination: The legislation directs the Federal Communications Commission (FCC) to take all actions necessary to develop and implement the technical and operational rules needed to achieve interoperability. In meeting this requirement, the FCC is directed to work with an advisory board that, at a minimum, includes state, local, and tribal government leaders, public safety organizations, providers of commercial mobile services, as well as manufacturers of communications equipment.

Increased Flexible Use of Spectrum: The legislation directs the FCC to conduct a rulemaking to facilitate more flexible uses of the public safety narrowband and guard band spectrum, including for public safety broadband communications. Such flexibility allows the FCC and public safety officials to apply sound spectrum management principles to the 24 MHz of spectrum that has been allocated to public safety.

Increased Sharing of Spectrum: The legislation directs the FCC to establish rules permitting public safety to allow secondary use of its networks by non-public safety entities. Public safety would be allowed to charge users for such secondary access, and fees associated with this use would provide public safety agencies with greater resources for construction, maintenance, and equipment expenses associated with the interoperable broadband network.

Title II: Funding

To ensure state, local, and tribal governments have the funds necessary to construct their portion of a nationwide, interoperable public safety broadband network, the legislation creates a matching grant program to help with construction costs and a ten-year funding mechanism to help defray the cost of maintenance and operational expenses.

Comprehensive Revenue Streams: In order to provide adequate funding for the construction and maintenance of a nationwide, interoperable public safety broadband network (estimated to be \$12-16 billion over ten years according to the National Broadband Plan), the legislation directs the following activities to ensure full funding of the network:

- *Auction of the D Block:* Directs the proceeds from the auction of the D Block directly into an account established to provide funding for the construction of a nationwide, interoperable public safety broadband network.
- *Auction of the AWS-3 spectrum:* Directs the FCC to auction 25 megahertz of combined AWS-3 and upper J Block spectrum, with revenue going directly to the construction and maintenance of the public safety network.
- *Auction of additional 25 megahertz of federal spectrum:* Directs the National Telecommunications and Information Administration (NTIA) to identify and auction a minimum of 25 megahertz of contiguous spectrum at frequencies between 1675 – 1710 megahertz to be paired with the AWS-3 spectrum at auction. The revenue would go directly to the construction and maintenance of the public safety network.
- *Authorization of Appropriations:* To ensure public safety agencies have all the resources they need, the legislation authorizes additional funding to cover any shortage in the construction and maintenance of the public safety network.

Funding for Construction: The National Broadband Plan estimates the costs of constructing a nationwide, interoperable public safety broadband network to be approximately \$6.5 billion. The estimate includes costs associated with construction of new cellular towers, equipment, and transmission facilities, and provides funding for upgrading existing public safety and commercial infrastructure. The legislation would provide for an 80% matching grant program to ensure that states and tribal lands have the needed funding to construct this network. \$5.5 billion in auction proceeds and other revenue streams identified in the legislation would go to the Public Safety Interoperable Grant Fund to be administered by NTIA in coordination with the FCC and the Department of Homeland Security's Office of Emergency Communications.

Funding for Ongoing Maintenance and Operations: To provide for the costs associated with maintaining and upgrading the network over the next ten years, the legislation directs the FCC to establish a mechanism to cover recurring funding up to \$5.5 billion. The Public Safety Interoperable Broadband Maintenance and Operation Fund would provide for a 50% matching program to cover recurring maintenance and operational costs as well as device and network upgrades. The legislation directs the FCC to issue a report to Congress in the seventh year of the program on whether to continue to provide funding after the end of 10 years.

Title III: Miscellaneous

Federal Rates and Infrastructure Access: In order to take full advantage of government resources, the legislation requires the Administrator of the Government Services Administration (GSA) to establish a mechanism for permitting public safety access to the rates for communications services and devices offered to GSA.

Additionally, GSA is directed to provide public safety access to federal infrastructure to assist in constructing a nationwide, interoperable public safety broadband network.

C Report on Spectrum Needs: The legislation requires the FCC to report to Congress every 5 years regarding the spectrum held by public safety entities or dedicated to the public safety interoperable broadband network. The FCC is directed to provide a recommendation as to whether more spectrum needs to be made available to meet the ongoing needs of public safety entities.

GAO Report on Satellite Broadband: The National Broadband Plan notes that “satellites can serve as a communications option and a critical source of redundancy, particularly when terrestrial infrastructure is unavailable.” The legislation therefore requires the Comptroller General of the United States to report to Congress within two years on the current and future capabilities of fixed and mobile satellite broadband to assist public safety entities during an emergency.

[STAFF DISCUSSION DRAFT]

JUNE 14, 2010

111TH CONGRESS
2D SESSION**H. R.** _____

To develop and implement interoperability requirements for a public safety interoperable broadband network, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

M. _____ introduced the following bill; which was referred to the Committee on _____

A BILL

To develop and implement interoperability requirements for a public safety interoperable broadband network, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “Public Safety
5 Broadband Act of 2010”.

6 **SEC. 2. DEFINITIONS.**

7 In this Act:

1 (1) 700 MHZ BAND.—The term “700 MHz
2 band” means the portion of the electromagnetic
3 spectrum between the frequencies from 698 mega-
4 hertz to 806 megahertz.

5 (2) 700 MHZ D BLOCK SPECTRUM.—The term
6 “700 MHz D block spectrum” means the portion of
7 the electromagnetic spectrum between the fre-
8 quencies from 758 megahertz to 763 megahertz and
9 between the frequencies from 788 megahertz to 793
10 megahertz.

11 (3) ASSISTANT SECRETARY.—The term “Assist-
12 ant Secretary” means the Assistant Secretary of
13 Commerce for Communications and Information.

14 (4) COMMERCIAL MOBILE SERVICE.—The term
15 “commercial mobile service” has the meaning given
16 such term in section 332 of the Communications Act
17 of 1934 (47 U.S.C. 332).

18 (5) COMMISSION.—The term “Commission”
19 means the Federal Communications Commission.

20 (6) CONSTRUCTION FUND.—The term “Con-
21 struction Fund” means the fund established in sec-
22 tion 201(a)(1)(A).

23 (7) GUARD BAND SPECTRUM.—The term
24 “guard band spectrum” means the portion of the
25 electromagnetic spectrum between the frequencies

1 from 768 megahertz to 769 megahertz and between
2 the frequencies from 798 megahertz to 799 mega-
3 hertz.

4 (8) MAINTENANCE AND OPERATION FUND.—
5 The term “Maintenance and Operation Fund”
6 means the fund established in section 202(a)(2)(A).

7 (9) NARROWBAND SPECTRUM.—The term
8 “narrowband spectrum” means the portion of the
9 electromagnetic spectrum between the frequencies
10 from 769 megahertz to 775 megahertz and between
11 the frequencies from 799 megahertz to 805 mega-
12 hertz.

13 (10) NTIA.—The term “NTIA” means the Na-
14 tional Telecommunications and Information Admin-
15 istration.

16 (11) PUBLIC SAFETY ENTITY.—The term “pub-
17 lic safety entity” means any State, local, or tribal
18 government entity whose principal purpose is to pro-
19 tect the safety of life, health, or property.

20 (12) UNOCCUPIED GUARD BAND SPECTRUM.—
21 The term “unoccupied guard band spectrum” means
22 the portion of the electromagnetic spectrum between
23 the frequencies from 775 megahertz to 776 mega-
24 hertz and between the frequencies from 805 mega-
25 hertz to 806 megahertz.

1 **TITLE I—ACHIEVING**
2 **INTEROPERABILITY**

3 **SEC. 101. MANAGEMENT.**

4 (a) **ESTABLISHMENT.**—The Commission shall take
5 all actions necessary to ensure the deployment of a nation-
6 wide public safety interoperable broadband network in the
7 700 MHz band, including—

8 (1) developing and implementing nationwide
9 technical and operational requirements for such net-
10 work;

11 (2) adopting any rules necessary to achieve
12 interoperability in such network; and

13 (3) adopting user authentication and encryption
14 requirements for such network.

15 (b) **SPECIFICATIONS.**—In carrying out subsection
16 (a)(2), the Commission shall establish an appropriate rule,
17 or set of rules, to ensure nationwide interoperability in
18 such network by taking into consideration—

19 (1) the extent to which particular technologies
20 and user equipment are, or are likely to be, available
21 in the commercial marketplace;

22 (2) the availability of necessary technologies
23 and equipment on reasonable and non-discriminatory
24 licensing terms;

1 (3) the ability to evolve with technological devel-
2 opments in the commercial marketplace;

3 (4) the ability to accommodate prioritization for
4 public safety transmissions; and

5 (5) the ability to accommodate appropriate se-
6 curity measures for public safety transmissions.

7 (c) DEADLINE.—

8 (1) IN GENERAL.—The Commission shall com-
9 plete the actions required under paragraphs (1), (2),
10 and (3) of subsection (a) not later than 1 year after
11 the date of enactment of this Act.

12 (2) UPDATES.—The Commission shall update
13 such requirements and standards as necessary.

14 (d) CONSULTATION.—In carrying out subsection (a),
15 the Commission shall consult with the Director of the Of-
16 fice of Emergency Communications in the Department of
17 Homeland Security, the Assistant Secretary, the Director
18 of the National Institute of Standards and Technology,
19 and the advisory board established in section 102.

20 **SEC. 102. ADVISORY BOARD.**

21 (a) IN GENERAL.—Not later than 90 days after the
22 date of enactment of this Act, the Commission shall estab-
23 lish an advisory board to advise the Commission on—

24 (1) carrying out its duties under section 101;

25 and

1 (2) the implementation of improvements to the
2 public safety interoperable broadband network under
3 such section.

4 (b) COMPOSITION.—The Commission shall determine
5 the composition of the advisory board, which shall include,
6 at a minimum, representatives from each of the following:

7 (1) State, local, and tribal governments.

8 (2) Public safety organizations.

9 (3) Providers of commercial mobile service.

10 (4) Manufacturers of communications equip-
11 ment.

12 (c) REPORTS.—The Commission shall consult with
13 the advisory board on any study or report on public safety
14 spectrum, including the report required under section 302.

15 (d) TERMINATION.—The advisory board shall termi-
16 nate 10 years after the date of enactment of this Act.

17 **SEC. 103. FLEXIBILITY AND SHARING.**

18 (a) FLEXIBLE SPECTRUM USE.—The Commission
19 shall allow the narrowband spectrum, the guard band
20 spectrum, and the unoccupied guard band spectrum to be
21 used in a flexible manner, including for public safety
22 broadband communications.

23 (b) PERMITTING SECONDARY ACCESS TO PUBLIC
24 SAFETY SPECTRUM.—

1 (1) IN GENERAL.—The Commission shall per-
2 mit public safety entities to allow access through
3 written agreements to spectrum licensed to such
4 public safety entities.

5 (2) REQUIREMENTS.—The Commission shall—

6 (A) allow access to such spectrum only on
7 a secondary basis;

8 (B) require approval by the Commission of
9 such written agreements; and

10 (C) require that all funds received from
11 such secondary access pursuant to such written
12 agreements be reinvested in the public safety
13 interoperable broadband network by using such
14 funds only for constructing, maintaining, im-
15 proving, or purchasing equipment to be used in
16 conjunction with such network.

17 (c) DEADLINE.—The Commission shall take all ac-
18 tions necessary to establish rules to carry out this section
19 not later than 1 year after the date of enactment of this
20 Act.

21 **TITLE II—FUNDING**

22 **SEC. 201. ESTABLISHMENT OF FUNDS.**

23 (a) IN GENERAL.—

24 (1) CONSTRUCTION FUND.—

1 (A) ESTABLISHMENT.—There is estab-
2 lished in the Treasury of the United States a
3 fund to be known as the Public Safety Inter-
4 operable Broadband Network Construction
5 Fund.

6 (B) PURPOSE.—The Assistant Secretary
7 shall establish and administer the grant pro-
8 gram under section 202 using the funds depos-
9 ited in the Construction Fund.

10 (C) CREDIT.—

11 (i) BORROWING AUTHORITY.—The
12 Assistant Secretary may borrow from the
13 general fund of the Treasury beginning on
14 October 1, 2010, such sums as may be
15 necessary, but not to exceed
16 \$2,000,000,000, to implement section 202.

17 (ii) REIMBURSEMENT.—The Secretary
18 of the Treasury shall reimburse the general
19 fund of the Treasury, without interest, for
20 any amounts borrowed under clause (i) as
21 funds are deposited into the Construction
22 Fund, but in no case later than December
23 31, 2014.

24 (2) MAINTENANCE AND OPERATION FUND.—

1 (A) ESTABLISHMENT.—There is estab-
2 lished in the Treasury of the United States a
3 fund to be known as the Public Safety Inter-
4 operable Broadband Network Maintenance and
5 Operation Fund.

6 (B) PURPOSE.—The Commission shall use
7 the funds deposited in the Maintenance and Op-
8 eration Fund to carry out section 203.

9 (b) INITIAL DISTRIBUTION OF AUCTION PROCEEDS
10 IN FUNDS.—Notwithstanding subparagraphs (A) and (D)
11 of section 309(j)(8) of the Communications Act of 1934
12 (47 U.S.C. 309(j)(8)), the Secretary of the Treasury shall
13 deposit the proceeds (including deposits and upfront pay-
14 ments from successful bidders) from the auction of the
15 spectrum described in section 301 and the auction of the
16 700 MHz D block spectrum as follows:

17 (1) All proceeds less than or equal to
18 \$5,500,000,000 shall be deposited in the Construc-
19 tion Fund and shall be made available to the Assist-
20 ant Secretary without further appropriations.

21 (2) Any proceeds exceeding \$5,500,000,000
22 shall be deposited in the Maintenance and Operation
23 Fund and shall be made available to the Commission
24 without further appropriations.

1 (c) TRANSFER OF FUNDS AT COMPLETION OF CON-
2 STRUCTION.—The Secretary of the Treasury shall transfer
3 to the Maintenance and Operation Fund any funds re-
4 maining in the Construction Fund after the date of the
5 completion of the construction phase, as determined by the
6 Assistant Secretary.

7 (d) TRANSFER OF FUNDS TO TREASURY.—The Sec-
8 retary of the Treasury shall transfer to the general fund
9 of the Treasury any funds remaining in the Maintenance
10 and Operation Fund after the end of the 10-year period
11 that begins after the date of the completion of the con-
12 struction phase, as determined by the Assistant Secretary.

13 (e) AUTHORIZATION OF APPROPRIATIONS.—

14 (1) ASSISTANT SECRETARY.—There are author-
15 ized to be appropriated to the Assistant Secretary
16 for deposit in the Construction Fund in and after
17 fiscal year 2012 a total amount equal to
18 \$5,500,000,000 minus the amount deposited in the
19 Construction Fund under subsection (b)(1).

20 (2) COMMISSION.—There are authorized to be
21 appropriated to the Commission for deposit in the
22 Maintenance and Operation Fund in and after fiscal
23 year 2012 a total amount equal to \$5,500,000,000
24 minus the amount deposited in the Maintenance and
25 Operation Fund under subsection (b)(2).

1 **SEC. 202. PUBLIC SAFETY INTEROPERABLE BROADBAND**
2 **NETWORK CONSTRUCTION.**

3 (a) CONSTRUCTION GRANT PROGRAM ESTABLISH-
4 MENT.—The Assistant Secretary, in consultation with the
5 Commission and the Secretary of Homeland Security,
6 shall take such action as is necessary to establish a grant
7 program to assist public safety entities to establish a na-
8 tionwide public safety interoperable broadband network in
9 the 700 MHz band.

10 (b) PROJECTS.—The projects for which construction
11 grants may be made under this section are the following:

12 (1) Construction of a new public safety inter-
13 operable broadband network using commercial infra-
14 structure or public safety infrastructure, or both, in
15 the 700 MHz band.

16 (2) Improvement of the existing commercial
17 networks and construction of new infrastructure to
18 meet public safety requirements, as defined by the
19 Commission, that operate as part of the public safe-
20 ty interoperable broadband network in the 700 MHz
21 band.

22 (c) MATCHING REQUIREMENTS.—

23 (1) FEDERAL SHARE.—The Federal share of
24 the cost of carrying out a project under this section
25 may not exceed 80 percent of the eligible costs of

1 carrying out a project, as determined by the Assist-
2 ant Secretary in consultation with the Commission.

3 (2) NON-FEDERAL SHARE.—The non-Federal
4 share of the cost of carrying out a project under this
5 section may be provided through an in-kind con-
6 tribution.

7 (d) REQUIREMENTS.—Not later than 6 months after
8 the date of enactment of this Act, the Assistant Secretary,
9 in consultation with the Commission, shall establish grant
10 program requirements including the following:

11 (1) Defining entities that are eligible to receive
12 a grant under this section.

13 (2) Defining eligible costs for purposes of sub-
14 section (c)(1).

15 (3) Determining the scope of network infra-
16 structure eligible for grant funding under this sec-
17 tion.

18 (4) Conditioning grant funding on compliance
19 with the Commission's license terms.

20 (5) Prioritizing grants for projects that ensure
21 maximum population coverage.

22 **SEC. 203. PUBLIC SAFETY INTEROPERABLE BROADBAND**
23 **MAINTENANCE AND OPERATION.**

24 (a) MAINTENANCE AND OPERATION REIMBURSE-
25 MENT PROGRAM.—The Commission shall administer a

1 program through which not more than 50 percent of main-
2 tenance and operational expenses associated with the pub-
3 lic safety interoperable broadband network may be reim-
4 bursed from the Maintenance and Operation Fund for
5 those expenses that are attributable to the maintenance,
6 operation, and improvement of the public safety interoper-
7 able broadband network.

8 (b) RULEMAKING.—

9 (1) RULEMAKING PROCEEDING.—Not later
10 than 1 year after the date of enactment of this Act,
11 the Commission shall conduct a rulemaking to deter-
12 mine the requirements of the program described
13 under subsection (a).

14 (2) PRIORITY.—The rulemaking conducted pur-
15 suant to paragraph (1) may contain provisions to
16 prioritize reimbursement under the program de-
17 scribed under subsection (a).

18 (c) REPORT.—Not later than 7 years after the date
19 that the rule established under subsection (b)(1) becomes
20 effective, the Commission shall submit to Congress a re-
21 port on whether to continue to provide funding for the
22 Maintenance and Operation Fund after the end of the 10-
23 year period that begins after the date of the completion
24 of the construction phase, as determined by the Assistant
25 Secretary.

1 **TITLE III—MISCELLANEOUS**

2 **SEC. 301. AUCTION OF SPECTRUM.**

3 (a) IN GENERAL.—

4 (1) IDENTIFICATION OF SPECTRUM.—Not later
5 than 1 year after the date of enactment of this Act,
6 the Assistant Secretary shall identify, at a minimum,
7 25 megahertz of contiguous spectrum at frequencies
8 located between 1675 megahertz and 1710 mega-
9 hertz, inclusive, to be made available for immediate
10 reallocation.

11 (2) AUCTION.—Not later than January 31,
12 2013, the Commission shall conduct the auction of
13 the licenses, by commencing the bidding, for the fol-
14 lowing:

15 (A) The spectrum between the frequencies
16 of 2155 megahertz and 2180 megahertz, inclu-
17 sive.

18 (B) The spectrum identified pursuant to
19 paragraph (1).

20 (b) EXTENSION OF AUCTION AUTHORITY.—Section
21 309(j)(11) of the Communications Act of 1934 (47 U.S.C.
22 309(j)(11)) is amended by striking “2012” and inserting
23 “2020”.

1 SEC. 302. FCC REPORT ON SPECTRUM NEEDS.

2 Not later than 5 years after the date of enactment
3 of this Act and every 5 years thereafter, the Commission
4 shall conduct a study and submit to Congress a report
5 on the spectrum held by public safety entities or dedicated
6 to the public safety interoperable broadband network and
7 shall examine how such spectrum is being used and pro-
8 vide a recommendation for whether more spectrum needs
9 to be made available to meet the needs of public safety
10 entities.

11 SEC. 303. GAO REPORT ON SATELLITE BROADBAND.

12 Not later than 2 years after the date of enactment
13 of this Act, the Comptroller General of the United States
14 shall conduct a study and submit to Congress a report
15 on the current and future capabilities of fixed and mobile
16 satellite broadband to assist public safety entities during
17 an emergency.

18 SEC. 304. ACCESS TO GSA SCHEDULES.

19 The Administrator of General Services shall establish
20 rules under which public safety entities may access and
21 use the rates offered to the General Services Administra-
22 tion for communications services and devices.

23 SEC. 305. FEDERAL INFRASTRUCTURE SHARING.

24 The Administrator of General Services shall establish
25 rules to allow public safety agencies to have access to Fed-

- 1 eral infrastructure to construct and maintain the public
- 2 safety interoperable broadband network.

111TH CONGRESS
2^D SESSION

H. R. 4829

To amend the National Telecommunications and Information Administration Organization Act to enhance and promote the Nation's public safety and citizen activated emergency response capabilities through the use of 9-1-1 services, to further upgrade public safety answering point capabilities and related functions in receiving 9-1-1 calls, and to support in the construction and operation of a ubiquitous and reliable citizen activated system.

IN THE HOUSE OF REPRESENTATIVES

MARCH 11, 2010

Ms. ESHOO (for herself, Mr. SHIMKUS, and Mr. KAGEN) introduced the following bill; which was referred to the Committee on Energy and Commerce

A BILL

To amend the National Telecommunications and Information Administration Organization Act to enhance and promote the Nation's public safety and citizen activated emergency response capabilities through the use of 9-1-1 services, to further upgrade public safety answering point capabilities and related functions in receiving 9-1-1 calls, and to support in the construction and operation of a ubiquitous and reliable citizen activated system.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

1 **SECTION 1. SHORT TITLE.**

2 This Act may be cited as the “Next Generation 9-
3 1-1 Preservation Act of 2010”.

4 **SEC. 2. FINDINGS.**

5 The Congress finds that—

6 (1) for the sake of our Nation’s public safety,
7 a universal emergency telephone number (9-1-1)
8 that is enhanced with the most modern and state-of-
9 the-art telecommunications capabilities possible, in-
10 cluding voice, data, and video communications,
11 should be available to all citizens where they live,
12 work, and travel;

13 (2) a successful migration to the Next Genera-
14 tion 9-1-1 communications system will require great-
15 er Federal, State, and local government resources
16 and coordination;

17 (3) any funds that are collected from fees im-
18 posed on consumer bills for the purposes of funding
19 9-1-1 services or enhanced 9-1-1 services should only
20 be used for the purposes for which the funds are col-
21 lected;

22 (4) it is a national priority to foster the migra-
23 tion from analog, voice-centric 9-1-1 and current
24 generation emergency communications systems to a
25 21st century, Next Generation, IP-based emergency

1 services model that embraces a wide range of voice,
2 video, and data applications;

3 (5) ensuring 9-1-1 access for all citizens in-
4 cludes improving access to 9-1-1 systems for the
5 deaf, hard of hearing, deaf-blind, and individuals
6 with speech disabilities, who are increasingly com-
7 municating with non-traditional text, video, and in-
8 stant messaging communications services and who
9 expect those services to be able to connect directly
10 to 9-1-1 systems;

11 (6) a coordinated public educational effort on
12 current and emerging 9-1-1 system capabilities and
13 proper use of the 9-1-1 system is essential to the op-
14 eration of an effective 9-1-1 system;

15 (7) Federal policies and funding should enable
16 the transition to an Internet Protocol-based (IP-
17 based) Next Generation 9-1-1 system and Federal 9-
18 1-1 and emergency communications laws and regula-
19 tions must keep pace with rapidly changing tech-
20 nology to ensure an open and competitive 9-1-1 envi-
21 ronment based on the most advanced technology
22 available; and

23 (8) Federal policies and grant programs should
24 reflect the growing convergence and integration of
25 emergency communications technology, such that

1 State interoperability plans and Federal funding in
2 support of such plans is made available for all as-
3 pects of Next Generation 9-1-1 and emergency com-
4 munications systems.

5 **SEC. 3. PURPOSES.**

6 The purposes of this Act are—

7 (1) to focus Federal policies and funding pro-
8 grams to ensure a successful migration from a voice-
9 centric 9-1-1 system to an IP-enabled, Next Genera-
10 tion 9-1-1 emergency response system that uses
11 voice, data, and video services that greatly enhance
12 the capability of 9-1-1 and emergency response serv-
13 ices;

14 (2) to ensure that technologically advanced 9-1-
15 1 and emergency communications systems are uni-
16 versally available and adequately funded to serve all
17 Americans; and

18 (3) to ensure all 9-1-1 and emergency response
19 organizations have access to—

20 (A) high-speed broadband networks;

21 (B) interconnected IP backbones; and

22 (C) innovative services and applications.

1 **SEC. 4. COORDINATION OF 9-1-1 IMPLEMENTATION.**

2 Section 158 of the National Telecommunications and
3 Information Administration Organization Act (47 U.S.C.
4 942) is amended to read as follows:

5 **“SEC. 158. COORDINATION OF E-911 AND NEXT GENERA-**
6 **TION 9-1-1 IMPLEMENTATION.**

7 **“(a) 9-1-1 IMPLEMENTATION COORDINATION OF-**
8 **FICE.—**

9 **“(1) ESTABLISHMENT AND CONTINUATION.—**

10 The Assistant Secretary shall—

11 **“(A) establish and further a program to**
12 **facilitate coordination and communication be-**
13 **tween Federal, State, and local emergency com-**
14 **munications systems, emergency personnel,**
15 **public safety organizations, telecommunications**
16 **carriers, and telecommunications equipment**
17 **manufacturers and vendors involved in the im-**
18 **plementation of all 9-1-1 services; and**

19 **“(B) create an improved 9-1-1 Implemen-**
20 **tation Coordination Office to implement the**
21 **provisions of this section.**

22 **“(2) MANAGEMENT PLAN.—The Assistant Sec-**
23 **retary shall develop a management plan for the pro-**
24 **gram established under this section. Such plan shall**
25 **include the organizational structure and funding**
26 **profiles for the 5-year duration of the program. The**

1 Assistant Secretary shall, within 90 days after the
2 date of enactment of the Next Generation 9-1-1
3 Preservation Act of 2010, submit the management
4 plan to the Committees on Energy and Commerce
5 and Appropriations of the House of Representatives
6 and the Committees on Commerce, Science, and
7 Transportation and Appropriations of the Senate.

8 “(3) PURPOSE OF OFFICE.—The Office shall—

9 “(A) take actions, in concert with coordi-
10 nators designated in accordance with subsection
11 (b)(3)(A)(ii), to improve such coordination and
12 communication;

13 “(B) develop, collect, and disseminate in-
14 formation concerning practices, procedures, and
15 technology used in the implementation of E-
16 911 services and Next Generation 9-1-1 serv-
17 ices;

18 “(C) advise and assist eligible entities in
19 the preparation of implementation plans re-
20 quired under subsection (b)(3)(A)(iii);

21 “(D) receive, review, and recommend the
22 approval or disapproval of applications for
23 grants under subsection (b); and

1 “(E) oversee the use of funds provided by
2 such grants in fulfilling such implementation
3 plans.

4 “(4) REPORTS.—The Assistant Secretary shall
5 provide an annual report to Congress by the first
6 day of October of each year on the activities of the
7 Office to improve coordination and communication
8 with respect to the implementation of E-911 serv-
9 ices and Next Generation 9-1-1 services.

10 “(b) E-911 AND NEXT GENERATION 9-1-1 IMPLE-
11 MENTATION GRANTS.—

12 “(1) MATCHING GRANTS.—The Assistant Sec-
13 retary, after consultation with the Chairman of the
14 Commission, and acting through the Office, shall
15 provide grants to eligible entities for—

16 “(A) the implementation and operation of
17 E-911 services, migration to an IP-enabled
18 emergency network, and adoption and operation
19 of Next Generation 9-1-1 services and applica-
20 tions;

21 “(B) the implementation of IP-enabled
22 emergency services and applications enabled by
23 Next Generation 9-1-1 services, including the
24 establishment of IP backbone networks and the
25 application layer software infrastructure needed

1 to interconnect the multitude of emergency re-
2 sponse organizations; and

3 “(C) training in 9-1-1 services of public
4 safety personnel, including call-takers, first re-
5 sponders, and other individuals and organiza-
6 tions who are part of the emergency response
7 chain.

8 “(2) MATCHING REQUIREMENT.—The Federal
9 share of the cost of a project eligible for a grant
10 under this section shall not exceed 80 percent. The
11 non-Federal share of the cost shall be provided from
12 non-Federal sources unless waived by the Assistant
13 Secretary.

14 “(3) COORDINATION REQUIRED.—In providing
15 grants under paragraph (1), the Assistant Secretary
16 shall require an eligible entity to certify in its appli-
17 cation that—

18 “(A) in the case of an eligible entity that
19 is a State government, the entity—

20 “(i) has coordinated its application
21 with the public safety answering points lo-
22 cated within the jurisdiction of such entity;

23 “(ii) has designated a single officer or
24 governmental body of the entity to serve as
25 the coordinator of implementation of 9-1-1

1 services, except that such designation need
2 not vest such coordinator with direct legal
3 authority to implement E-911 services or
4 Next Generation 9-1-1 services or to man-
5 age emergency communications operations;

6 “(iii) has established a plan for the
7 coordination and implementation of E-911
8 services and Next Generation 9-1-1 serv-
9 ices; and

10 “(iv) has integrated telecommuni-
11 cations services involved in the implemen-
12 tation and delivery of E-911 services and
13 Next Generation 9-1-1 services; or

14 “(B) in the case of an eligible entity that
15 is not a State, the entity has complied with
16 clauses (i), (iii), and (iv) of subparagraph (A),
17 and the State in which it is located has com-
18 plied with clause (ii) of such subparagraph.

19 “(4) CRITERIA.—Within 120 days after the
20 date of enactment of the Next Generation 9-1-1
21 Preservation Act of 2010, the Assistant Secretary
22 shall issue regulations, after providing the public
23 with notice and an opportunity to comment, pre-
24 scribing the criteria for selection for grants under
25 this section. The criteria shall include performance

1 requirements and a timeline for completion of any
2 project to be financed by a grant under this section.
3 The Assistant Secretary shall update such regula-
4 tions as necessary.

5 “(c) DIVERSION OF 9-1-1 CHARGES.—

6 “(1) DESIGNATED 9-1-1 CHARGES.—For the
7 purposes of this subsection, the term ‘designated 9-
8 1-1 charges’ means any taxes, fees, or other charges
9 imposed by a State or other taxing jurisdiction that
10 are designated or presented as dedicated to deliver
11 or improve E-911 services or Next Generation 9-1-
12 1 services.

13 “(2) CERTIFICATION.—Each applicant for a
14 matching grant under this section shall certify to the
15 Assistant Secretary at the time of application, and
16 each applicant that receives such a grant shall cer-
17 tify to the Assistant Secretary annually thereafter
18 during any period of time during which the funds
19 from the grant are available to the applicant, that
20 no portion of any designated 9-1-1 charges imposed
21 by a State or other taxing jurisdiction within which
22 the applicant is located are being obligated or ex-
23 pended for any purpose other than the purposes for
24 which such charges are designated or presented dur-
25 ing the period beginning 180 days immediately pre-

1 ceding the date of the application and continuing
2 through the period of time during which the funds
3 from the grant are available to the applicant.

4 “(3) CONDITION OF GRANT.—Each applicant
5 for a grant under this section shall agree, as a con-
6 dition of receipt of the grant, that if the State or
7 other taxing jurisdiction within which the applicant
8 is located, during any period of time during which
9 the funds from the grant are available to the appli-
10 cant, obligates or expends designated 9-1-1 charges
11 for any purpose other than the purposes for which
12 such charges are designated or presented, all of the
13 funds from such grant shall be returned to the Of-
14 fice.

15 “(4) PENALTY FOR PROVIDING FALSE INFOR-
16 MATION.—Any applicant that provides a certification
17 under paragraph (1) knowing that the information
18 provided in the certification was false shall—

19 “(A) not be eligible to receive the grant
20 under subsection (b);

21 “(B) return any grant awarded under sub-
22 section (b) during the time that the certification
23 was not valid; and

24 “(C) not be eligible to receive any subse-
25 quent grants under subsection (b).

1 “(d) AUTHORIZATION AND TERMINATION.—

2 “(1) AUTHORIZATION.—There are authorized to
3 be appropriated to the Department of Commerce, for
4 the purposes of grants under the program operated
5 under this section, not more than \$250,000,000 for
6 each of the fiscal years 2010 through 2015, not
7 more than 5 percent of which for any fiscal year
8 may be obligated or expended for administrative
9 costs.

10 “(2) TERMINATION.—The provisions of this
11 section shall cease to be effective on October 1,
12 2014.

13 “(e) DEFINITIONS.—As used in this Act—

14 “(1) 9-1-1 SERVICES.—The term 9-1-1 services
15 includes both E-911 services and Next Generation
16 9-1-1 services.

17 “(2) E-911 SERVICES.—The term ‘E-911 serv-
18 ices’ means both phase I and phase II enhanced 9-
19 1-1 services, as described in section 20.18 of the
20 Commission’s regulations (47 CFR 20.18), as in ef-
21 fect on the date of enactment of the Next Genera-
22 tion 9-1-1 Preservation Act of 2010, or as subse-
23 quently revised by the Commission.

24 “(3) ELIGIBLE ENTITY.—

1 “(A) IN GENERAL.—The term ‘eligible en-
2 tity’ means a State or local government or a
3 tribal organization (as defined in section 4(l) of
4 the Indian Self-Determination and Education
5 Assistance Act (25 U.S.C. 450b(l))).

6 “(B) INSTRUMENTALITIES.—Such term in-
7 cludes public authorities, boards, commissions,
8 and similar bodies created by one or more eligi-
9 ble entities described in subparagraph (A) to
10 provide E-911 services or Next Generation 9-1-
11 1 services.

12 “(C) EXCEPTION.—Such term does not in-
13 clude any entity that has failed to submit the
14 most recently required certification under sub-
15 section (c) within 30 days after the date on
16 which such certification is due.

17 “(4) EMERGENCY CALL.—The term ‘emergency
18 call’ refers to any real-time communication to a pub-
19 lic safety answering point or other emergency man-
20 agement or response agency, including through
21 voice, text, or video and related data and including
22 nonhuman-initiated automatic event alerts, such as
23 alarms, telematics, or sensor data, which may also
24 include real-time voice, text, or video communica-
25 tions.

1 “(5) NEXT GENERATION 9-1-1 SERVICES.—The
2 term ‘Next Generation 9-1-1 services’ means an IP-
3 based system comprised of hardware, software, data,
4 and operational policies and procedures that—

5 “(A) provides standardized interfaces from
6 emergency call and message services to support
7 emergency communications;

8 “(B) processes all types of emergency calls,
9 including voice, data, and multimedia informa-
10 tion;

11 “(C) acquires and integrates additional
12 emergency call data useful to call routing and
13 handling;

14 “(D) delivers the emergency calls, mes-
15 sages, and data to the appropriate public safety
16 answering point and other appropriate emer-
17 gency entities;

18 “(E) supports data or video communica-
19 tions needs for coordinated incident response
20 and management; or

21 “(F) provides broadband service to public
22 safety answering points or other first responder
23 entities.

24 “(6) OFFICE.—The term ‘Office’ means the 9-
25 1-1 Implementation Coordination Office.

1 seeking comment on the feasibility of requiring
2 MLTS operators to provide a sufficiently precise in-
3 dication of a 9-1-1 caller's location, while avoiding
4 the imposition of undue burdens on MLTS manufac-
5 turers, providers, and operators.

6 (2) SPECIFIC REQUIREMENT.—The public no-
7 tice under paragraph (1) shall seek comment on the
8 National Emergency Number Association's "Tech-
9 nical Requirements Document On Model Legislation
10 E-911 for Multi-Line Telephone Systems" (NENA
11 06-750, Version 2).

12 (c) DEFINITION.—The term "multi-line telephone
13 system" or "MLTS" means a system comprised of com-
14 mon control units, telephone sets, control hardware and
15 software and adjunct systems, including network and
16 premises based systems, such as Centrex and VoIP, as
17 well as PBX, Hybrid, and Key Telephone Systems (as
18 classified by the Federal Communications Commission
19 under part 68 of title 47, Code of Federal Regulations)
20 and includes systems owned or leased by governmental
21 agencies and non-profit entities, as well as for profit busi-
22 nesses.

1 **SEC. 6. GAO STUDY OF STATE AND LOCAL USE OF 9-1-1**
2 **SERVICE CHARGES.**

3 (a) **IN GENERAL.**—Within 60 days after the date of
4 enactment of this Act, the Comptroller General shall ini-
5 tiate a study of—

6 (1) the imposition of taxes, fees, or other
7 charges imposed by States or political subdivisions
8 of States that are designated or presented as dedi-
9 cated to improve emergency communications serv-
10 ices, including 9-1-1 services or enhanced 9-1-1 serv-
11 ices, or related to emergency communications serv-
12 ices operations or improvements; and

13 (2) the use of revenues derived from such taxes,
14 fees, or charges.

15 (b) **REPORT.**—Within 18 months after initiating the
16 study required by subsection (a), the Comptroller General
17 shall transmit a report on the results of the study to the
18 Committee on Commerce, Science, and Transportation of
19 the Senate and the Committee on Energy and Commerce
20 of the House of Representatives setting forth the findings,
21 conclusions, and recommendations, if any, of the study,
22 including—

23 (1) the identity of each State or political sub-
24 division that imposes such taxes, fees, or other
25 charges; and

1 (2) the amount of revenues obligated or ex-
2 pended by that State or political subdivision for any
3 purpose other than the purposes for which such
4 taxes, fees, or charges were designated or presented.

○

OPENING STATEMENT OF HON. CLIFF STEARNS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF FLORIDA

Mr. STEARNS. Good morning, and thank you, Mr. Chairman, for holding this hearing, and also to welcome all of our witnesses this morning. We appreciate your time. Mr. Chairman, before I give all my comments on this hearing, I would like to note that this morning the FCC is considering a Notice of Inquiry to reclassify broadband as a Title 2 service. Broadband deployment and adoption are top priorities and Chairman Genachowski's plan to treat broadband similar to a public utility, I think will hurt investment and possibly hurt innovation. Our current pre-market, pro-investment policies have served us well. Approximately 95 percent of all Americans have access to broadband and approximately 200 million subscribe at home today and this is up from 8 million just 10 years ago. By comparison, it took 75 years to go from 8 million voice subscribers to 200 million under the old Title 2 common carrier regulations.

So, Mr. Chairman, I hope that we can soon have a hearing on the FCC's Notice of Inquiry. I think it is only appropriate considering what Chairman Genachowski is doing so that we have an opportunity. Both sides of the aisle can look at this issue and assess what he is doing. As you mentioned, in this hearing we are examining two very important pieces of legislation. The first is draft legislation to fund a nationwide interoperable public safety broadband network. I agree with the overall approach of the draft legislation, but perhaps the language could go further. I support the draft bill to the extent it uses revenue from a straight commercial auction of the D Block to fund the network on a 24 megahertz public safety spectrum already available. The FCC has concluded that the spectrum that has already been cleared for public safety is sufficient to simply build the network, but we need to be sure, however, that the legislation prohibits the FCC from imposing network neutrality or other such conditions and does not allow the FCC to rig the auction in favor of specific business models.

The 2005 DTV legislation which made this spectrum available left the FCC too much discretion in how to structure this auction. As we saw with the 700 megahertz auction in 2008, network neutrality and public safety conditions reduced the revenues by \$5 billion, sidelined both the 24 megahertz of public safety spectrum and the commercial D Block and crowded out smaller carriers. Absent exclusive prohibitions in the legislation, we can have no assurances that the FCC won't impose conditions on the D Block auction that will hurt it, again harming spectrum policy and reducing proceeds we need to fund the Public Safety Network. Instead of a commercial auction some argue that Congress should pass a law to give the D Block directly to the public safety community for free. This would do little good, however, absent funding to construct the network.

In this time of huge deficits and mounting public debt, it makes the most sense to raise the money through an auction to fund the network. We are now close to the 9-year anniversary of the September 11 terrorist attacks and yet we still do not have a nationwide interoperable broadband public safety network. This is too important, and we have already wasted too much time. The other bill

under discussion this morning is H.R. 4829, the Next Generation 911 Preservation Act of 2010. This bill can also improve our nation's public safety. Mr. Shimkus and Ms. Eshoo introduced this bill to expedite the ongoing migration of 911 service to enhance 911 service that can automatically identify the location of the caller to upgrade our entire 911 system for the Next Generation Internet enabled networks and capabilities that incorporate advanced texting and video applications, and to reduce the misuse of 911 fees which some state and local governments divert to fill holes in their budget.

You know, with a few changes the bill might help to not only modernize our 911 system but also to make it more economically and administratively efficient. Obviously there is a concern the bill costs and authorizes about \$250 million a year for the next 5 years. Frankly, we are having a little trouble finding money for the broadband public safety network so this is a very notable goal and thoughtful bill. I support it. I just want to make sure that we can also find the money to do this. So, Mr. Chairman, I think it is a very good hearing. I welcome this opportunity. Again, I would reiterate I think it would be appropriate that this subcommittee have a hearing on the FCC's Notice of Inquiry as soon as possible. Thank you.

Mr. BOUCHER. Thank you very much, Mr. Stearns. The gentleman from Tennessee, Mr. Gordon, is recognized for 2 minutes.

Mr. GORDON. Thank you, Mr. Chairman. We have a long panel here this morning. I will pass so we can get on to the hearing.

Mr. BOUCHER. Thank you, Mr. Gordon. We will add your opening statement time to your time for questioning our panel of witnesses. The gentleman from Illinois, Mr. Shimkus, is recognized for 2 minutes.

OPENING STATEMENT OF HON. JOHN SHIMKUS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ILLINOIS

Mr. SHIMKUS. Thank you, Mr. Chairman. Thank you for calling the hearing and the discussion on both bills. The D Block has been a problem for us. We tried to auction it off to get it in the hands and that was a failure, so now we are revisiting it. I think we had good hearings, I don't know how long ago, 6, 10 months ago on this issue, and I think we are moving in the right direction. So we look forward to continuing to work with you on that issue. I also want to commend my colleague, Anna Eshoo, on her work and us moving forward on the E 911 bill and the funds issues, not only getting technology in the hands of first line responders but also helping them afford some of this. This is something that I think we can move forward. I want to highlight Jill Pender who is leaving. I know Anna will probably mention her. She is leaving the stress and strain of the Hill to go to the peace and quiet of the FCC, so I wish her well. It might be more peaceful here than returning there right now.

The last thing is there is a budgetary crisis across this country and all we want is kind of truth in advertising. If states are taking money to help deploy 911 funds, that is where the money goes to, and our bill says you don't get federal additional help if you don't do that. When we first started this process, Illinois was a good

actor and our money was going in the right direction. Since then, we have turned to be a bad actor. We are \$12.5 billion in debt and we have raided the funds. Shame on us, and that is why we have done great work. And thank you for sharing Jill with us too. I yield back.

Mr. BOUCHER. Thank you, Mr. Shimkus. The gentleman from Illinois, Mr. Rush, is recognized for 2 minutes.

OPENING STATEMENT OF HON. BOBBY L. RUSH, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ILLINOIS

Mr. RUSH. Thank you, Mr. Chairman. Mr. Chairman, I want to commend you on this hearing. It is a privilege for me to participate in today's legislative hearing for it raises a number of the most critical national security and public safety needs and demands that this subcommittee could possibly address, and that is to promote the Nation's public safety by ensuring multiple public safety agencies in multiple jurisdictions including heroic first responders, that they have reliable access to adequate wireless spectrum and interoperable equipment during times of disaster, crises, and emergencies. These matters are very important to me and I empathize with the frustration of the public safety community, being proud to have co-sponsored legislation such as Congresswoman Harman's Emergency Communications Bill, H.R. 3633, which helps states to supply public safety personnel with interoperable communications equipment and training.

But what we have now, Mr. Chairman, is a Tower of Babel situation of sorts where public safety agencies operate on different and non-existing channels of spectrum allocations even though these public safety agencies, officials, and workers must communicate in a common language with no, and I emphasize no, margin for delay. These problems of interoperability have slowed response efforts considerably, costing people their lives, their homes, and their loved ones. Despite the legitimate issues of how we would pay for these interoperable networks and what are the best approaches to promoting spectrum efficiency and maximizing the utility of these frequencies for our society, we are taking a vitally important step today by bring this discussion up for a hearing and refusing to ignore these problems or to delay action any longer.

Let me also commend Ms. Eshoo and Mr. Shimkus for introducing H.R. 4829. Based on my reading of the bill, it will accelerate the migration of more central 911 services and systems to IP-enabled Next Generation 911 and emergency communication services and systems. The bill will make these services universally available and accessible to all Americans including the disabled and those with hearing, vision, and speech impairments. Additionally, it will provide matching grant funding assistance to eligible entities so that we can migrate more quickly to these Next Generation services to supporting the IP-enabled backbone and emergency network for those services and the necessary software to coordinate and interconnect our numerous emergency response organizations. Mr. Chairman, I look forward to hearing testimony and discussion during today's hearing. I want to thank you, and with that I yield back the balance of my time.

Mr. BOUCHER. Thank you very much, Mr. Rush. The gentleman from Texas, Mr. Barton, the ranking member of the Energy and Commerce Committee, is recognized for 5 minutes.

**OPENING STATEMENT OF HON. JOE BARTON, A
REPRESENTATIVE IN CONGRESS FROM THE STATE OF TEXAS**

Mr. BARTON. Thank you, Mr. Chairman. I commend you on holding the hearing with what is going on downstairs. We have a subcommittee that is focusing on things that don't make the media attention but are very important, and I am not saying what is happening downstairs is not important, but we do commend you for holding this hearing. We want to focus on our public safety technology goals today. Specifically, we are going to discuss the FCC's plans, the current discussion draft, to begin the buildout of a truly nationwide, truly interoperable broadband network for the public safety community. The good news is that everyone in the room agrees on the goal, which is to build a robust network that will allow all of our first responders to communicate with each other both in the everyday business of responding to fires, highway accidents, but also during a large scale tragedy like the 9/11 attack. This goal should be the singular focus.

I want to commend Chairman Genachowski of the FCC and the staff and the staff of the National Broadband Team. Based on their work and their conclusions about the state of broadband in the country 95 percent of the country has access to broadband and 200 million people have actually adopted it. A deregulatory posture that we have used so far in this country has been successful. I am deeply disturbed by today's action of the FCC and the Commission potentially to move towards reclassifying broadband as a Title 2 service. In my mind, this is a misguided decision. It contradicts and ignores explicit congressional intent not to mention the Obama Administration's promise to start creating jobs. I hope that we can have a hearing, Mr. Chairman, on that issue in the very near future.

That disagreement aside, where there is no disagreement about public safety the Commission got some of the things right in the plan. I want to congratulate Admiral Barnett on his work and also the issue surrounding the 700 megahertz D Block. Back in 2007, I laid out a framework for a D Block auction that is both the basis of the FCC's plan and for today's discussion draft, auction the D Block for commercial purposes, use the proceeds to build and operate the public safety network. The public safety community argues that they don't have enough spectrum and should be given the broadband. They argue that their current 10 megahertz won't be enough. I understand their concerns but I disagree with that. If we do it right, we can have private industry pay us to build a network and then give the public safety community the ability to use the right amount of spectrum when the inevitable emergencies occur.

We need to focus on how to maximize the revenue from the auction to D Block for commercial purposes. Maximizing those proceeds will do the most for getting this moving the right way. Imposing onerous conditions on the spectrum barring particular market players from participating only devalues the value of that spectrum. In my mind, there is no doubt about that. Finally, Mr. Chair-

man, I am anxious to hear from the witnesses today about their opinion of H.R. 4829. We obviously need to upgrade our 911 service for a new technological world when the current White House spends billions of dollars the way the previous administration spent millions, \$250 million a year could be considered pocket change. I believe, though, that the system should be modernized, made as efficient as possible. We need to be sure that the taxpayers' money we make available for that work is well spent and ideally is offset by spending cuts and services that are less vital. With that, Mr. Chairman, I welcome our witnesses, especially Admiral Barnett to the committee and look forward to their testimony.

Mr. BOUCHER. Thank you very much, Mr. Barton. The gentleman from California, Mr. Waxman, chairman of the full committee, is recognized for 5 minutes.

OPENING STATEMENT OF HON. HENRY A. WAXMAN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mr. WAXMAN. Thank you very much, Mr. Chairman, for scheduling this critically important hearing, and I want to thank you and ranking members Barton and Stearns for their constructive contribution to the bipartisan staff discussion draft, and I look forward to continued bipartisan collaboration. Last September, this subcommittee held a hearing to explore recent developments regarding the creation of a nationwide interoperable broadband network for public safety. There was a consensus that constructing a nationwide public safety broadband network remains critical unfinished business from 9/11 and Hurricane Katrina. In my statement, I identified 3 goals. First, network or networks must be built quickly. Secondly, there must be a clear plan to ensure that deployment reaches all areas of the country. And, third, the plan should avoid distorting or disrupting the commercial wireless marketplace by giving an unfair advantage to certain carriers over others.

I think the bipartisan discussion draft more than meets these essential goals. First, it allows for the immediate start of network construction, gives the NTIA the authority to start funding projects as soon as the rules are in place even prior to any auctions. As the FCC notes in its broadband plan, we need to act quickly to gain substantial cost savings regarding network construction. If we are unable to take advantage of commercial construction schedules the cost of building this network increases dramatically, possibly 3 times as high. Secondly, by providing the requisite funding for a network across the nation all communities, not just major cities with large budgets, will be able to construct their portion of the network. Specifically the discussion draft contemplates the federal government covering 80 percent of construction costs and 50 percent of the ongoing costs associated with this network.

The stark budget realities that the state and local governments face today would make it difficult for them to construct this network without such assistance. And, finally, the draft legislation does not distort competition in the wireless market. In fact, by setting deadlines for specific spectrum auctions to occur the discussion draft should help promote competition by ensuring the availability

of additional spectrum. I know this discussion draft doesn't satisfy all the public safety community, and several associations and their corporate partners have launched a campaign to convince Congress to give public safety 10 megahertz of spectrum, the so-called D Block.

It is my firm view, however that this singular focus on the D Block undercuts what we all want to achieve, a sustainable nationwide broadband network for public safety. Indeed, some have suggested to us that they would prefer to have the D Block of spectrum rather than the substantial federal support contemplated by the discussion draft. I don't think that is a tenable position. Spectrum without a viable plan to utilize it efficiently will create a network of haves and have nots, and I urge advocates of this position to reconsider this all or nothing approach. Indeed, the FCC's National Broadband Plan has amplified my concern about this spectrum first approach. In a detailed technical paper released earlier this week, the FCC concluded that 10 megahertz of dedicated spectrum allocated to public safety in the 700 megahertz band for broadband communications provides more capacity than it needs on a day-to-day and emergency basis.

But the FCC also concluded that giving public safety an additional megahertz of spectrum would not guarantee public safety sufficient capacity in a worse case emergency like 9/11, and that is why the FCC has instead proposed that public safety be guaranteed priority access to hardened commercial networks. This would give public safety much greater capacity than it needs when it needs it the most. All 5 FCC commissioners agreed that the FCC's plan is the best approach for public safety. The FCC plan and the staff discussion draft would allow us to make a multi-billion dollar down payment on a nationwide network with the proceeds of the D Block auction. Although the funding contemplated in the discussion draft is a good start, I am committed to working with our colleagues and the Administration to find additional funding sources including future spectrum auction proceeds. Moreover, I hope the public safety is able to take advantage of the flexibility of the draft legislation to generate additional revenues through leasing fees and partnerships with critical infrastructure providers and other entities. I would like to thank your witnesses for their participation today. I look forward to your testimony.

Mr. BOUCHER. Thank you very much, Chairman Waxman. The gentleman from Nebraska, Mr. Terry, is recognized for 2 minutes.

Mr. TERRY. I will waive my opening statement.

Mr. BOUCHER. Thank you, Mr. Terry. We will add your time to your questioning period. The gentlelady from California, Ms. Eshoo, is recognized for 2 minutes.

OPENING STATEMENT OF HON. ANNA G. ESHOO, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Ms. ESHOO. Thank you, Mr. Chairman, for holding this hearing, and how the importance of it is more than obvious. We need to explore public safety inoperability issues especially with regard to E 911. And I would like to thank both the chairman and Mr. Shimkus for the kind remarks that they made about the legislation and

the effort that we launched as co-chairs of the E 911 caucus. The NG 911 bill provides essential funding for 911 grants to bring us past enhanced 911 and into the Next Generation where call centers and first responders have interoperable communications and the ability to use new technology to improve their response capabilities. We have done a lot of work on this legislation. We have met with industry and agency representatives to discuss their perspectives, and we have determined that the E 911 coordination office really should remain at NTSA to ensure the ongoing success of its work.

So I look forward to this discussion. I think that we need to explore amending the draft public safety bill to provide directed funding for these call centers. This is an integral part of our public safety system in the country and to leave that out, I think really will leave our citizens in a lurch. These call centers deal with life and death issues every day so we are going to have to work hard on that and identify financial resources to achieve the goal, but to leave it out, I think we will pay a huge price for that. I also want to draw attention to the funding section of the draft public safety bill Title 3 where there seems to be language that would once again delay the use of the AWS 3 spectrum in the 2155–2180 megahertz band. I have spoken numerous times about this issue on the need to roll out the fallow spectrum now instead of delaying its use with pie in the sky paring up plans.

I don't think we can allow valuable spectrum to lie dormant for years. So I will support language that sets a date certain for the auction but since the FCC already has an established record to schedule the auction, I think we should have a much earlier deadline than the one specified in the draft bill. And I would like to ask unanimous consent to submit for the record a statement by M2Z who plans to bid on this spectrum and use it for nationwide wireless broadband life line. So we have a lot to discuss. I thank you for your leadership, Mr. Chairman, and I yield back any time that I might have.

Mr. BOUCHER. Thank you very much, Ms. Eshoo, and without objection that statement will be received in the record. Actually, you owe us about a minute, but we will be generous in the repayment terms. The gentlelady from Tennessee, Ms. Blackburn, is recognized for 2 minutes.

OPENING STATEMENT OF HON. MARSHA BLACKBURN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TENNESSEE

Mrs. BLACKBURN. Thank you, Mr. Chairman. And, first of all, I want to join Mr. Stearns in expressing my disappointment in what is transpiring at the FCC as we speak with their short-sighted efforts, in my opinion, to stifle innovation, destroy jobs, and to take over the Internet. It is an unnecessary step. Moving on, I am pleased that our committee is convening today to discuss public safety needs and spectrum on the D Block. I feel confident that we can find bipartisan support for this measure. I am certain that all of you are glad to see that there is bipartisan support, and I am encouraged that so many on this committee are advocating for an auction of spectrum, and I hope that my colleagues outside this committee will learn from what we are attempting to do, which is

to reject an idea that we cannot pay for no matter how much merit there seems to be for that idea on the surface.

While I strongly support public safety, having the spectrum and equipment it needs to effectively and efficiently do its job. Giving away valuable spectrum, quite frankly, is not affordable and not feasible at this time. In closing, I just want to make a couple of quick points. First, I would implore our friends in the industry to stand with us on this and not change their collective minds 3/4 of the way through the process. And, second, I would ask my colleagues to make the auction of spectrum available without any conditions attached, especially open access or limitations on who can bid on the spectrum. This would be bad policy and only reduce revenue to pay for the public safety network. With that, Mr. Chairman, I will yield back so that there is a little bit of time to apply toward Ms. Eshoo's time.

Mr. BOUCHER. Thank you very much, Mrs. Blackburn. The gentleman from California, Mr. McNerney, is recognized for 2 minutes.

OPENING STATEMENT OF HON. JERRY MCNERNEY, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mr. MCNERNEY. Thank you for holding this hearing today, Mr. Chairman. As a representative of earthquake territory, I am keenly aware of the urgent need for first responders to be effectively communicating with one another and with the public in the event of a national disaster or other emergency, and I want to thank today's witnesses for sharing their expertise on this subject. H.R. 4829, the Next Generation 911 Preservation Act, is intended to help modernize and improve emergency services by providing support for the new technologies. And I commend my colleague, Ms. Eshoo, for her efforts. This morning, I will be listening for solutions that provide the greatest public benefit in safety. I have heard from many of my constituents including law enforcement professionals with strong views on the proposed legislation. It is vitally important that this network is built quickly, cost effectively, and meets all of our nation's police, firefighter, EMTs, and other first responder needs. With that, I yield back.

Mr. BOUCHER. Thank you very much, Mr. McNerney. The gentleman from New York, Mr. Weiner, is recognized for 2 minutes.

OPENING STATEMENT OF HON. ANTHONY D. WEINER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW YORK

Mr. WEINER. Thank you, Mr. Chairman, and I thank all the members of the panel. I would name them individually but when I would have no more of my 2 minutes left. There are a lot of you here, and I am glad that you are. I do want to particularly single out perhaps the most, one of the most important members of the panel, Deputy Chief Charles Dowd of the New York City Police Department, who every day has to deal in a real life way with the challenge of having communication infrastructure that supports 35,000 some odd police officers in a city of 8 million people that swells to about 12 million during every day, and doesn't have to think about the challenges of terrorism and communications in a

crisis as an abstract because, frankly, we encounter it every day. Chief Dowd is someone who has dedicated his entire life to the safety and security of the people of New York City and those that visit it, and I want to thank him for being here.

I am a sponsor of the King bill but I have great empathy for the position that Mr. Waxman takes that we do have to figure out a way to have a sustainable structure and I think that somewhere between the King language and Mr. Waxman's proposal to have some of it subject to auction, I think we can find common ground. The one thing we can't allow though is any more years of inertia here, and I think that is a common thread of statement by my colleagues on both sides of the aisle and I think all 16 members of the panel here will probably agree with that. And I think you, Mr. Chairman, for convening this hearing.

Mr. BOUCHER. Thank you, Mr. Weiner. The gentlelady from Florida, Ms. Castor, is recognized for 2 minutes.

OPENING STATEMENT OF HON. KATHY CASTOR, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF FLORIDA

Ms. CASTOR. Thank you very much, Mr. Chairman, and thank you to the witnesses who are here today. I am looking forward to hearing from you and learning more about what we can finally do to get a public safety network up and running. It is almost inconceivable that 9 years after the terrorist attacks of September 11 and after Hurricane Katrina the United States still doesn't have a National Public Safety Network. With the help of the 9/11 Commission, we have learned many lessons. We need a public safety network for our first responders whether they are fearless police officers, firefighters out there protecting our homes and businesses. I know there might be some disagreement about the best way to set up the network but I think we all agree that it is a national security priority, and it will be an invaluable asset to our community.

So I would like to hear from you on what you believe is best. That is why we are here today. So I would like to raise a few questions for you all to consider as we move forward. First, I understand that the primary benefit of auctioning off the D Block and sharing spectrum with commercial providers is affordability. Without a spectrum auction, it could be very difficult to raise the money needed to build out a public safety network. So the question is will it be possible to raise funds for the network if there is no auction? What is the public safety community's proposed alternative for raising these funds in lieu of an auction. Second, operability is key to the success of the public safety network. What are the projected spectrum needs of the approximately 2 million first responders who will be using it? Will they need more than they have now? How will the operability be impacted by a sharing arrangement? Will logistical challenges necessarily be greater on a shared network?

Time is of the essence. Every day that we do not have a fully operationable public safety network is a day that our communities are less safe than they should be. What is the time line for getting the network up and running under the current proposals laid out in the National Broadband Plan and what are the alternatives to that? So I want to thank you for considering these questions. I look

forward to your testimony, and we are all grateful for your service day in and day out. Thank you, Mr. Chairman.

Mr. BOUCHER. Thank you, Ms. Castor. The gentleman from Washington State, Mr. Inslee, is recognized for 2 minutes.

OPENING STATEMENT OF HON. JAY INSLEE, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF WASHINGTON

Mr. INSLEE. Thank you. I just think one task before us is to find the confidence of law enforcement if we are going to move forward. I have met with my local law enforcement community in Washington, and there are real concerns about assuring that, in fact, in any system like this, we, in fact, give priority to law enforcement or emergency responders on networks, number 1. Number 2, that there is total confidence that spectrum will be available as additional needs grow. And, third, there is some increasing interest in regional networks instead of maybe perhaps a national one in this regard. So I will be looking for ideas on how to win that confidence in any process in this regard, and I think we have a lot of work to do to try to reach that, and look forward to working with all the witnesses in that regard. Thank you.

Mr. BOUCHER. Thank you very much, Mr. Inslee. The gentlelady from California, Ms. Harman, while not a member of our subcommittee is certainly welcome in our proceedings this morning, and I am pleased to recognize her for 2 minutes.

OPENING STATEMENT OF HON. JANE HARMAN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Ms. HARMAN. Thank you, Mr. Chairman. I missed my service on this subcommittee because I think it deals with absolutely critical issues like this one. Like other senior members of this committee, I was here on 9/11. No one will forget that many, especially firefighters, died in New York City because the NYPD circling overhead could not communicate with them to tell them that the World Trade Center towers were glowing red and immediate evacuation was required. Nine years later as some have pointed out, we have still not fixed this problem. We have operability in some geographic areas like New York City and among D.C. area fire and police but we do not have a national interoperable emergency communications capability. As many know, my focus in Congress is security and I know how possible and devastating a series of near simultaneous terror attacks in the cities around the U.S. could be. We do not have the communications infrastructure we will need in that event.

Unfortunately, as some have said, the legislation and administrative efforts so far have lagged. I co-authored with our former colleague, Curt Weldon, the Hero Act, to set a date certain for a transition to a national interoperability network space. We never got there. The DTV transition, which this committee was involved in, cleared the analog spectrum, but it doesn't have this capability up and running. The D Block auction failed, as some have pointed out. The PSIC bill, which I co-authored earlier this year, and Mr. Rush mentioned, is a success but it funds local projects. It doesn't fund a national interoperable network, and the bright spot is the E 911 effort that Ms. Eshoo has championed for years.

But I just want to say that this new discussion draft is the best opportunity we have had to resolve the problem. It would generate funds to build out spectrum. It would give public safety priority access in roaming and insists on a network of networks. That is the key to making this interoperable. And, as I understand it, there is agreement on most issues but not all. I just want to say as a volunteer to this subcommittee for the morning, we must resolve the outstanding issues. We must enact the legislation. We must build out this network yesterday. And, in conclusion, everyone loses if we fail to do it. We all have family and friends in communities across the country, any of which could be a target. Their lives will depend on our prompt action and do the lives of firefighters and police. Thank you, Mr. Chairman, for letting me participate.

Mr. BOUCHER. Thank you very much, Ms. Harman. We are happy to have you here this morning. I am pleased now to recognize our panel of witnesses, and I will say a brief word of introduction about each of them. Rear Admiral James Barnett is the Chief of the Public Safety and Homeland Security Bureau at the FCC. Mr. Charles Dowd is the Deputy Chief of the New York City Police Department's Communications Division. Mr. Jonathan Moore is the Director of Fire and EMS Operations and GIS Services for the International Association of Fire Fighters. Mr. Dale Hatfield is an Adjunct Professor in the Interdisciplinary Telecommunications Program at the University of Colorado at Boulder. Mr. Steve Zipperstein is the Vice President for Legal and External Affairs and General Counsel for Verizon Wireless. Mr. Joseph Hanley is the Vice President of Technology Planning and Services for Telephone & Data Systems, Inc. Mr. Coleman Bazelon is the Principal for the Brattle Group. And Mr. Brian Fontes is the Chief Executive Officer of the National Emergency Number Association.

We welcome each of you this morning, and thank you for taking time to share your views on this urgent subject with us. Without objection, your full written statements will be made a part of our record of proceedings, and we would welcome your oral statement and ask that each of you keep that oral statement to approximately 5 minutes. Admiral Barnett, we welcome you this morning and we will be pleased to begin at your end of the table.

STATEMENTS OF JAMES ARDEN BARNETT, JR., REAR ADMIRAL (RET.) USNR, CHIEF, PUBLIC SAFETY AND HOMELAND SECURITY BUREAU, FEDERAL COMMUNICATIONS COMMISSION; CHARLES F. DOWD, DEPUTY CHIEF, NEW YORK CITY POLICE DEPARTMENT; JONATHAN MOORE, DIRECTOR OF FIRE AND EMS OPERATIONS AND GIS SERVICES, INTERNATIONAL ASSOCIATION OF FIRE FIGHTERS; DALE HATFIELD, ADJUNCT PROFESSOR, INTERDISCIPLINARY TELECOMMUNICATIONS PROGRAM, UNIVERSITY OF COLORADO AT BOULDER; STEVE ZIPPERSTEIN, GENERAL COUNSEL, VERIZON WIRELESS; JOSEPH HANLEY, VICE PRESIDENT, TECHNOLOGY PLANNING & SERVICES, TELEPHONE & DATA SYSTEMS, INC.; COLEMAN D. BAZELON, PRINCIPAL, THE BRATTLE GROUP; AND BRIAN FONTES, CHIEF EXECUTIVE OFFICER, NATIONAL EMERGENCY NUMBER ASSOCIATION

STATEMENT OF JAMES BARNETT

Admiral BARNETT. Thank you, Chairman Boucher, Ranking Member Stearns, and members of the subcommittee, including volunteers. Thank you for attaching my full testimony. We would also ask that the FCC's White Paper on capacity and on the cost model also be entered into the record.

Mr. BOUCHER. Without objection.

Admiral BARNETT. Here is a summation of my testimony. We, as a Nation, must seize this brief technological opportunity to create a truly nationwide, truly interoperable broadband public safety network. And there is nothing that is inevitable about such a network, and if we are going to ensure and afford interoperability then we need to have a really well researched and comprehensive plan. The Navy transferred me to Washington, D.C. in October, 2001 when there was still a gaping hole inside of the Pentagon, and since as we now look at the 9th anniversary of 9/11 coming up and with all the other disasters the nation has faced in the meantime, we still do not have the level of interoperability for public safety that they desperately need.

So as we move forward, we have to recognize that already billions of dollars have been spent in really energetic efforts and yet we are no closer. But now after considerable research and numerous communications and meetings with public safety leaders the National Broadband Plan recommends an innovative approach to solve the 911 interoperability problem once and for all. And I would ask that Sarah bring up the slide Appendix B. This shows some of the components of our plan. The core of the network is the 10 megahertz dedicated to public safety. We cannot think of this spectrum in terms of old technologies. With modern cell architecture, with the latest technologies, and with good spectrum management, 10 megahertz can actually perform like 160 megahertz would on the current public safety voice networks. This will provide more than enough capacity for day-to-day operations and for most emergencies.

We also must plan for the worst emergencies, the next 9/11, and in thinking through that an additional 10 megahertz, merely adding 10 megahertz such as the D Block might not be enough to really handle the load, and that is why the FCC has proposed that

public safety have the ability to have priority access and roaming overall into commercial networks. Now that means first in line privileges for up to 40, 50, maybe 60 additional megahertz. Another feature of this is that it provides an additional advantage in that it provides resiliency and redundancy for public safety networks in case they go down. This happened in D.C. back in March. So we have created an in-depth cost model which shows the way to afford 99 percent population coverage for the network and to ensure an iron rule of interoperability, we have already stood up and established the Emergency Response Interoperability Center or ERIC, and we will work with public safety and with our federal partners to make sure that it is effective.

Now it might surprise some to know how much agreement there is between public safety and the FCC's proposal. We agree on LT technology. We agree on the roaming and priority access. We agree on the interoperability center. We agree on the need for public funding. We need to make sure that there is in-building coverage, that it extends to inside buildings and the network at heart. And we agree that there should be early deployment. So the only major disagreement is on the D Block itself, and not all public safety even disagrees on that. Now Congress has indicated that we are to buy legislation currently that we are to auction the D Block, and here is why the FCC does not recommend reallocating the D Block. It will nearly destroy the commercial market for equipment and devices for public safety isolating public safety on a technological island the way they are today.

It will vastly increase the cost of building the network for public safety by billions of dollars and it will increase the cost to public safety of operating the network by billions of dollars. And if the network is that much more expensive, as Chairman Waxman mentioned a minute ago, it will create a patchwork system across the country of haves and have nots. Perhaps some big cities may be able to afford it. Most rural areas will not. And if Sarah could bring up Appendix F, it also may mean that we would have more than 20, 25 years in order to spread the network across the network. And if it is not nationwide, then it is truly not interoperable. I think that some in public safety have this idea that they will be able to take the D Block and sublease it to carriers for some type of revenue and that would pay for the network.

But unlike the FCC, no one has come forward with any type of cost model or business plan or financial analysis that shows this will work, and in our view the amount of revenue that would come in for some of the big cities would not be able to fund the entire network. Let me shift for a moment to Next Generation 911. H.R. 4829 and its companion bill in the Senate, 3111, advanced the vision for the rapid deployment of Next Generation 911 as we move into the IP-based broadband world. We see it is entirely consistent with the National Broadband Plan and a necessary step forward, not only for public safety but for the safety of the public. Let me stop here. I look forward to your questions, and thank you again for the opportunity to address you today.

[The prepared statement of Admiral Barnett follows:]

**Statement of
James Arden Barnett, Jr.
Chief, Public Safety and Homeland Security Bureau
Federal Communications Commission**

Legislative Hearing on the Public Safety Broadband Network and H.R. 4829

**Before the
Subcommittee on Communications, Technology and the Internet
Committee on Energy and Commerce
U.S. House of Representatives**

June 17, 2010

Good morning Chairman Boucher, Ranking Member Stearns, and Members of the Subcommittee. I appreciate this opportunity to appear before you today on this issue of significant national importance. We must work together to ensure that our law enforcement officers, firefighters, emergency medical personnel and other public safety officials have a nationwide, truly interoperable broadband wireless network, and it is critically important that we do so now. Unfortunately, the costs of not having a nationwide, interoperable public safety network can often be measured in lost American lives. I welcome your input and look forward to working with you and the public safety community to ensure that this system is deployed and operable as quickly as possible so public safety can receive the benefits of state-of-the-art nationwide interoperable broadband communications and the American people may be afforded the safety and security to which they are entitled.

The Navy transferred me to Washington, D.C. in October, 2001, when there was still a gaping hole in the Pentagon. We are facing the ninth anniversary of 9/11, and yet the nation is still plagued by many of the same interoperability problems that hampered emergency responders on that very tragic day. Since then, America has suffered Hurricanes Katrina, Ike and Gustav, as well as other storms where interoperability was a factor in the aftermath of the storm.

Even as the armada of oil approached our shores, it took Herculean effort to link the land mobile radio systems of the Gulf Coast states so that they could coordinate the efforts of their public safety officers. All of these emergencies have highlighted that, despite significant funding in the billions of dollars, and energetic efforts, public safety communications still face significant interoperability challenges, jeopardizing the ability of the public safety personnel to communicate during emergencies. Further, first responders do not have access to the advanced data communications capabilities they require to do their job.

However, for a brief moment in time, a solution is readily within reach. We, as a nation, have the opportunity of a lifetime to ensure that public safety has a nationwide *interoperable* public safety broadband wireless network. But this vital national asset will not become available to future generations, even the next generation, unless we act now. Unless we embark on a comprehensive plan now, including public funding, to construct a 4G broadband network that reaches at least 99% of the population, from the most crowded urban street to the most rural road, catching the technological wave as commercial networks are built, America will not be able to afford a nationwide, interoperable public safety network. There is nothing that is inevitable about having in nationwide, interoperable system. Indeed, the last seventy-five years of public safety communications teaches us that there are no natural or market forces or incentives which create interoperability. To achieve an interoperable network, we must start at this very inception of 4G technology, and we must aggressively pursue a comprehensive, well-reasoned and well-researched plan.

The approach that the FCC recommended in the National Broadband Plan, which was developed with the significant public safety input outlined in Appendix A, provides a realistic, achievable roadmap to successful deployment and operation of this system. I would like to

emphasize to the Sub-Committee that the public safety community has expressed agreement, in most respects, with the National Broadband Plan's comprehensive concept for the public safety broadband network¹. There is broad agreement on the need for the new LTE technology, on priority access for public safety, on roaming onto commercial networks and other public safety networks, with the recognition that those details have to be worked out. There is general agreement on the need for an emergency response interoperability center, whose main function is to ensure interoperability across the network. Public safety generally agrees with the plan that the FCC should require the development of devices that "see" the relevant bands, and that we should pursue policies and rules that will reinforce the opportunity for public safety to obtain devices at nearly consumer priced electronics costs.

We agree that the public safety network should not be an isolated technological island, but that it continues to evolve and upgrade as commercial technology improvements are made. Public safety agrees that there needs to be public funding for the network to ensure that it is built, that it is hardened, that it works inside buildings and that it extends to rural areas. These are all significant points of agreement with the FCC approach, and reflect the fact that we have listened closely to the public safety community and solicited its information and requirements. The only major point of disagreement by the public safety community of which I am aware is the amount of spectrum that it will take to make the network fully functional. In other words, most of the public safety community would like the 10 MHz of the D Block added to the 24 MHz of

¹ Robert LeGrande II, Association of Public-Safety Communications Officials, Presentation at Federal Communications Commission's Public Safety and Homeland Security Bureau's Technical Panel on a 700 MHz Nationwide Interoperable Public Safety Broadband Network (Mar. 17, 2010). The presentation is available at <http://www.fcc.gov/pshs/docs/public-safety-spectrum/031710/LeGrandeAPCO-Open-meeting-Presentation-031710.pdf>.

spectrum already dedicated to public safety in the 700 MHz band. (Although, it bears noting, some in the public safety community have spoken in favor of auctioning the D Block.²)

In addition to broad agreement with public safety, the FCC's recommended approach has been expressly endorsed by the leaders of the former 9/11 Commission, who stated that "the 9/11 Commission on which we served concluded that the absence of interoperable communications capabilities among public safety organizations at the local, state and federal levels was a problem of the highest order. . . . The FCC's plan offers a realistic framework to move forward."³ This is what we must do if we ever want to solve the 9/11 interoperability problem.

After much written input from public safety and hundreds of meetings, telephone calls, workshops, technical forums and of course, emails, these are the attributes that the public safety broadband network must include:

1. **Nationwide.** The network must provide coverage for public safety to all the locations where Americans live, work, and play, whether rural or urban, with the goal of 99% coverage of the population.
2. **Interoperable.** The network must interoperate across geographies and public safety agencies. We must move away from fragmented public safety networks that currently define the norm.
3. **Capacity and Performance.** The network must have the required capacity and performance to reliably and dependably support public safety on a day-to-day and

² See Fraternal Order of Police, Press Release, FCC Announcement on D Block (Mar. 1, 2010), available at http://www.fop.net/servlet/display_news_article?id=2254&XSL=xml_pages%2Fpublic_news_individual.xml&nocache=5549924; see also Letter from Harold A. Schaitberger, General President, International Association of Fire Fighters, to Julius Genachowski, Chairman, Federal Communications Commission (Apr. 23, 2010).

³ Thomas H. Kean and Lee H. Hamilton, 9/11 Commission Chair and Vice Chair, Statement on the Federal Communications Commission's Approach to Interoperable Communications Capabilities for Public Safety (Mar. 18, 2010), available at <http://blog.broadband.gov/?entryId=297238>.

emergency basis, as well as provide contingencies for operations during the worst disasters.

4. **Cost-effective.** The network and its devices must be affordable for the Nation and for public safety to deploy, operate, utilize and upgrade.
5. **Technologically advanced.** The network must utilize the latest technology and have a clear path for technological evolution. We cannot afford for public safety to be trapped in expensive, old technologies that cannot be upgraded without considerable expense and that threaten interoperability.

I would like to take a few minutes to walk you through this vision and plan, which we are actively implementing based on the approach contained in Appendix B.

In order to fully understand the way ahead, it is important that we first focus on the heart of the network, the radio access network. Currently there is 10 MHz of dedicated spectrum in the 700 MHz band available exclusively for public safety broadband communications. This spectrum is available today and, because of its propagation and other technical attributes, it provides a solid platform for deployment of a nationwide, interoperable public safety broadband network. This 10 MHz is the necessary foundation on which to build the public safety network, and it will provide public safety with more than adequate capacity and performance required to support day-to-day and most emergency communications (how the network will handle major emergencies will be discussed below).

The 700 MHz band, where this spectrum is located, is particularly exciting as new commercial 4G technologies, such as LTE, are just beginning to be deployed to support advanced data communications. Public safety, by being able to deploy their networks now and in the near future, can capitalize on these technologies and this commercial deployment, ensuring

a path for technological evolution and reducing costs by leveraging these commercial technologies.

By deploying its network using this core spectrum and capitalizing on synergies created by the contemporaneous deployment schedules of commercial carriers, public safety can enter into incentive-based partnerships with commercial entities to deploy the public safety network using 4G technologies in a way that is significantly less expensive than building a stand-alone system. In other words, public safety will have its own spectrum, its own network, and its own antennas, but in most areas public safety can share infrastructure that already exists or is being supplemented by commercial service providers now. The public safety radio access network can be installed on a commercial tower at the same time that the commercial system is installed, for instance, and use the fiber optic cables or other technology that connect the tower to the network. In this way, public safety will recognize approximately \$9 billion in cost savings for the construction of the network and potentially tens of billions in savings in operating costs. Frankly, I do not see how the Nation, the states, counties, cities or tribes could afford this network if this strategy is not employed. The network simply becomes unaffordable.

As I will discuss a little later, if the D block is reallocated and combined with the current public safety broadband spectrum, equipment costs will skyrocket no matter whom public safety selects as a partner and projected savings for state, local and tribal governments will not be realized because significant cost-efficiencies will be squandered. If this occurs, the mere expense of the network and user devices will make it extremely unlikely that the capability will be nationwide, leaving portions of the country without access to these critical public safety communications services, in essence, leaving these areas behind with the vestiges of legacy, narrowband fragmented networks which encumber our Nation today.

FCC engineers, experts and technical staff have spent hundreds of hours, including late nights and weekends, performing engineering analysis to validate whether the 10 MHz of dedicated spectrum available to public safety will, indeed, provide more than adequate capacity and performance for day-to-day and emergency communications. This analysis, which we released publicly in a White Paper on capacity this week, examines two real-life large-scale emergencies and empirical data collected and analyzed by FCC staff. It demonstrates that allowing public safety to build out their broadband network on the 10 MHz of dedicated spectrum supports these critical communications requirements.

When analyzing capacity, an important point to keep in mind is that spectrum does not equal capacity. Making a decision on network design by considering spectrum alone or even principally would be an erroneous decision. Network capacity and performance are affected by spectrum, as the White Paper states, other important “factors include the type of architecture employed, the number of cell sites in operation, the number of sectors per cell, sound network and spectrum management, and the specific technology that the network utilizes.” By deploying advanced, 4G wireless technologies and cellular network architecture, public safety can achieve much greater capacity than they have achieved in the past. Further, based on the past evolutionary trends of commercial technologies, if the public safety network is deployed utilizing non-proprietary commercial technologies, capacity and performance of the network are likely to improve in the same amount of spectrum. We must escape the mindset of evaluating the promise of new technologies based upon the limitations of old technologies. We cannot design a public safety 4G broadband network using concepts, and spectrum, from decades old narrowband land mobile radios concepts. The capacity White Paper quotes a recent study of public safety communications in the greater Los Angeles area. The study indicated moving from

today's LMR technology to the type of cellular technology that will be used (LTE or even pre-LTE) could increase capacity per megahertz by a factor of 16. To state this more starkly, as shown in Appendices C and D, the study demonstrated that 10 megahertz of capacity on a cellular network would be the equivalent of 160 megahertz on an LMR-type network!⁴ Our plan ensures that adequate capacity is afforded public safety and that scarce, valuable spectrum will be used efficiently.

However, we must plan for the major disasters and emergencies that may challenge the public safety spectrum, and the National Broadband Plan developed a smart, innovative approach. Every public safety agency must have immediate, agile additional capacity for use when needed, such as when their network is at capacity or otherwise unavailable. To that end, as shown in Appendix E, the FCC will initiate a rulemaking proceeding, planned for this summer, that will examine requiring commercial operators across the 700 MHz band, and possibly other bands, to provide public safety with roaming and priority access for public safety on their networks at reasonable rates in those times of critical need. This means that public safety will have access to 60 MHz or more of additional spectrum – far more than the 10 MHz of spectrum available in the D block. Further, unlike the case of just reallocating the D block, roaming and priority access will provide public safety with access to redundant networks in case their network is rendered unavailable. Public safety networks occasionally suffer outages, sometimes during catastrophes and sometimes just on a daily basis. The District of Columbia public safety communications systems suffered such an outage for several hours back in March of this year. If the FCC concept is employed, police, fire and emergency medical communications could simply roam over onto one or more commercial networks, with priority, and still continue their public

⁴ J.M. Peha, "How America's Fragmented Approach to Public Safety Wastes Money and Spectrum," *Telecommunications Policy*, Vol. 31, No. 10-11, 2007, p. 605-618.

safety work. This level of resiliency and redundancy has important benefits not only for public safety, but also for homeland security. Simply reallocating spectrum does not provide this level of resiliency.

Still, there are additional pieces to ensure adequate capacity and performance. We developed an in-depth cost model for this network, and I have not seen any cost model for any alternative plan that will ensure nationwide coverage at an affordable, sustainable price. First, our cost model recognizes and captures the need for deployable caches of communications equipments, such as cell towers on wheels, to ensure that the public safety community is able to supplement its network during the worst emergencies. Second, we have also recommended that states and localities should include in their building codes requirements for the installation of in-building transmitters. This will ensure that communications is extended to deep within buildings.

Finally, we are planning to seek comment on a letter filed by the Sandy Spring, Georgia Police Department asking about the possibility of public safety obtaining additional flexibility for broadband communications in the adjacent 700 MHz public safety narrowband spectrum. We recognize that this spectrum supports critical public safety voice communications that must be protected and promoted to increase voice interoperability. But at the same time, we look forward to building a record based on the suggestions of our colleagues in the public safety community, such as Sandy Spring, Georgia, exploring whether flexibility could be given to public safety to utilize this spectrum on a non-interfering basis for broadband communications. We recognize that this is part of the draft discussion legislation and we look forward to further discussions with Committee staff on this important issue.

Another critical requirement for this network is to ensure that it is interoperable. In April of this year we took a dramatic step forward to ensure interoperability when we established the

Emergency Response Interoperability Center or ERIC. ERIC's mission is to develop technical requirements to ensure that the 700 MHz public safety broadband wireless network will be fully operable and interoperable on a nationwide basis, both day-to-day as well as during times of emergency. We are planning to shortly announce the formation of a technical advisory committee to ERIC made up of a diverse group of state and local public safety officials from around the country. This advisory committee will be instrumental in working with ERIC to develop an effective interoperability regime for the public safety broadband network.

The impact of ERIC is already being seen as we move forward to ensure the expeditious deployment of this critical network on an interoperable basis. Just last month, we granted 21 waiver petitions for early deployments of this network.⁵ In these initial grants, the FCC adopted stringent baseline requirements as a first step towards to ensure day one interoperability of the public safety broadband network wherever it is deployed. ERIC will be responsible for evaluating the interoperability showings required of the waiver recipients, which will then be instrumental as the FCC adopts its final technical rules. As the establishment of ERIC and our recent actions on the waiver petitions demonstrate, the FCC is committed to ensuring that as deployment begins on this network, interoperability is fully achieved.

Next, I want to focus on the nationwide aspect of the network. There are two requirements that must be met if the public safety broadband network is to be truly nationwide. First, public safety must be able to leverage commercial technologies and infrastructure to capture cost efficiencies through economies of scale and shared resources. If this does not occur, it is

⁵ These include the City of Boston; the City and County of San Francisco, City of Oakland, City of San Jose CA; State of New Jersey; City of New York; City of San Antonio TX on behalf of the San Antonio Urban Area Security Initiative Region; City of Chesapeake, VA; State of New Mexico; City of Charlotte, NC; State of New York; District of Columbia; County of Maui, County of Hawaii, County of Kauai, City and County of Honolulu, and the State of Hawaii; City of Seattle, WA; Adams County, CO Communications Center; City of Pembroke Pines, FL; Los Angeles Regional Interoperable Communications System; Iowa Statewide Interop. Comms. System Bd.; Calumet, Outagamie and Winnibago Counties, WI; Mississippi Wireless Communications Commission; City of Mesa AZ and the TOPAZ Regional Wireless Cooperative; State of Oregon; and State of Alabama.

exceedingly likely that deployment of the network will be extended indefinitely and will be too costly for many jurisdictions to pursue. As I will discuss shortly, if D block is reallocated, it is likely that the costs of the equipment to support the public safety broadband network will increase dramatically, threatening nationwide deployment.

Second, it is critical that funding be provided by Congress to support the network's capital and operating expenses. To this end, I was heartened when the Department of Commerce's National Telecommunications and Information Administration re-opened its Broadband Technology Opportunities Program (BTOP) filing window recently to allow the waiver recipients to apply for BTOP funding for capital expenses. However, this is only the tip of the iceberg. Our cost model demonstrates under an incentive-based partnership approach, which is able to fully leverage commercial technologies and infrastructure with 99% of the U.S. population covered by the network, capital expenses for a fully hardened network will cost approximately \$6.5 billion over 10 years. Operating expenses for this network will cost for the same ten-year period between \$6 and \$10 billion. With this funding and based on the roadmap we are pursuing, the citizens of our country can be certain that we will have a nationwide, interoperable public safety broadband network.

However, all of this is at risk if the D block is reallocated to public safety. First, 10 MHz of additional spectrum allocated to public safety cannot provide public safety with the capacity it may require in the worst emergencies. Ten megahertz of additional spectrum also fails to provide the redundancy and dependability of roaming and priority access on multiple commercial networks across the commercial 700 MHz bands. Further, our study demonstrates that except for the very worst emergencies, most of this spectrum will go unused or it will be significantly under-utilized. This would be the equivalent of building a separate four-lane

highway for emergency vehicles when all that is required for clear access are a public safety “HOV” lane and flashing lights and a siren.

Further, one thing that is certain is that additional spectrum will not ensure interoperability. In fact, D block reallocation may endanger interoperability. D Block re-allocation would remove a key advantage of the FCC’s plan that would have a commercial operator develop devices for public safety use with commercial-level economies of scale. The D Block and public safety broadband allocations are in the same LTE band class, so “off-the-shelf” devices created for D Block customers would be available to public safety users at consumer-electronic prices, as could radio network equipment. Reallocation will eliminate the commercial market for off-the-shelf devices in this band class, relegating public safety to the same position they are in now, with quickly-outmoded devices that cost thousands of dollars. At the very least, a licensee in the D Block could provide another potential partner for public safety agencies seeking to construct and operate their network.

Without this basis for public safety to be able to capture traditional commercial economies of scale, the cost of the public safety network would skyrocket. The cost can easily rise for capital and operating expenses from approximately \$6.5 billion for construction costs and approximately \$8-10 billion in operating costs to an estimated combined total of \$35-\$48 billion over ten years, a three to four times increase. Similarly, as depicted in the Appendix F, D block reallocation, because of its impact on cost and equipment availability is likely to significantly retard network deployment. Instead of a ten year deployment it is more likely that the deployment will take at least 20 to 25 years, or perhaps never occur.

Further, there is no evidence that reallocating the D block will provide public safety with the funding from the lease of excess capacity to deploy and operate a nationwide interoperable

public safety broadband network. There has been no showing presented that demonstrates that the amount, if any, of projected income from this opportunity and how that would meet capital and operating expenses of the network. To the contrary, at least some leaders in the public safety community have admitted that in rural areas this opportunity will not be available and instead public safety would have to build fewer towers in those areas as a cost savings method. This concerns me because limiting infrastructure has a very real impact on capacity and performance.

Our mission is to ensure that public safety agencies in **all** areas of the country have the best chance of successfully gaining access to an advanced, wireless broadband network. Our holistic approach fulfills this mission. We have a singular opportunity to ensure that public safety has a nationwide interoperable broadband network. Our plan takes advantage of this opportunity by offering a sustainable, long-term, cost-efficient model that provides first responders with the state-of-the-art, affordable, and interoperable broadband communications networks they deserve. We can provide the public and the public safety community with a nationwide, interoperable broadband network that is robust, which can evolve with commercial technological gains, and which is affordable, truly a national asset. But we must act quickly and decisively, based on a comprehensive plan using the best technology and scientific analysis. We must not commit to a plan that perceives the future based upon the limitation of old technologies. We can solve the 9/11 interoperability problem.

Thank you for your time and attention. I am very happy to take any questions you may have.

Appendix A

FCC and PSHSB have proactively reached out to the Public Safety Community on the Public Safety Broadband Network for Input and Recommendations

A continuing, open dialogue on promoting public safety broadband communications including speaking engagements across the country

- Hundreds of pages of comments and dozens of ex parte presentations from public safety groups on the National Broadband Plan (GN Docket No. 09-51) and on the development of a nationwide interoperable public safety broadband network (PS Docket No. 06-229).
- Hundreds and hundreds of email exchanges, conference calls and telephone calls with public safety officials, state and local officials and key trade associations including APCO, NENA, the Major Chiefs, among others.
- National Broadband Plan workshops on public safety and homeland security (Aug. 25, 2009) and cybersecurity (Sept. 30, 2009), and a field hearing at Georgetown University Medical Center (Nov. 12, 2009) on public safety communications and emergency response.
- A forum on creation of the Emergency Response Interoperability Center (Mar. 2, 2010)
- A symposium on the public safety and homeland security aspects of the National Broadband Plan (Mar. 31, 2010)
- Meetings in Las Vegas (Mar. 9, 2010) and Washington, D.C. (Mar. 15, 2010) to discuss the FCC's cost model for the public safety broadband network
- Multiple conference calls to discuss key policy matters such as roaming and priority access
- Public notices soliciting comment on such matters as the technical aspects of interoperability and a follow up call on interoperability issues
- Regular attendance at NPSTC meetings and NPSTC Broadband Task Force meetings
- Participation in the PSCR Shareholder Meeting (April 20-21, 2010) in Boulder, CO
- Meetings with representatives from the U.S. Conference of Mayors
- Briefing of the DOJ Tribal Working Group (May 27, 2010) on ERIC and the public safety broadband network
- 9-1-1 Gala (Mar. 16, 2010)
- Police Executive Research Forum (Mar. 19, 2010)
- National Governors Association (Apr. 1, 2010)
- SAFECOM Executive Committee conference call (May 12, 2010)
- NENA Conference (June 8, 2010)
- Meetings with the National Governors Association and the United States Conference with Mayors

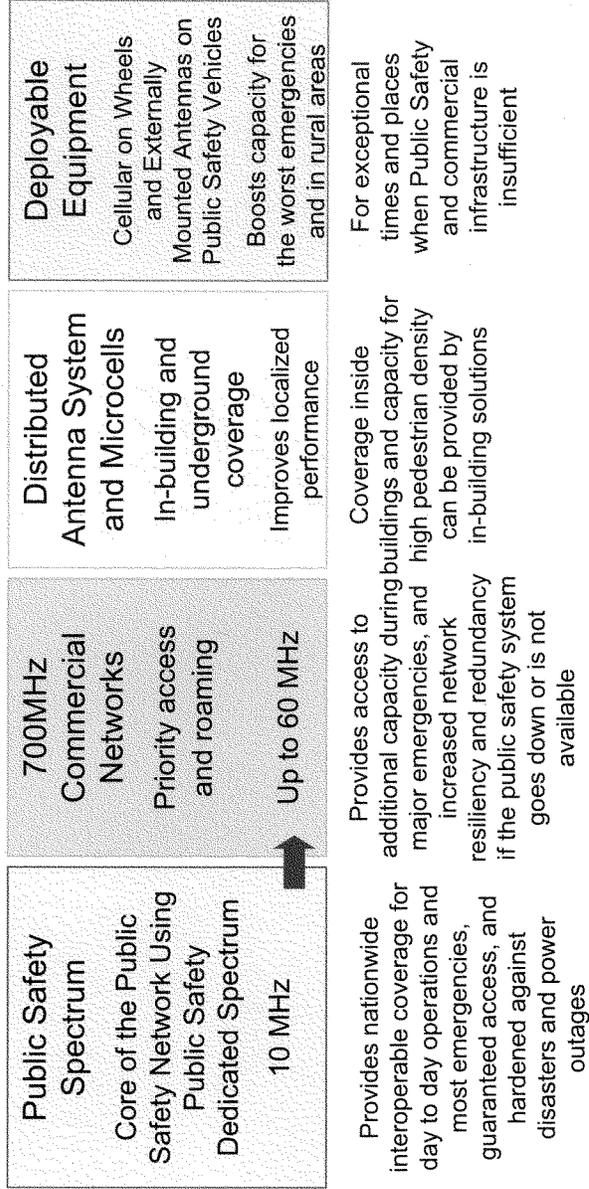


Appendix B



Components of Public Safety Broadband Network

Nationwide, 99% population coverage from dense cities to rural counties



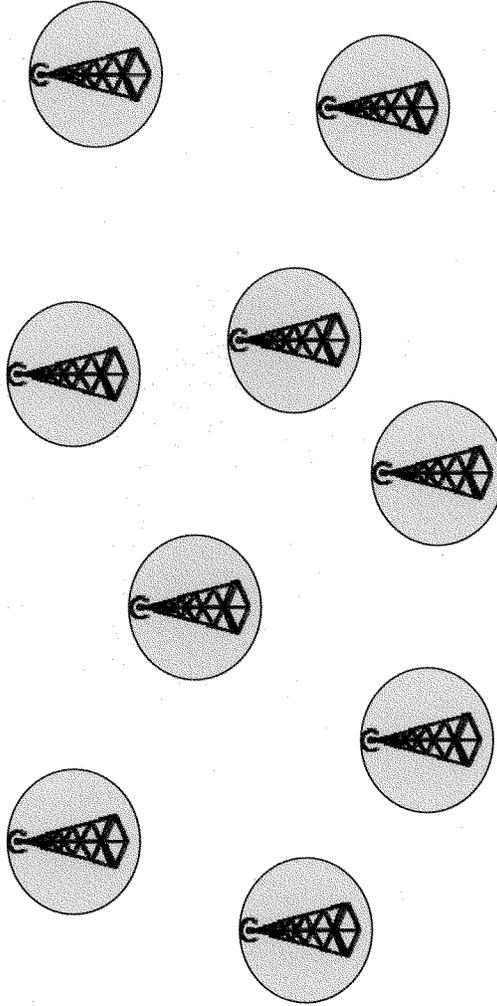


Appendix C



The Old Current Technology and Architecture: Narrowband Land Mobile Radio (LMR)

LMR is “noise limited”, tall towers, high power, large spaces in between



Inefficient use of spectrum, limits capacity, but saves money on fewer towers

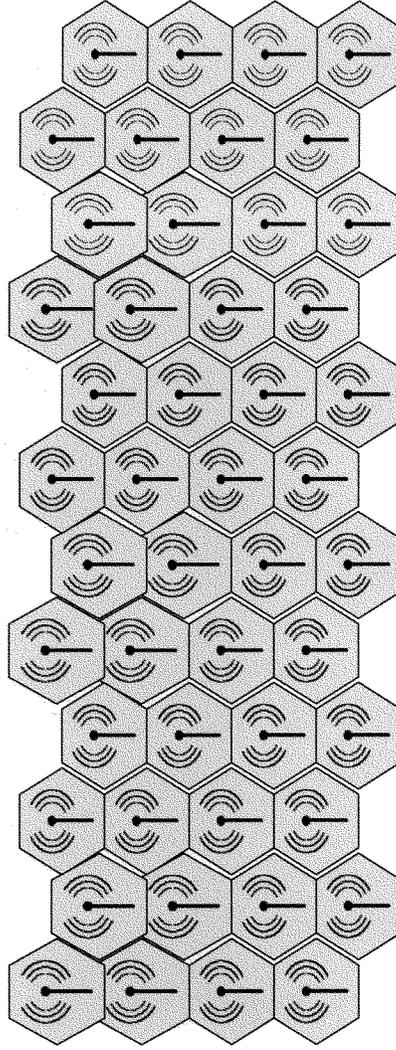


Appendix D



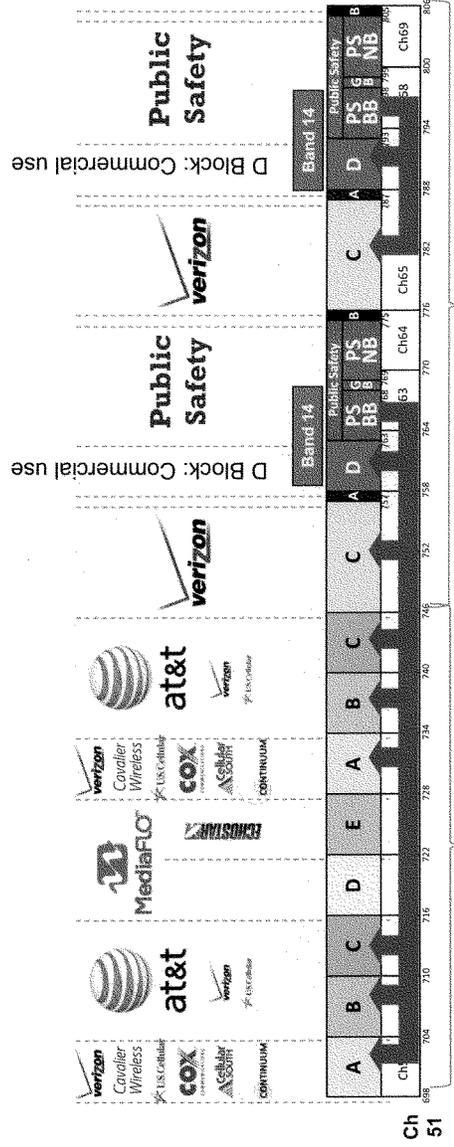
The New Technology and Architecture: Broadband and Cellular

Cellular architecture is only “interference limited”, many towers, lower to the ground, each covering a small space, no spaces in between



Efficiently reuses same spectrum in each cell, vastly boosting capacity,
but requires more towers

Appendix E 700 MHz Band Plan with Priority Access and Roaming



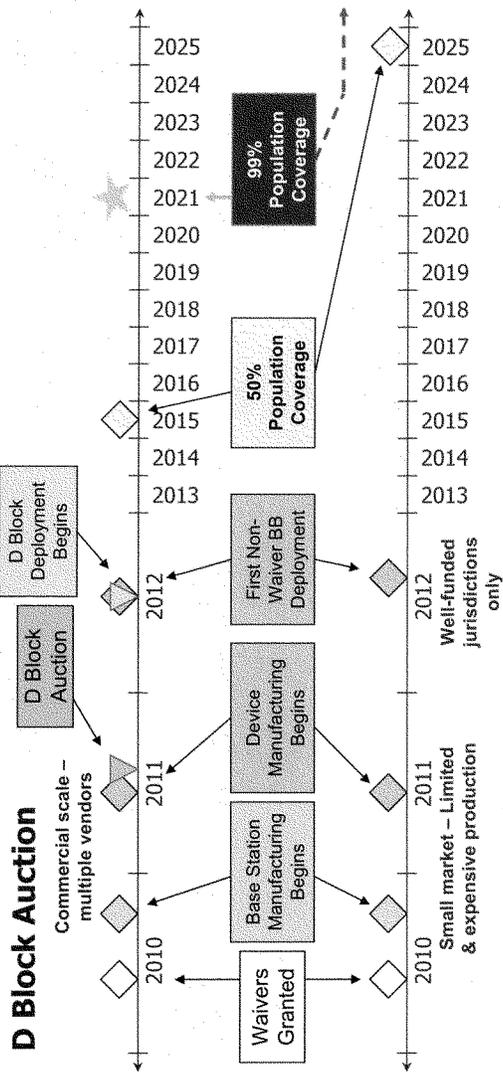
- Priority Access and Roaming provides far more capacity for major emergencies than reallocating the D Block alone, plus the resiliency of back up networks
- Reallocating D Block isolates Public Safety from reasonably priced devices and equipment, and from commercial technology advances



Appendix F

Timeline Comparison: D Block Auction vs Reallocation

Delay Equals Added Cost, Less Coverage and Threatens to Nationwide Interoperability



D Block Reallocation

D Block reallocation undermines the market for reasonably priced devices and equipment, vastly increases the expense, and defeats nationwide coverage.

Mr. BOUCHER. Thank you very much, Admiral Barnett. Mr. Dowd.

STATEMENT OF CHARLES F. DOWD

Chief DOWD. Good morning, Chairman Boucher, Ranking Member Stearns, members of the subcommittee. I am Deputy Chief Charles Dowd, Commanding Officer of the New York City Police Department's Communications Division. On behalf of Police Commissioner Raymond Kelly, I want to thank you for the opportunity to discuss with you today the critical need for Congress to act to ensure that public safety agencies will be able to communicate effectively now and in the future. I speak today not only for the NYPD and the City of New York, but also on behalf of virtually all of my colleagues in public safety, represented by the 21,000 members of the International Association of Chiefs of Police, the 13,000 members, chiefs, of the International Association of Fire Chiefs, the National Sheriffs' Association, the Metropolitan Fire Chiefs, the Major Cities Police Chiefs, the Major County Sheriffs' Association, the Association of Public Safety Communications Officials, and the National Emergency Management Association.

We are joined in this effort by the National Governors Association, the National Conference of State Legislatures, the Council of State Governments, the National Association of Counties, the National League of Cities, the U.S. Conference of Mayors, and the International City/County Management Association, and many others that I could not list here today. We jointly and urgently request that Congress take immediate action to reallocate and assign the 700 megahertz D Block of broadband spectrum directly to public safety, rather than conducting a public auction of this vital resource. We strongly support a bi-partisan bill introduced by Representative Peter King. This legislation, H.R. 5081, currently co-sponsored by 24 members of the House, including Representative Anthony Weiner, vice Chairman of this subcommittee, would accomplish this purpose, and we ask that Congress swiftly approve the bill and send it to the President for his signature.

In previous testimony before this committee, we have said that broadband technology will create a paradigm shift in public safety communications. The events in Mumbai, India and more recently in Times Square confirm the need for information sharing capabilities that will allow first responders to be effective in preventing such attacks. The ability to share information in real time on a local, state, and federal level is critical to that goal. The staff discussion draft referred to by this committee as the Public Safety Act of 2010 is fatally flawed legislation in that it calls for the auctioning of the D Block.

It does address some of public safety's needs, as Admiral Barnett already mentioned, it does address some of public safety's needs designating other spectrum for auction with the proceeds being dedicated to public safety broadband. It also talks about the establishment of an advisory board under the FCC, which most of us in public safety agree is a good idea. Such an entity could be successful if comprised of public safety practitioners as decision makers. The section on flexibility and sharing of broadband spectrum is an idea also generally supported by public safety as a way to fund and

maintain the network. However, we cannot agree with the bill's intent to auction a resource as critical to public safety as the D Block.

Since the D Block spectrum is adjacent to the public safety broadband allocation it is uniquely desirable, as it can provide needed additional capacity simply and elegantly, and simply is important, without complicating network or handset design. Any alternative spectrum offered would be less desirable since additional components would be required which would dramatically increase the cost while reducing performance. Nonadjacent spectrum blocks will not provide as much throughput capacity as the D Block, since greater efficiency is achieved through spectrum aggregation. This is the essence of broadband. If adding sites were the solution to network capacity shortage, there would be no contention for, or market for the D Block. Rather than seeking additional spectrum, network operators would simply add more sites. This is clearly not the case.

Allocating the D Block to public safety will also provide first responders with the bandwidth required for the eventual migration of mission critical voice to 700 LTE as envisioned in the National Broadband Plan. The NYPD shares this vision and looks forward to the day when public safety users can share a nationwide network that supports mission critical voice, video, and data on an integrated wireless network and abandon the web of disparate legacy networks that impedes interoperability today. The D Block is the cornerstone of the mission critical voice foundation. Without it, a mission critical voice and data network would not be possible. The City of New York filed a White Paper with the FCC describing the spectrum needs for an integrated voice and data network several months ago. As public safety experts, we contend that filing provided proof that the 19 megahertz of dedicated spectrum is insufficient for public safety's needs during emergencies. We have submitted a copy for the record of this hearing.

Our experience with commercial network failures tells us we need network control to ensure guaranteed access and security. Commercial networks are simply not built to the same standards of reliability and survivability as our public safety networks. In a timely 60 Minutes broadcast last Sunday, federal officials criticized the utility industry for failing to safeguard their networks and systems from intrusion and malicious software. It was clear that the biggest impediment to protecting the power grid was the utility's unwillingness to spend profits to secure their systems. What assurance do we have that commercial carriers will provide the adequate network security and robust build out that public safety requires and demands?

And, by the way, again our experience over the years tell us that they will not. The nationwide network will be interconnected to confidential databases and secure servers that need to be protected. We need to have the option to build our own secure networks and manage the security of these networks ourselves.

The public safety organizations mentioned at the beginning of my testimony are unified in the goal of establishing for the first time a nationwide interoperable mission critical voice and data public safety broadband network. They are not motivated by profit or poli-

tics. Their only motivation is the ability to serve the public they are sworn to protect. On behalf of those organizations, I thank you for your attention to this important issue, and I will be happy to answer any questions from the members of the subcommittee.

[The prepared statement of Mr. Dowd follows:]

STATEMENT OF
DEPUTY CHIEF CHARLES F. DOWD
COMMANDING OFFICER, COMMUNICATIONS DIVISION
NEW YORK CITY POLICE DEPARTMENT

BEFORE THE UNITED STATES HOUSE OF REPRESENTATIVES
COMMITTEE ON ENERGY AND COMMERCE
SUBCOMMITTEE ON COMMUNICATIONS, TECHNOLOGY AND THE
INTERNET



JUNE 17, 2010

STATEMENT OF
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INTERNET

JUNE 17, 2010

Good morning Chairman Boucher, Ranking Member Stearns, and members of the Subcommittee. I am Deputy Chief Charles Dowd, Commanding Officer of the New York City Police Department's Communications Division. On behalf of Police Commissioner Raymond Kelly, I want to thank you for the opportunity to discuss with you today the critical need for Congress to act to ensure that public safety agencies will be able to communicate effectively, now and in the future.

I speak today not only for the NYPD and the City of New York, but also on behalf of virtually all of my colleagues in public safety, represented by the International Association of Chiefs of Police, the International Association of Fire Chiefs, the National Sheriffs' Association, the Metropolitan Fire Chiefs, the Major Cities Police Chiefs, the Major County Sheriffs' Association, the Association of Public Safety Communications Officials, and the National Emergency Management Association. We are joined in this effort by the National Governors Association, the National Conference of State Legislatures, the Council of State Governments, the National Association of Counties, the National League of Cities, the U.S. Conference of Mayors, and the International City/County Management Association, and to many others to list here today.

We jointly and urgently request that Congress take immediate action to reallocate and assign the 700 MHz D Block of broadband spectrum directly to public safety, rather than conducting a public auction of this vital resource. We strongly support a bi-partisan bill introduced by Representative Peter King. This legislation, H.R. 5081, currently co-sponsored by twenty-four members of the House, including Representative Anthony Weiner, Vice-Chair of this Subcommittee, would accomplish this purpose, and ask that Congress swiftly approve the bill and send it to the President for his signature.

In previous testimony before this committee we have said that broadband technology will create a paradigm shift in public safety communications. The events in

Mumbai India and more recently in Times Square confirm the need for information sharing capabilities that will allow first responders to be effective in preventing such attacks. The ability to share information in real time on a local, state, and federal level is critical to that goal.

The staff discussion draft referred to by this committee as the “Public Safety Act of 2010” is fatally flawed legislation in that it calls for the auctioning of the D Block. It does address some of public safety’s needs by designating other spectrum for auction with the proceeds being dedicated to public safety broadband. It also talks about the establishment of an advisory board under the FCC. Such an entity could be successful if comprised of public safety practitioners as decision makers. The section on flexibility and sharing of broadband spectrum is an idea also generally supported by public safety as a way to fund and maintain the network. However, we cannot agree with the bill’s intent to auction a resource as critical to public safety as the D Block.

Since the D Block spectrum is adjacent to the public safety broadband allocation it is uniquely desirable, as it can provide needed additional capacity simply and elegantly, without complicating network or handset design. Any alternative spectrum offered will be less desirable since additional components would be required which would dramatically increase the cost while reducing performance. Non adjacent spectrum blocks will not provide as much throughput capacity as the D Block, since greater efficiency is achieved through spectrum aggregation; this is the essence of broadband. If adding sites were the solution to a network capacity shortage, there would be no contention for, or market for the D Block. Rather than seeking additional spectrum, network operators would simply add more sites. This is clearly not the case.

Allocating the D Block to public safety will also provide first responders with the bandwidth required for the eventual migration of mission critical voice to 700 LTE as envisioned in the National Broadband Plan. The NYPD shares this vision and looks forward to a day when public safety users can share a nationwide network that supports voice, video, and data on an integrated wireless network and abandon the web of disparate legacy networks that impedes interoperability today. The D Block is the cornerstone of the mission critical voice foundation; without it, a mission critical voice and data network would not be possible. The City of New York filed a whitepaper with the FCC describing the spectrum needs for an integrated voice and data network several months ago. As public safety experts, we contend that filing provided proof that 10MHz of dedicated spectrum is insufficient for public safety’s needs during emergencies. We have submitted a copy for the record of this hearing.

Our experience with commercial network failures tells us we need network control to ensure guaranteed access and security. Commercial networks are simply not built to the same standards of reliability and survivability as our public safety networks. In a timely 60 Minutes broadcast last Sunday, federal officials criticized the utility industry for failing to safeguard their networks and systems from intrusion and malicious software. It was clear that the biggest impediment to protecting the power grid was the utilities’ unwillingness to spend profits to secure their systems. What assurances do we

have that commercial carriers will provide the adequate network security and robust buildout that public safety requires and demands? The nationwide network will be interconnected to confidential databases and secure servers that need to be protected. We need to have the option to build our own secure networks and manage the security of these networks ourselves.

The public safety organizations mentioned at the beginning of my testimony are unified in the goal of establishing for the first time a nationwide interoperable mission critical voice and data public safety broadband network. They are not motivated by profit or politics. Their only motivation is the ability to serve the public they are sworn to protect. On behalf of these organizations, I thank you for your attention to this important issue, and I will be happy to answer any questions from this Subcommittee.

Mr. BOUCHER. Mr. Moore.

STATEMENT OF JONATHAN MOORE

Mr. MOORE. Thank you, Chairman Boucher, Ranking Member Stearns, and distinguished members of the subcommittee. My name is Jonathan Moore, and I am the Director of Fire and EMS Operations and GIS Services for the International Association of Fire Fighters. I appreciate the opportunity to appear before you today on behalf of General President Schaitberger, and the nearly 300,000 fire fighters and emergency medical personnel who comprise our organization. Mr. Chairman, I testify today not only as a representative of the IAFF, but as a former fire fighter who understands the critical importance of effective and reliable public safety communications. While Congress and the FCC have taken important steps forward to establish a public safety broadband network, establishing such a network is only the top of the iceberg. Much work remains to be done to improve not only interoperable communications, but basic operable radio communications within individual police and fire departments.

For years the IAFF has participated in the ongoing dialogue among members of the public safety community, telecommunications industry and elected officials about how to best utilize evolving communications technology. We believe that the broadband technology can provide public safety with the ability to quickly communicate complicated information and that the broadband plan proposed by the FCC will deliver a functional and affordable broadband network to public safety. We believe that the 10 megahertz currently allocated to public safety combined with roaming and priority access on the D Block and of the networks as proposed by the FCC will provide public safety with adequate capacity for every day use as well as large scale emergencies.

Furthermore, because such partnerships will be required to meet the requirements established by the Emergency Response Interoperability Center, which itself will be advised by public safety, we have confidence that they will meet the public safety's mission critical standards. The argument that public safety needs 20 megahertz depends on a number of assumptions which are unlikely to occur, that a majority of public safety agencies will participate in the network and that a majority of agencies will utilize the myriad of applications envisioned for such a network. This sort of buy-in is unlikely to happen for several reasons, including use of alternate networks, personal preference, and, perhaps most importantly, cost.

Perhaps the most important aspect of the FCC plan is the fact that it proposes both short and long-term funding mechanisms to help build and maintain the public safety network. The plan also ensures that the network is affordable to its users by leveraging commercial technology and utilizing the GSA schedule to provide reasonable benchmark rates for public safety equipment and network access. As public safety budgets nationwide face significant cuts in the current economy affordability is key to making any network interoperable on a nationwide level. Some in industry and the public safety community have suggested that the FCC plan is insufficient to meet public safety needs and instead recommend re-

allocating the D Block to public safety. While well intentioned, we believe that this proposal is not only unnecessary but unrealistic.

As a case in point, the legislation reallocating the D Block to public safety has been introduced in the House by Representative Peter King. However, the bill proposes no funding mechanism to build or maintain the network. While we support the FCC plan and the establishment of a nationwide public safety broadband network building such a network will in no way address the real communication dilemma facing the majority of America's first responders achieving basic communications operability. The communications failures of 9/11, Oklahoma City, and Katrina are often cited as proof of why a nationwide interoperable communications network is needed. Yet, these were not failure of interoperability but rather failures of basic operability.

Despite the promise of broadband for the foreseeable future communications in the fire service will continue to be dependent on radio, and ensuring fire fighters have basic radio communications capabilities must continue to be our top priority. The safety of both fire fighters and the public depends on reliable, functional communication tools that work in the extreme environment in which fire fighters operate with zero visibility, in high heat or in self-contained breathing apparatus that distort the voice, and gloves that make operation of a complicated handset difficult. Fire fighters operate inside structures of varying sizes and construction types which have a direct impact on the ability of a radio wave to penetrate the structure and be interpreted by the receiver. It is precisely this environment that makes the application of new technology so challenging.

Current digital radio technology, for example, is largely unintelligible on the fire ground. Any communications technology must take all of these factors into consideration. Communications technology must not only be reliable and functional, it must also be affordable. Fire departments will simply be unable to utilize new technology if it is too expensive. Focusing time and resources on fixing these and other basic communication issues will have a larger impact on public safety than will the establishment of any broadband network. Moreover, failure to address the challenges of communication on the fire ground will undermine the entire purpose of creating a broadband network. Thank you for the opportunity to testify before you today, and I am happy to answer any questions you may have.

[The prepared statement of Mr. Moore follows:]

INTERNATIONAL ASSOCIATION OF FIRE FIGHTERS



STATEMENT OF

JONATHAN W. MOORE
DIRECTOR OF FIRE AND EMS OPERATIONS AND GIS
SERVICES

BEFORE THE
HOUSE SUBCOMMITTEE ON
COMMUNICATIONS, TECHNOLOGY AND THE
INTERNET

ON
ESTABLISHING A PUBLIC SAFETY BROADBAND
NETWORK

JUNE 17, 2010

Thank you Chairman Boucher, Ranking Member Stearns and distinguished members of the Subcommittee. My name is Jonathan Moore and I am the Director of Fire and EMS Operations and GIS Services for the International Association of Fire Fighters (IAFF). I appreciate the opportunity to appear before you today on behalf of our General President, Harold Schaitberger, and the nearly 300,000 fire fighters and emergency medical personnel who comprise our organization.

Mr. Chairman, I testify today not only as a representative of the IAFF, but as a former fire fighter who fully understands the critical importance of effective and reliable public safety communications. Prior to my employment at the IAFF, I spent my entire adult life in the fire service, starting as a volunteer fire fighter before serving for over eight years as a professional fire fighter and paramedic in the City of Concord, New Hampshire Fire Department.

Whenever and wherever needed, IAFF members are on the front lines working tirelessly to save lives and protect the public safety. Whether responding to a local crisis such as a fire or medical emergency, or a large-scale disaster such as a hurricane or terrorist attack, the men and women of the IAFF are the first to arrive on the scene and the last to leave.

No matter the size or scope of an emergency, it is critically important to ensure that our nation's emergency responders have the ability to communicate effectively. It is from this perspective as the primary users of public safety communications technology and systems that we speak today on efforts to improve public safety communications. While Congress and the Federal Communications Commission (FCC) have recently taken important steps forward to establish a nationwide interoperable public safety broadband network, establishing such a network is only the tip of the iceberg. Much work remains to be done to improve not only interoperable communications, but basic 'operable' radio communications within individual police and fire departments.

The FCC Plan

Public safety communications technology has evolved significantly over the past sixty years, and will continue to evolve. For years, the IAFF has participated in the ongoing dialogue among members of the public safety community, telecommunications industry and elected officials about how to best utilize such technology. We believe, as does the Administration and numerous others, that broadband technology can provide public safety with the ability to quickly communicate complicated information, and potentially save lives.

The public safety broadband network envisioned by the FCC, and outlined in the National Broadband Plan, will help public safety access new tools and technology to carry out their mission. The network proposed by the FCC will help assure that public safety has adequate capacity while providing first responders with resilient, hardened and affordable coverage.

Despite claims from some in industry and others in the public safety community, we believe that the ten megahertz currently allocated to public safety, combined with roaming and priority

access on the D block and other commercial networks, will provide public safety with adequate capacity for everyday use as well as large-scale emergencies.

Furthermore, because such partnerships will be required to meet the technical and operational requirements established by the Emergency Response Interoperability Center (ERIC), which itself will be advised by public safety, we have confidence that they will meet public safety's mission critical standards.

The argument that public safety needs 20 MHz is dependent on a number of assumptions which are unlikely to occur. First and foremost, this argument presumes the participation of a majority of public safety agencies in the nationwide network, and presumes that a majority of agencies in the network will utilize the myriad of applications envisioned for such a network. This sort of buy-in is unlikely to happen for several reasons, including use of alternate networks, personal preference, and, perhaps most importantly, cost.

The argument also presumes the participation of non-public safety entities such as utilities and state governments, a controversial proposal in the public safety community as well as among public officials.

Perhaps the most important aspect of the FCC plan is the fact that it proposes both short and long-term funding mechanisms to help build and maintain the public safety network. While some may disagree about the specific manner by which a public safety broadband network should be funded, the fact that a funding mechanism must be found is not debatable. Investing proceeds from the D block auction will help fund the network's initial construction, while imposing a minimal public safety fee on broadband users will provide significant funding to operate, maintain and improve the network.

As no public safety network is viable without both short and long term funding, neither is any such network viable if it is unaffordable to its end-users. As public safety budgets nationwide face significant cuts in the current economy, affordability is key to making any network interoperable on a nationwide level. This is especially true in rural communities, many of which have poor network coverage and access. The FCC plan contains several proposals to ensure that both network access and equipment is affordable to the end-user.

First, the FCC plan calls upon the D block licensee and other 700 MHz commercial licensees to develop commercial devices that can operate across Band 14 in its entirety. Leveraging commercial technologies in this manner is expected to reduce the cost of devices to public safety. Additionally, the FCC plan calls for the utilization of the General Services Administration schedule to provide reasonable benchmark rates for public safety equipment as well as network access.

Lastly, by auctioning the D block, the FCC plan provides public safety with a true competitive choice among commercial partners, as well as the more competitive network rates which would follow.

Alternate Proposals

Because the FCC plan will provide public safety with an affordable network which meets mission critical standards, we believe it is a pragmatic solution to the problem of establishing a nationwide broadband network.

Some in industry and the public safety community have suggested that the FCC plan is insufficient to meet public safety needs, and instead, recommend reallocating the D block to public safety. While well-intentioned, we believe that this proposal is not only unnecessary, but unrealistic.

As a case in point, legislation reallocating the D block to public safety has been introduced in the House by Representative Peter King (R-NY). However, the bill provides no funding mechanism to build or maintain the network. The King bill also lacks the requirements included in the FCC plan to make equipment affordable for public safety.

Furthermore, reallocating the D block to public safety would provide a competitive advantage to the extremely limited number of carriers capable of building a nationwide broadband network across 20 MHz. By removing competitive forces, prices will rise, rendering public safety's own network potentially unaffordable for much of public safety.

The Real Problem: Basic Operability

While we support the FCC plan and the establishment of a nationwide public safety broadband network, in reality, interoperable communications on a national level is rarely going to be used. With limited exceptions, most public safety responses occur on the local or regional level. In many regions, such as the national capital area, interoperability on this level is already being addressed.

Furthermore, building a public safety broadband network will in no way address the real communications dilemma facing the majority of America's first responders: achieving basic communications operability.

Often, the communications failures of 9/11, Oklahoma City, and Katrina are cited as proof of why a nationwide interoperable communications network is needed. Yet, the failures associated with these disasters were not failures of interoperability, as is often claimed, but rather, failures of basic operability.

On 9/11, for example, it was the limited effectiveness of low-powered radios in use at the Twin Towers, combined with an extremely high volume of communications traffic that prevented fire fighters from receiving the call to evacuate. Widespread claims that a broadband network would have saved lives on that tragic day are simply not true.

Despite the promise of broadband, for the foreseeable future, communications in the fire service will continue to be dependent on radio, and ensuring fire fighters have basic radio communications capabilities must continue to be our top priority.

The safety of both fire fighters and the public depends on reliable, functional communication tools that work in the harshest and most hostile of environments. Fire fighters operate in extreme environments that are markedly different from those of any other radio users. Fire fighters operate in zero visibility, in high heat, high moisture environments and wearing self-contained breathing apparatus facepieces that distort the voice.

It is precisely this environment that makes the application of new technology so challenging. Current digital radio technology, for example, is largely unintelligible on the fireground.

Fire fighters are further challenged by bulky safety equipment - particularly gloves that eliminate the manual dexterity required to operate portable radio controls.

Firefighters operate inside structures of varying sizes and construction types. The size and construction type of the building have a direct impact on the ability of a radio wave to penetrate the structure and be interpreted by the receiver.

Any communications technology must take all of these factors into consideration in order to assure safe and effective communications on the fireground.

The IAFF has made it a priority to ensure that everyone goes home safe at the end of each shift. Because radios are one of most important pieces of safety equipment, we expect that any new communications system will be effective, safe, reliable and simple to use.

Communications technology must not only be reliable, it must also be affordable. Today, a basic handset can run into the thousands of dollars. Understandably, fire departments are reluctant to spend significant amounts on new technology that has not been thoroughly field tested. As communities nationwide continue to squeeze public safety budgets, fire departments will simply be unable to utilize new technology if it is too expensive. We can and must do better. The federal government can help local fire departments overcome this hurdle by ensuring federal grants for public safety communications may be spent on improved communications equipment and other activities needed to achieve basic communications operability.

Focusing time and resources on fixing these and other basic communications issues will have a larger impact on public safety than will the establishment of any broadband network. Moreover, failure to address the challenges of communications on the fireground will undermine the entire purpose of creating a broadband network. A network that enables a fire fighter in Los Angeles to communicate with a fire fighter in New York will serve no purpose if two FDNY fire fighters working the same incident can't talk to each other.

Conclusion

On behalf of the International Association of Fire Fighters, I appreciate the opportunity to share with you our views on efforts to establish a nationwide interoperable public safety broadband network. Although the FCC's plan to establish such a network will provide first responders with reliable and affordable broadband coverage, these efforts will address only one small component of public safety communications needs. Congress and the FCC must commit to improving all aspects of public safety communications, including the often overlooked but critically-important matter of basic communications operability.

To the extent that the IAFF can assist the Subcommittee in working towards this end I am happy to offer our expertise and pledge to work closely with you and your staffs.

Again, I'd like to thank the Subcommittee for the opportunity to testify today and am happy to answer any questions you may have.

Mr. BOUCHER. Thank you very much, Mr. Moore. Mr. Hatfield.

STATEMENT OF DALE HATFIELD

Mr. HATFIELD. Chairman Boucher, Ranking Member Stearns and members of the subcommittee, I am very pleased and honored to appear before you today to testify on the draft legislation that would provide funding for constructing and maintaining an interoperable public safety broadband network. My name is Dale Hatfield, and I am the Executive Director of the Silicon Flatirons Center for Law, Technology and Entrepreneurship at the University of Colorado at Boulder. While I have some other affiliations that are disclosed in my prepared remarks, my testimony here today reflects solely my own views and any recommendations that I offer should not be ascribed to any of the other institutions with which I am associated.

I would be remiss if I did not begin my testimony by commending you for taking up an issue, the funding of a nationwide interoperable public safety broadband network that is so vital to the safety of life and property and to our homeland security. Past experience with large scale man-made and natural disasters have clearly demonstrated the price we may pay in the future without such an interoperable network. Moreover, the challenges we have had in the past in developing and deploying interoperable narrow band voice network for public safety use provide a warning of the hard work that lies ahead if we are going to realize the full benefits and vision by an interoperable public safety broadband network.

Fortunately, in my opinion, legislation along the lines that has been set forth in the staff draft coupled with the recommendations and analyses presented in the National Broadband Plan provide the necessary policy direction, funding sources, and analytical framework to ensure the successful deployment of such a nationwide network. Turning to my written testimony, I focus there on 4 areas. First, I address the importance of taking into account commercial equipment and technologies and the evolution of commercial wireless networks in establishing rules to ensure the deployment of the interoperable network. More specifically, Section 101 of the discussion draft directs the Commission in adopting the rules necessary to achieve interoperability to consider, 1, the extent to which particular technologies and user equipment are or are likely to be available in the commercial marketplace, 2, the availability of necessary technologies and equipment on reasonable and non-discriminatory licensing terms, 3, the ability to evolve with technological developments in the commercial marketplace, and, 4, the ability to accommodate prioritization for public safety transmissions.

As I explain more fully in my written testimony, I believe these provisions are essential to developing the interoperability public safety broadband network. Among other things, the network will benefit from the economies of scale, increased competition, and rapid technological advances associated with commercial marketplace, and also importantly because it will facilitate the ability of public safety users to roam onto and gain priority access to commercial networks in times of stress. Second, building upon some earlier testimony that I delivered to the subcommittee in December

of last year, I address the importance of spectrum flexibility and sharing as raised in Section 103 of the discussion draft. I strongly support those revisions of the draft because I am convinced that we can no longer afford to leave vast stretches of valuable spectrum lying idle most of the time when there are technologies available to allow more efficient dynamic sharing of the resource while giving public safety entities access to large amounts of additional spectrum in extreme emergency situations.

Third, I addressed the issue of the adequacy of the 10 megahertz of spectrum in the 700 megahertz band that has already been allocated to public safety for broadband networks and having reviewed the White Paper on capacity requirements released by the Commission on Tuesday as well as some other documents. I state that I am in general agreement with the analysis contained therein. More specifically, I support both the conclusion that the 10 megahertz of spectrum already allocated is sufficient to meet the day-to-day and serious emergency broadband requirements for public safety, and the concept of allowing public safety entities to gain access to substantial amounts of additional spectrum through priority access to and roaming access across commercial broadband spectrum.

Again, this is consistent with my strongly held belief that better spectrum management requires more efficient dynamic sharing of the increasingly scarce spectrum resource. Fourth, and, finally, I address several less over-arching issues which I wanted to call to your attention, but because they are not central to the main issues and in the interest of time, I will not address them in this oral statement. That concludes my oral statement, Mr. Chairman, and I will be happy to take questions. Thank you very much.

[The prepared statement of Mr. Hatfield follows:]

Testimony of
Dale N. Hatfield
Executive Director
Silicon Flatirons Center for Law, Technology and Entrepreneurship
University of Colorado at Boulder
before the
Subcommittee on Communications, Technology and the Internet
of the
House Committee on Energy and Commerce

June 17, 2010

Chairman Boucher, Ranking Member Stearns and members of the Subcommittee on Communications, Technology and the Internet, I am very pleased and honored to appear before you today to testify on the draft legislation that would provide funding for constructing and maintaining an interoperable public safety broadband network and on H.R. 4829, the "Next Generation 9-1-1 Preservation Act of 2010." My name is Dale Hatfield and I am the Executive Director of the Silicon Flatirons Center for Law, Technology and Entrepreneurship at the University of Colorado at Boulder. In the interest of full disclosure, I should also mention that I am on the board of directors of Crown Castle International, a major operator of radio towers for the wireless industry here in the United States and in Australia and I also engage in a limited amount of independent consulting activities including with the Shared Spectrum Company, a developer of spectrum-sensing cognitive radio technology.

I have been involved in telecommunications policy and regulatory issues for more than four decades and during that period I have had a hand in many of the major issues associated with public safety communications, especially as related to the technical aspects of spectrum management and 9-1-1 matters. With regard to that involvement, I have had the honor of serving in senior technical and policy positions at both the Federal Communications Commission ("FCC" or "Commission") and at the National Telecommunications and Information Administration ("NTIA") in the U.S. Department of Commerce. Currently, I am serving as the co-chair of NTIA's Commerce Spectrum Management Advisory Committee ("CSMAC"). While my testimony here today is based upon my experience and my current academic research interests, it reflects solely my own views and any recommendations that I offer should not be ascribed to any of the institutions with which I am affiliated.

I would be remiss if I did not begin my testimony by commending you for taking up an issue – the funding of a nationwide, interoperable public safety broadband network – that is so vital to the safety of life and property and to homeland security more generally. Past experience with large scale manmade and natural disasters such as the 1995 Oklahoma City bombing, the 2001 attack on the World Trade Center, and Hurricane Katrina in 2005 have clearly demonstrated the price we may pay in the future without such an interoperable network. Moreover, the challenges we have had in the past in developing and deploying an interoperable narrowband (voice) network for public

safety use provide a strong warning of the hard work that lies ahead of us all if we, as a Nation, are going to realize the full benefits envisioned by a nationwide, interoperable public safety broadband network. Fortunately, in my opinion, legislation along the lines that have been set forth in the staff draft coupled with the recommendations and analyses presented in the National Broadband Plan released by the Commission last March provide the necessary policy direction, funding sources, and analytical framework to ensure the successful deployment of such a nationwide network.

In the balance of my testimony, I will focus my attention on four areas:

- *First*, I will address the importance of taking into account commercial equipment and technologies and the evolution of the commercial wireless networks in establishing rules to ensure the deployment of the interoperable network. That is, I will address Sec. 101 of Title I of the discussion draft.
- *Second*, building upon some earlier testimony that I delivered to the Subcommittee in December of last year in conjunction with the proposed Radio Spectrum Inventory Act, I will speak to the importance of spectrum flexibility and sharing as raised in Sec. 103 of Title I of the discussion draft.
- *Third*, I will address the issue of the adequacy of the 10 MHz of spectrum in the 700 MHz band that is already allocated to public safety for broadband networking – an issue that came into even sharper focus with the release by the Commission of a report on that topic on Tuesday of this week.
- *Fourth*, and finally, I will address several, less over-arching issues to which I would like to call to your attention.

1. Specifications for Achieving Interoperability

Among other things Section 101 (b) of Title I of the discussion draft directs the Commission to take into consideration certain commercial factors in adopting the rules necessary to achieve interoperability in the public safety broadband network. More specifically, the Commission is directed to consider (1) the extent to which particular technologies and user equipment are, or are likely to be, available in the commercial marketplace; (2) the availability of necessary technologies and equipment on reasonable and non-discriminatory licensing terms; (3) the ability to evolve with technological developments in the commercial marketplace; and (4) the ability to accommodate prioritization for public safety transmissions. I believe these provisions are essential to developing the interoperable public safety broadband network.

I believe they are essential because of the sheer size of the commercial market relative to the public safety market and to the extensive geographic coverage already offered and planned by commercial mobile service providers. By taking into account, as appropriate, commercial equipment and technologies and the evolution of the commercial

wireless marketplace, the public safety broadband network will benefit from, among other things:

- The economies of scale associated with the development and production of end user and network equipment,
- Increased competition associated with the potential of more vendors and a reduction in vendor “lock-in” due to proprietary solutions and vendor unwillingness to license critical technologies on reasonable and non-discriminatory licensing terms,
- Increased ability to roam onto and gain priority access to commercial networks during significant emergencies and during periods and/or at locations where the public safety broadband network may not be able to provide service,
- Increased ability to enter into financially beneficial routine spectrum sharing arrangements with commercial entities,
- The rapid performance improvements and other technology advancements that are the result of the large R&D expenditures associated with commercial wireless operators and their vendors.

In my opinion, and the opinion of many others as well, it was largely a public policy failure – not fully taking into account the four considerations included in Section 101 (b) of the discussion draft – that led to the current limitations associated with public safety narrowband voice interoperability after more than two decades of effort.

2. Spectrum Flexibility and Sharing

In my testimony before this subcommittee in December of last year, I bemoaned what I regarded as the excessive rigidities associated with the management of spectrum resource. These rigidities include prohibitions (a) against (or in some cases the lack of incentives for) changing how spectrum is used in the face of rapid marketplace and technological trends and (b) against voluntary sharing of the resource among users even when it is beneficial to the parties involved and interference is controlled to satisfaction of all parties to the proposed transaction. Because of this excessive rigidity, it is not unusual to find through actual field measurements that large blocks of spectrum or large numbers of channels are unused or only lightly used even in areas of the country and at times when spectrum congestion and scarcity is apt to be most acute. This includes in the existing public safety bands. In my previous testimony, I noted that in the spectrum management field, we refer to this form of scarcity as *administrative* scarcity to distinguish it from true scarcity in a physical sense.

Because of my strongly held belief that we simply cannot afford to have continued administrative scarcity given the dramatic increase in demand for this critical

natural and national resource, I was pleased when I first read Section 103 of Title I of the discussion draft. I was pleased because that section instructs the Commission to allow certain spectrum specified in the draft legislation to be used in a flexible manner, including for public safety use. More specifically it addresses the existing narrowband public safety spectrum as well as the guard band and the unoccupied guard band as defined in the draft. The importance of this provision can be understood through an example. It may well be that, as the broadband networks evolve to effectively handle narrowband voice traffic, certain areas of the country may make more rapid progress in shifting that traffic to the interoperable broadband public safety network. Thus a situation could arise wherein one area of the country was using more broadband spectrum and less narrowband spectrum respectively while the opposite was true in another part of the country. In this situation – as long as no channels needed for narrowband interoperability were involved and as long as any change in the interference environment was dealt with – it makes sense to give the FCC the flexibility to change the proportion of narrowband and broadband channels in the respective areas. Another example would be where a technology change or an adjustment in usage might make it feasible to utilize otherwise wasted guard band spectrum.

In terms of spectrum sharing, the same section of the discussion draft instructs the Commission to permit, with certain conditions, public safety entities to allow other entities including, presumably, commercial entities to access or share their spectrum in exchange for a financial consideration. As I noted in my prior testimony, spectrum sharing can be accomplished on a static or long-term basis or, especially with recent technological advances, on a more dynamic basis or “real-time” basis. The potential for static sharing could arise in a situation where the public safety entity does not intend to fully utilizing its broadband spectrum in either the spectrum and/or geographic dimensions for some period of time. Leasing the under-utilized spectrum to a commercial entity not only provides a source of funds for reinvestment in the interoperable broadband network but also serves the additional public interest objective of not wasting a scarce resource. Opportunities for short-term, voluntary, non-interfering uses of public safety spectrum also arise when peaks in usage between the public safety broadband network and other broadband (e.g., commercial) networks do not coincide in time. In this approach a commercial entity would utilize public safety spectrum in a given locale until it was needed by a public safety entity during one of its peak usage periods. When required, the commercial entity would abandon its use of the spectrum to accommodate higher priority public safety transmissions.

The advantage of such sharing can be illustrated by referring to a simple analogy. It would be extremely wasteful to permanently reserve a special lane on a highway for use only by emergency vehicles. Instead, when an emergency vehicle is present, the non-emergency vehicles move to the side and the emergency vehicle is allowed to pass. In spectrum management, this is sometimes referred to as the “lights and siren” approach. Just as it generally does not make sense to have a separate lane devoted to emergency vehicles on a highway, in these times of rapidly growing spectrum demand, it does not make sense to let spectrum lie unused when it can be dynamically assigned.

Although not explicitly mentioned in the draft legislation, sharing in the other direction – i.e., public safety entities using commercial broadband spectrum in the 700 MHz band can produce substantial benefits as well. Indeed, as I will discuss in more detail in a moment, not only would such sharing provide significantly more broadband capacity for public safety entities in emergency situations, it will be facilitated by the requirement noted earlier that the Commission must take into account the four considerations included in Section 101 (b) of the discussion draft. To summarize, we can no longer afford to have vast stretches of valuable spectrum lying idle much of the time when there is technology available to allow the “lights and siren” approach to succeed. For all of these reasons, I believe that Section 103 of the draft is critical to the successful development and evolution of the public safety interoperable broadband network and to sound management of the increasingly scarce radio spectrum resource.

3. Adequacy of Spectrum

As the Subcommittee is well aware, the proposal to auction the D-block spectrum as called for in the National Broadband Plan and in the discussion draft has engendered considerable controversy. As I touched upon earlier, that issue came into sharper focus on Tuesday of this week when the FCC released a white paper containing an extensive analysis of the capacity requirements for a nationwide, broadband network to serve public safety needs. Prior to the release of the white paper, I had familiarized myself with other studies of the capacity, performance and cost of public safety networks and with the public statements and materials that Dr. Jon Peha, the Chief Technologist at the FCC, had provided prior to the release of the white paper itself. In brief, the white paper concludes that the 10 MHz of spectrum already allocated to broadband public safety use within the 700 MHz band “will provide the necessary capacity and performance necessary for day-to-day communications and serious emergency situations.” It goes on to suggest a concept wherein public safety entities could gain access to substantial amounts of additional spectrum through priority access to – and roaming across – commercial broadband wireless spectrum.

With regard to the D Block issue and to the white paper, I would like to offer three thoughts for the Subcommittee’s consideration. *First*, I have known the principal author of the white paper, Dr. Peha, for many years and have frequently interacted with him on a professional basis. I am familiar with his extensive research regarding technical and policy issues in the field of Information Communications Technology (“ICT”). Based upon that familiarity, I have always found Professor Peha’s research to be objective and based on a sound technical and economic footing. *Second*, based upon my review of the white paper, I am in general agreement with the analysis contained therein and, in particular, with the two conclusions I summarized a moment ago. In my previously referenced testimony before this subcommittee last December, I noted the challenges associated with relying upon some of the more traditional ways of accommodating growth in the demand for spectrum but I also spoke very favorably about the prospects for increased frequency reuse and more dynamic spectrum management techniques as ways of alleviating shortages in spectrum capacity. These techniques are consistent with the types of solutions identified in the white paper. *Third*, what the

Commission is suggesting in terms of priority access and roaming on commercial broadband wireless spectrum is consistent with my strongly held belief that better spectrum management requires more dynamic sharing of the increasingly scarce spectrum resource. Furthermore, I would note – as I touched upon before – that requiring the Commission to take into account the four considerations included in Section 101 (b) of the discussion draft would facilitate the creation of such sharing arrangements.

5. Miscellaneous Provisions

I would like to complete my testimony by raising some questions regarding certain details of the discussion draft. First, in reading through the draft, it is a little unclear to me as to what costs can be recovered from the Construction Fund and what costs can be recovered from the Maintenance and Operation Fund. Under Section 202 of Title II of the discussion draft, grants from the Construction Fund can be used (a) for the construction of a new public safety broadband interoperable network using commercial infrastructure, or public safety infrastructure, or both and (b) for the improvement of existing commercial networks and construction of new infrastructure to meet public safety requirements as defined by the Commission. Under Section 203, funds from the Maintenance and Operation Fund can be used for the reimbursement of expenses that “are attributable to the maintenance, operation and improvement of the public safety interoperable network [emphasis added].” The operation of an evolving network normally involves some sustaining level of capital expenditures to expand capacity or to replace, for example, obsolete equipment. Based upon the language in the discussion draft, it is not clear whether these sustaining levels of capital investment would be recovered from the Construction Fund or from the Maintenance and Operation Fund under the rubric of an “improvement.” Since under the draft legislation the fraction of the eligible amounts that can be reimbursed varies between the two funds and because the two funds would be administered by two different agencies, additional clarity may be appropriate.

Second, in establishing the grant program associated with the Construction Fund, Section 202(d)(5) of the discussion draft specifies that priority should be given to grants for “projects that ensure maximum population coverage.” In radio system design, engineers often distinguish between breadth and depth of coverage where the former refers to the geographic extent of the coverage (the coverage “footprint”) while depth of coverage refers to how deep the coverage is into buildings and other hard to serve locations within that footprint. Viewed from this perspective, increased population coverage can be obtained by extending the geographic coverage – the footprint, by providing more in-building coverage or by some combination of the two. Thus there is some degree of ambiguity in terms of what it means to ensure maximum population coverage and, once again, additional clarity may be appropriate.

Third, Section 302 of the discussion draft directs the Commission to conduct a study and submit a report to Congress on the spectrum held by public safety entities or dedicated to the public safety interoperability network. The first report would be due within five years and subsequent reports would be due every five years thereafter. The

required study would examine how such spectrum is being used as well as provide a recommendation for whether more spectrum should be made available to meet the needs of public safety entities. In my previously referenced testimony before this Subcommittee, I strongly supported the idea of a spectrum inventory based upon a study of license records for example. However, I readily conceded that there were potentially significant shortcomings to relying upon paper studies in certain cases. While I won't take the time today to identify the potential shortcomings of such studies, I believe it is critical to augment paper studies with field measurements of actual spectrum utilization in order to accurately ascertain the situation "on the ground." Therefore, I would recommend that the Subcommittee consider requiring that the Commission conduct statistically valid measurements of actual public safety spectrum use on at least a selective basis in order to confirm – or not – the results of the regularly scheduled studies of public safety spectrum use as called for in Section 302.

Mr. Chairman that concludes my testimony and once again I want to express my appreciation for being invited to testify here today on these important pieces of legislation. I would be happy to respond to any questions that you might have.

Mr. BOUCHER. Thank you very much, Mr. Hatfield. Mr. Zipperstein.

STATEMENT OF STEVEN ZIPPERSTEIN

Mr. ZIPPERSTEIN. Thank you. Good morning, Chairman Boucher, Ranking Member Stearns, and members of the subcommittee. It is a privilege to be here with you today. In the 9 years since the 9/11 attacks public attention has focused on the need for effective interoperable first responder communications. Congress actually began to address this important issue 12 years ago in 1997 when it enacted legislation to reallocate certain 700 megahertz spectrum for public safety's use. Today, we endorse the work being done to continue those efforts by implementing a nationwide interoperable public safety broadband network that is effective, efficient, and sustainable. The FCC's National Broadband Plan delivered in March is a watershed event for public safety because it promises to change forever the way public safety officials communicate. By constructing a nationwide public safety broadband network, it will ensure that all first responders in all parts of the country, including rural America, will benefit from the broadband revolution.

The FCC's plan provides several important benefits. First, it establishes a national framework for a network of networks with common technology and operational standards to ensure interoperability across the United States. Second, it leverages the benefits of commercial technologies which will mean lower costs and more rapidly available equipment. Third, it promotes public, private partnerships that will enable public safety to leverage the considerable investments of the private sector. Public safety will have the ability to choose from many prospective partners whether or not they hold licenses in the 700 band.

In addition to Verizon Wireless, many other players in the industry, a wide variety of industry associations, including rural associations, have all endorsed this leveraged network approach. Fourth, the FCC plan will advance broadband deployment in rural areas by providing funds for new facilities where they are needed and promoting flexible partnerships to maximize those investments. This is the same kind of approach that we announced recently with our program to advance LTE in rural America under which Verizon Wireless will work collaboratively with rural companies to build and operate fourth generation networks where they currently have or plan to build their own infrastructure. Given the merits of a nationwide interoperable public safety broadband network, we commend the subcommittee and the staff for promptly considering legislation to authorize federal funding to support the construction and operation of such a network.

We agree that the best way to fund this network is through future spectrum auctions. Given the FCC's aggressive plan for making new commercial spectrum available over the next decade, we believe there will be more than ample revenues to support the National Public Safety Network and other important legislative initiatives. The last two auctions alone raised nearly \$33 billion, and that was a lot less than 500 megahertz of spectrum. By ensuring an adequate supply of spectrum for the future an enabling companies to acquire and use the spectrum without restrictions, Congress

will maximize the future auction revenues. So while the FCC's plan indeed is visionary, we disagree with it in just one respect. We do not believe it provides the spectrum necessary to ensure its successful implementation.

As Chief Dowd has testified this morning, a broad alliance of public safety and state and local government organizations and the Attorney General of the United States have all concluded that public safety will need more spectrum to support the wide array of broadband applications that first responders will use in the future to protect us. The FCC did release a White Paper this week reaching the opposite conclusion, but even the FCC's own study concedes that public safety will need additional spectrum during times of emergency, yet the FCC concludes that during those times when effective communication is most crucial public safety should be reliant on commercial networks, a conclusion that most in the public safety community believe defeats the very purpose of building a nationwide public safety network.

It should come as no surprise that public safety now needs more spectrum than Congress or anyone else envisioned when it designated the original allocation 13 years ago. Much has changed in the wireless world during that time. Thirteen years ago few people had ever heard of text messaging, yet today billions and billions of text messages traverse our wireless networks daily. Thirteen years ago, we were all using First Generation narrow band voice technology. Today, we are embarking on the transition to 4G technology, broadband technology that will support a wide array of data multimedia and video applications that public safety needs to protect us. Public safety should not be limited from taking advantage of these technological advancements because it doesn't have enough spectrum.

So members of the subcommittee, great progress has been made. We applaud the progress. We applaud the draft legislation because it does solve 2 of the 3 critical components needed to address this issue, funding and infrastructure. All that is needed is sufficient spectrum. The FCC's broadband plan calls for almost 500 megahertz of additional spectrum over the next 10 years. The D Block is just 2 percent, only 2 percent, of that 500 megahertz of spectrum. We should consider the D Block an investment in public safety and investment in our future. The taxpayers own it today. They will continue owning it in the future. Finally, Mr. Chairman, I am pleased to announce that Verizon Wireless wholeheartedly supports H.R. 4829, the Next Generation 911 bill.

[The prepared statement of Mr. Zipperstein follows:]

**Testimony of Steven E. Zipperstein
Vice President, Legal and External Affairs and General Counsel
Verizon Wireless**

COMMITTEE ON ENERGY AND COMMERCE
SUBCOMMITTEE ON COMMUNICATIONS, TECHNOLOGY AND THE
INTERNET
U.S. HOUSE OF REPRESENTATIVES

Constructing a Nationwide, Interoperable, Public Safety Broadband Network

June 17, 2010

Good morning Chairman Boucher, Ranking Member Stearns and Members of the Subcommittee. It is a privilege to be with you this morning to discuss public safety communications and to share my company's views on recommendations to construct a nationwide, interoperable, public safety broadband network.

Ensuring Interoperable Emergency Communications

It has been nearly nine years since the events of September 11, 2001 focused national attention on the critical importance of effective, interoperable communications for the nation's first responders. While this need is especially crucial during times of national emergency, it is also important on a daily basis wherever and whenever a police officer, firefighter, or other public safety official needs to respond. In the years since 9/11, public safety officials have made considerable progress in working to make their existing voice communications systems interoperable, and those efforts must continue. However, as policymakers consider how first responders should be provided access to new and advanced broadband capabilities, we must ensure that the interoperability

problems of the past are not repeated. The effective implementation of a nationwide, interoperable, public safety broadband network will provide that assurance.

While the events of 9/11 may have focused public attention on the problems associated with ineffective public safety communications, those problems were well understood long before 2001. In fact, it was the recognition that significant changes to public safety communications were needed that led Congress to enact legislation in 1997 that reallocated certain 700 MHz spectrum for public safety's use. It took more than a decade to complete the DTV transition so that this spectrum could be made available. Now that it is, we must be absolutely sure that it's put to the most effective use to serve the American public.

A Nationwide Public Safety Broadband Network

The *National Broadband Plan* released by the FCC in March was a significant step toward that goal.¹ For public safety, it represents a watershed event. Never before has an FCC made such a bold recommendation – one that, if implemented effectively, promises to change forever the way that public safety officials communicate. The construction of a nationwide public safety broadband network, as the Commission proposes, will ensure that all first responders in all parts of the country will benefit from the broadband revolution.

In my company's view, the FCC's plan offers a number of important advantages. First, it proposes to implement a network (or "network of networks") on a local, state, or regional basis, which will ensure that the network is designed to meet the specific needs of public safety in each area of the country. If there is one thing that has been made clear

¹ FCC, *Connecting America: The National Broadband Plan* (Mar. 16, 2010), available at <http://download.broadband.gov/plan/national-broadband-plan.pdf>

through the Commission's multi-year review, it is that public safety's needs are not homogenous. While all first responders require access to reliable, effective, and interoperable communications, the types of communications applications that are needed and the way in which those applications are delivered may be very different in a major city like New York as compared to a rural part of Minnesota. Consequently, it is important that state and local officials have control over how these networks are designed, and I applaud the FCC for providing that assurance in its plan.

Second, the FCC's plan lays out a path to achieving interoperability across departments and jurisdictions. Deployment of a variety of citywide, statewide, or region-wide systems across the country certainly creates a potential risk of interoperability problems. But the Commission addresses that risk through its recommendation to develop a national framework to ensure interoperability and establish an Emergency Response Interoperability Center (ERIC) to oversee the process. This national framework includes the use of a common technology standard, LTE, which is expected to be widely deployed by commercial providers.

That brings me to the third key advantage of the FCC's plan – its reliance on commercial technologies. The decision to employ commercial technologies in the nationwide public safety broadband network will produce considerable benefits for public safety because it will yield lower cost and more rapidly available equipment, ensure continued innovation and regular technological enhancements, and facilitate roaming arrangements with commercial providers.

Fourth, the Commission rightly recognizes that the costs associated with building and operating the nationwide public safety broadband network can be further reduced

through public-private partnerships. We have long advocated the benefits of such partnerships as a means for public safety to leverage the considerable investments that companies like Verizon Wireless have already made, or will make in the future. Even where public safety deploys broadband networks that are dedicated for their use, the sharing of towers, buildings, power equipment, backhaul facilities, and other infrastructure can reduce the cost of building and operating the proposed network by 50% or more and will reduce substantially the time required for deployment.

Verizon Wireless supports the Commission's recommendation and stands ready to work with public safety in this endeavor. Of course, Verizon Wireless is not the only company with whom the public safety community can potentially partner. Indeed, it is not even necessary for a carrier to hold licenses in the 700 MHz band in order to share its towers, buildings, and other infrastructure with public safety. AT&T, Cellular South, MetroPCS, Sprint Nextel, T-Mobile, U.S. Cellular, the Rural Cellular Association and the Rural Telecommunications Group have all endorsed the FCC's proposed "leveraged network" approach. The establishment of public-private partnerships through open and competitive "request for proposal" (RFP) processes that are conducted on a local, state, or regional basis will ensure that there are opportunities for all carriers to participate and that public safety will be able to choose the best possible partner(s) in a given region.

The Commission's plan also promises to advance broadband deployment in rural areas. In addition to providing opportunities for public safety to leverage carriers' existing rural investments, it would also promote investment in new facilities by providing public safety with funds to support the construction of new towers and associated infrastructure where commercial coverage is lacking and allowing public

safety to share those facilities with its commercial partners. We believe this forward-thinking approach will enable both public safety and commercial carriers to maximize their broadband investments. This is the same kind of creative approach that Verizon Wireless had in mind in establishing its program to advance “LTE in Rural America.”² Under that program, Verizon Wireless will lease 700 MHz spectrum to rural carriers and work with them to collaboratively build and operate a 4G network in areas where they already have, or plan to build, existing infrastructure.

While the costs associated with building and operating a nationwide network for public safety’s use can be reduced through public-private partnerships and some funds will be provided by state and local governments, significant funding will need to be available from federal sources. Consequently, I commend the House Energy and Commerce Committee for promptly considering legislation that would authorize federal funds to support the proposed nationwide public safety broadband network. We believe that the best means for providing that funding is through spectrum auctions and that the aggressive efforts by Congress and the FCC to identify additional spectrum will provide substantial revenue sources for the future. Although we have had only a short time to review the Committee staff’s discussion draft legislation (“*Discussion Draft*”), our preliminary view is that, by providing for funding through spectrum auctions and incorporating the Commission’s recommendation to rely on commercial technology and infrastructure, the draft bill effectively provides two of the three elements that public safety needs – funding and infrastructure. The third element is spectrum, to which I now turn.

² Verizon Wireless, *LTE in Rural America*, available at <http://aboutus.vzw.com/rural/Overview.html>

An Effective Spectrum Policy Framework

A principal focus of the FCC's *National Broadband Plan* was the key spectrum policies that are necessary to ensure the long term availability of radio frequency spectrum, and as a result, the continued development of wireless broadband technologies and services. The *Plan* appropriately recognizes the critical importance of wireless broadband and demonstrates a strong commitment to providing the spectrum resources necessary to continue the wireless industry's phenomenal growth. It establishes a laudable goal of making 500 MHz of new spectrum available within the next ten years, and it identifies specific frequency bands comprising 300 MHz of spectrum that could be made available in the next five years.

The spectrum identified by the FCC as being available in the near term includes, at least in part, the spectrum specified in the *Discussion Draft* to be auctioned to fund the construction and operation of the nationwide public safety broadband network. The 2155-2180 MHz band is spectrum currently allocated for Advanced Wireless Services ("AWS"), and the FCC's *National Broadband Plan* noted that this spectrum would be best used if paired with additional spectrum in the 1755-1850 MHz band that is currently allocated to the federal government. The *Plan* recommended that NTIA investigate the potential reallocation of this spectrum and that the FCC and NTIA produce a joint report in October of this year.

We concur with the Commission's recommendation to pair 2155-2180 MHz with 25 MHz of contiguous spectrum in the 1755-1850 MHz band. Both of those spectrum bands are harmonized globally for advanced mobile services, and the pairing arrangement recommended by the Commission is consistent with the current AWS band plan.

Configuring the spectrum in this manner would extend the AWS band by 50 MHz, and the expansion of globally harmonized spectrum would yield considerable advantages including lower cost equipment and more rapid deployment of advanced wireless networks.

Unlike the Commission's recommendation, the *Discussion Draft* specifies that 2155-2180 MHz should be paired with spectrum in the 1675-1710 MHz band, spectrum that is adjacent to the current AWS band but is not globally harmonized. While Verizon Wireless believes that the 1675-1710 MHz spectrum could provide a suitable alternative if it could be made available for use in a reasonable period of time, we believe that every effort should be made to allocate a significant portion of the 1755-1850 MHz band, as the advantages associated with the use of harmonized spectrum are significant.

Regardless of which course is taken, the reallocation of additional spectrum is critical to promoting the deployment of wireless broadband services. Congress' efforts to establish a spectrum inventory process will aid these efforts by requiring the FCC and NTIA to conduct an exhaustive review of spectrum that could be made available for future use. Verizon Wireless applauds the Congress and the Commission for their vision and aggressive efforts to meet the future spectrum needs of the wireless industry.

As additional spectrum is made available, however, it is critical that it not be burdened with restrictions or onerous conditions. In particular, the Commission should not, as some have advocated, impose ownership restrictions or auction limitations. Such rules would risk harm to carriers and their customers by impeding carriers' ability to acquire and deploy the spectrum they need, where and when they need it, to meet

customers' growing demands. As a result, spectrum ownership limits would impede, not advance, the development of wireless broadband services.

Verizon Wireless understands the importance of promoting competition.

However, expert economists have concluded that spectrum ownership limitations would actually limit competition by restricting output and preventing an operator from growing both as the industry grows and as a result of innovation. In repealing previous spectrum ownership limits, the Commission determined that it could best evaluate the impact of spectrum aggregation on a case-by-case basis and that it can most effectively ensure opportunities for new entry through its competitive auction process.

By aggressively allocating new spectrum for commercial use and ensuring that spectrum can be used flexibly without ownership restrictions or onerous operational conditions, Congress and the FCC can be assured that spectrum will be put to its most valuable uses and that wireless broadband technologies and services will continue to grow at a rapid pace for the benefit of wireless consumers. Importantly, the establishment of such market-based spectrum policies will also increase spectrum auction revenues and maximize the government's return on this valuable public resource. That will help Congress to fund various initiatives – including the construction and operation of a nationwide public safety broadband network. Given the critical importance of federal funding, Verizon Wireless urges the Committee to include in its legislation a provision that would ensure that the spectrum auctioned for the purposes of funding the nationwide public safety broadband network is subject to open and competitive bidding by any carrier without restriction.

Public Safety's Need for the 700 MHz D Block

As visionary as the Commission's plan is for addressing public safety's broadband needs, there is one aspect of that plan with which we disagree – the decision to auction the 700 MHz "D Block" spectrum for commercial use. While we appreciate the Commission's efforts to make more commercial spectrum available, the D Block represents an important element of any plan to meet public safety's long term communications needs.

The development of a nationwide, interoperable, public safety broadband network holds out the promise that first responders across the country will have access to the most advanced communications capabilities available. If effectively implemented, it will enable police officers to gain immediate access to various law enforcement databases, use automated license plate recognition and biometric technologies like mobile fingerprint readers and iris identification to prevent and respond to criminal activities, and use high quality video surveillance networks capable of identifying known terrorists through the use of video analytics. It will enable firefighters to access building blueprints and databases that identify the presence and location of toxic or flammable materials, and facilitate the use of high quality video capabilities that enable them to know exactly what's happening inside a burning building. By having access to a public safety broadband network, emergency medical personnel will have access to high resolution video and patient records at the scene to speed the delivery and increase the effectiveness of medical care. These are only just some examples of the ways in which a nationwide broadband network can help first responders and the public they serve.

The technologies necessary to implement this vision are available today. However, in order to successfully take advantage of these capabilities, the proposed nationwide public safety broadband network must have sufficient capacity to meet public safety's communications needs over the long term. Various experts have concluded that the 10 MHz of spectrum currently allocated for public safety broadband use will not be sufficient to meet this demand. The New York Police Department, for example, recently completed a study that concludes that anticipated demand for advanced wireless services in New York City will exceed 10 MHz in just six years.³ Analyses conducted by Motorola, a company recognized as an expert in the areas of wireless technology and public safety communications, indicate that available spectrum capacity may be exceeded before then, especially when one considers the extensive use of video applications.⁴

Even the FCC has conceded that public safety will require more than 10 MHz of spectrum in the future. Although it has suggested it will try to find some unspecified spectrum when that time comes, the reality is that having a public safety network operate on two separate blocks of spectrum with different propagation and other characteristics will create technical challenges and substantially increase costs. By contrast, because the D Block is contiguous with the spectrum that public safety already has, it represents a unique opportunity to make sure public safety's long term needs are met in a cost-efficient manner. With LTE technology, the cost of deploying a network using 20 MHz of contiguous spectrum is effectively the same as a network using just 10 MHz of

³ City of New York, *700 MHz Broadband Public Safety Applications and Spectrum Requirements*, PS Docket 06-229 (FCC filed Feb. 23, 2010).

⁴ See, e.g., Ex Parte Letter from Steve Sharkey, Senior Director, Regulatory and Spectrum Policy, Motorola, to Marlene Dortch, Secretary, FCC, PS Docket 06-229, WT Docket 06-150 (Apr. 12, 2010); Ex Parte Letter from Steve Sharkey, Senior Director, Regulatory and Spectrum Policy, Motorola, to Marlene Dortch, Secretary, FCC, PS Docket 06-229, WT Docket 06-150 (Mar. 15, 2010).

spectrum, because it requires only a simple software change. If the D Block were not available for public safety's use, however, the cost of deploying an extended 20 MHz network would, minimally, be twice as much because the two non-contiguous spectrum bands would require two separate radio networks.

The D Block is an investment in public safety's future whose return will be measured in both lives saved and cost savings to the government over the long term. And, while the D Block would have short term value for supporting commercial services, it is only a very small portion of the 500 MHz that the Commission's *National Broadband Plan* recommends be made available for commercial use over the next ten years. Moreover, auctioning the D Block is not necessary to fund the construction and operation of the proposed public safety broadband network. To the extent that auction proceeds from the 50 MHz identified in the *Discussion Draft* is not itself sufficient (and, assuming the auction is not burdened by exclusions and restrictions as noted above, it may well be), a small piece of the proceeds from subsequent auctions will certainly provide enough funding. The D Block offers unique benefits to public safety and provides Congress with a unique opportunity to address public safety's long term needs. We recommend it be reallocated for public safety's direct use.

It should come as no surprise that public safety now needs more spectrum than Congress or anyone else envisioned when it designated a portion of the 700 MHz band for interoperable, public safety communications twelve years ago. That allocation was based on a report by a Public Safety Wireless Advisory Committee ("PSWAC") jointly established by the FCC and NTIA to assess the status of public safety communications and to make recommendations for meeting public safety's future needs through 2010. In

1996, the PSWAC issued its final report, concluding that improvements were needed in three basic areas: interoperability; enhanced capabilities such as data and video; and additional spectrum to address both.⁵ After Congress allocated additional spectrum to public safety, the FCC designated part of that spectrum for interoperable voice communications and part for wideband data communications, and the wideband data segment was re-designated for broadband in conjunction with the establishment of the Commission's initial D Block public-private partnership rules.

Verizon Wireless does not mean to diminish the important steps already taken by Congress and the FCC in improving the state of public safety communications. However, it is important to note that the studies on which these actions were based were completed almost fifteen years ago. Much has changed over that period of time. While public safety and wireless industry experts at the time certainly had an idea about the potential benefits of so-called "broadband" technology, few really appreciated its true potential or the impact that it could have on the way U.S. citizens live, work, and play.

Few also understood the tremendous demand that broadband applications would place on the nation's spectrum resources. Data experts like Cisco have recently estimated that wireless data traffic will increase 40x over the next five years.⁶ As a result, there is now virtual consensus – as reflected in the FCC's *National Broadband Plan* – that this growth in wireless data usage will substantially increase the amount of spectrum needed in the future.

⁵ Final Report of the Public Safety Wireless Advisory Committee to the FCC and NTIA (Sept. 11, 1996), available at www.ntia.doc.gov/osmhome/pubsafe/pswac_al.pdf.

⁶ Cisco, *Global Mobile Data Traffic Forecast Update, 2009-2014* (Feb. 9, 2010), available at www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-520862.html.

Why should we expect it to be any different for public safety? Just as commercial use requires far more spectrum for broadband uses than was expected in 1997, the same is true for public safety. Verizon Wireless believes that first responders will be heavy users of broadband services – if provided with a broadband network designed for their use. We encourage Congress to update its plan for addressing public safety’s communications needs and provide first responders with the funding, infrastructure, and spectrum resources they need based on our current understanding of those needs and not based on information that is more than a decade old. That should include, we believe, reallocating the D Block for public safety use.

Verizon Wireless appreciates the difficult decisions that Congress must face in addressing the extensive and varied budgetary needs of the country, and the challenges associated with funding an initiative as significant as the construction and operation of a nationwide public safety broadband network. However, the successful implementation of that initiative is crucial to the future of public safety communications, and we believe the Commission’s plan to make available substantial amounts of new spectrum over the next ten years provides the opportunity to fund its public safety plan – without auctioning the D Block.

Moreover, just as important as the need for federal funding, Congress must ensure that adequate spectrum is available so the national broadband network has adequate capacity to serve all of public safety’s needs over the long term. If these future spectrum needs are not met, Congress, the FCC, and the public safety community will have other difficult questions to face. Will the broadband applications used by first responders be slower or less reliable because of capacity constraints, or will only certain first responders

be afforded the benefits of wireless broadband? And, if it's the latter, which law enforcement officers will have access to state-of-the-art communications tools that will enable them to do their jobs more safely and efficiently, reduce crime and deter terrorism, and which will not? Which firefighters will have access to helmet cameras, health-monitoring sensors and GPS tracking systems to help ensure their safety while they work to protect the lives and property of American citizens, and which will be forced to risk their lives each day without these tools? Which accident victims will be attended to by emergency medical personnel equipped with high resolution video equipment that enables doctors to assess their status while still at the scene, and which will have to wait to arrive at the hospital to get the treatment they need?

The President and Congress share a common goal – that every U.S. citizen, including our first responders, should have access to broadband services. Verizon Wireless supports that goal, and is committed to working with Congress, the Commission, and public safety to achieve it. Thank you again for the opportunity to appear before the Subcommittee to address these important issues.

Mr. BOUCHER. Thank you very much, Mr. Zipperstein. Mr. Hanley.

STATEMENT OF JOSEPH HANLEY

Mr. HANLEY. Good morning, Chairman Boucher, Ranking Member Stearns, and members of the subcommittee. Thank you for the opportunity to be here today. My name is Joe Hanley and I am Vice President at TDS, parent company of U.S. Cellular. U.S. Cellular serves over 6 million customers and has received 9 consecutive J.D. Power awards for highest call quality in the north central region. We are members of the Rural Cellular Association, as well as CTIA, the Wireless Association. In addition to commercial users, our networks serve hundreds of public safety agencies throughout the country. Like other wireless carriers, we need more spectrum fourth generation services. U.S. Cellular is prepared to bid in future auctions, especially the D Block. We, therefore, applaud the committee for its leadership in identifying 2 bands for auction and look forward to working with the committee to enact the legislation.

When I testified before this committee last fall, I laid out 2 fundamental goals providing interoperable broadband for public safety and fostering a competitive market for commercial broadband services. Old goals remain essential to the public interest, and I am pleased to say that both are advanced by the proposals in the National Broadband Plan and by the committee's bipartisan legislation. U.S. Cellular strongly supports the proposal to dedicate auction proceeds to fund the public safety network. We have long advocated for a win-win solution, one that delivers on the promise of a public safety broadband network but also one that fosters competitive mobile broadband for all American consumers, urban and rural. The question has always been funding. The legislation's innovative proposal to use proceeds from 2 auctions is an important step forward. Congress should pass this legislation and the FCC should move quickly to implement it.

Let me make 2 specific comments about how Congress should direct FCC to structure these auctions. First, it is critical the licensed areas be reasonably sized. Smaller licensed areas will bring in more bidders and generate more revenue, which means more resources for the public safety network. Furthermore, small licensed areas will allow local public safety officials to pursue partnerships with locally strong carriers who especially in rural areas often have the best networks and the greatest commitment to the local community. The 700 megahertz auction offered the D Block as a national license. It also made the C Block less competitive and generated lower revenues by using mega regional licenses subject to package bidding.

By contrast, a D Block auction with area licenses would attract many carriers, large and small, that could build on their existing assets in each area. With the resources of multiple operators network deployment will be faster, more extensive and more reliable with no single point of failure. We support cellular market areas or CMAs or is the second choice the slightly larger economic areas or EAs. Second, the auction procedures must be straightforward and fair, not biased in favor of large bidders. The 700 megahertz

auction used packaged bidding, a procedure that allows large bidders to trump small ones by bidding on all or nothing packages of licenses. As the experience of this auction demonstrates packaged bidding only serves to create opportunities for the largest bidders to exploit the rules and shut out smaller bidders. Smaller license areas free of package bidding rules are equally accessible to everyone and produce much higher revenues.

For instance, the B Block generated \$9.1 billion using CMAs, but the C Block, which is 12 license areas, generated only \$4.7 billion for nearly twice as much spectrum. In conclusion, U.S. Cellular strongly supports the committee's draft legislation and the FCC's plans to auction D Block licenses. The proposed legislation charts the best course by funding public safety mobile broadband networks while promoting competition in the auction and in the market for wireless services. The FCC should expeditiously auction the D Block using CMA or EA licenses and no packaged bidding. U.S. Cellular is prepared to bid on D Block area licenses, pursue partnerships with public safety and deeply advance services to American's consumers and businesses. Thank you for the opportunity to provide this testimony, and I look forward to your questions.

[The prepared statement of Mr. Hanley follows:]

WRITTEN STATEMENT

of

**MR. JOSEPH R. HANLEY, VICE PRESIDENT - TECHNOLOGY PLANNING
AND SERVICES, TELEPHONE AND DATA SYSTEMS, INC.**

before the

**HOUSE SUBCOMMITTEE ON COMMUNICATIONS, TECHNOLOGY,
AND THE INTERNET**

**Legislative hearing on a discussion draft to provide funding for the construction and
maintenance of a nationwide, interoperable public safety broadband network and for other
purposes and on H.R. 4829, the "Next Generation 9-1-1 Preservation Act of 2010"**

June 17, 2010

INTRODUCTION

Good morning Chairman Boucher, Chairman Waxman, Ranking Member Barton, Ranking Member Stearns and members of the Subcommittee. Thank you for the opportunity to appear before you today. My name is Joe Hanley and I am Vice President - Technology Planning and Services for Telephone and Data Systems, Inc., which is the parent company of United States Cellular Corporation.

U.S. Cellular is the sixth largest mobile operator in the U.S., serving over 6 million customers in rural, suburban, and urban markets in twenty-six states. We are members of the Rural Cellular Association ("RCA"), as well as CTIA – The Wireless Association. We provide award-winning call quality, as recognized in nine consecutive J.D. Power awards for highest call quality in the North Central Region. U.S. Cellular operates as part of a national interoperable network today. We offer national service plans through roaming arrangements with other carriers, we coordinate call handoffs with many neighboring carriers, and our engineers contribute to industry standards work.

U.S. Cellular's networks serve public safety needs as well as the needs of consumers and businesses. Hundreds of state and local public safety agencies subscribe to our services, we have deployed E911 service to over 1,000 PSAPs, and we participate in the Wireless AMBER Alerts Initiative.

Our commitment to meeting customers' needs includes the on-going deployment of cell towers and advanced technologies to provide voice and broadband services to many previously unserved and underserved areas. Our aggressive investments in third-generation broadband networks already reach about 75 percent of our post-pay customers. Like other wireless carriers, U.S. Cellular seeks additional spectrum to facilitate its deployment of fourth-generation broadband services.

I am pleased to be here today in order to offer testimony in support of the Committee's legislative proposal to auction the D Block and use the proceeds to fund a nationwide, interoperable mobile broadband network. A commercial auction of reasonably-sized D Block licenses followed by negotiated public/private partnerships will help meet both public safety and commercial broadband goals for the spectrum in the 700 MHz Public Safety Broadband Licensee

(PSBL) and D Blocks. Properly designed, I believe this approach provides the fastest path to needed services for public safety and economic growth; manageable roles for government, public safety agencies and commercial operators; and the lowest possible burden on taxpayers.

U.S. Cellular is prepared to play a significant role by bidding on D Block area licenses and, if successful, establishing public safety partnerships, constructing regional shared networks and operating parts of an interoperable broadband network meeting the needs of public safety. If public safety entities choose other options, then U.S. Cellular will construct and operate commercial networks that bring broadband services to consumers and increase competition.

Future competition in broadband services depends on making this spectrum available to consumers through a variety of commercial operators. Moreover, the D Block auction with smaller area licenses will attract active bidding and substantial revenues that the legislative proposal will direct to the construction and maintenance of the public safety network. Due to the nature of the build-out requirements, it will also ensure that more rural communities will see the needed infrastructure will be deployed more quickly. At the same time, this framework would allow for shared networks, which we continue to believe will benefit public safety agencies through economies in network infrastructure and operations, while ensuring that capacity, coverage and quality are available to public safety, especially in emergencies. The National Broadband Plan also proposes a broader roaming and priority access obligation which we support and would further augment the capacity available to public safety.

The federal government must not continue to leave this valuable spectrum idle. A commercial auction of the D Block with an obligation for 700 MHz licensees to provide roaming access to public safety along with the option of public/private partnerships is the best path forward. With reasonably-sized license areas, widely-accepted technical conditions and transparent bidding procedures, the commercial auction will lead to competitive broadband services and the strongest implementation of public safety services. Congress should promote vigorous competition in the D Block auction and commercial services, and provide funding for the construction of the public safety broadband network, encouraging public safety and commercial licensees to form partnerships whenever possible.

The legislative draft also proposes to pair spectrum between 2155 and 2180 MHz with new commercial spectrum between 1675 and 1710 MHz. The FCC would be required to auction this spectrum by January 31, 2013. The FCC's Office of Engineering and Technology recently issued a public notice requesting comment on the feasibility of commercial operations in these frequencies. The record in this proceeding will help the FCC and the NTIA determine the best way to move forward with the directive proposed in the legislation. U.S. Cellular applauds the Committee for including this spectrum in its draft legislation and for proposing that the proceeds of this second auction also be directed toward the public safety broadband.

PUBLIC POLICY GOALS FOR THE D BLOCK AUCTION AND PUBLIC SAFETY BROADBAND

I commend you for holding this hearing to examine the important question of how to move forward with the National Broadband Plan's public safety and spectrum proposals and the draft legislation before the Committee. U.S. Cellular believes that there are two fundamental goals we should seek to leverage from the use of spectrum in the 700 MHz PSBL and D Blocks. Both goals are essential to the public interest and are supported by the proposals in the National Broadband Plan and the Committee's bi-partisan discussion draft.

One goal is to provide nationwide interoperable mobile broadband services for public safety uses. These services are critical and must be made available throughout the nation, not just for a few select communities. These services should be provided at the lowest possible cost to taxpayers and resource-constrained public safety agencies by leveraging commercial operators' existing networks, financing capabilities, and interest in shared use of the PSBL spectrum. Action on a public safety network is long overdue and it is important that policy makers settle on a path forward so that a nationwide interoperable network can be constructed.

The second goal is to expand competitive broadband services for consumers nationwide. As Congress recognized in funding the Broadband Initiatives Program (BIP) and the Broadband Technology Opportunities Program (BTOP) as parts of the American Recovery and Reinvestment Act of 2009 (ARRA), broadband services provide critical infrastructure for economic growth, with additional benefits for environmental, health care, educational,

energy and other policy goals. The FCC and the Department of Justice correctly recognized that the public interest demands more spectrum for commercial broadband services and opportunities for additional providers to mount stronger challenges to the dominant carriers. While we applaud the efforts of Congress and the FCC to identify spectrum, the reality is that the near-term availability of new spectrum is severely limited and we have few opportunities to promote competition through release of new spectrum resources. Given this scarcity and its superior propagation characteristics, the D Block in particular is highly attractive for commercial broadband services. With licenses sized to be accessible to multiple bidders and fair auction rules, the D Block will foster competition for 4G mobile broadband services. And, it will generate significant revenues to help fund the public safety network.

As I explain in this testimony, the goal of meeting public safety needs is advanced by providing public safety with options, including network-sharing partnerships with the D Block licensees and other licensees of 700 MHz spectrum. Congress should not view the issue as an irreconcilable choice between helping public safety or facilitating broadband services for consumers and businesses. These goals are highly complementary. The D Block and PSBL spectrum operate within the same band class defined by the Third Generation Partnership Project (3GPP) for use in LTE networks, band class 14. That means that commercial utilization of this spectrum and the much larger base of wireless devices that will result from commercial use will provide significant scale benefits to public safety. In fact, commercial use may be essential to driving the necessary volumes of handsets and other devices needed by public safety. And as commercial use of this spectrum rises, the prices for public safety handsets should continue to decline.

The FCC's National Broadband Plan and the legislative discussion draft outline the best path to meet these twin goals of competition and public safety. The FCC should auction the D Block under rules that promote a competitive auction and competitive commercial services. The rules for D Block licensees should also position this spectrum to be used in shared network partnerships with public safety, if the public safety entities in each area so choose. These rules must include reasonably-sized area licenses such as cellular market areas (CMAs), transparent

auction procedures with no package bidding¹, the fourth generation technology selected by public safety entities (LTE, or 3GPP Long-Term Evolution), roaming and priority access on an equitable and compensatory basis, and devices that support all paired spectrum blocks in the 700 MHz band. Public safety entities, including those receiving early-build waivers from the FCC, would be in a strong position to form partnerships with the D Block licensees for shared use of the adjacent PSBL and D Blocks. The D Block licensees would have to compete against other 700 MHz licensees for these partnerships and public safety would have the option of proceeding on its own in particular areas if it desired.

The framework of a commercial auction for the D Block with the option of negotiated public/private partnerships now provides the fastest, clearest approach to achieving both commercial and public safety goals. Many other carriers, including other members of the Rural Cellular Association, likewise favor expeditious auction of the D Block.

PRINCIPLES FOR ACHIEVING THE PUBLIC SAFETY AND COMMERCIAL GOALS FOR THE D BLOCK

We believe that the public safety and commercial goals for the D Block require Congress and the FCC to implement four fundamental principles. U.S. Cellular believes that the steps outlined in the National Broadband Plan and in the legislative draft, under reasonable auction rules and with the recommended public funding, would implement these principles.

First, D Block licensees would be in a position to enter into partnerships with public safety to share spectrum for public safety and commercial customers. Shared use benefits the public safety community as well as commercial broadband users.

Second, there are strong economies from public/private partnerships utilizing commercial operators to construct and operate the nationwide interoperable broadband network. Public

¹ Package bidding is an auction procedure that allows a bidder to bid on a collection of licenses. This procedure has proven difficult to implement without introducing unintended opportunities to manipulate the auction rules in favor of the package bidder. Package bidding is also unfair because it introduces a bidding tool that is for all practical purposes only available to bidders with deep pockets.

safety would leverage the commercial operators' financing capabilities, operating efficiencies and advanced technologies in order to promote rapid build-out, greater coverage, and lower costs for both public safety and commercial users.

Third, there must be a competitive bidding process for the selection of commercial licensees for the D Block and that process must be fair and open, not biased in favor of any particular class of wireless carriers. As the experience of Auction 73 demonstrates, package bidding only serves to create opportunities for the largest bidders to exploit the auction rules to their advantage and to shut out smaller bidders. Smaller license areas, free of package bidding rules, are open equally to all bidders and produced much higher revenues in Auction 73.

Fourth, and most importantly, smaller license areas will generate more revenue during the bidding process, which will ultimately help ensure there is sufficient funding to enable public safety networks to be built and maintained. Furthermore such an arrangement will allow local public safety officials to pursue partnerships with local carriers with the best networks and the strongest community ties in each particular area. Auction 73 mistakenly offered the D Block as a nationwide license. It also made the C Block auction less competitive (and generated lower revenues for the U.S. Treasury) by offering mega-regional licenses subject to package bidding. By contrast, a D Block auction using area licenses would attract many carriers, large and small, that could build on their existing network infrastructure and operations in an area. These carriers may be more responsive to the varying needs of public safety agencies. Additionally, with multiple operators building area networks, network deployment will be faster, more extensive and more reliable than under a nationwide or mega-region approach as there will be no single point of failure that can shut down the whole country or large swaths of territory. U.S. Cellular believes that the ideal licensing approach would be based on Cellular Market Areas (CMAs), or as a second choice, the slightly larger Economic Areas (EAs). As it moves forward with legislation, the Congress should mandate the use of smaller license areas to enable partnerships, foster a competitive marketplace, and maximize auction revenues.

RULES FOR FCC AUCTION OF D BLOCK LICENSES

Congress should promote FCC rules for a successful D Block auction that attracts commercial bidders, increases competition for commercial services, and supports the formation of shared network partnerships meeting public safety's interoperability and other requirements.

Auction 73 failed to attract serious bids to the D Block because it offered a national license and left for post-auction negotiation major aspects of the obligations and rights of the licensee. Since the failure of the D Block auction in March 2008, there has been substantial progress in developing solutions for its shortfalls. I will mention four highlights.

First, in 2009 public safety organizations endorsed fourth-generation LTE technology and developed a set of requirements for this network. This critical decision has opened up a global 4G ecosystem to public safety. Building LTE networks in the D and PSBL Blocks, which share LTE's band 14, would give handset, chipset, and infrastructure manufacturers greater business certainty to support development of solutions in their equipment across the 700 MHz band.

Second, in April 2010 the FCC established the Emergency Response Interoperability Center (ERIC) that will lead the development of a technical and operational framework for the nationwide, interoperable mobile broadband wireless network. Other progress toward interoperability and coordination has come through the efforts of National Public Safety Telecommunications Council (NPSTC)'s Broadband Task Force and ongoing work of the Public Safety Communications Research (PSCR) Laboratories, a joint effort of the National Telecommunications and Infrastructure Administration (NTIA) and the National Institute of Standards and Technology (NIST).

Also in April 2010, the FCC released a comprehensive staff white paper analyzing the equipment and costs for nationwide public safety broadband services. Building on the National Broadband Plan recommendations, the study strongly endorses a shared network approach. The study finds that a stand-alone public safety network would suffer from in excess of \$20B of higher costs in failing to leverage commercial resources and technologies (including cell sites, towers, construction and operations capabilities, and access to handsets and other equipment).

Finally, in May 2010 the FCC granted conditional approval for 21 statewide or regional public safety interoperable mobile broadband networks using the PSBL spectrum. The FCC correctly imposed certain technical requirements to promote interoperability, including use of LTE, support for certain applications, and certain security features.

Along with U.S. Cellular's interest in bidding for D Block regional licenses and forming public/private partnerships for shared networks, there will be many other serious bidders in a properly-designed auction. Most commercial operators have a strong need for more spectrum in many markets in order to deploy fourth-generation broadband services. The 700 MHz D Block has excellent propagation characteristics, and many carriers have expressed their interest in area licenses in this band.

So while we all recognize that the chief objective here is to enable the development of shared network partnerships for the PSBL and D Blocks, Congress and the FCC have the additional opportunity to promote a more robust and competitive wireless market. The FCC's recent market analysis shows a troubling rise in wireless industry concentration. Moreover, spectrum – the lifeblood of mobile broadband services and wireless competition – has become highly concentrated in the hands of the two largest carriers. As noted earlier, reasonably-sized area licenses will be a win for competitive commercial services, a win for strong shared network partnerships with public safety, and a win for auction revenues, which under the draft legislation will directly fund construction and operation of the public safety broadband network. The auction rules should be transparent, not applying package bidding which deterred bidding on the C Block in Auction 73 and lowered auction revenues. Overall, the FCC's final auction rules can and should incentivize the participation of additional providers of 4G broadband services, and protect against further consolidation of spectrum holdings in the hands of the two largest carriers.

Additionally, the FCC's technical rules for the D Block should facilitate the formation of shared network partnerships with public safety by requiring LTE and requiring that devices support all paired spectrum blocks in the 700 MHz band. In addition, a widespread roaming and priority access obligation, established on an equitable and compensatory basis, will accelerate public safety access to better coverage and more capacity.

FEDERAL FUNDING FOR PUBLIC SAFETY BROADBAND SERVICES

U.S. Cellular applauds the Committee's proposal to use proceeds from the D Block and 1.6/2.1 GHz auctions to fund construction and operation of the public safety broadband network. As the FCC's technical and economic analysis showed, such funding is needed in some areas to meet public safety's demands regarding capacity, applications, coverage, reliability, security and other features.

To encourage public safety entities and commercial operators to form shared network partnerships and efficiently deploy shared networks, Congress should promptly adopt the proposed legislation. There is a window of opportunity for public safety entities to form partnerships with commercial entities to take advantage of the economies of shared network design, construction and operation. Future D Block licensees will start behind other 700 MHz licensees in constructing networks. They cannot be expected to build networks meeting public safety needs without adequate compensation, and the competitive marketplace will not allow them to delay network construction if the federal government has not approved funding for public safety construction and operations when the D Block licenses are granted. Moreover, uncertainty regarding future federal funding for this program will deter investments in shared networks.

CONCLUSION

U.S. Cellular strongly supports the Committee's legislative proposal and the FCC's plan for a commercial auction of D Block licenses followed ideally by shared public safety/commercial network partnerships. With the PSBL spectrum, adequate public funding and opportunities to negotiate with multiple commercial operators in a region, public safety entities will be in a strong position to develop favorable arrangements with D Block and other 700 MHz licensees, or to develop public safety-only networks if they so choose. The proposed legislation charts the best course by promoting vigorous competition in the D Block auction and commercial services and providing funding for construction and operation of public safety mobile broadband networks. The legislation promotes the two goals of meeting public safety needs and expanding commercial broadband services, all at the lowest possible burden on taxpayers.

Many commercial operators, including U.S. Cellular, want and need additional spectrum for broadband services. Reasonable rules and geographic scope for D Block area licenses would attract high bids and provide the basis for forming shared network partnerships with public safety entities. The federal government should expeditiously proceed with the D Block auction and creation of the shared network. U.S. Cellular is prepared to play a significant role by bidding on D Block area licenses, negotiating partnerships for public safety services, and deploying advanced mobile broadband services to American consumers and businesses.

Thank you for the opportunity to provide this testimony.

Mr. BOUCHER. Thank you, Mr. Hanley. Mr. Bazelon.

STATEMENT OF COLEMAN BAZELON

Mr. BAZELON. Thank you. It is an honor to speak here today. Two years ago I testified before this committee on the outcome of Auction 73, the 700 megahertz auction. At that time I said as for the pending decisions about the D Block, the worst thing would be to leave it unused. Freeing it for unrestricted commercial use, configuring it as smaller geographic licenses, and then auctioning it would be best. This would have the benefit of adding more commercial spectrum under flexible license to the band, which would allow a portion of the significant unmet demand from Auction 73 to be met. This approach, of course, would require that the needs of public safety community be met through other means. My conclusions then still hold today. The D Block should be auctioned for unrestricted commercial uses and public safety's needs should be directly funded. Consequently, I congratulate the subcommittee on the draft of the Public Safety Broadband Act of 2010 for the significant progress it makes in getting the D Block auctioned for commercial uses and directly addressing the issue of funding public safety networks.

Forecasting spectrum license auction receipts is not for the faint of heart. Significant uncertainty about future wireless market conditions, as well as details of licensing and auction rules, requires that any forecasts of spectrum values and auction receipts have a wide confidence interval. Nevertheless, a good idea of spectrum value can be derived by observing recent sales, and adjusting for quality differences and changing market conditions. By my estimates, a well-structured competitive auction of the D Block could be expected to raise \$3 billion to \$4 billion in revenue. Such estimates assume a well-designed, unconstrained auction. Specifically, my calculations assume small licenses, no package bidding or open access obligations, and unrestricted entry in the auction.

Dropping any of those assumptions would be expected to have a negative impact on auction revenues. I also want to say a brief word about the value of the discussion draft's auction of 25 megahertz of the 1675 to 1710 band paired with the 2155, 2180 band. Without knowing the timing and cost of reallocating the federal users from the lower portion of the band, it is difficult to put a value on this pair of bands. Nevertheless, a reasonable, initial estimate for the value of the spectrum identified in the discussion draft would be around \$7.5 billion for 50 megahertz paired. Combined with the D Block revenues the discussion draft identifies approximately \$11 billion in revenue from spectrum auctions.

I would also like to say a word about auctions of additional bands of spectrum. In addition to the 2 bands noted above, there are many more bands of radio spectrum that could potentially be licensed and auctioned. The National Broadband Plan identified several bands and there are others to consider as well. Decisions about specific allocations and pairing of spectrum band should consider the full set potential bands available for reallocation. Also, getting additional spectrum commercially licensed will benefit public safety in at least 2 ways. First, additional competition in the provision of mobile broadband services increases the potential partners for pub-

lic safety reducing cost and increasing the range of services that they can use. Second, a better connected public is a safer public. Just as the proliferation of cell phones supports public safety's mission, the increasing use of mobile broadband by the public will further enhance public safety community's ability to respond to future emergencies.

Finally, as a former Congressional Budget Office analyst, I would like to comment briefly on the scoring of revenue to fund public safety infrastructure and operations. The scorable value of any directed spectrum auction is only the increase in value from the legislation over the baseline revenue estimates from the sale of the spectrum. Consequently, the roughly \$11 billion in potential auction receipts identified in the discussion draft will likely have a score of a few billion dollars less. Thank you.

[The prepared statement of Mr. Bazelon follows:]

Oral Testimony of Coleman Bazelon, The Brattle Group
U.S. House of Representatives, Committee on Energy and Commerce
Subcommittee on Communications, Technology, and the Internet
June 17, 2010

It is an honor to speak here today.

Two years ago I testified before this Committee on the outcome of Auction 73—the 700 MHz auction. At that time I said:

As for the pending decisions about the D Block, the worst thing would be to leave it unused. Freeing it for unrestricted commercial use, configuring it as smaller geographic licenses, and then auctioning it would be best. This would have the benefit of adding more commercial spectrum under flexible license to the band, which would allow a portion of the significant unmet demand from Auction 73 to be met. This approach, of course, would require that the needs of the public safety community be met through other means.

My conclusions then still hold today: The D Block should be auctioned for unrestricted commercial uses and public safety's needs should be directly funded. Consequently, I congratulate the Subcommittee on the draft of the "Public Safety Broadband Act of 2010" for the significant progress it makes in getting the D Block auctioned for commercial uses and directly addressing the issue of funding public safety networks.

Today I would like to discuss revenue that might be raised by auctioning the D Block and other bands of spectrum, and the need for and benefits of additional licensed radio spectrum generally. I am an economist and plan to focus on economic issues. I would also like to be clear that I am not representing anyone here today, but for purposes of full disclosure I do work for carriers, equipment manufacturers and other parties interested in telecommunications policy. My comments today are mine alone.

Forecasting spectrum license auction receipts is not for the faint of heart. Significant uncertainty about future wireless market conditions, as well as details of licensing and auction rules, requires that any forecasts of spectrum values and auction receipts have a wide confidence interval. Nevertheless, a good idea of spectrum value can be derived by observing recent sales, and adjusting for quality differences and changing market conditions.

A well structured, competitive auction of the D Block could be expected to raise \$3 billion to \$4 billion in revenue. In my testimony two years ago, I explained the many problems with Auction 73 and why the final prices in that auction may not have been efficient. In that analysis I calculated that there was unmet demand and an unfulfilled willingness-to-pay of approximately \$1.36 per MHz-Pop. Such a price level would translate into about \$4 billion for the D Block. By my calculations, current spectrum market conditions are likely somewhat depressed and imply a 20% reduction in spectrum values, or a D Block worth about \$3.3 billion. Depending on the timing of a future auction, spectrum prices may rebound with the economy and prospects for future economic growth.

Such estimates assume a well designed, unconstrained auction. Specifically, my calculations assume small license sizes, no package bidding or open access obligations, and unrestricted entry in the auction. Dropping any of those assumptions would be expected to have a negative impact on auction revenues.

I also want to say a brief word about the value of the Discussion Draft's auction of 25 MHz of the 1675 MHz to 1710 MHz band paired with the 2155 MHz to 2180 MHz band. Without knowing the timing or costs of reallocating the federal users from the lower band, it is difficult to put a value on this pair of bands. Nevertheless, a reasonable initial estimate for the value of the spectrum identified in the Discussion Draft would be around \$0.50 per MHz-Pop or \$7.5 billion for 50 MHz of spectrum. Combined with the D Block revenues, the Discussion Draft identifies approximately \$11 billion in revenue from spectrum auctions.

I would also like to say a word about auctions of additional bands of spectrum. In addition to the two bands noted above there are many more bands of radio spectrum that could potentially be licensed. The National Broadband Plan identifies several bands and there are others to consider as well. Decisions about specific allocations and pairing of spectrum bands should consider the full set of potential spectrum bands available for reallocation. Getting additional spectrum licensed will benefit public safety in at least two ways. First, additional competition in the provision of mobile broadband services increases the potential partners for public safety, reducing costs and increasing the range of services they can use. Second, a better connected public is a safer public. Just as the proliferation of cell phones supports public

safety's mission, the increasing use of mobile broadband by the public will further enhance the public safety community's ability to respond to future emergencies.

Finally, as a former CBO Analyst I would like to comment on the scoring of revenue to fund public safety infrastructure and operations. The scorable value of any directed spectrum auction is only the increase in value from the legislation over the baseline revenue estimates from the sale of that spectrum. Consequently, the roughly \$11 billion in potential auction receipts identified in the Discussion Draft will likely have a score of a few billion dollars less.

Thank you.

Mr. BOUCHER. Thank you, Mr. Bazelon. Mr. Fontes.

STATEMENT OF BRIAN FONTES

Mr. FONTES. Good morning, Chairman Boucher, Ranking Member Stearns, members of the subcommittee. My name is Brian Fontes, and I am CEO of the National Emergency Number Association, NENA. NENA represents more than 7,000 dedicated 911 and emergency communications professionals who receive and manage nearly 250 million 911 calls annually. NENA members are the first link in the emergency response chain that so many Americans rely on every day. I would like to thank the House co-chairs of the Congressional 911 Caucus, both members of this subcommittee, Representatives Eshoo and Representative Shimkus, for their commitment to advancing 911 and emergency communication systems, most recently by introducing the Next Generation 911 Preservation Act of 2010, which NENA fully supports.

NENA thanks the subcommittee for holding today's hearings. It is fitting that the subcommittee is simultaneously addressing 911 legislation and a draft bill to provide for a nationwide wireless public safety broadband network. The public must be able to rely on effective 911 and emergency response systems, and in the broadband world these two are joined. This requires the most technologically advanced 911 systems and access to high speed wireless broadband networks for emergency responders. The 2 pieces of legislation the subcommittee is addressing today have potential to improve our nation's 911 and emergency communications capabilities. Millions of 911 calls are made every year by citizens who are increasingly utilizing innovative forms of voice, video, data services. Yet, today most 911 centers are primarily limited to voice only communications, and this is simply unacceptable.

It is essential that we improve access to 911 for all Americans, especially for the deaf, hard of hearing, and individuals with speech disabilities who regularly communicate with non-traditional text, video, and instant messaging communication services, and who also expect that these services will be able to connect directly to 911. For all these reasons and more, it must be a national priority to foster the migration from 20th century 911 and emergency communication system into a broadband enabled IP emergency services model that embraces all voice, video, and data applications. The Next Generation 911 Preservation Act of 2010 will help foster this transition. This legislation builds upon and extends several elements in the Enhanced 911 Act of 2004, and will help accelerate the nationwide transition to Next Generation 911 systems.

While we support the legislation, there are a few minor modifications, and I assure you they are just minor and we have already provided those recommendations to the staff for the co-sponsors as well as the committee, and we look forward to working with the committee on that. Also, while the current bill, as written, would place the leadership of the national 911 office within the National Telecommunication Information Administration. As Representative Eshoo said, we are aware that the co-sponsors of the bill have discussed making this office a joint program office by adding the administrator of the National Highway Traffic Safety Administration. This would essentially be a continuation of the current structure of

the National 911 Office as established in the Enhanced 911 Act of 2004. NENA would support this modification to the bill, and we look forward to working with the committee staff, and we thank you for your interest in this legislation.

Now with respect to the discussion draft for the Public Safety Broadband Act of 2010, NENA has consistently encouraged the FCC and Congress to ensure that any actions taken provide at least the following. First, a public safety wireless broadband network or network of networks must be built nationwide. Second, funding for the nationwide wireless public safety broadband network basis both on a construction cap ex basis and maintenance op ex basis must be provided. The National Broadband Plan outlines several essential steps necessary to achieve a nationwide wireless public safety broadband network, including some issues that only Congress can address. First and foremost is the critical issue of funding, NENA's number 1 priority in this debate.

NENA urges Congress to address the draft legislation's recommendations to make near term funding available for public safety broadband systems and to ensure that funds are available on a sustainable and annually recurring basis. Such action will ensure that broadband networks are built and maintained and effectively serving all areas of the country. With the release of the discussion draft this week, it is clear that you intend to do just that, to address public safety's broadband funding needs. We thank you for releasing this draft discussion item, and we hope that it will do just that, generate discussion resulting in the establishment of a nationwide public safety broadband network and the funding to build and operate that network. We stand ready to work with you, the Commission, and our colleagues in public safety on this important issue. Thank you.

[The prepared statement of Mr. Fontes follows:]

**STATEMENT OF
BRIAN FONTES, CEO**

On Behalf of the

National Emergency Number Association

Before the

United States House of Representatives

**Subcommittee on Communications, Technology, and the Internet of the
Committee on Energy and Commerce**

**Next Generation 9-1-1 Preservation Act of 2010 (H.R. 4829)
and Public Safety Broadband Act of 2010**

June 17, 2010

Chairman Boucher, Ranking Member Stearns, Members of the Subcommittee, my name is Brian Fontes and I am CEO of the National Emergency Number Association (NENA). NENA represents over 7,000 dedicated 9-1-1 and emergency communications professionals who receive and manage nearly 250 million 9-1-1 calls annually. These public safety individuals are the first link in the emergency response chain that so many Americans rely on every day. Today, I appear before the Committee representing not just a national organization, but also on behalf of the thousands of individual NENA members who work tirelessly to help those who dial 9-1-1 in times of need. I would like to thank the House Co-chairs of the Congressional E9-1-1 Caucus, both members of this Subcommittee, Representatives Eshoo and Shimkus for their commitment to advancing 9-1-1 and emergency communications systems, most recently by introducing the Next Generation 9-1-1 Preservation Act of 2010 (H.R. 4829), which NENA fully supports.

In my testimony today I wish to do two things:

- First, offer full support for the Next Generation 9-1-1 Preservation Act and offer a few suggestions to improve the bill.
- Second, offer support for the establishment of a nationwide public safety broadband network, recognizing the spectrum needs of public safety, but focusing on the critical issue of funding.

On behalf of its Board and members, NENA thanks the Subcommittee for holding today's hearing. I would also like to take this opportunity to publicly thank the Chief of the FCC's Public Safety and Homeland Security Bureau, Jamie Barnett, and his staff for their significant efforts to address public safety broadband needs, as well as Next Generation 9-1-1, in the National Broadband Plan. It is fitting that the Subcommittee is simultaneously addressing 9-1-1 legislation and a draft bill to provide for a nationwide wireless public safety broadband network.

The public must be able to rely on an effective and efficient 9-1-1 and emergency response system, and in a broadband world, the two are joined. This requires the most technologically advanced 9-1-1 systems and access to high-speed wireless broadband networks for emergency responders. The legislation the Subcommittee is addressing today would significantly improve our nation's 9-1-1 and emergency communications capabilities.

The Next Generation 9-1-1 Preservation Act of 2010

Hundreds of millions of 9-1-1 calls are made every year by citizens who are increasingly capable of utilizing innovative forms of voice, video and data services and applications. Yet, today most 9-1-1 centers are primarily limited to voice-only communications. This is simply unacceptable. It is essential that we improve access to 9-1-1 for a growing segment of the population, including the deaf, hard of hearing, and individuals with speech disabilities, who regularly communicate with non-traditional text, video, and instant messaging communications services, and who expect those services to be able to connect directly to 9-1-1 systems. Therefore, it must be a national priority to foster the migration from 20th century voice-centric 9-1-1 and emergency communications systems into a broadband-enabled, IP-based emergency services model that embraces all voice, video, and data applications. The Next Generation 9-1-1 Preservation Act of 2010 (H.R. 4829) will help foster this transition.

What is Next Generation 9-1-1 (NG9-1-1) and why is it so important?

There are four fundamental purposes of NG9-1-1: (1) fully replace Enhanced 9-1-1 (E9-1-1) with all the core functionalities and capabilities of the current E9-1-1 system; (2) add capabilities to support 9-1-1 access in multiple formats for all current and new types of originating service providers; (3) add increased system flexibility for Public Safety Answering Points (PSAPs) and 9-1-1 governing authorities; and (4) add capabilities to integrate and interoperate with entities involved in emergency response beyond the PSAP.

NG9-1-1 systems are not being designed as dedicated, closed, single purpose systems. Instead, they will be shared systems comprised of multiple entities. 9-1-1 will be only one part of a much larger system shared with general government, private sector entities and other public safety services and agencies. The amount and type of information (voice, text or video) received by PSAPs and shared with emergency response agencies will greatly surpass current E9-1-1 systems. NG9-1-1 makes it possible to push and pull video, still images, medical information and a host of other data with a 9-1-1 call. NG9-1-1 is not simply an extension of E9-1-1. While a full NG9-1-1 system must support all E9-1-1 functions and features, NG9-1-1 is IP-based, and software and database controlled in fundamentally new ways, enabling many new technical and operational capabilities to further enhance the coordination and delivery of emergency services nationwide. NG9-1-1 is designed to:

- provide standardized interfaces from all call and message services
- process all types of emergency calls including non-voice (multi-media) messages
- acquire and integrate additional data useful to call routing and handling
- accurately locate and deliver calls/messages and data to the appropriate PSAPs and other appropriate emergency entities

- support data and communication needs for coordinated incident response and management
- provide a secure environment for emergency communications

Building upon and extending several elements of the ENHANCE 911 Act of 2004, the Next Generation 9-1-1 Preservation Act of 2010 includes the following important provisions that will facilitate the transition to NG9-1-1 systems:

- **First**, the bill would reauthorize the National 9-1-1 Implementation Coordination Office (ICO) which plays a central role in coordinating 9-1-1 issues and activities among federal government agencies, state and local government agencies, national organizations and industry involved in the implementation of 9-1-1 services.
- **Second**, the 9-1-1 Office also would be responsible for administering an important grant program authorized at up to \$250 million annually for Next Generation 9-1-1 services and applications, as well as training.
- **Third**, the bill would provide a federally codified definition of NG9-1-1. Not only is it important to define NG9-1-1 for purposes of the grant program authorized by this bill, but also having a federal definition will be helpful for states to be able to point to in their own NG9-1-1 legislation to ensure consistency.
- **Fourth**, the legislation would require the FCC to issue a public notice concerning E9-1-1 requirements for providers of multi-line telephone systems (MLTS). NENA supports each of these important provisions.

While we support the legislation, there are a few minor modifications that we think could be made to improve the bill. We have shared the following recommendations with staff of the bill's lead sponsors and the Committee:

- **First**, we have suggested some modifications to the terms "emergency call" and "Next Generation 9-1-1 services" to be consistent with national NG9-1-1 standards.
- **Second**, we would eliminate Section 6, a requirement that GAO issue a report on the current practices of the states in the collection and use of 9-1-1 fee revenues. This is unnecessary as it is duplicative of a report the FCC is now required to produce annually on the same subject as a result of the NET 911 Improvement Act of 2008.
- **Third**, there should be an explicit requirement that the 9-1-1 Office coordinate its activities with the FCC. With the release of the National Broadband Plan and the recommendations put forth by the Commission, and the regulatory responsibility of the FCC for 9-1-1 service, it makes sense to ensure that any communication and coordination led by the National 9-1-1 Office is done in coordination with the FCC.
- **Fourth**, we have proposed the formation of a National 9-1-1 Advisory Council to provide guidance and assistance from a wide array of stakeholders with expertise in 9-1-1 technical, operational, and policy issues. The Advisory Council would give direction and help establish priorities for the Office and make recommendations on several identified topics.
- **Fifth**, we have suggested language to further disincentivize the practice of state diversion of 9-1-1 fee revenues for unintended purposes.

Finally, while the current bill would place the leadership of the National 9-1-1 Office within the National Telecommunications and Information Administration (NTIA), NENA is aware that the co-sponsors of the bill have discussed making the Office a joint-program Office by adding the Administrator of the National Highway Traffic Safety Administration (NHTSA). This would essentially be a continuation of the current structure of the National 9-1-1 Office as established in the ENHANCE 911 Act of 2004. Given the tremendous support of 9-1-1 issues that NHTSA has demonstrated, NENA would support this modification to the bill.

We look forward to working with you and your staff to address NENA's proposed changes to the Next Generation 9-1-1 Preservation Act. Thank you for your bi-partisan effort on this important legislation.

Now, I would like to address the discussion draft legislation concerning the establishment of a nationwide public safety wireless broadband network released on Monday of this week.

Nationwide Public Safety Wireless Broadband Network

As different options for a nationwide public safety wireless broadband network have been considered, NENA has consistently encouraged the FCC and Congress to ensure that any actions taken ensure that:

- a public safety wireless broadband network, or network of networks, is built nationwide;
- in addition to public safety broadband networks, public safety agencies also have priority access and the ability to roam on to commercial wireless broadband networks at affordable rates and on favorable terms;
- a known and recurring revenue source is available to pay for public safety access to and use of (hardware, software, applications, training) broadband networks;
- public safety is able to benefit from the substantial research and development of the commercial wireless industry; and
- sufficient oversight and enforcement of agreed upon requirements for the nation-wide system is provided.

To that end, on May 24th of this year NENA sent a letter to the leadership of this Subcommittee in which we expressed our strong support for key elements of the public safety portion of the National Broadband Plan (see Appendix A). The Plan outlines several essential steps necessary to achieve a nationwide wireless public safety broadband network, including some issues that only Congress can address. First and foremost, is the critical issue of funding. In our letter, NENA urged Congress to act upon the FCC's recommendations to make near-term funding available for public safety broadband systems and to ensure that funds are available on a sustainable and annually recurring basis. Such action will ensure that broadband networks are built, maintained and effectively serving all areas of the country. With the release of the discussion draft this week, it is clear that you do intend to address public safety's broadband funding needs for construction, maintenance and operational costs. NENA applauds your willingness to address this essential need.

While there is a strong and understandable desire to have wireless broadband networks designed and built specifically for public safety use (and under the control/ownership of public safety), a recent report of the National Public Safety Telecommunications Council (“NPSTC”) indicates that reliance on commercial wireless broadband networks will continue for many years. The NPSTC 700 MHz Broadband Task Force Report states that, “a nationwide, interoperable wireless broadband network...for public safety will not be built overnight and it will take many years to even approximate ubiquitous coverage. During that period, the ability of public safety users to roam on commercial networks will be essential.”¹ This is primarily due to the reality that there is a lack of identified funding to build public safety stand-alone broadband networks, a central fact that has driven the Commission’s discussion on innovative public/private partnerships to ensure public safety access to wireless broadband.

The general lack of funding and recognition that in many areas public safety will continue to rely on commercial wireless broadband networks for a long time leads to three overall conclusions:

- **First**, it is essential that a reliable, recurring funding source is established for public safety access to, and use of, broadband.
- **Second**, it is important to seek innovative public/private partnerships to ensure public safety access to commercial wireless broadband networks on a priority basis.
- **Third**, given the continued reliance on commercial wireless broadband networks, it is important to look at what additional steps can be taken to ensure that current and planned commercial networks can meet the bandwidth, coverage and reliability needs of public safety.

It will always be desirable to have specialized public safety-only networks that meet the critical needs for public safety communications, but it will not always be efficient or cost effective. Therefore, it is important to consider options that could enhance commercial networks and devices, in conjunction with the construction of public safety networks. The discussion draft addresses each of these three points.

Recently, much attention has been devoted to efforts to seek the allocation of the D Block to public safety. NENA certainly understands the desire and benefits of contiguous public safety spectrum and the ability to control/own the network. As NENA has previously stated, if the D block were allocated to public safety to create a 20 MHz contiguous spectrum block for broadband, and a substantial and recurring revenue stream was provided to ensure public safety could build out and use that spectrum, NENA would support such an approach. However, to date the D block allocation efforts have focused almost exclusively on spectrum, and not the associated and necessary funding. It is unclear how the primary funding aspect under this approach (leasing public safety spectrum) will generate sufficient revenues to build and maintain a nationwide wireless public safety broadband network. Nor is there any guarantee that such leasing arrangements will be in demand or able to be effectively negotiated in many parts of the

¹ National Public Safety Telecommunications System, 700 MHz Public Safety Broadband Task Force Report and Recommendations (September 4, 2009) at pg. 32; available at http://www.npstc.org/documents/700_MHz_BBTF_Final_Report_0090904_v1_1.pdf.

country. It is this uncertainty over funding that has driven NENA's decision to focus more on sustainable and recurring funding solutions than spectrum allocation.

As it currently stands, it appears that there are two approaches on the table to providing a nationwide wireless public safety broadband network. The two approaches are as follows:

1. Allocate the 700 MHz D Block to public safety with funding coming from the traditional sources of state and local government (and possibly some additional federal grant funds). Additional money could potentially be generated through the lease of excess public safety capacity where there is demand for additional spectrum from commercial carriers. There would also have to be provisions that revenues obtained from leasing excess spectrum must be reinvested in the public safety broadband network in the 700 MHz band, rather than used by local and state authorities for non-broadband uses. In addition, it would appear that any leasing arrangements would need to have provisions to ensure public safety could reacquire that spectrum on a short-term preemptive basis during emergencies (or in the long term in the event that public safety needs to utilize all 20 MHz for their own broadband network). A benefit of this approach for public safety is of course that the terms of use of the network are under the control of the public safety licensee.
2. The second approach is contained in the draft legislation and the National Broadband Plan which would, if the draft legislation were to become law, provide a major source of funding for public safety broadband systems while ensuring access to adjacent commercial spectrum during emergencies on a priority basis with roaming. This approach does not allocate the D Block to public safety. However, it does provide a significant source of funding and would provide access to 70 MHz of combined public safety and commercial spectrum, rather than a standalone 20 MHz public safety block if the D block is allocated to public safety. Of course, this approach would require the FCC to establish clear priority access and roaming rules suitable to public safety's needs, and to allow funding mechanisms to pay for priority access and roaming as necessary.

NENA believes that there is merit to both approaches. Nonetheless, all parties need to focus on what will best serve the interests of both public safety and the public. In NENA's opinion, having access to a nationwide public safety broadband network with significant funding for construction, maintenance and operation of the network, with a guarantee of roaming and priority access, is a workable approach. Critical details would need to be worked out, primarily on the viability and capabilities of the priority access regime that is implemented and on the operational costs that can be reimbursed from federal grant funds (e.g. roaming and priority access fees).

We thank you for releasing this discussion draft and hope that it will do just that, generate discussion, resulting in the establishment of a nationwide public safety broadband network and the funding to build and operate that network. We stand ready to work with you, the Commission, and others in public safety on this important issue.

Thank you.

Appendix A

May 24, 2010

The Honorable Henry Waxman
 Chairman
 Committee on Energy and Commerce
 U.S. House of Representatives
 Washington, D.C. 20515

The Honorable Joe Barton
 Ranking Member
 Committee on Energy and Commerce
 U.S. House of Representatives
 Washington, D.C. 20515

The Honorable Rick Boucher
 Chairman
 Subcommittee on Communications,
 Technology, and the Internet
 Committee on Energy and Commerce
 U.S. House of Representatives
 Washington, D.C. 20515

The Honorable Cliff Stearns
 Ranking Member
 Subcommittee on Communications,
 Technology, and the Internet
 Committee on Energy and Commerce
 U.S. House of Representatives
 Washington, D.C. 20515

Dear Chairman Waxman, Chairman Boucher, Ranking Member Barton, and Ranking Member Stearns:

The National Emergency Number Association (“NENA”) wishes to express our strong support for key elements of the public safety portion of the National Broadband Plan (“Plan”). The Plan outlines several essential steps necessary to achieve a nationwide wireless public safety broadband network and Next Generation 9-1-1 systems, including many issues that only Congress can address. First and foremost, is the critical issue of funding. NENA urges you to act upon the FCC’s recommendations to make near-term funding available for public safety broadband and Next Generation 9-1-1 systems and to ensure that funds are available on a sustainable and annually recurring basis. Such action will ensure that broadband networks are built, maintained and effectively serving all areas of the country.

Recently, much attention has been devoted to efforts to seek the allocation of the D Block to public safety. However, little attention has been given to other important elements of the National Broadband Plan. The focus on public safety’s need for additional spectrum, while important, must be put into the broader context of the other key elements of the Plan, including the critical need for funding to build, maintain and operate a nationwide system.

Key elements included in the Plan for the benefit of public safety include the following recommendations:

- the need for sustainable funding to ensure the public safety broadband network is built and maintained;
- requiring the ability of public safety to roam on commercial networks with priority access during emergencies resulting in access to a significant amount of commercial spectrum in the 700 MHz band;

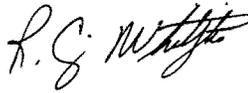
- the creation of the Emergency Response Interoperability Center (ERIC) that will implement technical requirements and procedures to ensure system operability, roaming, priority access, authentication, encryption, gateway functions and interfaces, and interconnectivity of public safety broadband wireless networks; and
- a commitment to address pending public safety 700 MHz waiver requests (recently resolved); and
- the identification of several steps to enable Next Generation 9-1-1 systems.

NENA supports these recommendations, especially the proposals for funding.

While the Commission did not recommend the allocation of the D Block to public safety, the FCC certainly recognized the need for additional spectrum for public safety broadband. NENA is aware that legislation was recently introduced to allocate the D Block to public safety (HR 5081). However, in its current form, the legislation does not address the need for funding, a central issue for NENA. As we have consistently stated, while access to additional spectrum is important, spectrum without sufficient funding will not provide for a truly nationwide public safety broadband network. This is particularly true for the more rural areas of the country that are traditionally underfunded.

In summary, the FCC is to be commended for the numerous recommendations in the National Broadband Plan designed to ensure the availability of a nationwide public safety wireless broadband network and Next Generation 9-1-1 systems. We look forward to fully engaging in the FCC Broadband Plan proceedings and with Members of Congress in a constructive effort to enable a much needed transition into the broadband era for public safety and 9-1-1 systems.

Sincerely,



Craig Whittington, ENP
President

cc: The Honorable Janet Napolitano, Secretary, Department of Homeland Security
The Honorable Julius Genachowski, Chairman, Federal Communications Commission
The Honorable Michael Copps, Commissioner, Federal Communications Commission
The Honorable Robert McDowell, Commissioner, Federal Communications Commission
The Honorable Mignon Clyburn, Commissioner, Federal Communications Commission
The Honorable Meredith Attwell Baker, Commissioner, Federal Communications Commission
The Honorable Lawrence Strickling, Assistant Secretary for Communications and Information, Department of Commerce

Mr. BOUCHER. Thank you very much, Mr. Fontes. And thanks to all of our witnesses for being with us this morning and sharing your views on this matter. Mr. Barnett, I am going to be my questioning with you. The public safety community at the present time holds 10 megahertz in the 700 block that has been designated for broadband communications. Your analysis shows that that holding is sufficient for the broadband network and Mr. Dowd, Mr. Zipperstein and others have recommended that additional spectrum be provided to public safety for that purpose. So that we can get an empirical sense of whether the 10 megahertz is sufficient, I wonder if you have any numbers that shows the number of first responder users per megahertz at 10 megahertz as compared to the number of commercial users in the commercial 700 megahertz spectrum holding given the number of megahertz that is designated for commercial holders in the 700 megahertz block. Simply stated, would there be more public safety users in their megahertz or would there be more commercial users in the commercial block that is available? Do you happen to have those numbers?

Admiral BARNETT. Mr. Chairman, I think what I can tell you is that per megahertz the commercial networks cover vastly more users than there will be users in the public safety spectrum, so the way that we calculated, and I think you may be referencing this in the capacity White Paper, there are about 2 million users in public safety or at least you could estimate that. There may be fewer at any particular time, 10 megahertz, so that is where we are considering there will be about 200,000 users per megahertz.

Another way of looking at those on the commercial side there is about 547 megahertz across all the spectrum, and so when you do the divisional map that is about 530,000 users per megahertz. When you compare that to the 97 megahertz that public safety has across all spectrum, that is only about 21,000. So in some ways what you can think of this is that there are 25 times the number of users for commercial for megahertz than there are for, in essence, public safety users.

Mr. BOUCHER. And so your conclusion from that is that public safety would have ample megahertz available with 10 megahertz devoted to broadband?

Admiral BARNETT. Absolutely. For day-to-day and for most emergencies, and as we mentioned you can design scenarios where it will really stress any system, any system that I would design, any system that Chief Dowd would design, but that is why we did have the ability to roam over with priority access.

Mr. BOUCHER. OK. Chief Dowd or Mr. Zipperstein, do you want to make any comment with regard to those numbers?

Chief DOWD. Well, I guess my comment, Mr. Boucher, would be what relevance does it have to public safety? Public safety systems are used very differently than the commercial systems. We use our radio systems in a way that, quite frankly, if you are going to compare it to commercial usage is very inefficient. But you have to look at the criticality of the systems and what we are doing on them and what has to happen on them. You know, the FCC has issued a White Paper. You know, it only came out 48 hours ago, so we really haven't had a chance to go into it in depth, but the City of New York filed a White Paper back in February with the FCC,

and, you know, as public safety experts and having already built a broadband system in the City of New York and utilized some of the information from that system, we came to the conclusion clearly that 10 megahertz of spectrum is simply not enough for public safety. And that is not just in a large scale place.

Mr. BOUCHER. OK. Thank you. My time is limited. I think we have the sense of your answer. Mr. Zipperstein, I will give you an opportunity very briefly if you want to add to that.

Mr. ZIPPERSTEIN. I would simply say that commercial networks are more efficient but I completely agree with Chief Dowd that the average commercial user is using far less bandwidth than with the average public safety user in a broadband environment. AT&T has had very well-publicized problems with its network in San Francisco and New York as a result of very high bandwidth users. And in the public safety world—

Mr. BOUCHER. That is in the 3G network and we are merging into the era of 4G and LTE technology now which is the standard for public safety. That is really talking about a whole other generation.

Mr. ZIPPERSTEIN. That is right, Mr. Chairman.

Mr. BOUCHER. Let me come to—my time is limited. Public safety now has 10 megahertz dedicated to broadband. It has 12 megahertz dedicated to narrow band. All of that is in the 700 block. It has 2 megahertz used as guard bands to protect from interference for a total of 24 megahertz. The 24 megahertz are all contiguous, so if, in fact, more megahertz than that has been assigned for broadband is needed for broadband, why not aggregate at least 22 out of the 24 leaving a couple for guarding and simply have the voice function be delivered over VOIP data standard, which LTE is, and why would that not be a satisfactory means of providing more spectrum if, in fact, public safety feels like it needs it? Mr. Dowd, do you want to comment?

Chief DOWD. Sure. The problem with that is that that plan was established several years ago, and that spectrum is dedicated at this time at least for land mobile radio systems, narrow band systems, which by the way is a mandate that exists from the FCC as far as certain agencies like the NYPD have—

Mr. BOUCHER. Let me just interject. We are looking at a 10-year time horizon to achieve all of this, and within that 10-year horizon why could you not migrate the narrow band offerings that you have on that 12 megahertz at the present time to broadband if, in fact, you need more megahertz for the broadband?

Chief DOWD. Because the answer is we need it now. So we are looking at building a broadband network and an effective broadband network that has enough capacity to do what we need to do as we go into that new technology and these are things and information that we shared before. So if you are telling us to wait 10 years for that spectrum, our answer is we really can't. Maybe somebody else can wait 10 years, maybe the commercial side, if that ultimately becomes available because everybody ultimately migrates from land mobile radio to broadband.

Mr. BOUCHER. Here is the other part of that question though. Why could you not even immediately with the 10 megahertz that you have deploy your broadband technology and then use VOIP as

the means of offering the narrow band voice service over the broadband technology so you are using LTE data standard. You would use that for voice, video and data using the voice as a VOIP application. Why could you not do that?

Chief DOWD. Well, because these things have not been perfected as mission critical capabilities.

Mr. BOUCHER. You are saying VOIP is not?

Chief DOWD. Yes.

Mr. BOUCHER. Do you think VOIP is not sufficient for the kind of voice service you would need?

Chief DOWD. Not at this point, no.

Mr. BOUCHER. All right. Mr. Barnett, do you have any comment?

Admiral BARNETT. Yes, sir. We do need to look over the horizon and I think that is what the concept of being flexible in the use of the narrow band. There are not many that are built out in the narrow band part of the 700 megahertz spectrum right now. We even got a letter from a chief of police in Sandy Springs, Georgia asking whether or not they might be able to do just that so we do need to look at for the near term and for that 10-year horizon whether or not public safety at its choice, at its option, could use some of that spectrum and we are thinking about how to pursue that.

Mr. BOUCHER. All right. Thank you very much. My time has expired. The gentleman from Florida, Mr. Stearns, is recognized for his questions. Mr. Stearns has reminded me we have a series of recorded votes pending on the floor of the House, 3 votes in total. This will consume the better part of 15 to 20 minutes for us, and so we will ask your indulgence while we respond to those votes, and we will be back as soon as we can.

[Recess.]

Mr. BOUCHER. I would ask the witnesses if they could resume their places at the table. When we recessed, my questions had been posed to our witnesses, and I am pleased to recognize now the gentleman from Florida, Mr. Stearns, for his questions.

Mr. STEARNS. Thank you, Mr. Chairman. If anybody didn't completely answer your question, I would be glad to allow you any extra time because I think you had some very good questions. Is there anything that has to be resolved on your questions?

Mr. BOUCHER. Well, thank you, Mr. Stearns. I guess at the moment it is just the two of us and so we are not impinging on anyone else's time except our witnesses. I do have one other question that I will just take this opportunity to pose. Admiral Barnett, in your recommendations you had talked about priority access being provided to first responders over some additional 700 megahertz spectrums, and I wonder if you could be a little more specific about where else you would see that priority access pertaining, in other words, what other 700 megahertz spectrum would that apply to and whose hands would that be? And what does priority access actually mean? How would that work in practice? What are the circumstances under which it would apply and how would you see that impacting the commercial use of the spectrum to which it applies?

Admiral BARNETT. Mr. Chairman, let me say first some of the things you are asking about still need to be worked out and it will

be the subject of rulemaking where we will get input from public safety and from industry as well. Certainly we look at priority access and roaming onto the D Block. We would think that that would need to be something that would be a condition on the sale of the D Block, as well as creating devices that would see both the D Block and the public safety spectrum. We would also see, and we have looked at how this would happen is roaming over onto, in essence, Verizon, AT&T and others carriers in the 700 megahertz, so that, in essence, public safety would have its choice. It could contract with the D Block licensee for roaming and priority access. It could contract with all of them for that. It basically provides as much choice as possible.

Mr. BOUCHER. That would be on a contractual basis?

Admiral BARNETT. Yes, sir. And the way that this works is that there would also be compensation. Carriers would be compensated for it. We would think that that would need to be at the most favored customer level. That is why we do think that there needs to be a look at how the cost of operating the network will be very important.

Mr. BOUCHER. Just to clarify. You are proposing that on a purely voluntary basis, not a mandatory basis?

Admiral BARNETT. It would be mandatory on the carrier if public safety wants to contract with that particular carrier. That is the way we are looking at it so that it becomes public safety's choice on that. If public safety wants to contract with them then the carrier would need to provide that.

Mr. BOUCHER. And the terms of the contract would specify the compensation that would be provided and possibly other terms of service?

Admiral BARNETT. Yes, sir.

Mr. BOUCHER. There would be no choice but to enter into the contract.

Admiral BARNETT. Yes, sir. That would be a requirement and we think that that is reasonable. One of the things that LTE will offer is 15 levels of priority service, and so the things that have—and it is not the old circuit switch technology. As soon as public safety accesses the network the packets begin to flow and they get first in line privileges. The same would be true for 911 calls. And so it is not that you are cutting off any calls on all the rest of the network at that point so, you know, my kids or something like that playing video games, that performance goes down so that the performance of the public safety cost and the 911 cost would go up.

Mr. BOUCHER. All right. Thank you very much. Thank you, Mr. Stearns. You are recognized for your questions.

Mr. STEARNS. Thank you, Mr. Chairman. I request unanimous consent to submit for the record a letter that 16 members of this committee from both sides of the aisle sent to the FCC in June, 2007 warning that a harmful condition would hurt the 700 megahertz auction, a prediction that came true.

Mr. BOUCHER. Without objection.

[The information appears at the conclusion of the hearing.]

Mr. STEARNS. This is a question for Mr. Bazelon and Mr. Zipperstein. I know you list as your first choice auctioning off the D Block and funding the public safety network through the pro-

ceeds. There has been lots of talk by the FCC about debt neutrality, imposing that. If that was implemented by the FCC as part of the auction and other conditions, would that reduce the proceeds of the auction? Mr. Zipperstein, first.

Mr. ZIPPERSTEIN. Yes. It is fair to say that any time spectrum is encumbered with conditions that the likely revenue to be gained by the Treasury will be lower than spectrum auction free and clear of any conditions.

Mr. STEARNS. And the conditions besides network neutrality, what other conditions do you think which would be harmful?

Mr. ZIPPERSTEIN. Well, for example, in the first attempt to auction the D Block back in 2008 there were a number of conditions that had nothing to do with network neutrality, conditions on the winner in terms of building a public safety network, those sorts of things. And we had over 250 rounds of bidding in that auction. There was only one bid for the D Block, and it was less than half of the reserve price.

Mr. STEARNS. Mr. Bazon.

Mr. BAZELON. I agree that in general when you reduce the returns to investment, the investment is worth less, and if net neutrality regulations are applied to the wireless sector and it reduces the returns to the network operators they are going to pay less for the spectrum for the privilege in the first place.

Mr. STEARNS. Mr. Barnett, are there any comments you would like to add?

Admiral BARNETT. Mr. Stearns, I am not your expert on auctions and their proceeds. The main thing that I think we focused on and my particular is on the interoperability making sure that it is nationwide.

Mr. STEARNS. OK. Admiral Barnett and Mr. Hatfield, if we auction the D Block rather than dedicate it to public safety, how much faster and how much more cheaply can we deploy interoperable broadband public safety networks to cover the entire country?

Mr. HATFIELD. Let me make sure I understood your question. Was it—

Mr. STEARNS. If we auction the D Block rather than just allocate it to public safety, it is a question of cost and deployment. How much faster and how much more cheaply can we deploy this public safety network across the country?

Mr. HATFIELD. I am not sure I can quantify it for you, but I do think that we are at a unique period of time here where the commercial networks are building out their LTE networks, and if we can piggyback on that and build at the same time, I think that there is substantial economies. I am not sure I can quantify it for you.

Mr. STEARNS. Admiral.

Admiral BARNETT. And I would just add to that if the D Block is reallocated it really destroys the commercial markets for the equipment. It makes the network more expensive to build and for public safety to operate it and get their own devices. For that reason we think that it would really be destructive on both a nationwide system and of an interoperable system.

Mr. STEARNS. This is a question for the entire panel I was asking the staff. Is there any country that has deployed through the

broadband this type of interoperable broadband public safety network, and to our knowledge no one has done it. Does anyone on the panel know of any country that has done it?

Admiral BARNETT. I am not aware of anyone and certainly not in 4G.

Mr. STEARNS. But in maybe less than 4G?

Admiral BARNETT. Well, there are countries that have national police forces that have the advantage of having interoperable networks. I am not positive that those have made the leap to broadband yet. I don't know that.

Mr. STEARNS. OK. Well, I thought that was interesting that the fact that no one else had done it so possibly we would be the first. Chief Dowd, we appreciate your being here and everything you are doing. I have not talked to Peter King about his bill. I shall do that. I think the question that perhaps I would have because I think we all share the same goal, and I thank you for your opening statement. The problem is that legislation providing for direct grant of the spectrum it appears is not likely to make it we mark up this bill, that is not what we are looking at. Mr. King, Mr. Boucher and I should probably talk to him to see if there is any way we could discuss further dimensions of his bill. But if you and your illustrious peers decide that this is not the right way to go, it would be unfortunate because we would like your support. So I guess in a larger sense if you make a position that you are not supporting, which I think the majority on this panel and in this subcommittee, then that would not be good.

So I guess I am reaching out to you that you might want to think about a fall back position so that we all move together here on a bipartisan fashion. Have you perhaps any ideas perhaps realizing that we would like your support? That is probably an observation rather than a question.

Chief DOWD. Yes. Let me see if I can respond to that. We have studied this from every different angle, and when we look at the FCC's plan, we have only looked at it superficially so far because again it has only been out for 48 hours, but one of the things we keep hearing, I think, here from a public safety perspective is the notion or the concern that by doing this we are preventing public safety from having a broadband network. And our contention is that by doing what we are doing, we are establishing the necessary requirements to build a viable public safety network. You can't be in a situation where you are constantly comparing, and I keep hearing this, constantly comparing usage on the different types of networks, commercial compared to public safety, and say that those comparisons somehow invalidate public safety's needs. They simply don't.

Commercial networks are built as for-profit networks. They try to maximize usage of the spectrum. Now we already on a number of occasions presented alternatives to members of this committee and to the FCC specifically that we feel would be far more efficient than our normal usage of spectrum. In the broadband technology those capabilities clearly are there, and we have discussed those and described those, and we are open to those flexibilities. Some of the flexibilities we see in your bill we are supportive of. But we just at the core of it can't get past the point that 10 megahertz of

spectrum is just not going to be sufficient for our needs on an emergency basis and for that guaranteed delivery of information that we have to have which is different from the philosophy in commercial networks.

And, if I could, just very quickly, you know, our position is and always will be that we cannot rely on commercial networks for mission critical work. Every experience we have ever have tells us that those systems will fail before our system were to fail. So we just don't see that as a realistic alternative.

Mr. STEARNS. So in your likelihood what happens is if we followed your path and you had this spectrum then you would rent it out? What do you feel the next step would be?

Chief DOWD. Well, again, in trying to come up with solutions that we believe will be efficient but also accomplish the primary mission, don't forget the first and foremost mission of this is to be a viable public safety communications network, so we are looking to do not just data and video and all that stuff. We also want to do voice on this. We want to migrate into this highly efficient technology but always at the level of service that we would require. Would we allow for it or do we think the idea or the flexibility of allowing for the leasing on a secondary basis? As James just mentioned, there was an LTE that was 15 levels of priority. Could you allow for usage on a commercial basis to offset costs of the public safety network? Sure, you could.

We have already talked to utilities that are very attractive to the idea because they would love to be on a system that is more hardened than the commercial networks which could give them on a secondary basis access to a public safety network. In an emergency, I will give you a quick example of it. Recently, in New York City we had a tremendous weather storm which was like a hurricane—

Mr. STEARNS. My time has expired, so I appreciate it. I guess the question would be where are you going to get the money to even do the initial construct afterwards. But my time has expired. Thank you, Mr. Chairman.

Mr. BOUCHER. Thank you very much, Mr. Stearns. The gentleman from Illinois, Mr. Rush, is recognized for 5 minutes.

Mr. RUSH. I want to thank you, Mr. Chairman. And, Mr. Chairman, first of all, let me ask unanimous consent that 2 letters from the National Governors Association that they be admitted into the record.

Mr. BOUCHER. Without objection.

[The information appears at the conclusion of the hearing.]

Mr. RUSH. Mr. Chairman, I really do feel like I am swimming upstream. In this situation I have listened to all the testimony. This situation kind of reminds me of a time when I was in the 5th grade and we had had a course—my teachers at the time were very enthusiastic about the Constitution and the Declaration of Independence and how everybody was equal and equality was the subject. So I was full of it and I went home, and my mother asked me to do something and we got in a little spat. I told my mother, I said, well, mom, I am equal. I have equal status in this household. And she said, yes, you do, but I am more equal than you. Chief Dowd, there is a lot of equality and everybody's opinion is respected here,

but I have to say you are a little bit more equal than the others simply because you have the experience and we are looking to you to ensure that whatever kind of crisis that we might be faced with, the American people, that you have the sufficient resources and equipment to make sure that the emergency, that you are able to manipulate it and control it and to keep as many Americans alive as you possibly can, so to me you are a little more equal than the rest of the other panelists.

And I just got to ask you just a couple of questions here. I understand that New York had to pay a fee to roam on a commercial carrier network. Is that true that you pay roaming fees in New York?

Chief DOWD. Are we currently paying roaming fees?

Mr. RUSH. Yes.

Chief DOWD. We are paying fees for commercial services on broadband right now.

Mr. RUSH. Does it impose a condition on D Block spectrum for enrollment fee charges to first responders?

Chief DOWD. Well, again, you know, the logic of it to us is we are going to build our own system then why would we also want to pay for broadband services especially on networks that we are deeply reluctant to rely on, so it doesn't make a whole lot of sense to us.

Mr. RUSH. All right. I understand that FCC, and it has been testified about the 48-hour release of their White Paper concluded that 10 megahertz of broadband safety spectrum is sufficient for day-to-day operations. Yet I do have a FCC document filed by Motorola that shows something to the contrary. And, Mr. Chairman, I want to ask unanimous consent that this document be entered into the record also.

Mr. BOUCHER. Without objection.

[The information appears at the conclusion of the hearing.]

Mr. RUSH. Do you agree with the FCC that 10 megahertz is sufficient for day-to-day operations?

Chief DOWD. No, we don't. And we base on that our analysis of it with the White Paper that we submitted to the FCC which shows actual usage and estimates of usage of broadband capabilities in the future which clearly show us at concentrated incidents which happen on a regular basis, and some of them are high profile and you hear about them like plane crashes and such, and others that you don't hear about that happen every day. And our analysis clearly indicates to us that that 10 is simply not going to be enough. Just because there is a situation in Times Square where there is a very high profile incident where there is an explosive device doesn't mean that we don't respond to those types of things every day. And, you know what, thankfully most of them turn out to be nothing. An unattended bag in the subway system, it ends up being somebody's dirty laundry, but you don't know that until you take all the steps necessary to determine that, and to do that you need the communications capabilities to make those determinations.

Mr. RUSH. On the issue of priority access it merely puts public safety at the head of the line but does not guarantee. Now that is important to me. It does not guarantee that they can get on the system that is already clogged with consumer traffic, a situation that routinely occurs at the scene of a lot of emergencies across the

country. And I guess this issue has been addressed with a pre-emption clause, and pre-emption would guarantee that access will require kicking consumers off the network in order for first responders to get access to the network. Do you support pre-empting consumer use to guarantee public safety access and how would that work and how viable is that?

Chief DOWD. Well, that is the problem because there is a couple of issues there. Number 1 is clearly you are correct in our view in public safety that you need pre-emptive access to the spectrum. Next in line or first in queue is not sufficient for us to do the work that we have to do, but the problem is that again commercial systems are not built to the same standards that public safety communications are built to. They don't have the same survivability, the same backups, the same redundancies. You know, it is cost prohibitive for them and we understand that. They are in business to make money. We don't build that way. We build to a very different standard, so the problem is that even if you had pre-emptive access on commercial systems it doesn't mean that the system is going to be viable.

And our experience is that if our systems get strained or our systems become overwhelmed or start to run into difficulties that has already happened to the commercial systems. Ours survive longer than theirs do.

Mr. RUSH. Maybe, Mr. Barnett, maybe you can answer this question for me. If commercial carriers are unable to provide priority access because the systems are overloaded, who is liable if the system is not available with the public safety operatives need it the most? Who is liable? Who assumes the liability for that?

Admiral BARNETT. I am not positive I can address your liability question on that, but it is why we designed our proposal so that public safety would have the core 10 megahertz. Nobody else can use that. They can manage that spectrum however they want to. So the key question here is, and where Chief Dowd and I have a slight disagreement, he would tell you that 10 megahertz is not enough and I would tell you on some days, on those bad emergency days, 20 megahertz is not going to be enough. They are going to need to be able to roam over, and that is exactly why I cited the outage of the public safety voice system in the District of Columbia. They were out of business because they couldn't roam over onto other networks, and if those networks had been available and the FCC plan had been available to them, they could roam over to 1, 2, 3, 4, any other network. It is a tremendous amount of redundancy that reallocating the D Block alone does not provide.

Mr. RUSH. Well, maybe Mr. Hatfield can—I had one more question.

Mr. BOUCHER. OK. Mr. Rush, we have a series of votes coming.

Mr. RUSH. I have just one more question and this is a very simple question. Mr. Hatfield, in your opinion is 10 megahertz enough for public safety officials?

Mr. HATFIELD. If I could answer your question in this way. The advantage of cellular networks compared with when I started out in this business the public safety networks and the mobile telephone networks at the time use a very powerful transmitter that covered a whole area. Therefore, one conversation, there was only

200,000 subscribers in the country at that time, and the reason you couldn't have many more, one of the major reasons is that one conversation would take up the spectrum in a whole region. The whole notion of the cellular concept is that you shorten up the range of each transmission. So that, for example, a conversation here in this room could be used—that same frequency could be used over at the Capitol Building and over on the Senate side. That same spectrum can be reused over and over.

So a lot of this debate that you are hearing here concerns how much we use the spectrum. And so is it enough? Just having the size of the cell quadruples the capacity, so this is in some ways, you see, an economic issue. In other words, you take New York City, if they need more capacity, you do exactly what the cellular carriers have done and that is to divide their geographic areas more finely. And I believe it is correct that the FCC studies show that the amount of frequency we use, being proposed and being used in traditional public safety, is much, much less than what the commercial users provide. So to me Congress here has sort of a trade off here. If you can get more capacity for a public safety system by making it look more commercial with more sites or you can say, no, no, we will just hand you the spectrum without paying for it. And that is basically the trade off. That is basically the trade off that is going on here. To go back to your question, you can get more spectrum by dividing the cells down, cutting it in half, quadruples, roughly speaking, quadruples the amount of capacity.

Mr. BOUCHER. Mr. Rush, thank you very much. Thanks to all of our witnesses. We appreciate your attendance here this morning. This has been a highly informative session certainly for me. I think the other members would say the same. And we may actually have some follow-up questions that we want to propound to you, so without objection the record of this hearing is going to remain open for a period of 2 weeks while members propound to you questions. When you get those, if you could answer them expeditiously, we would appreciate that. Thanks for your attendance today, and this hearing stands adjourned.

[Whereupon, at 12:45 p.m., the Subcommittee was adjourned.]

[Material submitted for inclusion in the record follows:]



June 16, 2010

Via Electronic Mail

The Honorable Henry A. Waxman
United States House of Representatives
2204 Rayburn House Office Building
Washington, D.C. 20515

The Honorable Joseph L. Barton
United States House of Representatives
2209 Rayburn House Office Building
Washington, DC 20515

Re: Legislative Hearing on a Bipartisan Staff Discussion Draft to Provide Funding for the Construction and Maintenance of a Nationwide, Interoperable Public Safety Broadband Network, and for Other Purposes, and on H.R. 4829, the "Next Generation 911 Preservation Act of 2010."

Dear Chairman Waxman and Ranking Member Barton:

Thank you for your leadership in calling for this hearing to discuss a draft of legislation to provide funding for constructing and maintaining an interoperable public safety broadband network, and for other purposes, and on H.R. 4829, the "Next Generation 911 Preservation Act of 2010. M2Z Networks, Inc. ("M2Z") provides its comments on these important issues to the Committee and respectfully asks that they be included in the record of the hearing.

Although the Committee's hearing is ostensibly about the funding of a national public safety interoperable network and the modernization of our country's emergency call system, the draft Public Safety Broadband Act of 2010 shows that these issues are inextricably intertwined with how the FCC is managing our country's precious spectrum resources and how the Agency's policies can positively or adversely affect our nation's digital future. Because the draft legislation raises the possibility of delaying the auction of the 2155-2180 MHz spectrum band (also known as "Advanced Wireless Services-3" or "AWS-3") which is readily available to deliver affordable nationwide broadband access, M2Z hereby recommends that the draft legislation be modified consistent with the FCC's National Broadband Plan so the AWS-3 spectrum can be auctioned no later than the second quarter of 2011. Auctioning this band consistent with the timeline recommended in the FCC's National Broadband Plan ("NBP") will not only address the need for affordable broadband for consumers but it will also help America maintain its technological lead in advanced wireless services. Furthermore, M2Z believes it

would be in the public interest to modify the draft legislation so that the funds raised from the auction of AWS-3 be used to offset the costs of the Next Generation 9-1-1 program as provided in H.R. 4829. This proposal would jump start the modernization of this heavily used and critically important consumer and public safety infrastructure.

I. The National Broadband Plan, the Need for Affordable Broadband for 100 Million Americans and moving forward AWS-3

At the direction of Congress, the FCC developed a comprehensive national broadband plan that tries to address the needs of our country's digital future. Any discussion of spectrum policy must first and foremost focus on and start from the extensive findings of the FCC. The NBP found that 100 million Americans do not have access to even a basic level of broadband largely because it is not affordable.¹ For many others, there is a pressing need to have a choice in broadband providers given the highly concentrated broadband market found in most parts of the country. In the NBP, the FCC outlined a specific set of recommendations and a schedule for how it plans to implement those recommendations. As such, the guiding principle for any new legislation should be to avoid diverting the FCC from the NBP recommendations and related schedule.

As MZZ has long believed, and as supported by the NBP findings, there is a desperate need to increase consumers' adoption of broadband in the United States.² Not only will increasing broadband adoption improve our educational system but it will also create jobs, stimulate economic activity and improve our country's global competitiveness. Increasing consumer adoption of broadband for all Americans, regardless of income, ethnicity and geography, by making it highly affordable has been identified as the top telecommunications priority by our country's leaders including President Obama, Speaker Pelosi, FCC Chairman Genachowski, and a majority of the distinguished members of this Committee. One of the key recommendations of the NBP in this regard is for the Commission to "consider using wireless for free or low cost broadband services."³ MZZ has long advocated for such an approach and the upcoming auction of the AWS-3 spectrum band is an immediate opportunity to implement this type of innovative solution in the marketplace.

II. The NBP Recognizes that the AWS-3 Block is Readily Available for Immediate Auction

The AWS-3 spectrum is a nationwide block of unpaired spectrum that is highly underutilized and which the FCC allocated in 2003 for advanced wireless services like Fourth generation ("4G") protocols including WiMax and LTE. Starting in 2006, the FCC has developed an extensive and complete record about the highest and best use of this spectrum and the necessary public interest obligations on the spectrum. In building this record, the FCC has conducted multiple rulemakings, technical interference studies and license application procedures. Yet, seven years after the AWS-3 band was reallocated for use by 4G technologies,

¹ Connecting America: The National Broadband Plan at 3 (Mar. 16, 2010) ("NBP").

² NBP at XIII.

³ NBP at 173.

the spectrum remains unassigned and unused. This delay in providing broadband spectrum into the marketplace is to our country's detriment.

The FCC was clearly mindful of this wasted resource when it made a specific recommendation regarding the AWS-3 band. The NBP recommended that "if there is no strong possibility of reallocating the 1755-1780 MHz [federal government band]," the Commission would "promptly adopt final rules and auction the AWS-3 spectrum on a stand-alone basis" *no later* than the second quarter of 2011.⁴ Recently, NTIA Administrator Larry Strickling made it clear that the 1755-1780 MHz band is not available for commercial reallocation.⁵ In light of this fact and the extensive record in front of the FCC, the time has now come for the FCC to similarly move with urgency and fulfill its commitment to promptly license AWS-3 as a stand-alone spectrum band.

III. The Draft Legislation Proposes Delaying the Availability of AWS-3 to the Detriment of American Consumers and Economy

Unfortunately, the current language in the draft legislation violates first principles by countermanning the specific recommendation of the National Broadband Plan to auction the AWS-3 band by no later than the second quarter of 2011. In its expert agency capacity the FCC's NBP explains that "[t]he FCC should move expeditiously to resolve the future of the spectrum already allocated for AWS."⁶ The draft legislation, on the other hand, seeks to slow Commission progress and delay the auction of the AWS-3 band until January 2013 by tying it to the availability of the 1675-1710 MHz band, a federal band, which the NTIA has just begun considering for commercial reallocation.⁷ Linking the auction of these two bands is premature and unnecessary.

By calling for the "immediate reallocation" of the 1675-1710 MHz band without any finding from NTIA that the band can be reallocated without harming the public interest (the band is used by NOAA and NASA for tracking weather and other sensitive environmental data), the draft legislation is clearly premature. The draft is also premature because it fails to account for the costs involved in relocating the federal systems currently operating in the band. Moreover, there is no information in the record at the FCC or at the NTIA making it necessary for the FCC to auction these bands at the same time. Nor are there any technological or "global harmonization benefits" that would justify the simultaneous auction of these two unrelated bands.

⁴ NBP at 87 (emphasis added).

⁵ "As many of you know, the FCC, largely at the request of industry, has suggested that NTIA evaluate the 1755-1780 band for possible pairing in an auction with the 20 MHz of AWS-3 spectrum at 2155-2175. We have concluded from our preliminary review of that band that there are too many agencies and assets involved to allow for a pairing with AWS-3 in the time frame the FCC has set for an auction." See Remarks of Lawrence E. Strickling, Assistant Secretary of Commerce for Communications and Information, delivered at Public Knowledge Federal Spectrum Conference, Jun. 3, 2010. Multiple press reports have also cited Mr. Strickling as having declared the pairing of the 1755-1780 MHz band with AWS-3 as a moot point. Mr. Strickling explained to reporters that "the timeframe the FCC's talking about for an auction . . . to pair it with AWS-3 - we can't get that band [1755-1780 MHz] dealt with in that timeframe." He went on to clarify "[t]hat's not to say it isn't a candidate for eventual reallocation down the road, but it's a multi-year process. We have too many agencies in there." See TRDaily, June 3, 2010. Previously Administrator Strickling debunked the "readily available" argument by noting that "[t]he band is used for many critical government operations" and that "[t]he idea that that is something that could be auctioned quickly is not one that I think could come to fruition." See Communications Daily, May 4, 2010.

⁶ NBP at 86.

⁷ Public Safety Broadband Act of 2010, H.R. _____, 112th Cong. § 301 (a)(2).

Finally, as we describe below, delaying the availability of the AWS-3 band for an additional three years goes against the public interest purely on global competitiveness grounds. Countries such as China, India, and members of the European Union have made it a priority to provide large amounts of unpaired spectrum in order to speed the availability of new 4G networks to their consumers.

These increased allocations have been supported by nearly all major vendors of advanced telecommunications equipment and their trade associations. 3G Americas (the trade association for advanced wireless system operators and equipment vendors) and the Telecommunications Industry Association (TIA) are actively advocating for making more unpaired spectrum available globally and in the US in particular. Individual companies that have come out in support of unpaired spectrum include Motorola, Nokia, Ericsson, Siemens, Samsung and Qualcomm. Despite this concerted global call for more unpaired spectrum, the FCC has yet to respond in a manner befitting this opportunity. Although the FCC has provided more than 150 MHz of new spectrum that could be used for broadband over the last decade, unpaired spectrum allocation for has been less than 10% of the total. The US is now lagging in this critical area despite the unassailable fact that unpaired spectrum allows for the most efficient use of spectrum and is best suited for the use of advanced radio technologies such as smart antennas and beamforming where the US has long been a global leader. Thus, delaying the availability of AWS-3 would make America lag even further behind in broadband adoption and in wireless innovation.

India's recent spectrum auctions demonstrated how our country is falling completely behind by not placing unpaired spectrum in the marketplace that is readily available. Just this month, India's regulator announced that Qualcomm, one of America's leading wireless technology companies, acquired unpaired spectrum in that country in order to deploy its TD-LTE systems. This recent development in India provides compelling evidence that the FCC's historical procrastination over allocating unpaired spectrum has hurt our economy; moreover, it is ludicrous when we see our leading technology companies having to deploy their technologies and their shareholders' capital in other countries because the FCC has failed to release readily available spectrum.⁸ In this particular case, the auction revenues and resulting economic activity that could have been generated by auctioning AWS-3 has now gone to the Indian government and Indian consumers instead of the US government and US consumers. Clearly, the call in the draft legislation to delay AWS-3 for three years by tying it to the availability of the 1675-1710 MHz band is logically flawed and highly detrimental to our country's economy, our global competitiveness and, most of all, to the best interests of American consumers.

IV. Recommendation: Auction AWS-3 in According to the NBP While Supporting NG-911

In light of these facts, M2Z recommends that the draft legislation be modified to call for the auction of the AWS-3 spectrum no later than the date recommended in the NBP which is the second quarter of 2011. M2Z also recommends that any funds raised from the auction of AWS-3 be directed towards supporting all or part of the rollout of the Next Generation 9-1-1 program pursuant to H.R. 4829. This change would not only achieve greater adoption of broadband but

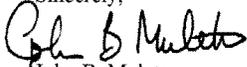
⁸See September Commission Meeting Presentation at slide 74 (Sept. 29, 2009) showing that 50 MHz is in the "pipeline."

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also help speed up the modernization of the 911 system. This change would be in the public interest as it would benefit the 300 million Americans and thousands of public safety agencies that rely on this critical 9-1-1 infrastructure every moment of every day.

M2Z applauds the Committee and its staff for their efforts to support the modernization of the country's public safety infrastructure. We would greatly appreciate it if our comments receive full and full consideration by the Committee.

Sincerely,


John B. Muleta
Chief Executive Officer
M2Z Networks, Inc.

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 Washington, DC 20515-6115

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The Honorable Kevin J. Martin
 Chairman
 Federal Communications Commission
 445 12th Street, S.W.
 Washington, D.C. 20554

Re: Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band; Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Communications Requirements Through the Year 2010 PS Docket No. 06-229, WT Docket No. 96-86 (*Ninth Notice of Proposed Rulemaking*)

Dear Chairman Martin:

We commend you for your consideration of the above-referenced rulemaking. We request that this letter be placed in the public comment file with respect to that proceeding. We believe that it is worth considering whether public-private partnerships can help First Responders use more efficiently the 24 MHz of spectrum that was cleared by the Digital Television Transition and Public Safety Act of 2005 and made available specifically for that purpose. Proposals like those of Frontline to jury-rig the 700 MHz auction, however, would force public safety officials to negotiate with one winner, of one auction, with one pre-determined business plan and no track record of success. In the end, it would harm both the broader auction and our public safety goals. We urge you to reject Frontline-type schemes and stick with your proposal in the Ninth Notice of Proposed Rulemaking to allow First Responders to negotiate with all comers outside the confines of an auction.

Public safety officials have expressed concern that Frontline does not adequately represent their interests, as evidenced in the recent filings of the National Public Safety Telecommunications Council, the Association of Public Safety Communications Officials, and others. State and local government representatives oppose the Frontline proposal for similar reasons in filings by the National Association of Telecommunications Officers and Advisors, the National Association of Counties, the U.S. Conference of Mayors, and the National League of Cities. The public safety and

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government officials note that little time has been available to scrutinize the 11th-hour proposal, which is short on specifics, leaving doubt whether the business plan and proposed network will really work. They also worry that the coverage, reliability, security, and quality of service will not meet public safety standards; that the network will not be available for years; and that First Responders will lack control.

Public safety officials are so skeptical, in fact, that they insist any spectrum set-aside for entities such as Frontline be granted on the condition that the licensee meet a series of public safety requirements or return the spectrum. The statement of requirements, however, will not be drafted until some time in the future. The odds of crafting precisely the right auction conditions, that create precisely the right model, and that result in precisely the right winner, who will then agree to public safety's requirements are minimal at best. We are likely to be left either with no bidder, or a winner who will neither meet the needs of public safety nor relinquish the license without a fight. Meanwhile, we would have wasted time, spoiled the auction, taken valuable spectrum out of circulation, and slowed progress toward our public safety goals. The history of spectrum policy has been marred by unfortunate incidents in which litigation delayed the allocation and use of spectrum.

Alarming, a number of Frontline's proposals do not even have anything to do with public safety. Suggestions to impose wholesale and so-called open access requirements, for example, are blatant poison pills to discourage competing bids and lower the price of the spectrum. An outright prohibition on participation by incumbents is similarly self-serving. Whether considered as part of the Frontline proposal or as stand-alone requirements, these restrictions are inappropriate. Business models should be left to the market, not hard-wired into auctions. Moreover, Congress overwhelmingly rejected network neutrality mandates last year in a bipartisan vote of 269 to 152 on the House floor. The Commission has also just launched proceedings which we believe will demonstrate that network neutrality and device unbundling mandates are not only unnecessary, but harmful. The National Public Safety Telecommunications Council and the Association of Public Safety Communications Officials have also expressed concerns that requiring open access would jeopardize the public safety network.

To avoid starting down a path that will be difficult, if not impossible, from which to recover, we suggest that the Commission follow the approach it outlined in the Ninth Notice of Proposed Rulemaking. There, the Commission proposed assigning half of the 24 MHz of spectrum to a public safety licensee that would have discretion to enter into public-private partnerships. This would allow more time to consider additional proposals, increase the likelihood that the network actually meets the needs of public safety, and give First Responders more control, not to mention more competitive alternatives than one license holder. Further, it does so without jeopardizing the 24 MHz of public safety spectrum, the 60 MHz of commercial spectrum, or the auction proceeds that will fund the \$1 billion interoperable public safety grant program and the \$1.5 billion converter-box program for digital television. The prospect of subscribers from tens of thousands of public safety agencies and the pooling of spectrum will give multiple parties incentives to negotiate with First Responders. Proposals could come from winners of this

Letter to Chairman Kevin Martin
June 29, 2007

auction as well as holders of other licenses, all of whom may be willing to provide public safety access to additional spectrum and their existing infrastructure in return for access to public safety's spectrum.

This approach will also leave more spectrum available to create a greater diversity of geographic license sizes and spectrum blocks. The Commission would then have an easier time creating options for a wide variety of providers: national, regional, and local; large, medium, and small; incumbent and new entrant; rural and urban.

It is imperative that the Commission abide by the statutory timetable for the auction. Achieving the right balance between the commercial and public safety interests, however, will take fundamentally more flexibility, coordination, and cooperation than can possibly be achieved through a hastily fabricated proposal reverse-engineered into an auction. Separating this matter from the auction would also allow us to take a more cautious and deliberative approach, not just the 28 days that could be allotted to the pleading cycle without jeopardizing the January 28, 2008, statutory deadline for start of the auction. Moreover, both the First Responders and the commercial entities may see need for adjustments. Such adjustments are manageable when relationships are based on contracts and service agreements, which can have shorter durations, modification provisions, and termination clauses. Spectrum licenses, by contrast, cannot be easily modified or terminated. De-linking the debate from the auction would also free bidders to make their auction plans, rather than continue to hold them hostage as delays over this controversy continue to threaten the time that will remain between release of the rules and the auction.

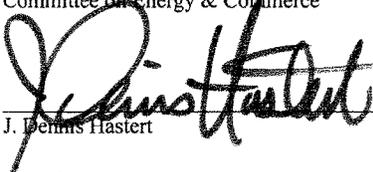
If Frontline and others believe in their business plans and are genuine in their desire to help public safety, there should be no need to stack the deck. They can still participate in the auction, enter into an agreement with First Responders, and voluntarily operate their networks under a wholesale and open access model. If they cannot raise enough money to win spectrum at a fairly structured auction, this is an indication that their proposal will not adequately serve either public safety or consumers. Honest, market-based auctions work when free of onerous service conditions. They have fostered a vibrant and competitive wireless industry, and produced tens of billions of dollars in Federal revenue. But the rules are critical. If done right, they create a fair playing field. If rigged, they sway the auction toward particular parties and particular business models. Let us not mistake this proposal for what it is: yet another attempt to get valuable spectrum on the cheap.

Sincerely,

cc: Commissioner Michael J. Copps
Commissioner Jonathan S. Adelstein
Commissioner Deborah Taylor Tate
Commissioner Robert M. McDowell

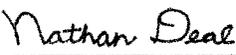

Joe Barton, Ranking Member,
Committee on Energy & Commerce


Fred Upton, Ranking Member,
Subcommittee on Telecommunications &
the Internet


J. Dennis Hastert


Cliff Stearns


Ed Whitfield

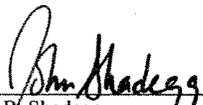

Nathan Deal

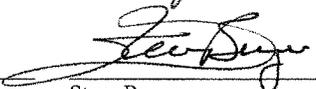

Gene Green

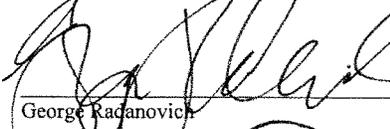

Charles A. Gonzalez

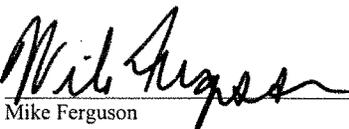

G.K. Butterfield

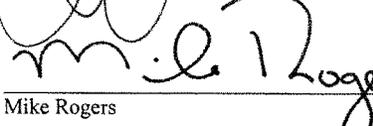

Charlie Melancon

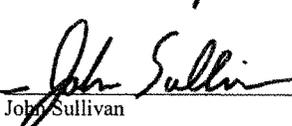

John B. Shadegg


Steve Buyer


George Radanovich


Mike Ferguson


Mike Rogers


John Sullivan

**National Governors Association
National Conference of State Legislatures
The Council of State Governments
National Association of Counties
National League of Cities
The U.S. Conference of Mayors
International City/County Management Association**

June 15, 2010

The Honorable Henry Waxman
Chairman
Committee on Energy and Commerce
U.S. House of Representatives
Washington, DC 20515

The Honorable Joe Barton
Ranking Member
Committee on Energy and Commerce
U.S. House of Representatives
Washington, DC 20515

The Honorable Rick Boucher
Chairman
Subcommittee on Communications,
Technology, and the Internet
Committee on Energy and Commerce
U.S. House of Representatives
Washington, DC 20515

The Honorable Cliff Stearns
Ranking Member
Subcommittee on Communications,
Technology, and the Internet
Committee on Energy and Commerce
U.S. House of Representatives
Washington, DC 20515

Dear Chairman Waxman, Chairman Boucher, Ranking Member Barton and Ranking Member Stearns:

As national organizations representing state and local government officials, we thank you for examining public safety communications needs, specifically as they pertain to the 700 MHz D block of broadband spectrum. The utilization of broadband technology is crucial to the future of public safety and will enhance the ability to save lives by quickly sharing information with first responders, public institutions and private citizens. Stopping the Federal Communications Commission's (FCC) auction and reallocating the D block directly to public safety is the only way to ensure a robust, modern and reliable nationwide interoperable network.

For years, state and local first responders have sought to build a national interoperable communications network that allows real-time information sharing through high speed video and data. This requires an appropriate, dedicated band of spectrum that can accommodate the everyday needs of firefighters, police officers and emergency medical personnel, as well as provide excess capacity during times of emergency. The 700 MHz D block finally provides this opportunity.

As you know, the FCC plans to auction the D block for commercial purposes. In its National Broadband Plan, the FCC proposes to meet public safety spectrum needs by providing roaming and priority access on other commercial 700 MHz networks for a fee. This proposal is insufficient because it will not meet stringent public safety requirements necessary to protect lives and will increase the costs of achieving and maintaining operable and interoperable emergency communications for years to come.

To ensure the ability to communicate during an emergency, public safety must have guaranteed access which can only be accomplished if the network is dedicated for public safety. As demonstrated during many disasters, commercial systems become congested with a dramatic increase in demand that can

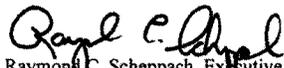
prevent users from accessing the network. Efforts to provide first responders with priority access on commercial systems have failed to meet public safety requirements and will likely continue to do so because of service providers' responsibility to serve their commercial customers.

One of the reasons why first responders have faced tremendous challenges in achieving and maintaining interoperable communications is because public safety has been given only small sections of spectrum across different frequency bands over the past several decades, but never enough to consolidate their communications into a single segment of spectrum. Since devices operating on different frequencies cannot talk to each other, public safety agencies have sometimes found it necessary to install two or more radios in each response vehicle to ensure neighboring agencies can communicate. This solution can be extremely costly and cumbersome.

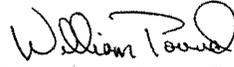
By reallocating the D block to public safety, the nation has the opportunity to not only ensure that our police officers and firefighters have access to advanced technologies, but also to avoid the mistakes of the past that have made public safety communications systems complex and costly. The location of the D block next to the 10 MHz of spectrum previously designated for public safety offers a unique opportunity to ensure first responders not only have access to sufficient spectrum, but also to gain efficiencies of scale and reduce the costs of such systems that must be maintained by taxpayers over time.

We urge you to take action to stop the auction and support reallocation of the D block to ensure this one time opportunity to develop a nationwide interoperable network for public safety is not lost.

Sincerely,



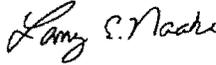
Raymond C. Scheppach, Executive Director
National Governors Association



William Pound, Executive Director
National Conference of State Legislatures



David Adkins, Executive Director
The Council of State Governments



Larry E. Naake
Executive Director, National Association of
Counties



Donald J. Borut, Executive Director
National League of Cities



Tom Cochran
CEO and Executive Director
United States Conference of Mayors



Robert J. O'Neill, Executive Director
International City/County Management Association



James H. Douglas
Governor of Vermont
Chair

Joe Manchin III
Governor of West Virginia
Vice Chair

Raymond C. Schuppach
Executive Director

April 9, 2010

The Honorable Julius Genachowski
Chairman
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Dear Chairman Genachowski:

On behalf of the nation's governors and first responders, we request that the Federal Communications Commission's recommendation in the National Broadband Plan be amended so that the 700 MHz D block is reallocated to public safety. This is the best way to ensure that a nationwide broadband network will meet the mission critical needs of our public safety community.

Allowing first responders roaming and priority access on other 700 MHz commercial broadband networks for a fee is not sufficient because it adds cost and complexity to their communications. In addition, much of this other spectrum is not suitable for use by first responders because devices that utilize the entire 700 MHz band do not currently exist. Removing the D block as the designated spectrum for public safety officials does not adequately meet public safety needs.

Our nation's first responders deserve the most modern and reliable communications capabilities available. The reallocation of the D block to public safety offers the best opportunity to provide these capabilities while still balancing commercial interests.

Sincerely,

Governor Martin O'Malley
Co-Chair, Special Committee on Homeland Security
and Public Safety

Governor Tim Pawlenty
Co-Chair, Special Committee on Homeland Security
and Public Safety

cc: The Honorable Michael J. Copps, Commissioner, Federal Communications Commission
The Honorable Robert M. McDowell, Commissioner, Federal Communications Commission
The Honorable Mignon Clyburn, Commissioner, Federal Communications Commission
The Honorable Meredith Atwell Baker, Commissioner, Federal Communications Commission



Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

FCC White Paper

*The Public Safety Nationwide
Interoperable Broadband Network:
A New Model for Capacity,
Performance and Cost*

June 2010

The Public Safety Nationwide Interoperable Broadband Network:
A New Model for Capacity, Performance and Cost

The Federal Communications Commission (“FCC”) has performed a technical analysis of the capacity and performance of the public safety broadband network assuming that the National Broadband Plan recommendations concerning this network are implemented. This analysis includes examining different emergency situations based on actual experiences and as submitted in the record of the National Broadband Plan. This analysis shows:

1. The 10 megahertz of dedicated spectrum allocated to public safety in the 700 MHz band for broadband communications provides more than the required capacity for day to day communications and for each of the serious emergency scenarios set forth below.
2. For the worst emergencies for which public safety must prepare, even access to another 10 megahertz of spectrum would be insufficient. Accordingly, priority access and roaming on the 700 MHz commercial networks is critical to providing adequate capacity in these extreme situations. Moreover, priority roaming is a cost-effective way to improve the resilience of public safety communications, along with its capacity, in a way that a single network cannot provide.
3. The capacity and efficiency of a public safety broadband network will far exceed the expectations of someone who has only experienced narrowband land mobile radio (LMR). This is because of the system architecture, density of cell sites, the density of cell sectors per site, network and spectrum management, and the use of new and emerging technologies,
4. Public safety can make more capacity available when and where it is needed by using all of its spectrum resources appropriately and effectively, no matter how much spectrum is available (*e.g.*, use the 700 MHz band for mobile devices and other frequency bands for fixed devices).

Jon M. Peha, PhD¹
Chief Technologist

¹ The authors of this paper are Jon M. Peha, Walter Johnston, Pat Amodio and Tom Peters.

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I. Introduction

In March 2010, the FCC released the National Broadband Plan (NBP), which makes significant recommendations for improving access to broadband communications across America. A critical issue the NBP addressed was how to ensure the availability of broadband communications for public safety and emergency response on a cost-effective and technically feasible basis. For many years this issue has gone unresolved; today the goals of mission critical broadband networks for public safety use and nationwide interoperability for public safety communications have not yet been achieved.

The NBP proposes a cost-effective and technically viable strategy for the creation and deployment of a nationwide interoperable public safety broadband wireless network for first responders and other public safety personnel. The recommendations in the NBP comprise a comprehensive plan to provide the public safety community with the capacity, performance, nationwide coverage, interoperability, technological growth and affordability required for reliable, nationwide, interoperable broadband communications.

The cornerstone of the NBP's public safety recommendations is the utilization of 10 megahertz of dedicated 700 MHz spectrum, currently designated by Congress for public safety use. In order to exploit this asset, the NBP recommends that this spectrum be utilized by public safety agencies through the creation of incentive-based partnerships with commercial entities, such as 700 MHz broadband service providers, to construct the public safety broadband network in a cost-efficient manner by leveraging commercial technologies and infrastructure, with the support of public funding. The NBP also recognizes the importance of commercial use of the D block because it shares the same LTE band class as the public safety broadband spectrum. As the D block is developed and deployed for commercial use, public safety will be able to leverage the commercial economies of scale associated with that band in its own frequency allocation, something the other 700 MHz bands do not offer as affordably.

While 10 megahertz of dedicated spectrum will support the core of the public safety broadband network, the NBP also recognizes that it is critical that the public safety community have access to additional capacity in the worst emergencies. Accordingly, the NBP recommends that the FCC adopt rules to ensure that public safety users are able to roam and obtain priority access on commercial broadband wireless networks— across the 700 MHz band commercial spectrum. The NBP also envisions that coverage and capacity of the public safety broadband network will be supplemented through in-building systems and through provision of deployable cell sites and vehicular relays.

This paper provides the FCC's analysis of why the NBP recommendations will provide public safety users across the country with required broadband wireless network capacity and performance, both on a day-to-day basis and during emergencies, while ensuring that the approach is cost-effective and technically feasible.²

² In a separate paper, the Omnibus Broadband Initiative explained in detail the NBP's cost model for the nationwide public safety broadband network. *See* Omnibus Broadband Initiative, A Broadband Network

II. Why the Plan Meets Public Safety Capacity Requirements: Baseline Capacity

In accordance with the Budget Act of 1997, FCC rules allocate 24 megahertz of dedicated spectrum to public safety in the 700 MHz band, bringing public safety's total spectrum allocation to 97 megahertz. This 24 MHz allocation makes public safety among the largest holders of spectrum in the 700 MHz band. The FCC designated 10 megahertz of this 24 megahertz for broadband use.³ Even if one only considers this 10 megahertz of spectrum allocated for broadband use, public safety would have 200 thousand users per megahertz.⁴ This is considerably fewer users than the estimated number of users that commercial broadband providers will support in an equivalent amount of similar spectrum. Accordingly, 10 megahertz of spectrum is a relatively large allocation for public safety's routine communications traffic. Furthermore, our analysis demonstrates that 10 megahertz of spectrum will provide significant capacity for the public safety broadband network on a day to day and emergency basis.

Public safety has a total of 97 MHz of spectrum allocated for use across the RF spectrum with 60 MHz of that total available for broadband use. Overall, the allocation of spectrum per user for public safety is now 25 times that of commercial providers.

Providing an additional 10 megahertz of spectrum to public safety would not guarantee public safety sufficient capacity for the worst emergencies. Priority access and roaming onto commercial bands can provide public safety with far more capacity during periods of greatest need. Further, reallocation of the D block would result in several severe detriments, including:

- The cost of the network and the associated mobile devices could increase significantly. The benefits associated with sharing an LTE band class (Band Class 14) with the commercial D block licensee would evaporate. Equipment vendors would not be able to rely on the broader commercial LTE market in Band Class 14. Accordingly, equipment costs could be much higher than estimated.

Cost Model: A Basis for Public Funding Essential to Bringing Nationwide Interoperable Communications to First Responders (rel. Apr. 2010) (*Cost Model Paper*), available at <http://www.fcc.gov/pshs/docs/ps-bb-cost-model.pdf> (last visited May 10, 2010).

³ In the 1997 Budget Act, Congress specifically determined that public safety would be provided with 24 megahertz of spectrum from the 108 megahertz of spectrum recovered from the DTV transition and the remainder of the spectrum was to be auctioned. Of this 24 megahertz, 12 megahertz has been designated for dedicated voice systems using traditional trunked technology and 2 megahertz is used as an internal guard band.

⁴ 170 megahertz: This includes the cellular and PCS bands; 547 megahertz: This includes the 700 MHz (formerly TV), AWS1, and EBS/BRS bands, a substantial portion of which is not currently in use; Public Safety: According to the Bureau of Labor Statistics, U.S. Department of Labor, there are 1.1 million police, fire and EMS professionals. This number excludes some first responders, such as volunteer firefighters. For this analysis, we assume 2 million public safety users. 97 megahertz: This includes the 700 MHz (formerly TV) and 4.9 GHz bands, a substantial portion of which is not currently in use.

- Technological evolution might be slowed. Without a Band Class 14 commercial partner, vendors may have less incentive to advance the technology envelope in this band class without significant cost imposed on public safety.
- In most cases, this spectrum would be severely underutilized.

A. Network Capacity Drivers

Many people equate capacity with spectrum. While spectrum is one of the resources being utilized, the amount of spectrum available to a network alone is not a meaningful measure of network performance and capacity. Network capacity and performance are dramatically improved through many factors in addition to the amount of spectrum. These factors include the type of architecture employed, the number of cell sites in operation, the number of sectors per cell, sound network and spectrum management, and the specific technology that the network utilizes. Accordingly, in order to analyze the capacity and performance of any given network, a multitude of factors must be evaluated in relation to one another. Relying solely on the amount of spectrum available to a network is a flawed way to evaluate the capacity of a network, and doing so could lead to seriously flawed and expensive decisions.

A significant driver of cellular network capacity is available infrastructure to support the network. In a cellular architecture, as recommended in the NBP, spectrum can be reused most efficiently, yielding greater network capacity, when a network utilizes an increased number of cell sites for a given geographic area because this technique enables greater spectrum reuse with minimal interference. To first approximation, the total capacity that a cellular architecture can provide to a given region can be described by the following equation.

$$\text{Total capacity} = \frac{(\# \text{ of sites}) * (\# \text{ of sectors per site}) * (\text{Capacity/MHz}) * (\# \text{ of MHz of spectrum})}{\text{Frequency Reuse Factor}}$$

Accordingly, two networks with the same amount of spectrum covering the same geographic area can have widely disparate capacity just by changing the number of cell sites available for network use in the relevant service area. It is for this reason that sound network engineering principles have dictated that commercial networks generally are built out using a dense number of cell sites. This enables these networks to be operated in a spectrally efficient manner by leveraging additional infrastructure, as opposed to spectrum, and to utilize a cost-effective means to increase network capacity.

Cellular networks also increase capacity through the deployment of spectrally-efficient advanced technologies. As commercial wireless carriers migrate to 4G standards such as LTE, it is estimated that the networks using this technology will provide more capacity (Mb/s) per megahertz of spectrum in any given cell than earlier technologies. As in the past, commercial cellular networks experience significant improvements in capacity per megahertz as technology advances, and further improvements are expected with LTE. In addition, advances in compression technology, particularly for video, means that new technologies hold the promise that the same piece of information (*e.g.* a video stream)

can be carried using less capacity. The commercial marketplace has benefited greatly from such developments as new technologies are introduced.

In contrast, if technology is developed exclusively for a much smaller market, such as public safety, the pace of improvements is likely to be slower. This is one of many reasons that the NBP recommends an approach for public safety broadband communications that leverages the advantage of technologies and standards that are gaining commercial use whenever they are suitable for public safety purposes, including the use of LTE technology for the radio access network. This is also why the NBP recommends the commercial auction of the D block, to ensure a potential partner in the same LTE Band Class as public safety. This approach provides public safety with access to commercial technologies that have generally been shown to advance more quickly to increase spectral and other operating, as well as cost, efficiencies.

Another way to increase capacity is to provide supplemental infrastructure to expand available capacity. There are unique strategies for increasing capacity within buildings, where a substantial amount of cellular network traffic originates. Additional infrastructure, such as distributed antenna systems (DAS) and pico cells, can be installed inside buildings to improve coverage and offload traffic from external cell towers. These approaches decrease strains on the available cell site infrastructure. The NBP recommends that building codes be changed or enacted to enable greater use of these technologies and that FCC rules be developed that enable and facilitate their use. Further, additional outreach by the federal, state and local governments to building and facility owners can assist in ensuring that this technology is widely pervasive as 4G networks are deployed.

Capacity can be further expanded by utilizing deployable communications systems, such as next generation cell sites on wheels (a.k.a. "COWs" or "COLTs"⁵) and vehicular relays, as is frequently done with today's wireless technologies during disasters and major incidents or events. The NBP recommends deployment of these technologies for public safety broadband use, through a program that would help fund caches of equipment throughout the country that can be rapidly deployed to the site of any major disaster.

Further, sound spectrum management must also be considered. For example, to meet day-to-day fixed needs for applications like video monitoring, the public safety community should rely on other transmission technologies, such as fixed wireline and fixed wireless technologies, which will enable public safety to preserve its 700 MHz capacity for mobile broadband communications. By ensuring that the overall public safety communications network leverages all existing resources most suited to the intended purpose, public safety can have access to the most robust and reliable communications network possible, on a cost-effective basis.

⁵ "COW" and "COLT" are common industry terms for Cell On Wheels and Cell On Light Truck.

In addition, as discussed, supra, utilizing the communications networks of other network operators is another way to increase network capacity and provide a capability backstop to public safety. There may be times that 10, 20 or even 30 megahertz of capacity, even with sound network design and management principles might be insufficient to support demands during a major incident. In these cases, it is critical that public safety have access to additional broadband wireless networks, such as those operated by commercial network operators. Guaranteeing access to these networks will enable the public safety community to have access to substantially more capacity than a dedicated network can provide without vastly more dedicated spectrum than is under consideration. Roaming with priority access will also provide increased reliability and resiliency, especially if any roaming partner utilizes different cell tower sites for all or some of its network.

In conclusion, the amount of spectrum is only one of several interrelated factors in determining capacity and is influenced by other factors, such as increasing the number of sites, maximizing the sectors per site and using advanced technologies to achieve greater capacity per megahertz. As long as sound network management is adhered to, including the provision of adequate funding to construct sufficient cell sites in the network area, the deployment of cutting-edge technology in each cell site, and the use of supplemental tools to increase capacity, network capacity for public safety communications will be significant in 10 megahertz of dedicated capacity. As this paper will show, our analysis demonstrates that by deploying sufficient infrastructure and using sound spectrum management principles, the 10 megahertz of dedicated public safety spectrum can meet public safety capacity and performance requirements in circumstances that range from routine day to day use to serious emergencies.

B. Public Safety Communications Today

Unless we are able to get past the mindset that network capacity is synonymous with spectrum, it would be natural to expect that the capacity from this 10 megahertz block at 700 MHz will be comparable to what public safety has experienced in the past. This is not the case. The public safety LMR networks in use today consume a large amount of spectrum per user.⁶ This occurs in part because of legacy network design and technical considerations: public safety networks utilize radio systems with a relatively small number of high site towers and very sensitive radios. This technology and design greatly increases the amount of spectrum needed per user when compared to cellular architectures, which are used for today's commercial communications networks. Further, unlike cellular commercial systems, public safety communications have generally been locally operated which necessarily results in spectrally inefficient overlapping, independent networks. The NBP recommends that the public safety broadband network utilize a cellular architecture with LTE technology⁷ and be deployed in a coherent

⁶ Not including spectrum allocations in the 4.9 GHz and 700 MHz bands, over 23 megahertz of spectrum have been allocated for public safety use. Public safety LMR networks use frequencies in the 25-50 MHz, 150-174 MHz, 220-222 MHz, 450-470 MHz and 806-824/851-869 MHz bands. In some metropolitan areas public safety also uses frequencies in the UHF T-Band (470-512 MHz).

⁷ The Public Safety and Homeland Security Bureau (Bureau) sought comment on the Public Safety Spectrum Trust's (PSST) filing and the National Public Safety Telecommunications Council's Broadband

manner throughout larger non-overlapping geographies. This should result in dramatic increases in spectrum and cost efficiencies, while handling heavier traffic demands than currently exist.

Due to the spectrum efficiency of modern digital technologies and the movement towards larger network operation areas, analysis of the required capacity for the public safety broadband network must not rely on assumptions based on today's technology and LMR network designs. A coherent, nationwide public safety broadband network with a modern cellular architecture and the same 4G technology that is used commercially (LTE) will offer public safety users far more capacity on 10 megahertz of spectrum than would be the case if a traditional LMR-type network were deployed. For example, a recent study of public safety communications in the greater Los Angeles area showed that a shift from today's LMR technology to even a pre-LTE cellular technology could increase capacity per megahertz by a factor of 16. In other words, the study demonstrated that 10 megahertz of capacity on a cellular network would be the equivalent of 160 megahertz on an LMR-type network.⁸

It would be a mistake to design a network based upon the public safety's past experience in using spectrum. Public safety agencies do not have significant incentives to use spectrum efficiently, because, unlike commercial entities, public safety agencies in America do not pay for spectrum. Accordingly, using spectrum inefficiently is not a cost. However, constructing adequate infrastructure is a cost even when that cost would result in improved communications and reduced costs over the long term. Nevertheless, both spectrum and infrastructure are costly. Spectrum is a scarce public resource and receives a high price at auction for its exclusive use, because it is highly valued resource, especially in the bands below 3 GHz.⁹ On the other hand, it can be expensive to acquire, engineer, build and operate additional cell sites (although establishing new cell sites on existing towers, as recommended in the NBP, can decrease these costs significantly). In general, cellular networks achieve sufficient capacity for their users by balancing the costs of acquiring spectrum with the costs of adding sites—not by minimizing one cost without serious consideration of the other.¹⁰

Task Force (NPSTC BBTF) recommendations. *See* Comment Sought on NPSTC Broadband Task Force and Public Safety Spectrum Trust Technical Recommendations for 700 MHz Public Safety Broadband Deployments, PS Docket. 06-229, *Public Notice*, DA 10-458 (rel. Mar. 17, 2010) (*NPSTC PN*). Commenters were generally supportive of the technical recommendations of the NPSTC BBTF, including the mandatory use of Long Term Evolution (LTE) as an air interface, while recognizing that this standard is not yet fully developed. *See, e.g.*, Motorola NPSTC PN Comments at 1-2; IP Wireless NPSTC PN Comments at 1; Harris Corp. NPSTC PN Comments at 3.

⁸ J.M. Peha, "How America's Fragmented Approach to Public Safety Wastes Money and Spectrum," *Telecommunications Policy*, Vol. 31, No. 10-11, 2007, p. 605-618.

⁹ At Auction 73 in 2008, for example, winning bids for the 700 MHz A, B, C and E blocks totaled approximately \$19 billion. *See* Federal Communications Commission, Auction – Auction 73, http://wireless.fcc.gov/auctions/default.htm?job=auction_summary&id=73.

¹⁰ In recognition that cell sites have significant capital costs associated with them, the NBP recommends public funding, based on a cost-effective incentive-based partnership approach, to ensure there are an adequate number of sites available for the nationwide public safety broadband network, whether in rural or urban parts of the country.

The NBP recommendations for the public safety broadband network include the deployment of 44 thousand sites nationwide,¹¹ and a cost effective approach for funding this network in a manner that enables an efficient use of the 10 megahertz of dedicated public safety spectrum to meet important public safety requirements. This would give the public safety network at 700 MHz a site density comparable to commercial providers, and a total site count greater than all but two of these providers, even though the commercial providers typically serve user densities that are greater by an order of magnitude or more. In addition to providing significant aggregate capacity, this high site density is necessary because public safety requires a level of signal reliability (i.e., the ability to get a strong signal when needed) that is more stringent than users of commercial systems demand. Regardless of the amount of capacity needed or the amount of spectrum available, high signal reliability requires a high cell site density.

To compensate for limitations in public safety narrowband communications systems in terms of capacity, public safety has been allocated significant amounts of spectrum. Even if we examine only the spectrum allocated to public safety use and commercial use before 2002, we find that public safety has been allocated more than 20 times as much spectrum per user as commercial providers. In recent years, allocations to both public safety and commercial providers have been greatly increased, including spectrum at 700 MHz (although not all of this spectrum is currently being utilized). Public safety has a total of 97 MHz allocated for its use across the RF spectrum with 60 MHz of spectrum which can be used for broadband. Using 2010 data, the allocation of spectrum per user for public safety is now 25 times that of commercial providers.

Cellular architecture, advanced technology, and the accompanying funding to deploy it mean that a more spectrally- and cost-efficient approach can be taken, and this huge gap in spectral efficiency can be reduced. Instead, public safety, using current technologies, larger geographic service areas, sufficient infrastructure, and sound spectrum management principles, should be able to operate more efficiently and support increased traffic demands within less spectrum than previously experienced. Further, because of the use of commercial technologies, public safety communications no longer has to operate in a silo. Instead, public safety can access additional networks for spikes in capacity demands, such as during particularly large emergencies.

¹¹ See *Cost Model Paper*.

III. How the Plan Meets Public Safety Capacity Needs; Capability Back-stop

As discussed above, capacity depends on factors such as architecture, technology, and the number of sites, as well as amount of spectrum. Under NBP recommendations, public safety would have architecture, technology, and a number of sites comparable to leading commercial providers. Moreover, by commercial standards, 10 megahertz would be a large allocation to serve this number of users. For example, even if we completely disregard the 87 megahertz of spectrum public safety has outside this band, and we include spectrum recently allocated to commercial providers that is not yet in use, commercial providers would serve 2.7 times as many users per megahertz as public safety. (If we exclude commercial allocations made since 2006, because infrastructure has not yet been fully deployed in many of these bands, commercial providers would serve 8.5 times as many users per megahertz.) Commercial providers would need their current allocation and 900 megahertz of new spectrum before the amounts of spectrum per user were the same. Thus, if the routine needs of public safety users are comparable to, or twice as great as, those of commercial users, this combination of infrastructure build-out and spectrum would meet those needs.¹²

Nevertheless, for public safety communications, we must look beyond routine communications use to ensure that there is sufficient capacity available when major emergencies occur. As shown in the Appendix, our analysis demonstrates that 10 megahertz of dedicated spectrum will likely provide a significant amount of capacity and the required performance when used with 4G technology and sufficient infrastructure. The Appendix presents a series of specific scenarios: a “dirty bomb” attack at Manhattan’s Penn Station,¹³ a projected 12 year growth model for routine use of broadband services in New York City, a bridge collapse in Minneapolis, and a hurricane in Houston. This analysis determines that a system deployed in 10 megahertz of spectrum with the number of sites proposed in the FCC Cost Model¹⁴ would have sufficient capacity for estimated broadband communications in each of these scenarios.

As these scenarios demonstrate, and as supported by the record and past public safety broadband experience, the most demanding application with respect to capacity is likely to be high-data-rate applications such as mobile video. In order to support the potential

¹² This is consistent with the 2008 FNPRM which concluded that all communications for public safety could be supported within these 10 megahertz except under unusual circumstances. Under the rules proposed, public safety could supplement its 10 megahertz by accessing a limited portion of the D block if and only if the President or a state governor declares a state of emergency, the President or a state governor issues an evacuation order impacting areas of significant scope, the national or airline sector threat level is set to red, the National Weather Service issues a hurricane or flood warning likely to impact a significant area, other major natural disasters occur, such as tornado strikes, tsunamis, earthquakes, or pandemics, manmade disasters or acts of terrorism of a substantial nature occur, power outages of significant duration and scope occur, or the national threat level is set to orange.

¹³ See City of New York Ex Parte Filing, PS Docket No. 06-229, 700 MHz Public Safety Broadband Applications and Requirements at 34-40 (Feb. 23, 2010) (*New York City Paper*).

¹⁴ See *Cost Model Paper*.

for video demands during times of emergency, it is important to look first at sound spectrum management policies that ensure that capacity is properly allocated among users and available networks and technologies. Second, for the rare times when additional capacity is actually needed, such as when the public safety network is not available, the NBP recommends that public safety have roaming and priority access on commercial wireless broadband networks. This will provide a safeguard to ensure that public safety has access to multiple, redundant networks with significant additional capacity when it is needed. Further, the public safety community can enter into additional spectrum sharing arrangements with other commercial partners. In these scenarios, it is likely that in extreme emergencies with heavy video or other high-bandwidth requirements, far more capacity will be required.

A. Ensuring Capacity During Huge Demands or When the Network is Unavailable

Public safety communications capacity demands are generally modest (though support critical communications requirements), with occasional spikes during emergencies.¹⁵ Public safety must have adequate capacity to accommodate large capacity requirement spikes if and when they do occur. However, allocating dedicated resources to public safety to support the largest spike imaginable would leave a great deal of capacity unused between spikes. It is impossible to anticipate the timing of spikes. Reserving dedicated spectrum for these extreme emergencies would be grossly inefficient and waste two scarce resources: money and spectrum.

Further, even with 20 megahertz of spectrum, it is extremely unlikely that in the most video-dependent or most high-bandwidth response situations that public safety would have adequate capacity. The most cost-effective and spectrally efficient way to meet the emergency communications needs of the public safety community is through providing adequate infrastructure and spectrum sharing – ensuring a backstop capability for times when the public safety network is unavailable or there is a huge surge in demand. This

¹⁵ For example, as was observed based on usage data from Denver's public safety communications systems, "[m]odern public safety wireless communications systems are generally designed for the worst-case scenario: a large-scale event which requires communication between large numbers of first responders, potentially from diverse agencies. . . . Most of the time, these systems operate at the low end of their designed-for capacity." Joshua Marsh, "Secondary Markets in Non-Federal Public Safety Spectrum," *Telecommunications Policy Research Conference* (2004). In addition, at its peak, the Minneapolis system handled over two times the number of calls during the I-35W bridge collapse that it would typically expect. During the busy-hour of September 17, 2008, the Harris County Regional Radio System handled almost twice as many PTTs than it would handle on a typical day. See Federal Communications Commission, Emergency Communications during the Minneapolis Bridge Disaster: A Technical Case Study of the Federal Communications Commission's Public Safety and Homeland Security Bureau's Communications Systems Analysis Division at 16-17 (2008) (*Minneapolis Bridge Case Study*), available at <http://www.fcc.gov/pshs/docs/clearinghouse/references/minneapolis-bridge-report.pdf>; see also Federal Communications Commission, Emergency Communications During Hurricane Ike: Harris County Regional Radio System: A Technical Case Study by the Federal Communications Commission's Public Safety and Homeland Security Bureau's Communications Systems Analysis Division at 12-13 (2009) (*Hurricane Ike Case Study*), available at <http://www.fcc.gov/pshs/docs/clearinghouse/case-studies/Hurricane-Ike-Harris%20County-120109.pdf>.

can be best achieved through the implementation of the NBP's recommended priority access and roaming regime.¹⁶ The FCC has plans to begin a rulemaking that will result in the implementation of this priority access and roaming regime in the near term.

LTE technology is particularly promising with regard to priority access and roaming. As part of its current standard it allows network operators to assign different priority levels to different users or services, such that low-priority users have restricted use of network resources. Moreover, with IP (Internet Protocol) and LTE technology, it is possible to prioritize traffic in a way by which capacity is transferred to the highest and best use. Such prioritization schemes have been used successfully in military systems. The LTE standard is bringing these capabilities to wireless cellular systems.

B. Possible Future Capacity Expansions

In analyzing network capacity, it is also important to ensure that there is room for expansion and growth. Generally, a simple way to increase capacity is to increase the number of cell sites in a network. This can be done at a relatively low cost by exploiting commercial and other existing infrastructure wherever it is appropriate.¹⁷ Accordingly, by using a constant amount of spectrum and expanding infrastructure deployment, network capacity can be increased.

Furthermore, LTE is at an early stage of technology development, and it will continue to progress. The NBP recommendation to leverage this commercial technology provides an opportunity for public safety communications to benefit from commercial technology advances, including increases in spectrum efficiency. Commercial operators are constantly upgrading their network capabilities to take advantage of greater spectrum and operational efficiencies. The NBP's incentive-based partnership applies this approach to the public safety broadband network.

C. Efficient Use of Public Safety Spectrum

Finally, public safety users can ensure adequate capacity through good stewardship of the broadband spectrum that is allocated to them. The 700 MHz public safety broadband spectrum has excellent propagation characteristics for mobile wireless broadband services and the public safety community should manage it as efficiently as possible. This includes ensuring that the public safety broadband spectrum is used for its best use: mobile use. Public safety should look to utilize fixed wireline and fixed wireless systems for some applications that are better supported by these technologies. A good example of this is video surveillance. For example, in addition to its allocations under 1 GHz, public safety has exclusive use of 50 megahertz of the 4.9 GHz band on a flexible basis which is well-suited for fixed uses, such as video surveillance.

¹⁶ This commercial spectrum would be used for commercial purposes when not required for public safety use.

¹⁷ See *Cost Model Paper*.

Governance procedures are also an important component of sound spectrum management practices. For example, public safety needs to prioritize particular applications among incident commanders. This is an area on which the Emergency Response Interoperability Center (ERIC) and its federal partners can work with the public safety community. It is particularly important that public safety has access to capacity across its network; whether its dedicated 10 megahertz of public safety broadband capacity or the capacity of its roaming partners, in a manner that best supports the public safety community's needs at any one time.

D. The Role of Video and Future Bandwidth Intensive Applications

As previously discussed, mobile video is an example of one bandwidth-intensive application where capacity constraints may be experienced no matter the total amount (e.g., 10, 20 or even 25 megahertz) of dedicated spectrum available to public safety for broadband communications. First, no matter how much capacity public safety has available to it, public safety network engineers must consider the appropriate data rate for mobile video. Not only must there be sufficient aggregate capacity to support all of the video devices in operation, but the system must be designed such that a single video device can operate even when it is at the edge of a cell. The data rate and performance available to a device in a cellular broadband network is a function of how far it is from a transmission tower. This is particularly important for video uplinks. The received power levels from an end-user device, not the amount of spectrum, are the limiting factor that determines the maximum video uplink data rate. A network that must be capable of supporting a video device or other device that supports a high-data-rate application must therefore have smaller cell radii, even if very few such devices will be used. Since smaller cells means more cells for a given area, requiring a network to support higher-data-rate video increases costs.

Leading organizations representing public safety, represented by the National Public Safety Telecommunications Council (NPSTC), have stated that a system that supports 256 kb/s per video device throughout the coverage area, including edge of cell, is sufficient for public safety in urban areas (and lower data rates are acceptable in suburban and rural areas).¹⁸ This does not limit fixed devices located near a transmit tower, but typical mobile hand-held video devices must be capable of operating at 256 kb/s or less. The Department of Homeland Security's SAFECOM Program has stated that the preferred data rate for video depends on its use and purpose. 256 kb/s is acceptable for tactical and live surveillance of large targets, but for small targets, 512 kb/s may be needed.¹⁹ Under these recommendations, average video rates would fall somewhere between 256 and 512 kb/s. A great deal of tactical capability – currently unavailable to public safety users – can be made available through a mobile network that supports these data rates.

¹⁸ See National Public Safety Telecommunications Council, Public Safety 700 MHz Broadband Statement of Requirements at 39 (2007).

¹⁹ See Department of Homeland Security, SAFECOM Program, Public Safety Statement of Requirements for Communications & Interoperability Volume I (2006) and Volume II (2008).

However, a few vendors of high-data-rate video equipment have argued that the public safety broadband network must support 1.2 Mb/s or even 3.5 Mb/s for each video device, which is enough to carry standard-definition television (SDTV) and high-definition television (HDTV), respectively. While, of course, any public policy must strive to maximize public safety's tactical capabilities, the policy must also be grounded in practical assumptions. Because of the uplink power limitations of video devices, high speed uplink from the cell edge can only be supported at a limited distance from the cell site. Hence, video uplink speeds of greater than 1 Mbps from the cell edge, as suggested by a few vendors, will require vastly more cell sites than would otherwise be necessary. This cell limitation is independent of the amount of spectrum. Consider the cost of a coverage-limited network that can support a single 1.2 Mb/s device at the edge of a cell and that is otherwise built to the same standards as recommended in the NBP.²⁰ A coverage-limited network requires fewer cell sites than capacity-limited networks, and therefore costs less, so we can use this coverage-limited network to get a reasonable lower bound on the cost of a network that can support 1.2 Mb/s. We estimate that a coverage-limited network supporting 1.2 Mb/s would require 2.85 times as many cell sites, and both capital expenditures (CAPEX) to construct the network and operating expenditures (OPEX) to operate, maintain and upgrade the network are roughly proportional to the number of cell sites. Thus, by increasing the required data-rate-per-device to 1.2 Mb/s, a nationwide network that would have cost only \$14 billion would instead cost \$40 billion.

Of course, increasing the number of cell sites nationwide by a factor of 2.85 to support a single 1.2 Mb/s stream at edge of cell would have the effect of dramatically increasing aggregate capacity. This unavoidable expansion in aggregate capacity means a much larger number of video streams can be supported, without increasing the spectrum allocation beyond 10 megahertz. Indeed, a system operating in 10 megahertz of spectrum and designed to support 1.2 Mb/s video devices by deploying 2.85 times more sites than was proposed in the NBP would have more aggregate capacity than a system operating in 20 megahertz that has the amount of infrastructure proposed in the NBP.²¹

As noted above, we are not denying the value of mobile video capability to public safety. Indeed, we recognize that use of mobile video is likely to be a key tactical capability provided by the public safety broadband network. However, we emphasize that a significant degree of capability can be provided at bitrates that are much more reasonable from a cost-benefit standpoint over a mobile 700 megahertz system. To the extent that

²⁰ See *Cost Model Paper*.

²¹ There is one way to overcome the problems highlighted above and provide much higher data rates for video anywhere in a cell: one can use higher-gain antennas than is typical for commercial handsets, and perhaps higher-power transmitters. Users of commercial cell phones typically prefer smaller form factors rather than superior antennas, but this is presumably not an issue for a public safety command center. In effect, a device with a high-gain antenna at the edge of the cell can communicate as if it were much closer to the center of the cell. While this technology makes it possible to transmit at higher rate, it also reduces the effective consumption of network capacity, so high-data-rate video provided in this way does not create a problem for the network operating at 700 MHz.

public safety agencies require high-definition, full frame video capabilities, some of these services are more cost effectively accommodated using other spectrum.²²

E. The Effect of Interference

Adjacent cell interference can also impact the capacity of a wireless network. In the past, there have been instances in which public safety's LMR networks experienced levels of interference from commercial operations in adjacent spectrum that created problems for public safety users.²³ However, the use of advanced RF engineering techniques in combination with LTE technology can greatly reduce potential interference problems.

A nationwide broadband LTE cellular network based is far less likely than LMR networks to be susceptible to interference may potentially to reduce capacity. Cellular broadband networks are generally interference limited rather than noise limited, so they can tolerate more interference than LMR. Indeed, today's broadband cellular networks are designed to operate at an interference threshold so high that adjacent cells can reuse the same frequencies without causing harmful interference.

Moreover, while significant differences in cell site density also can increase the probability of near-far problems, site density will be more similar for two cellular networks using comparable technology (*e.g.*, LTE) than for a cellular network and LMR system. Furthermore, the number of public safety cell sites recommended in the NBP is roughly consistent with the number of sites currently operated by commercial nationwide wireless providers using spectrum comparable to the 700 MHz band. Thus, if these recommendations are realized and sufficient cell sites are deployed, the anticipated site density of the broadband public safety network will be very similar to that of a 700 MHz commercial network, substantially reducing the risk of near-far problems.

²² We note, for example, that commercial broadcasters utilize higher frequency spectrum for mobile Electronic News Gathering operations, which involve different network topologies optimized for high data rate video feeds suitable for HDTV broadcast.

²³ One important reason that adjacent channel interference can more easily become harmful to LMR systems is that LMR systems are noise limited, meaning that radios must operate well even when they receive very weak signal levels. In contrast to LMR networks, commercial cellular networks are designed to operate despite significant interference. Accordingly, LMR-based networks are inherently more vulnerable to interference, including adjacent-channel interference, than commercial networks.

The problem is compounded by differences in the number of cell sites deployed in a given region. The site density of commercial wireless networks is typically much higher than that of public safety LMR networks, as discussed *infra*. Thus, it is common for an LMR public safety radio to be far from an LMR cell site, receiving a weak signal that is close to the noise floor and close to a commercial cell site that is transmitting in adjacent spectrum. In this case, interference in the public safety spectrum allocation may be raised in the area directly around the commercial cell site, due to a) the presence of high levels of radiated power in out-of-band emissions; and/or b) intermodulation products that fall within the public safety channel; and/or c) in-band emissions that are too strong to be adequately filtered out by the public safety receiver. Thus, a commercial site using adjacent spectrum can create a coverage hole for LMR radios. This is called a "near-far" interference scenario. The larger the difference in site density between the commercial network and the adjacent public safety network, the greater the probability that this form of harmful interference will occur.

As public safety leverages commercial infrastructure and commercial broadband technology, and a sufficient number of sites, near-far issues for public safety will be essentially the same as near-far issues for commercial networks. This means that commercial standards for interference between networks operating in adjacent spectrum will apply to public safety. For example, 3GPP specifications for LTE assume that two adjacent channel LTE networks operated by different wireless providers (i.e., in which sites are not necessarily co-located) would not require an additional guard band, assuming they are each deployed using similar site densities.²⁴ As a result, spectrum allocations for LTE around the world (e.g., digital dividend allocations in the United Kingdom²⁵ and Germany²⁶) do not include guard bands between adjacent operators.

III. Cost as a Driver for Network Capability

In addition to providing sufficient capacity, the NBP recommendations are designed to provide public safety nationwide interoperable broadband communications in a cost-effective manner. One important way to reduce cost is to maximize the use of commercial technology. If public safety uses commercial-scale components in its devices, they will benefit from commercial economies of scale. This is achieved in part by requiring the D Block licensee, and perhaps other 700 MHz licensees, to offer some devices that are also capable of operating in the public safety band. However, if there is no D Block commercial operator, then there will be no ecosystem of D Block commercial devices. In this situation, the market for Band Class 14 LTE devices, *i.e.* the devices that use either the D Block or PS broadband spectrum, would be far smaller and the costs of public safety devices would be far larger. This same phenomenon would negatively impact the radio access network equipment market. Without one or more commercial operators utilizing equipment that can operate in Band Class 14, it is likely that public safety will not be able to benefit from the commercial economies of scale that are available in the rest of the 700 MHz band.

²⁴ Section 5.7.1 of the 3GPP standards on channel spacing provides:

The spacing between carriers will depend on the deployment scenario, the size of the frequency block available and the channel bandwidths. The nominal channel spacing between two adjacent E-UTRA carriers is defined as following:

$$\text{Nominal Channel spacing} = (\text{BW}_{\text{Channel}(1)} + \text{BW}_{\text{Channel}(2)})/2$$

where $\text{BW}_{\text{Channel}(1)}$ and $\text{BW}_{\text{Channel}(2)}$ are the channel bandwidths of the two respective E-UTRA carriers. The channel spacing can be adjusted to optimize performance in a particular deployment scenario.

²⁵ See <http://www.bis.gov.uk/assets/biscore/corporate/docs/migrated-consultations/digital%20britain%20report-%20a%20consultation%20on%20a%20direction%20to%20ofcom%20to%20implement%20the%20wireless%20radio%20spectrum%20modernisation%20programme.pdf> (paragraph 3.33 on page 17 which states that the 800 MHz digital dividend spectrum will be auctioned “in six lots of 2 x 5 megahertz”).

²⁶ See <http://www.cesifo-group.de/pls/guestci/download/CESifo%20DICE%20Report%202010/CESifo%20DICE%20Report%201/2010/dicereport110-db4.pdf> (Germany allocated digital dividend spectrum into six 2x5 megahertz blocks).

Another significant cost-saving element of the NBP is the incentive-based partnership approach. Although not required, NBP deployment costs were calculated using this approach, and the savings were considerable when compared to a stand-alone network dedicated to public safety and does not leverage commercial infrastructure. Under the NBP, a \$6.5 billion investment could provide coverage to 99% of Americans by enabling construction of a public safety “overlay” network on 41,600 existing commercial sites; hardening of commercial towers; the addition of over 3,000 sites in rural areas; and the development of a fleet of public safety deployables. This is far less expensive than a stand-alone public safety network, which would likely cost at least \$15 billion to construct.²⁷ Moreover, failing to leverage commercial infrastructure would mean that existing commercial networks would not be hardened, making them less reliable for carrying critical infrastructure traffic. The NBP also noted that this hardened infrastructure will better support utilities and facilitate the deployment of energy-efficient smart grid technology.

In sum, incentive based partnerships, where public safety holds full rights to its spectrum but where infrastructure is shared between public safety and commercial systems, provide a more cost effective mechanism for this necessary evolution path. A stand alone system dedicated to public safety would require all evolution costs to be borne by the vastly smaller public safety user base. Moreover, because of the higher cost of the stand-alone approach, the resulting network would probably have fewer cells with much larger cell radii, and the capacity and performance of public safety communications would suffer as a result.

IV. Conclusion

The NBP’s recommendations for the deployment of a nationwide interoperable public safety broadband wireless network were developed over the course of almost a year of intense study, inquiry, analysis and meetings with and input from public safety leaders, communications engineers and industry experts. The result is a plan that will provide public safety with a nationwide, interoperable network that has the capacity for all day-to-day operations and with the innovation of public safety roaming and priority access across the 700 MHz cellular spectrum, surge capacity for emergencies, and even extraordinary contingencies.

The network is based on the availability of 10 megahertz of spectrum dedicated to public safety use by Congress, which provides public safety with substantially more spectrum per user than major commercial networks, providing them with the required capacity and performance for critical communications needs. Roaming and priority access will provide additional capacity on up to 70 megahertz or more of spectrum. The NBP recommendations makes full use of the additional capacity that can be gained from use of LTE and IP technology, and public funding to build out a sufficient number of cell sites to support the network.

²⁷ See *Cost Model Paper* at Section E.

Appendix

INTRODUCTION

In this Appendix, we analyze public safety use of broadband wireless communications employing a network built in accordance with the FCC Cost Model in 10 megahertz of spectrum in four scenarios depicting various types of emergencies. For each scenario, we calculate the expected value of utilization²⁸ of the network.²⁹ We assume for purposes of this analysis an LTE network whose capacity averaged over each sector³⁰ is 7.5 Mb/s (downlink) and 3.25 Mb/s (uplink). These figures represent average throughput and are in-line with current industry benchmarks.

In addition, while studies of voice communications among present day emergency responders during disaster events have shown that the command and control communication structure used by public safety results in a sparse, highly compact process of communication,³¹ our analysis departs from this model to yield a more conservative result. For purposes of analysis we assume that video and data communications are generated by individual responders, mobile vehicles and command centers. Activity levels assumed per device category are greater than or equal to those typically found in the commercial environment. These assumptions produce a rich, video intensive environment in which large amounts of data are continually transmitted by emergency responders.

Our analysis yields the following observations/conclusions:

- LTE networks deployed in accordance with engineering assumptions in the FCC Cost Model, which are themselves consistent with commercial engineering assumptions, provide sufficient capacity to meet the communication needs of public safety utilizing the 10 megahertz of spectrum that has been allocated to public safety for broadband over a broad range of scenarios and assumptions.

²⁸ Utilization is the fraction of capacity in use. Utilization must be below 1 to be feasible, and not too close to 1 to avoid congestion problems.

²⁹ See Omnibus Broadband Initiative, A Broadband Network Cost Model: A Basis for Public Funding Essential to Bringing Nationwide Interoperable Communications to First Responders (rel. Apr. 2010) (*Cost Model Paper*), available at <http://www.fcc.gov/pshs/docs/ps-bb-cost-model.pdf> (last visited May 10, 2010).

³⁰ Each cell site is typically divided into 3 sectors.

³¹ See Federal Communications Commission, Emergency Communications during the Minneapolis Bridge Disaster: A Technical Case Study of the Federal Communications Commission's Public Safety and Homeland Security Bureau's Communications Systems Analysis Division at 16-17 (2008) (*Minneapolis Bridge Case Study*), available at <http://www.fcc.gov/pshs/docs/clearinghouse/references/minneapolis-bridge-report.pdf> (last visited Apr. 28, 2010).

- Deploying greater numbers of cell sites achieves a greater aggregate capacity and higher overall level of spectral efficiency, consistent with Commission goals to achieve highest use for this scarce resource.

Scenario I and II have been extracted from the New York City Department of Information and Technology's recent filing in FCC Docket 07-114 (*New York City Filing*).³² Scenario III and IV are based on actual events and empirical data that was collected and analyzed by FCC staff, to include data extracted from FCC reports on these disasters.

Scenario I: Dirty Bomb in New York City

The *New York City Filing* provides one of the few discussions in the record developed for the NBP of the public safety response to a specific emergency scenario, in this case a hypothetical "dirty bomb" attack at Manhattan's Penn Station in the middle of a busy work day.³³ In this scenario, the attack has left 900 people injured, some of whom are in critical condition. With support from the New York City Transit Authority, EMS has been mobilized to assist the injured. In addition, the New York City Police Department has initiated a Level 4 mobilization to deal with the security threat. To contain the broader dangers of the nuclear contaminants unleashed by the dirty bomb attack, the New York City Fire Department has set up a hazardous material (HazMat) detoxification / wash-down.

For purposes of analysis we employed the following assumptions, all of which are taken directly from the *New York City Filing*.³⁴ In the downlink direction, there are 38 video links active at a time, and 16 Mb/s of non-video traffic, which includes database access, file downloads, telemetry, computer aided dispatch, and VoIP. In the uplink direction, there are 12 simultaneous video links, and 7 Mb/s of non-video traffic which includes 2 Mb/s of triage images from EMS. The locations of emergency responders are uniformly distributed across an area surrounding the incident. (In the *New York City Filing*, this area consists of three sectors.³⁵)

In addition, we have employed three traffic assumptions in our analysis that differ from those in the analysis reflected in the *New York City Filing*. The first concerns video data rate. As discussed in great depth previously, NPSTC and SAFECOM have indicated that the needs of public safety can be met with per-device data rates of 256 Kb/s and 384 Kb/s respectively.³⁶ Notwithstanding these assessments, the analysis reflected in the *New York*

³² See Comments of NYC Department of Information and Technology, FCC Docket 07-114 (received Nov. 17, 2009) (*New York City Filing*).

³³ See *id.*

³⁴ See *id.* We take no position on the appropriateness of the assumptions reflected therein.

³⁵ See *id.* at 14.

³⁶ See Public Safety Spectrum Trust, Public/Private Partnership Bidder Information Document at 8 (2007); National Public Safety Telecommunications Council, Public Safety 700 MHz Broadband Statement of Requirements at 39 (2007), See Public Safety Statement of Requirements, Vol II, Ver 1.2, Tables 6 and 7 at

City Filing is based on the assumption that public safety will require downlink video at 1.15 Mb/s (essentially standard broadcast quality video) and 647 Kb/s quality uplink video³⁷. For the reasons stated, we have rejected this assertion.³⁸ We do, however, include the non-video traffic assumption reflected in the *New York City Filing* analysis of this scenario.³⁹

Second, the sector downlink capacity assumption of 7.5Mb/s (for 10 megahertz), which is the limiting factor in this scenario, is more conservative than that employed in the analysis reflected in the *New York City Filing*. The *New York City Filing* analysis assumes a downlink capacity of 10 Mb/s for 10 megahertz bandwidth and 21 Mb/s for 20 megahertz bandwidth.⁴⁰

Thirdly, our assumptions differ from the analysis reflected in the *New York City Filing* with regard to the number of cell sites deployed. We assume that an appropriate number of cell sites have been deployed, as would be the case under the NBP recommendations. The NBP recommends and the FCC Cost Model assumes that to meet public safety requirements either for capacity or in-door signal-reliability, the number of sites should be significantly increased from the 200 reflected in the *New York City Filing*.⁴¹ Increasing the number of cells would allow each cell to cover a smaller area, increasing overall capacity and spectral efficiency. As a result, where the analysis reflected in the *New York City Filing* assumes that the activities associated with disaster response would be distributed over 3 sectors, we conservatively assume the activities would be distributed over 6 sectors. The FCC Cost Model would result in the deployment of considerably more than 3 times as many cell sites than that reflected in the *New York City Filing* scenario. Therefore 9 or more sectors would cover the area of operation for the dirty bomb as assumed in the *New York City Filing*. As **Exhibit 1** below shows, this emergency would produce a mean utilization of 58% (downlink) of the capacity available in 10 megahertz for a video rate of 256Kb/s.

http://www.safecomprogram.gov/NR/rdonlyres/2ADCC02F-4665-4D4C-B512-63CE59BD58DB/0/PS_SoR2_v12.pdf (last visited May 10, 2010).

³⁷ See *New York City Filing* at 23.

³⁸ See *supra* at Section I(G).

³⁹ See *New York City Filing* at 24.

⁴⁰ See *id.* at 23.

⁴¹ See *id.* at 14.

**Public Safety Spectrum Utilization During "Dirty Bomb" Scenario
256 Kb/s video**

	Downlink utilization	Uplink utilization
Video	.22	.16
All other applications combined⁴²	.36	.36
Total	.58	.52

Exhibit 1

Even with higher-quality video, there is still more than enough capacity in 10 megahertz of spectrum to respond to the dirty bomb attack in Penn Station described in the scenario. **Exhibit 2** shows network utilization below 68% (downlink) for 384 Kb/s video. We also show in **Exhibit 3** the case for 512 Kb/s video with network utilization (downlink) of 79%.⁴³

**Public Safety Spectrum Utilization During "Dirty Bomb" Scenario
384 Kb/s video**

	Downlink utilization	Uplink utilization
Video	.32	.24
All other applications combined	.36	.36
Total	.68	.60

Exhibit 2

**Public Safety Spectrum Utilization During "Dirty Bomb" Scenario
512 Kb/s video**

	Downlink utilization	Uplink utilization
Video	.43	.32
All other applications combined	.36	.36
Total	.79	.68

Exhibit 3

⁴² Including VoIP, database access, file transfers, telemetry, computer aided dispatch, images transfers, sensors, incident management, and more. See *New York City Paper* at 34-40.

⁴³ In the *New York City Filing*, downlink utilization for the 200 cell site, 20 megahertz network under this scenario was 95%.

These Exhibits show that deploying a sufficient number of cell sites, in-line with commercial design strategies and the NBP recommendations, increases overall network capacity, improves spectral efficiency and provides sufficient capacity to meet public safety needs for this serious emergency in 10 megahertz of dedicated spectrum utilizing adequate infrastructure and sound spectrum management principles.

Scenario 2: New York City Network Growth needs for Major Urban Environment

In addition to the emergency dirty bomb scenario reflected in the *New York City Filing*, the New York City Department of Information and Technology’s (“NYCDIT”) estimate of the 12-year operational growth needs for a citywide wireless network provides a second scenario for analysis.⁴⁴ This estimate includes communications associated with a variety of municipal functions including public safety and many applications such as video and non-mission critical voice. As described below, we assess the ability of a system built out in 10 megahertz of dedicated spectrum to support this traffic using these projections. For simplicity of comparison, we will use all traffic load assumptions used by NYCDIT in their filing, although the FCC takes no position on the appropriateness of these assumptions.

NYCDIT estimates a network aggregate traffic load of approximately 7.3 Gb/s (downlink) and 3.6 Gb/s (uplink) in Year 12. **Exhibit 4** (Figure 5 from the *New York City Filing*) shows the growth of network traffic plotted against capacity for a 200 site network deployed in 10 megahertz of dedicated spectrum. NYCDIT’s figures indicate when aggregate load would reach 75% of capacity.⁴⁵

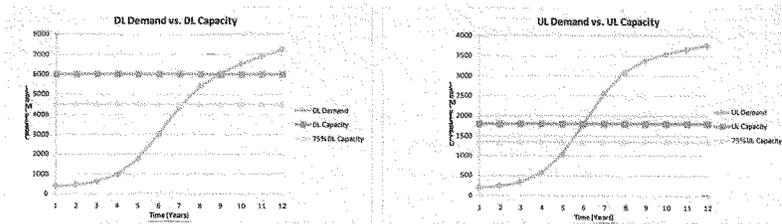


Exhibit 4

Exhibit 5 (Figure 6 from the filing) shows the same growth projection for a 200-site network deployed in 20 megahertz of spectrum:

⁴⁴ See *New York City Filing* at 10.

⁴⁵ NYC uses a 75% capacity threshold here as a conservative estimate of effective maximum capacity or a trigger point for capacity expansion.

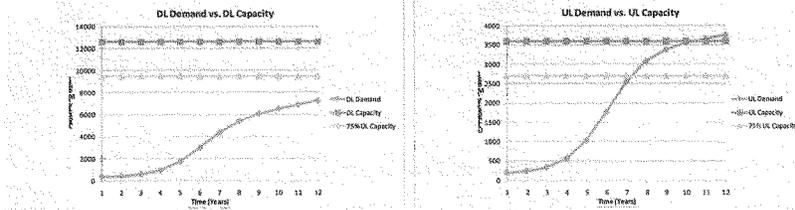


Exhibit 5

NYCDIT summarizes these results in **Exhibit 6** (Tables 2 and 3 from the *New York City Filing*).⁴⁶ A review of these tables demonstrates that the uplink channel will be the first to run out of capacity, reaching 75% of capacity in 5.5 years with a 10 megahertz allocation, and 7.1 years with a 20 megahertz allocation. Even with 20 megahertz of spectrum proposed by NYCDIT in its estimation, NYCDIT will need to expand the network by year 7 or 8 under these assumptions.

75% Capacity Exceeded	With Voice	Without Voice
Downlink	7 years	7.5 years
Uplink	5.5 years	5.8 years

Table 2 - Capacity with and without Voice with 10 MHz LTE Bandwidth

75% Capacity Exceeded	With Voice	Without Voice
Downlink	> 12 years	>12 years
Uplink	7.1 years	8 years

Table 3 - Capacity with and without Voice with 20 MHz LTE Bandwidth

Exhibit 6

As explained earlier, these network capacity exhaust time intervals are not intrinsic to the spectrum allocated; they depend on many factors, including the number of cell sites deployed. The number of cell sites assumed when deriving the above table is considerably less than would be recommended in the NBP. Indeed, it is just over half the number of sites that NYC has in use today, implying that New York would choose to greatly reduce its infrastructure at a time when the NBP would support expansion.

Based on NYCDIT’s growth model, we establish a target network capacity such that at Year 12, network capacity is 75% of total network capacity. As shown in **Exhibit 7**, NYDITC’s projected growth to reach 75% network capacity over the next 12 years can be supported within 10 megahertz of spectrum as long as at least approximately 492 cells are deployed, even using the more conservative FCC assumption of 7.5 Mb/s downlink capacity, which is still well below the number of sites that would be provided for based

⁴⁶ *New York City Filing* at 15.

on the methodology employed within the FCC Cost Model. If, for example, NYCDIT were to deploy 750 sites (which is consistent with the NBP and the FCC's cost model planning assumptions), then utilization would not reach 50% within 12 years, as shown in **Exhibit 8**.

In sum, by building out sufficient cell sites, even these 12-year traffic projections from NYCDIT can be supported within 10 megahertz of dedicated spectrum with excess capacity to spare. To be more specific, the FCC funding proposal derived from the FCC Cost Model would provide for significantly more capacity within a 10 megahertz allocation of spectrum than the NYCDIT proposed design which minimizes cell site deployment at the expense of spectral efficiency of NYCDIT's proposed 20 megahertz spectrum allocation. This approach of deploying more cell sites to increase capacity and spectral efficiency is consistent with the FCC Cost Model and funding recommendations for a public safety broadband network developed by the FCC.

New York City 12 Year Growth Requirements

	75% Capacity Uplink Cell Sites Required Year 12	75% Capacity Downlink Cell Sites Required Year 12
Capacity Required in NYC projection	4.8 Gb/s	9.7 Gb/s
No. Cell Sites Needed with FCC Plan	492	433

Exhibit 7

New York City Utilization after 12 Years with 750 cells

Uplink utilization after 12 years	Downlink utilization after 12 years
.49	.43

Exhibit 8

Scenario III: Collapse of the Minneapolis Bridge

The third scenario is based on an actual disaster. At 6:00pm on August 1st, 2007, the Interstate 35 West Bridge collapsed in Minneapolis killing 13 people and injuring 145. Emergency responders reacted quickly. In a little over 2 hours, all survivors from the affected area had been removed. The FCC, with the cooperation of public safety communication officials from Minnesota studied this disaster and issued a report.⁴⁷

As a result of the study certain facts are known which allow us to make certain approximations for purposes of analysis. Nearly all emergency responders in this area shared a common LMR system. This allows us to approximate the number of responders at the scene. We also know that as emergency responders rushed to the incident, the two LMR sites immediately adjacent to the disaster showed a combined increase of approximately 600 unique radio IDs in hour 2 of the disaster, over the baseline of 994 unique radio IDs that were present in the hour preceding the collapse.

We assume that each radio ID represents a single first responder. We assume that a majority of the 994 personnel on duty before the disaster continued their normal function and were randomly scattered throughout the two LMR serving areas, comprising an approximate serving area of 254 square miles. Thus, 600 additional personnel flooded a small area around the site of the disaster, participating in the rescue efforts. We also apportion an additional 40 emergency responders within the emergency area to represent the approximate number of emergency responders that might normally have been within a 10 square mile area of the disaster site and allocated this number to the rescue effort as well. Thus, a total of 640 emergency responders are used to represent the number of responders within the incident area. We vary the area constituting the affected rescue area, first assuming an approximate 10 square mile box that encompassed major highways surrounding the bridge and progressively shrinking the box to 5 sq. miles and then 1 sq. mile. This increases the density of emergency responders in the incident area and increases the traffic load per sector.

In addition to the individual first responders, we consider a scenario in which mobile command centers are on the scene, and are receiving and generating a significant amount of video traffic. The actual amount of video required at the incident scene is, of course, an estimate. As a figure of merit, we take the estimate employed by the NYCDIT in its analysis of the dirty bomb incident of 38 videos down and 12 videos up and apportion this video estimate over a conservative 6 sector⁴⁸ area. Thus, within the affected area, each sector supports 6 video links down and 2 video links up.

⁴⁷ See *Minneapolis Bridge Case Study*.

⁴⁸ As noted earlier, we estimated a minimum of 9 sectors would cover the equivalent area in the NYC dirty bomb scenario (Scenario I). We assume 6 sectors over which the video traffic will be distributed, rounding the result.

This traffic is designated as Command Unit Uplink and Downlink Video in the traffic model, as shown in **Exhibit 9**.⁴⁹ For the command unit video only, we vary the quality of the video from 256 Kb/s to 512 Kb/s. As the model shows, we also assume that some percentage of video, at 256 Kb/s, is generated by emergency responders.

For these scenarios we assume the following traffic model:

Type of application or device	% of responders carrying device	% of time devices transmit	Up Link data rate (Kb/s)	% of time devices receive	Down Link data rate (Kb/s)
Mobile Video Camera	25%	10%	256	5%	12
Data File Transfer CAD/GIS	87%	15%	50	5%	300
VoIP	100%	5%	27	15%	27
Secure File Transfer	12%	5%	93	5%	93
EMS Patient Tracking	6%	10%	30	5%	50
EMS Data Transfer	6%	25%	20	5%	25
EMS Internet Access	6%	10%	10	5%	90
Command Unit Downlink Video	NA	NA	NA	100%	256, 384, 512
Command Unit Uplink Video	NA	100%	256, 384, 512	100%	256, 384, 512

Exhibit 9

The amount of VoIP traffic in the model is a conservative estimate based on prior analysis of public safety communications.⁵⁰ As noted, Command Unit video is derived from the example presented in the *New York City Filing*.⁵¹ The remaining functions are approximations of public safety functions on a broadband network chosen to ensure that each emergency responder will present a network load. In this model, emergency responders are assumed to contribute to the overall video traffic. Assumptions about data rates are taken directly from the *New York City Filing*, PSST Bidder Information Document and the SAFECOM Statement of Requirements (SoR).⁵²

⁴⁹ Command Units are specialized vehicles used by emergency responder command staff for incident management and generally equipped with extensive communications equipment.

⁵⁰ Data developed during the FCC Report on the Minneapolis Bridge Disaster demonstrated that voice utilization by public safety is very low for LMR radio, less than 3%. To remain conservative, we assume higher utilization rates for this analysis.

⁵¹ See *New York City Filing* at 24 (Nov. 17, 2009).

⁵² See Public Safety Statement of Requirements, Tables 6 and 7 at http://www.safecomprogram.gov/SAFECOM/library/technology/1258_statementof.htm

See also Public Safety Spectrum Trust Public/Private Partnership Bidder Information Document, Version 2.0, November 30, 2007.

See also *New York City Filing* at 7.

Exhibit 10 shows the area of the bridge disaster with a 10 square mile area that encompasses major highways surrounding the bridge. Traffic is modeled in the following manner. As shown in **Exhibit 9**, the average number of responders within a sector is calculated and the traffic load generated by emergency responders under the model is calculated. This is combined with the Command Unit video traffic to provide the traffic per sector to be supported. Finally, the traffic utilization for sector is calculated.

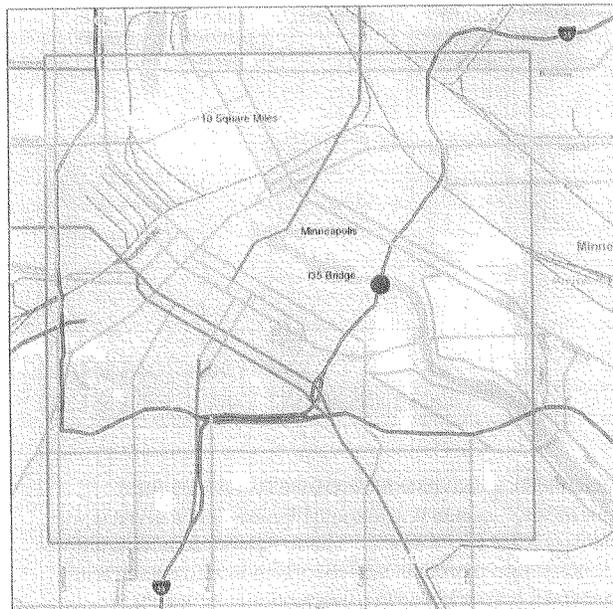


Exhibit 10

Case 1: Responders Operate in 10 Square Mile Area

Responder Area: 10 Square Miles - Sector Utilization

Responders At Scene: 640	Sectors: 60	Responders/Sector: 11
Type of application or device	Up Link Load	Down Link Load
Mobile Video Camera	2%	0%
Data File Transfer CAD/GIS	2%	2%
VoIP	1%	1%
Secure File Transfer	0%	0%
EMS Patient Tracking	0%	0%
EMS Data Transfer	0%	0%
EMS Internet Access	0%	0%
Total	5%	3%

Exhibit 11

As can be seen from **Exhibit 11**, with a 10 square mile operating area, the Non-Command Unit traffic has a utilization of only 5% up and 3% down.

	Video Links	Up Link Load 256 Kb/s	Down Link Load 256 Kb/s	Up Link Load 384 Kb/s	Down Link Load 384 Kb/s	Up Link Load 512 Kb/s	Down Link Load 512 Kb/s
Command Unit Downlink	6	0%	20%	0%	31%	0%	41%
Command Unit Uplink	2	16%	0%	24%	0%	32%	0%
	Total	16%	20%	24%	31%	32%	41%
Total Traffic	Total All	21%	23%	29%	34%	37%	44%

Exhibit 12

As shown in **Exhibit 12**, a single sector can support 6 downlink video channels and 2 uplink channels and still support a range of other activities with low utilization levels even at video quality as high as 512 Kb/s for Command Unit traffic. The total utilization with 512 Kb/s Command Unit video is 37% (uplink) and 44% (downlink). Thus, this traffic can easily be supported.

Case 2: Responders Operate in 5 Square Mile Area

We next look at the same bridge scenario but with emergency responders operating within a 5 mile area, effectively doubling the density of the population as well as the traffic they generate within the served area, as shown in **Exhibit 13**. We again focus on the traffic utilization for a single sector.

Responder Area: 5 Square Miles - Sector Utilization

Responders At Scene: 640	Sectors: 31	Responders/Sector: 21
Type of application or device	Up Link Load	Down Link Load
Mobile Video Camera	4%	0%
Data File Transfer CAD/GIS	4%	4%
VoIP	1%	1%
Secure File Transfer	.5%	0%
EMS Patient Tracking	.25%	0%
EMS Data Transfer	.25%	0%
EMS Internet Access	0%	0%
Total	10%	5%

Exhibit 13

	Video Links	Up Link Load 256 Kb/s	Down Link Load 256 Kb/s	Up Link Load 384 Kb/s	Down Link Load 384 Kb/s	Up Link Load 512 Kb/s	Down Link Load 512 Kb/s
Command Unit Downlink	6	0%	20%	0%	31%	0%	41%
Command Unit Uplink	2	16%	0%	24%	0%	32%	0%
	Total	16%	20%	24%	31%	32%	41%
Total Traffic	Total All	26%	25%	34%	36%	42%	46%

Exhibit 14

As can be seen from the results in **Exhibit 14**, compressing the incident area provides more traffic per sector. For example, uplink utilization non-command unit traffic has doubled from 5% to 10%. Total traffic utilization per sector however, even for 512 Kb/s video, remains relatively low at 46% (Down Link). Again, this traffic can be supported.

Case 3: Responders Operate in 1 Square Mile Area

Finally, we examine the scenario where all responders are working within a 1 square mile area. **Exhibit 15** shows this area overlaid on the bridge location. This represents one of the more serious communication scenarios faced by public safety since such a concentration of resources places a greater burden on any communications system.

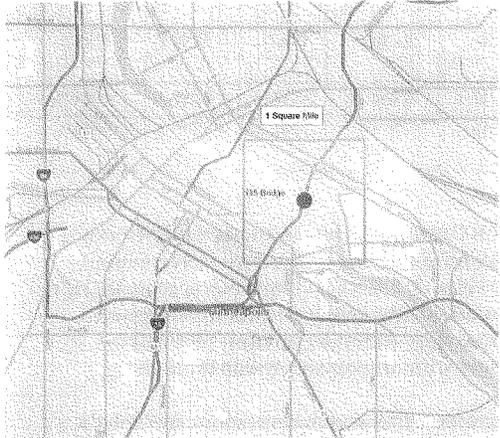


Exhibit 15

Responder Area: 1 Square Mile - Sector Utilization

Responders At Scene: 640	Sectors: 6	Responders/Sector: 107
Type of application or device	Up Link Load	Down Link Load
Mobile Video Camera	21%	0%
Data File Transfer CAD/GIS	22%	19%
VoIP	4%	6%
Secure File Transfer	2%	1%
EMS Patient Tracking	1%	0%
EMS Data Transfer	1%	0%
EMS Internet Access	0%	0%
Total	51%	26%

Exhibit 16

	Video Links	Up Link Load 256 Kb/s	Down Link Load 256 Kb/s	Up Link Load 384 Kb/s	Down Link Load 384 Kb/s	Up Link Load 512 Kb/s	Down Link Load 512 Kb/s
Command Unit Downlink	6	0%	20%	0%	31%	0%	41%
Command Unit Uplink	2	16%	0%	24%	0%	32%	0%
	Total:	16%	20%	24%	31%	32%	41%
Total Traffic	Total All	67%	46%	75%	57%	83%	67%

Exhibit 17

Exhibit 16 and **Exhibit 17** show that with 107 responders within a sector, full video is maintained, even at a video rate of 512 Kb/s for Command Unit Video. Total uplink utilization is at 83% with command unit video of 512 Kb/s. While this is approaching the practical limits of operation, all video assumed in the scenario is still fully supported. With command unit video at 256Kb/s video, uplink utilization is only 67% and the network has excess capacity. All applications are still supported within the sector.

Local incidents are likely to represent the most extreme communications scenario for a public safety network since responders concentrate within a small area proportionately increasing traffic for that portion of the network. Nevertheless, this analysis demonstrates that there are serious emergencies concentrated within one square mile that can be accommodated with an appropriately built-out network operating in 10 megahertz of dedicated spectrum.

Scenario 4: Hurricane Ike Hits Houston

The fourth scenario is also based on an actual disaster. On Saturday, September 13, 2008, Hurricane Ike struck Texas as a Category 2 hurricane with winds up to 110 mph. Immediately prior to Hurricane Ike’s arrival, Galveston Island and other coastal areas were devastated by twenty foot storm surges. Hurricane Ike was extremely large and powerful. At almost 900 miles wide it rolled across the Gulf of Mexico and eventually passed 100 miles to the east of Dallas, Texas. The massive Category 2 hurricane, with winds up to 110 mph at landfall, hit Texas on Saturday, September 13, and became the third hurricane to hit or affect Texas in less than two months. 20-foot storm surges swallowed Galveston Island and other coastal areas just before Ike’s arrival and prompted the National Weather Service to later upgrade Ike to a Category 4 hurricane.

The results of our analysis show that in the worst case, the average number of responders per cell site will be 27 and sector utilization will be 18.67% Up Link and 12.9% Down Link. As shown in **Exhibit 18** if 4 times the responders (324 responders) arrived at each cell site, 75% of the Up Link and 51% of the Down Link capacity is utilized – Public Safety communications is still supported.

This analysis, which is based on empirical data that was collected and analyzed by FCC staff, considers the ability of a public safety broadband network to meet average capacity needs in the 14 sites affected in the aftermath of the hurricane, assuming that emergency responders make full use of a variety of broadband applications, including voice and video.⁵³ At peak of this event, 14,991 unique radios were active throughout these 14 sites. As this analysis shows, if emergency responders were unformally distributed across the county with the most public safety activity, they would consume a mere 18.67% of uplink capacity and 12.9% of downlink on average at the peak of the response. Moreover, even in the extreme case in which the density of Public Safety responders reached four times that level, a cell site would still have a utilization of 75% in the Up Link and 51% in the Down Link direction, which means there would be more than enough capacity available in 10 megahertz.

Capacity Summary - Equivalent PSBB Network to Support Hurricane Ike				
	PS Radios at Peak per Cell	PS Radios at Peak per sector	Total Up Stream load	Total Down Stream Load
Uniformly Distributed across Typical PSBB network	81	27	18.67%	12.90%
2x PS Responders at scene	162	54	37.34%	25.46%
4x PS Responders at scene	324	108	74.69%	50.59%

Exhibit 18

⁵³ See *Emergency Communications during Hurricane Ike at*, <http://www.fcc.gov/pshs/docs/clearinghouse/case-studies/Hurricane-Ike-Harris%20County-120109.pdf>.

Exhibit 19 shows the locations of the Harris County Regional Radio System (RRS) tower sites, in relation to the path of Hurricane Ike. The Harris County RRS with 24 sites, presently covers nine counties and supports more than 44,320 users in 243 agencies and 641 departments. Currently, the system covers 9,581 square miles supporting a population of 5,879,458. The Grade of Service (GoS) objective for this system is 2%, meaning that no more than 2% of calls should experience delays exceeding 3 seconds. However, on September 17th, that objective could not be achieved, as traffic levels reached double those that occur in the busiest hour of a typical day. 95% of all the users were served by the 14 LMR sites along or near the path of Hurricane Ike.

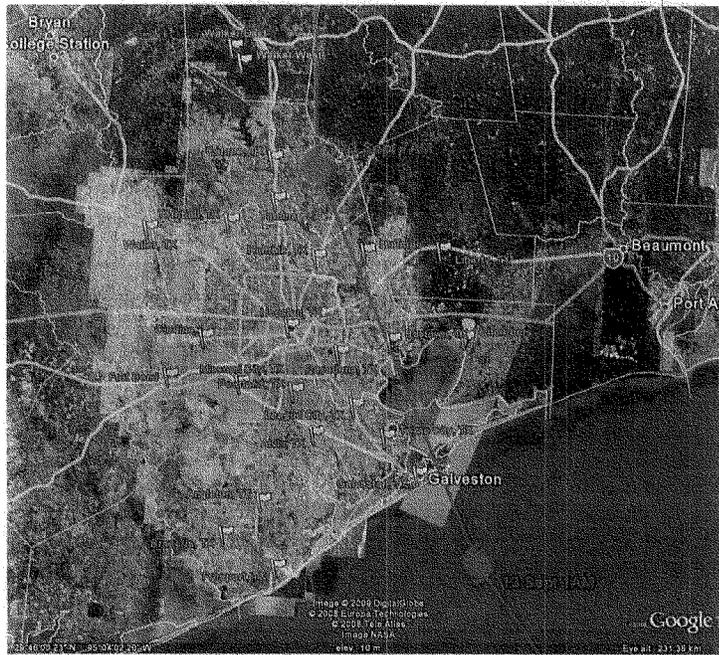


Exhibit 19

Of the 14,991 Public Safety responders dispersed across these 14 Harris County LMR sites during Hurricane Ike, the major radio users were 58% Law Enforcement, 12% Fire Departments, 10% Public Works, 7% Transportation Departments and 6% Emergency Medical Services. The distribution is shown in **Exhibit 20**.

Radio Usage during Hurricane Event - Busiest Day	
Type of Radio User	Total % of Radio Usage
Law Enforcement	57.79%
Fire Department	12.26%
Public Works	9.82%
Transportation Departments	7.39%
Emergency Medical Service	6.49%
Communications/Dispatching	2.94%
Security Companies	1.53%
Engineering Departments	0.73%
Elected Officials	0.43%
Parks Departments	0.34%
Probation Departments	0.17%
Legal Departments	0.05%
Admin Administrative	0.03%
Environmental Monitoring and Services	0.02%
Independent School Districts	0.01%
Humane Services	0.01%
Utility	0.00%
Grand Total	100.00%

Exhibit 20

As discussed in Section II, a broadband system that reaches 99% of the population with approximately 44,000 cell sites, as recommended in the NBP, would have many more cell sites serving the same area. Cell size depends on many factors, and the FCC model [which one] considers both population density and terrain.⁵⁴ **Exhibit 21** shows the number of cells estimated in each county. In the roughly 7,265 square-mile area severely affected by the hurricane, we estimate that 529 sites would be deployed, for a total of 1,278 sectors. As a result, the number of active radios per cell at the peak of the response ranges from 5 in Montgomery County to 81 in hard-hit Brazoria County.

⁵⁴ See *Cost Model Paper*.

HARRIS County Regional Radio System (RRS)							PSBB Network Cell Site Count and PS Users During Hurricane Ike		
COUNTY	POPs	Square Miles	Harris RRS All Sites	Sites exceeding Grade of Service (GoS) objective during Hurricane Ike	PS Radio at Peak	PS Radios at Peak per sector	Total Cell Sites	PS Radios at Peak per Cell	PS Radios at Peak per sector
BRAZORIA	309,208	1,773	5	3	6307	701	78	81	27
CHAMBERS	31,431	723	1	0					
FORT BEND	556,870	1,375	3	3	2056	228	104	10	7
GALVESTON	286,814	456	3	1	942	314	18	33	10
HARRIS	4,070,389	2,070	6	5	5291	353	246	23	7
LIBERTY	75,779	1,253	1	0					
MONTGOMERY	447,718	1,591	2	2	395	66	83	5	2
WALKER	64,119	817	2	0					
WALLER	36,530	575	1	0					
	Incident Total:	7,265		14	14,991		Total Cell Sites:		
	Harris RRS Total:	9,581	24				529		

Exhibit 21

For this comprehensive analysis, we considered the applications shown in **Exhibit 22**. Assumptions about data rates are taken directly from the *New York City Filing*, PSST Bidder Information Document and the SAFECOM Statement of Requirements (SoR).⁵⁵ We assume that Public Safety responders of various types (e.g. police, firefighters, and EMS) are distributed evenly across the disaster area, such that the percentages in each region correspond to the overall percentages from the actual event, presented in **Exhibit 20**. Given that the average number of radios per cell was 81 in the worst case discussed above, we consider the case of 81 radios per cell or 27 per sector.

Exhibit 22 is based on the county that was most severely affected by the hurricane, and assumes that responders are uniformly distributed across that county. In reality, the density of responders may be greater in some parts of the county and worse in others. Thus, a busy cell may have two or more times the density of responders. Nevertheless, as shown in the table below, there is ample capacity even if density reaches four times the country-wide average of the busiest county and the busiest time in the aftermath of Hurricane Ike.

The results show a mean utilization of, only 18.67% in the Up Link and 12.9% in the Down Link direction. Therefore, during this extreme disaster in September 2008, when the Harris County RRS encountered an exceedingly high demand for resources, which

⁵⁵ See *id.* The FCC takes no position on the appropriateness of New York City's assumptions.

See also; Public Safety Statement of Requirements, Tables 6 and 7 at http://www.safecomprogram.gov/SAFECOM/library/technology/1258_statementof.htm.

See also; Public Safety Spectrum Trust Public/Private Partnership Bidder Information Document, Version 2.0, November 30, 2007.

resulted in a doubling of busy-hour traffic, a public safety broadband network with 10 megahertz of dedicated spectrum could have supported this mission critical event.

Hurricane Ike Incident Scenario										
PS Responders at scene - Uniformly Distributed across 426 PSBB Sites		14,991	# of PSBB sectors serving	426	PS Responders per sector	27				
Type of application or device	% of responders carrying device	% of time devices transmit	Up Stream data rate (Kb/s)	Up Stream Capacity (Kb)	% of time devices receive	Down Stream data rate (Kb/s)	Down Stream Capacity (Kb)	Up Stream load	Down Stream Load	
Law Enforcement Mobile Video Cameras	58%	10%	256	3,250	5%	12	7,500	12.34%	0.25%	
Law Enforcement Data file transfer CAD/GIS	58%	10%	50	3,250	5%	300	7,500	2.41%	6.26%	
Law Enforcement Mobile Handheld Users (VoIP)	58%	5%	27	3,250	15%	27	7,500	0.65%	0.20%	
Fire Department Data file transfer CAD/GIS	12%	15%	50	3,250	5%	300	7,500	0.75%	1.94%	
Fire Department Secure File Transfer Program (SFTP)	12%	5%	93	3,250	5%	92	7,500	0.46%	0.30%	
Fire Department Mobile Handheld Users (VoIP)	12%	5%	27	3,250	15%	27	7,500	0.13%	0.06%	
Public Works Data file transfer CAD/GIS	10%	15%	50	3,250	5%	300	7,500	0.62%	1.63%	
Public Works Mobile Handheld Users (VoIP)	10%	5%	27	3,250	15%	27	7,500	0.11%	0.05%	
Transportation Departments Mobile Handheld Users (VoIP)	7%	5%	27	3,250	15%	27	7,500	0.08%	0.03%	
Transportation Departments Data file transfer CAD/GIS	7%	18%	50	3,250	5%	300	7,500	0.52%	1.36%	
Other Mobile Handheld Users (VoIP)	7%	5%	27	3,250	15%	27	7,500	0.08%	0.03%	
Emergency Medical Service Patient Tracking	6%	10%	30	3,250	5%	50	7,500	0.15%	0.11%	
Emergency Medical Service Data Transfer	6%	25%	20	3,250	5%	25	7,500	0.25%	0.14%	
Emergency Medical Service Internet Access	6%	10%	10	3,250	5%	90	7,500	0.05%	0.19%	
Emergency Medical Service Mobile Handheld Users (VoIP)	6%	5%	27	3,250	15%	27	7,500	0.07%	0.03%	
							Total	18.67%	12.56%	
Number	Video Streams	% of time devices transmit	Up Stream data rate (Kb/s)	Up Stream Capacity (Kb)	% of time devices receive	Down Stream data rate (Kb/s)	Down Stream Capacity (Kb)	Up Stream load	Down Stream Load	
Broadcast Video Channel	1	1	0	0	0	10%	256	7,500	0.00%	0.34%
Command Units	0	1	100%	256	3,250	100%	1,000	7,500	0.00%	0.00%
								Up Stream load	Down Stream Load	
								Total All	18.67%	12.90%

Exhibit 22



James H. Douglas
Governor of Missouri
Chair

Joe Manchin III
Governor of West Virginia
Vice Chair

Raymond C. Scheggsch
Executive Director

April 9, 2010

The Honorable Julius Genachowski
Chairman
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Dear Chairman Genachowski:

On behalf of the nation's governors and first responders, we request that the Federal Communications Commission's recommendation in the National Broadband Plan be amended so that the 700 MHz D block is reallocated to public safety. This is the best way to ensure that a nationwide broadband network will meet the mission critical needs of our public safety community.

Allowing first responders roaming and priority access on other 700 MHz commercial broadband networks for a fee is not sufficient because it adds cost and complexity to their communications. In addition, much of this other spectrum is not suitable for use by first responders because devices that utilize the entire 700 MHz band do not currently exist. Removing the D block as the designated spectrum for public safety officials does not adequately meet public safety needs.

Our nation's first responders deserve the most modern and reliable communications capabilities available. The reallocation of the D block to public safety offers the best opportunity to provide these capabilities while still balancing commercial interests.

Sincerely,

Governor Martin O'Malley
Co-Chair, Special Committee on Homeland Security
and Public Safety

Governor Tim Pawlenty
Co-Chair, Special Committee on Homeland Security
and Public Safety

cc: The Honorable Michael J. Copps, Commissioner, Federal Communications Commission
The Honorable Robert M. McDowell, Commissioner, Federal Communications Commission
The Honorable Mignon Clyburn, Commissioner, Federal Communications Commission
The Honorable Meredith Atwell Baker, Commissioner, Federal Communications Commission

Response of James Arden Barnett, Jr.
To Written Questions for the Record from
Testimony before the House Subcommittee on Communications, Technology and the Internet
Held on June 17, 2010

The Honorable Henry A. Waxman

1. What do you think about a financing proposal that would fund construction and maintenance of the network through commercial leases? Does the FCC have any estimates on how much might be raised through leasing agreements?

Response:

With respect to the prospect of public safety becoming a spectrum broker for secondary access, nothing in our record demonstrates that enough revenue could be generated to meet capital and operating expenses of the network. The likely result is that public safety would have no choice but to limit the construction of cell sites in rural areas to save money, or simply would not deploy a network at all. Moreover, when the FCC attempted to broker a mandatory partnership with significant public safety obligations on the designated commercial provider, there were no buyers. Thus, we have no assurance that any potential buyers would be willing to pay sufficient leasing fees to fund a viable nationwide network.

The Honorable Anna G. Eshoo

1. Could you comment on Mr. Fontes' perspective about fund-diversion activities? Are there additional administrative tools that you can use to fight this problem, and is there anything that you need legislatively to end the diversion problem? Can't you use available truth in billing rules to handle this matter?

Response:

I share Mr. Fontes' concern about the significant impediment to improving 911 services that can result from the diversion by some states of 911 funds for non-911 purposes. In fact, pursuant to the NET 911 Improvement Act, Commission staff will shortly be submitting its Second Annual Report to Congress on state collection and distribution of 911 fees and charges, which will provide updated information on this issue. FCC staff is also exploring steps the Commission could take within its existing jurisdiction to address 911 fund diversion, including whether the Commission's truth-in-billing requirements could be used to expose or discourage this practice. However, questions remain regarding the extent of the Commission's existing jurisdiction to restrict states from diverting funds. Additional legislation would be one way to address such questions. We welcome your continued leadership in devising legislation to address this critical issue.

2. Do you consider interoperability with 9-1-1 call centers and first responders to be part of the core interoperability model? Should we be looking at comprehensive interoperability that integrates and makes interoperable the call centers with public safety systems?

Response:

I consider interoperability with 9-1-1 call centers and first responders to be part of the core interoperability model. Unfortunately, at this time, the dispatch portion of the overall 911 network suffers from a number of limitations. Most notably, bandwidth constraints limit the ability of the dispatch function to support the delivery of broadband services to, and among, first responders. Additionally, the lack of interoperability limits the necessary coordination between first responders groups, especially when different jurisdictions or levels of government are involved. Since a large portion of the traffic that flows to first responders is from 9-1-1 call centers, I believe that the FCC and Congress should examine comprehensive interoperability solutions that integrate call centers with public safety systems.

The Honorable Anna G. Eshoo (cont.)

3. How do you see the FCC's role in the Next Generation 9-1-1 program? Should we be considering giving you a more active role as NENA advises? What should be your relationship to NTIA in this process, considering our desire to keep the Coordination office and grant administration at NHTSA. Do you see the FCC as having overlapping functions with NTIA that could be streamlined?

Response:

I envision the FCC playing an active role in the Next Generation 9-1-1 program. Indeed, in the National Broadband Plan, the Commission made several recommendations to encourage the deployment of NG911. First, the Commission recommended that the National Highway Traffic Safety Administration (NHTSA) prepare a report to identify the costs of deploying a nationwide NG911 System. The Commission also recommended that Congress allocate public funding for NHTSA to conduct this analysis. Second, the Commission recommended that Congress consider the enactment of a federal NG911 regulatory framework. This framework should recognize existing state authority over 911 services, but should also require states to remove regulatory roadblocks to NG911 development. The FCC should be given the authority to implement the NG911 regulatory framework, eliminate outdated 911 regulations at the federal level and preempt inconsistent state regulations. Third, the FCC will be releasing two NG911-related items later this year. The first will be a Further Notice of Proposed Rulemaking expanding an existing inquiry into location accuracy and ALI requirements to explore how NG911 may affect these issues. The second proceeding will be a Notice of Inquiry exploring how public expectations may evolve as new broadband and IP-based communications services, devices, applications, and technologies develop, and how development of NG911 can meet these expectations and accommodate new forms of communications.

NTIA, NHTSA, and the FCC have worked well together in the past and I am certain that the FCC will closely coordinate with both agencies throughout the NG911 program. Further, I believe that the Coordination office and grant administration should be administered jointly by NTIA and NHTSA. NHTSA staff has acquired extensive experience appropriating E911 grants and this experience should not be overlooked. I would also like to note that the joint effort between NTIA and NHTSA has proven to be successful and the FCC would welcome both entities continued involvement. In regard to your final question, I do not believe that the FCC has overlapping functions with NTIA.

The Honorable Anna G. Eshoo (cont.)

4. Could you comment on Title III of the Public Safety discussion draft where it encourages reclaiming frequencies located between 1675 and 1710 megahertz – I understand that the National Weather Service uses these frequencies at the current time. Would the transfer of this spectrum interfere with essential weather technology? Does the FCC recommend using this spectrum for other purposes?

Response:

On June 4, 2010, the Commission issued a Public Notice in ET Docket No. 10-123 that requested comment on non-federal use of the 1675-1710 MHz band and the band's potential utility for mobile broadband. The Notice noted that the 1675-1710 MHz band is allocated on a co-primary basis for federal and non-federal use for the Meteorological Aids Service and the Meteorological Satellite Service (Space-to-earth). Specifically, this band is used for downlinks from certain weather satellites and radiosondes (weather balloons) that are administered by NOAA, which provides these services for weather forecasting, tracking of hurricanes and other storms, prediction of flooding and drought conditions, and warning against other hazards to life and property. The Notice explained that the National Telecommunications and Information Administration (NTIA) has preliminarily identified the 1675-1710 MHz band as a candidate for mobile broadband use, and noted that NTIA is examining the impact of potential broadband use on incumbent federal users.

5. Isn't the FCC poised to auction the AWS III spectrum, given that there is a full and complete record on this matter? Has the FCC asked for additional time to conduct this auction?

Response:

The Commission has not asked for any additional time to auction the AWS-3 spectrum. As recommended by the National Broadband Plan, NTIA, in consultation with the FCC, is presently conducting an analysis of the possibility of increasing the amount of spectrum available for wireless broadband by reallocating some spectrum currently reserved for federal operations. The Plan anticipates prompt action with respect to the AWS-3 band upon completion of the analysis, and Commission staff is actively working to ensure that the timeframes contemplated by the Plan will be met.

**Supplemental Testimony of Steven E. Zipperstein, Vice President, Legal and
External Affairs and General Counsel, Verizon Wireless**

COMMITTEE ON ENERGY AND COMMERCE
SUBCOMMITTEE ON COMMUNICATIONS, TECHNOLOGY AND THE
INTERNET
U.S. HOUSE OF REPRESENTATIVES

*Hearing on "Constructing a Nationwide, Interoperable, Public Safety Broadband
Network"*

June 17, 2010

Questions for the Record from the Honorable Henry A. Waxman

1. **If Congress were to direct the FCC to allocate the D Block to public safety, budget rules require that we "pay for" this reallocation by coming up with an offset. Mr. Bazelon estimates that the value of the D Block ranges from \$2-5 billion dollars, which would be the amount needed. Assuming we can find a way to cover the cost of this spectrum grant and we do give public safety the spectrum, do you have suggestions on how we could raise the billions necessary to build and maintain the national network?**

Answer: Verizon Wireless believes that the best way to offset the revenue lost from reallocation of the D Block would be to auction other spectrum. The FCC proposed in its *National Broadband Plan* that 500 MHz of new spectrum be made available over the next ten years to support the continued growth of wireless broadband. On June 28, 2010, President Obama issued a Presidential Memorandum that endorses the FCC's recommendations and directs the Department of Commerce and other executive departments, agencies, and offices to work with the Commission to satisfy this goal. While some of the new spectrum may not be available for five years or more, we believe that a significant amount of additional spectrum could be auctioned in the relative near term to provide the revenues needed to offset the reallocation of the D Block.

2. **If Congress were to allocate the D Block to public safety, some have proposed that public safety could fund construction and maintenance of the network through public-private partnerships or by leasing some of the spectrum to commercial carriers. Would this work for rural communities where the private sector may have no need to lease spectrum? If yes, please provide any studies or information you have showing the potential value of leases in rural areas? If not, please provide suggestions on how rural communities might build their portions of the network?**

Answer: In its *National Broadband Plan*, the FCC proposed the construction of a nationwide interoperable public safety broadband network that would provide first responders with broadband access in rural communities as well as in urban areas. Unlike the FCC's original public-private partnership concept, however, this network would not be a single shared network that uses both commercial and public safety spectrum to serve public safety as well as the general public. Rather, it would utilize dedicated public safety spectrum and some dedicated public safety equipment to ensure dedicated access for first responders. As a result, the FCC recommended that the network be funded by the government. To reduce the cost of the network and speed the time to deployment, the FCC proposed that public safety partner with commercial providers to share existing infrastructure (e.g., towers, buildings, backhaul, etc.).

Verizon Wireless supports the FCC's recommendation that the public safety broadband network be fully funded by the government, and that it not rely on spectrum leasing arrangements with commercial providers. While spectrum leases are often useful mechanisms for commercial providers to gain access to spectrum, we do not believe they represent the best means for funding construction and operation of the proposed Public Safety broadband network. Public Safety's spectrum needs are likely to be very situationally dynamic, rendering it more difficult to structure a spectrum lease arrangement with a commercial provider because there would be little certainty as to when the spectrum would be available on a consistent and predictable basis for commercial use.

The FCC requested funding to cover estimated aggregate capital expenses of \$6.5 billion, and annual operating expenses of approximately \$1 billion over the first ten years. These estimates include construction and operation of the network in rural communities. Thus, assuming these estimates are accurate, there should be more than sufficient funds from upcoming spectrum auctions to construct the network in rural areas without the need to lease the spectrum. Nonetheless, public safety officials should have the flexibility to lease their spectrum if they deem it appropriate. In some rural areas, public safety may conclude that it is more cost effective to share a network with a commercial provider rather than to build a dedicated public safety network. Under such a scenario, leasing the spectrum to a commercial provider would be a necessary prerequisite to enable the construction of such a shared network.

3. **If Congress must choose, is it your position that it is more important for public safety to hold the D Block license than to have dedicated funding to build the network?**

Answer: Sufficient spectrum and funding are both needed to ensure the successful implementation and operation of a nationwide public safety network. Neither is more important than the other. Fortunately, Congress doesn't need to make such a choice. The FCC's plan to auction 500 MHz of new spectrum over the next ten years

provides the assurance that there will be more than adequate monies to fund the construction and operation of the network without having to auction the D Block.

4. **Would you support the imposition of a line item on consumer broadband or wireless bills to finance this spectrum grant? What about a spectrum fee on spectrum licensees?**

Answer: As already stated, Verizon Wireless believes that the best way to offset a reallocation of the D Block, as well as support the construction and operation of the public safety broadband network, is to auction additional spectrum. Fair and open auctions, in which no encumbrances are placed on the spectrum and no potential bidders are excluded, will raise more than enough money to fund the construction and operation of a nationwide, interoperable Public Safety broadband network.

Nevertheless, if Congress wishes to utilize a consumer tax to help fund the proposed public safety plan, it should do so in a way that recognizes the universal benefit to all Americans of a nationwide public safety broadband network. Thus, such a tax should not apply solely to wireless consumers or to broadband consumers, but to a much broader population. For example, a fee similar to the E911 surcharge, which applies to all telecommunications lines (wired or wireless), would ensure that the cost of the public safety network is spread over all those that will ultimately benefit from it.

We do not favor the imposition of spectrum fees on licensees.

5. **Some corporate analysts and media reports have suggested that Verizon and AT&T are advocating a position that provides each company with a tremendous commercial advantage. They say that if the D block goes to public safety, Verizon and ATT would keep valuable spectrum out of the hands of their competitors and eliminate any real competition for contracts to build the public safety network. Additionally, Verizon and AT&T would end up paying less to lease spectrum from public safety because they would be the only options available to public safety if other competitors do not obtain 700 MHz spectrum. How do you respond to this analysis?**

Answer: Unlike Sprint, T-Mobile, and other commercial providers, Verizon Wireless' position is not influenced by a desire to gain access to the D Block. Those competitors could have bought the D Block at auction two years ago had they wanted to, but they chose *not* to do so. Indeed, neither T-Mobile nor Sprint made a single bid for the D Block, nor for *any other* spectrum license in the entire 700 MHz auction. Thus, it rings hollow for those companies to complain today about Verizon Wireless' 700 MHz spectrum holdings, when neither company submitted a single bid for a single 700 MHz license.

In addition, Sprint has repeatedly told investors that its current spectrum holdings are superior to Verizon Wireless' and AT&T's 700 MHz portfolios for purposes of providing 4G services. For example, earlier this year Sprint said the following:

As WiMAX and LTE use very similar radio technologies, the bandwidth efficiency should be roughly equal and, in the end ..., *having more spectrum available is a far greater advantage than the frequency band it occupies*. Initial LTE services are planned for the 700 MHz spectrum the FCC auctioned in 2008. In each major market, the 700 MHz A- and B-Blocks provide a total of 24 MHz and the C-Block (Open Device block) has a total of 22 MHz. *Sprint/Clearwire have an average of 120 MHz of 2.5 GHz BRS spectrum in most major markets.*¹

More recently, Sprint's CEO told the *Financial Times* that Sprint Nextel is considering adding a Long Term Evolution (LTE) network to its growing list of supported networks, citing its significant spectrum advantage: "We have the spectrum resources where we could add LTE if we choose to do that, on top of the WiMAX network. *The beauty of having a lot of spectrum is we have a lot of flexibility.*"²

Finally, to the extent other carriers need more spectrum, they will have every opportunity to bid for it (and provide the needed proceeds for the Public Safety broadband network) in the upcoming auctions of new spectrum, as the Administration has requested.

Verizon Wireless is advocating a reallocation of the D Block because it wants an effective long term solution to the problems with public safety communications that have plagued our nation for too long. The current system for public safety communications has not only resulted in a lack of interoperable communications that undermines emergency response and places our first responders at risk, but it has also promoted an inefficient spectrum management process that threatens future spectrum use. We have a unique opportunity to put public safety on the right course – with the right spectrum, technology, and public policies that will resolve the problem once and for all. This includes creating a new spectrum home for public safety in the 700 MHz band that will eliminate the problems caused by the use of disparate networks in many different bands.

A reallocation of the D Block would not extend an advantage to any particular carrier in partnering with public safety. All carriers, as well as other commercial entities, would be free to compete for the opportunity to partner with public safety through an open and competitive "Request for Proposal" (RFP) process. It is expected that this RFP process would be implemented by local, state and/or regional public safety entities, which means that there will be ample opportunity for carriers to participate regardless of size. And, because the proposed network would be dedicated to public safety and would not be part of a shared network, it is not even necessary for a carrier

¹ "Mobile WiMAX: The 4G Revolution Has Begun," Version 1.0 at 12 (latter emphasis in original), available at http://029b499.netsolhost.com/whitepapers/Sprint_Mobile_WiMAX.pdf.

² Andrew Parker, *Sprint's 4G Move Opens Way to Merger*, *Financial Times*, Jul. 12, 2010 (emphasis added), available at <http://www.ft.com/cms/s/0/c4d6eb6a-8de0-11df-9153-00144feab49a.html>.

to be a 700 MHz licensee in order to establish such a partnership. A commercial carrier could propose to build, operate and maintain the public safety network and collocate the network at its existing facilities even if it only operates commercial systems outside of 700 MHz.

As already noted, Verizon Wireless believes that most public safety officials will not choose to lease their spectrum but rather make direct use of it. Consequently, claims that a reallocation of the D Block would enable Verizon Wireless and AT&T to get access to spectrum at reduced rates are unfounded.

Questions for the Record from the Honorable Anna G. Eshoo

- 1. According to news report from 2009 and 2010, my understanding is that Verizon Wireless is participating in the “TD-LTE” trials with China Mobile in order to help achieve scalability for this 4G standard that uses “unpaired spectrum.” Doesn’t this investment contradict your testimony about the need for more “paired spectrum” here in the US?**

Answer: Verizon Wireless has been cooperating with China Mobile in their LTE trials in hopes that expansion of LTE around the world will drive greater economies of scale in the U.S. However, our support for those trials should not be misinterpreted as a preference for unpaired spectrum over paired spectrum. We continue to believe that paired spectrum offers significant advantages over unpaired spectrum, including a better environment for managing interference between different wireless broadband systems. Consequently, we have advocated that paired spectrum be allocated wherever possible. When pairing is not possible and the risk of interference is minimal, the use of TDD-based technologies (like TD-LTE) is appropriate.



July 27, 2010

Honorable Henry A. Waxman
Chairman
Committee on Energy and Commerce
2125 Rayburn House Office Building
Washington, DC 20515-6115

Honorable Rick Boucher
Chairman
Subcommittee on Communications, Technology and the Internet
2125 Rayburn House Office Building
Washington, DC 20515-6115

Dear Chairman Waxman and Chairman Boucher:

Thank you again for inviting me to testify before the Subcommittee at the hearing on June 17th. U.S. Cellular continues to believe that the goal of a nationwide network for public safety is best achieved through long-term, full partnerships with commercial operators. It was an honor to share our perspective with the Subcommittee and we look forward to working with you to advance this goal.

As requested, enclosed is the response to the follow up question put forward in your letter of July 13th. Please contact me at your convenience if there are any further questions on this matter.

Sincerely,

A handwritten signature in cursive script, appearing to read "Joseph R. Hanley".

Joseph R. Hanley
Vice President – Technology, Planning and Services
Telephone and Data Systems, Inc.

enclosure

Response to question from the Honorable Henry A. Waxman**Question:**

U.S. Cellular serves a number of rural areas. Do you think leasing is a viable option to pay for the construction and maintenance of the network in rural areas?

U.S. Cellular's Answer:

U.S. Cellular has extensive experience in constructing, maintaining and operating wireless networks serving rural areas in 26 states, including many areas that were unserved or underserved by other carriers. Our aggressive investments in third-generation broadband networks already reach about 75 percent of our post-pay customers and will reach 98% this year. Along with 6 million consumer and business subscribers to U.S. Cellular's services, hundreds of state and local public safety agencies subscribe to our mobile voice and data services.

U.S. Cellular believes that the [Bipartisan Staff Discussion Draft to Provide Funding for the Construction and Maintenance of a Nationwide, Interoperable Public Safety Broadband Network and for Other Purposes](#) provides a viable option to pay for the construction, maintenance and operation of the network supporting broadband, interoperable wireless services for public safety agencies in rural areas. Depending on the rules adopted to implement this approach, U.S. Cellular expects to bid on spectrum licenses. If successful in winning some licenses, we expect to discuss shared network partnerships with the Public Safety Spectrum Trust and with public safety agencies assisted by federal grants funded through auction proceeds.

U.S. Cellular prefers a D Block auction to reallocation because it provides a more certain path to commercial participation. In past testimony we have described the conditions under which reallocation, coupled with firm rules governing the selection of partners and the lease of commercial capacity, could work. Our fear is that, without such rules, simply reallocating the D Block to public safety agencies and allowing them to lease portions of this spectrum to commercial operators provides a less secure foundation for the full, long-term partnership we believe is required for success. By making the arrangement less secure for commercial operators, the result will be less commercial funding for public safety than an auction would generate. In many locations, an underfunded rural public safety community would lack the resources needed to build networks on the spectrum and it could sit idle for years to come. Finally, without the firm foundation of commercial D Block licensees, it will be more difficult for an ecosystem to develop in the frequencies of the D Block and the Public Safety Broadband Spectrum, affecting costs for all public safety agencies, urban and rural. The D Block and the Public Safety Broadband Spectrum are the sole occupants of 3GPP's Band Class 14. In order for an adequate ecosystem to develop for Band Class 14 mobile devices, a robust commercial user base is required. With this broader user base, the price of public safety handsets for the 700 MHz band would benefit from economies of scale. The recent report of the Congressional Research Service states:

The participation of commercial carriers in developing and deploying, for example, a common radio interface, is expected to put the cost of public safety radios in the same price range as commercial high-end mobile devices (\$500). By contrast, interoperable radios for the narrowband networks at 700 MHz cost \$3,000 and up, each.

(L. Moore, "Spectrum Policy in the Age of Broadband: Issues for Congress" at 8 (July 1, 2010)).

FCC Chairman Genachowski's letter to you dated July 20, 2010 makes the same observation. In the absence of the firm foundation of commercial license rights, commercial participation in partnerships may not be sufficient to provide this critical scale contribution to the Band Class 14 ecosystem.

Under the reallocation/leasing approach, U.S. Cellular and other operators may seek to lease spectrum in some rural areas, but unless rules are enacted that ensure participation of commercial operators as full partners with long-term rights, the proceeds may be inadequate to achieve the objective. We are concerned that in many rural areas the commercial demand under a spectrum lease framework (i.e. without license rights) would not justify sufficient payments for construction, maintenance and operation of networks meeting public safety's coverage and other specifications.

Finally, U.S. Cellular is concerned that any leasing process run by public safety agencies could limit the opportunities of smaller carriers to use spectrum. The wireless marketplace and spectrum holdings have become highly concentrated. Competition in commercial services requires that smaller carriers have reasonable opportunities to acquire additional spectrum. In contrast to the FCC's long experience in auctioning spectrum, public safety agencies do not have experience in leasing spectrum or capacity on their networks. It is also unreasonable to expect public safety agencies to take sufficient account of the public's interest in competition for commercial services. As a result, without substantial guidance and oversight, the leasing process may encounter delays and a preference for the larger carriers. The result would be less competition for broadband wireless services and underutilization of a scarce resource.

Viable Option – Auction, Shared Network Partnerships and Grants

The Bipartisan Draft builds on three solid foundations to promote this network in rural areas.

First, the proposed legislation would auction the 700 MHz D Block licenses as well as additional spectrum. With reasonable geographic sizes for these licenses, the licenses would be sold to carriers that would build, maintain and operate broadband networks in all areas of the country, including rural areas. In Auction 73 for other 700 MHz licenses and in more recent public statements, commercial operators demonstrated and expressed strong demands to bid on reasonably-sized spectrum licenses in all areas. U.S. Cellular believes that, if able to obtain these spectrum licenses, it and other carriers would aggressively build broadband networks in rural areas.

Such rural broadband deployments by commercial licensees would be further supported by the inclusion of a strong mobile component in a reformed Universal Service Fund. Properly designed, the USF funding would help commercial licensees of the D Block achieve faster

construction of higher quality, more ubiquitous wireless broadband networks serving both commercial and public safety users.

Next, the Bipartisan Draft would promote shared network partnerships between public safety agencies and other 700 MHz licensees. Shared networks would yield strong efficiencies in construction and maintenance, which would be especially important in rural areas that are characterized by higher costs and lower usage per cell site than urban areas. Moreover, shared networks would provide additional capacity for public safety use during emergencies. U.S. Cellular's experience is consistent with the FCC's cost model – there would be large savings from a coordinated build-out and operation of a network using the public safety spectrum and commercial spectrum. According to the FCC's cost model, failure to coordinate efforts with commercial providers would potentially increase construction and operation costs for the public safety network by more than \$47.5 billion. Under the draft legislation, public safety agencies would be able to choose among competitive alternatives for these shared network partnerships; the competitive alternatives among spectrum licensees would give public safety agencies a strong position to maximize the availability and minimize the costs of obtaining the coverage, reliability, service features and other terms that they want in mobile broadband services.

Third, the proposed legislation provides a mechanism to support public safety mobile broadband services in those rural areas where the shared network partnership alone is insufficient to meet public safety needs. The grant program established by the Assistant Secretary of Commerce for Communications and Information, in consultation with the FCC and the Secretary of Homeland Security, would draw on the billions of dollars of proceeds from auctioning all licenses in the two spectrum blocks to assist public safety agencies. In some cases, the shared network would not cover certain remote areas without such funding. In other cases, the shared network would require funding to meet public safety specifications in certain rural areas. Properly implemented, this framework would produce the nationwide, interoperable, broadband wireless network to support public safety needs.

The history of wireless services in rural areas has been plagued by two divides driven by demand and cost factors in the commercial marketplace – (1) between the high-quality “haves” in urban areas and the lower-quality “have-nots” in rural areas generally, and (2) between the “haves” portions of rural areas with reliable wireless coverage (like along interstate highways) and the “have-nots” portions of rural areas (like in places with low population density away from highways) with no, unreliable or limited service. The network envisioned for public safety services must overcome the barriers to service in all rural areas through targeted federal financing. U.S. Cellular expects that in many rural areas grants funded by the auction proceeds would be critical to constructing, maintaining and operating a network meeting public safety specifications.

In summary, Congress should (1) direct the FCC to define reasonably-sized commercial licenses as it has in other auctions and conduct an auction under rules similar to the FCC's experience in other auctions, and (2) create a grant program with a nationwide pool of auction proceeds available to fund needy rural areas.

HENRY A. WAXMAN, CALIFORNIA
CHAIRMAN

JOE BARTON, TEXAS
RANKING MEMBER

ONE HUNDRED ELEVENTH CONGRESS
Congress of the United States
House of Representatives
COMMITTEE ON ENERGY AND COMMERCE
2125 RAYBURN HOUSE OFFICE BUILDING
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Majority: (202) 225-2927
Minority: (202) 225-3841

July 13, 2010

Coleman D. Bazelon
Principal
The Brattle Group
1850 M Street NW, Suite 1200
Washington, DC 20036

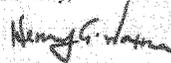
Dear Mr. Bazelon:

Thank you for appearing before the Subcommittee on Communications, Technology, and the Internet, on June 17, 2010, at the legislative hearing on a discussion draft to provide funding for the construction and maintenance of a nationwide, interoperable public safety broadband network and for other purposes and on H.R. 4829, the "Next Generation 9-1-1 Preservation Act of 2010."

Pursuant to the Committee's Rules, attached are written questions for the record directed to you from certain Members of the Committee. In preparing your answers, please address your response to the Member who submitted the questions.

Please provide your responses by July 27, 2010, to Earley Green, Chief Clerk, via e-mail to Earley.Green@mail.house.gov. Please contact Earley Green or Jennifer Berenholz at (202) 225-2927 if you have any questions.

Sincerely,



Henry A. Waxman
Chairman

Attachment

The Honorable Henry A. Waxman

1. You testified that the imposition of auction conditions – such as eligibility restrictions, open access conditions, large geographic areas, or combinatorial bidding – would reduce revenue from the spectrum auctions? By how much do you believe each of these conditions would reduce auction revenues? Please provide information on the assumptions underlying your analysis.

A: *Each auction condition mentioned has the potential to negatively impact auction revenue. I have discussed each of these restrictions at length in previous writings, including in:*

- *“Too Many Goals: Problems with the 700 MHz Auction,” Information Economics and Policy, June 2009, pp. 115-127.*
- *“Why the Exclusive Use of Large Licenses in the Upper or Lower 700 MHz Bands Would Reduce the Efficiency of the 700 MHz Auction,” Comments, WT Docket No. 06-150, April 20, 2007.*
- *“Principles for Choosing 700 MHz Block License Sizes,” Ex Parte Comments, WT Docket No. 06-150, March 6, 2007.*
- *“The Economics of License Sizes in the FCC’s 700 MHz Band Auction,” Ex Parte Comments, WT Docket No. 06-150, January 2007.*

The impact on auction revenues from each auction condition imposed would depend on the specific nature of the restriction and the auction. The impacts may also not be additive. For example, I have argued that in the 700 MHz auction the impact of open access regulations probably did not have a large impact on receipts because other design problems depressed prices sufficiently so that the effect of open access requirements was muted. Sufficiently onerous auction conditions have the potential of eliminating any bidder interest in an auction and reducing revenue to zero, as was the case with the original D Block in the 700 MHz auction. Without more information about the specific auction conditions and the auction they would be applied to it is impossible to quantify the impacts on auction revenues.

2. Some analysts have suggested that allowing the two largest carriers to bid without restriction might actually diminish the overall revenues from an auction. More specifically, these analysts contend that because smaller carriers would be unwilling to enter into a bidding contest against much larger companies like AT&T or Verizon, there will be less competition for the largest carriers. Accordingly, AT&T and Verizon will pay less for spectrum at auction. Is this a valid concern in your view?
- A: *If the concern raised—that the presence of AT&T and Verizon in the auction might keep most other bidders out of an auction—comes to true, then it would be likely that AT&T and Verizon would be able to get the spectrum at a low cost, assuming they do*

not bid aggressively against each other. I am not in a position to comment on any potential bidders' plans or reactions to AT&T or Verizon participating in a D Block auction and will leave it to them to describe their response to AT&T and Verizon bidding. I will note, however, that there was robust demand for licenses by smaller bidders in the 700 MHz A & B Blocks even though AT&T and Verizon were bidding in that auction for those blocks.

The Honorable Anna G. Eshoo

1. According to Mr. Zipperstein, there is no benefit from the pairing of AWS-3 with 1675-1710 MHz because that band is “not globally” harmonized. I noticed that your calculations are based on this harmonization making your estimates of the value of these bands highly unreliable. What do you believe is the value of the 1675-1710 band unpaired?

A: Unpaired spectrum is less valuable than paired spectrum, other things equal. In the 700 MHz auction, the unpaired E Block sold for \$0.74/MHz-Pop, compared with an average for the paired A, B and C Blocks of \$1.36/MHz-Pop, implying a discount of 46% for unpaired spectrum. In my testimony, I suggested a reasonable initial estimate of the value of the 1675 – 1710 MHz spectrum if paired would be about \$0.50/MHz-Pop. Applying the E Block discount to this estimate implies the value of the band unpaired would be approximately \$0.27/MHz-Pop.

2. In the study you submitted to the FCC on behalf of the Consumer Electronic Association as part of its comments in the National Broadband Plan, you analyzed the economic benefit of consumers from having access to wireless broadband. In the AWS-3 record at the FCC, Dr. Wilkie, former FCC Chief Economist, estimated that putting out the AWS-3 into the marketplace for wireless broadband as an unpaired band would generate over \$25 billion in consumer benefits. In making your projections, have you considered this alternative and if not, why not? Shouldn't your analysis weigh the alternatives that are possible?

A: Although I did not specifically consider this alternative in my analysis, consideration of unpaired spectrum does not change my conclusions. Dr. Wilkie's estimate of \$25 billion in consumer benefits is consistent with my analysis. I noted in the study that consumer benefits are likely to be 10 to 20 times the value of the spectrum. The implication is that if consumer benefits are \$25 billion, then the value of the spectrum is \$1.25 billion to \$2.5 billion. My estimate of the value of unpaired spectrum noted above of \$0.27/MHz-Pop implies a value of the AWS III band unpaired of approximately \$2 billion. In my testimony, I noted that the value of 50 MHz of paired spectrum could be \$7.5 billion. This implies consumer benefits on the order of \$75 billion to \$150 billion, far in excess of those estimated by Dr. Wilkie, even after adjusting for bandwidth.

3. As you know, there is a huge economic cost to Americans from the FCC's delay in reallocating spectrum for broadband. According to economic studies submitted to the FCC in the AWS-3 record, the FCC's delay in getting the AWS-3 spectrum into the marketplace is costing US consumers around \$4 billion in net present value each year. Purely as a matter of economics, doesn't the draft legislation add to this problem by causing a 3 year delay? By my calculation the AWS-3 band has been in limbo since

at least 2003 so that amounts to \$28 billion of consumer value that was lost over the last 7 years because of FCC inaction?

A: *Delay in getting spectrum in productive use is a pure waste—the loss from frequencies left fallow can never be recovered. The 7 years of delay noted, however, is already lost and should not influence what the most productive path forward will be. The trade-off described above is between unpaired today and paired in three years, with a cost of the unused unpaired band of \$4 billion per year. These parameters imply that waiting to sell the AWS III spectrum as paired would be worth while if it increased the consumer surplus derived from the spectrum by at least \$12 billion. (For simplicity, the effects of the time value of money are ignored. Including those effects would not qualitatively change any conclusions.) Based on ratios of consumer surplus to spectrum value between 10 to 1 and 20 to 1, this condition is met if pairing spectrum increases the spectrum value by \$0.6 billion to \$1.2 billion*

If a paired band of 50 MHz is estimated to be worth \$7.5 billion, applying the 46% discount for unpaired spectrum implies that the 50 MHz if sold unpaired would be worth about \$4 billion, and the 25 MHz of the unpaired AWS III band would be worth half that, about \$2 billion. By selling the 25 MHz of AWS III spectrum as part of a pair, its value increases from about \$2 billion to about \$3.75 billion, or an increase of about \$1.75 billion. Since \$1.75 billion is greater than \$0.6 billion to \$1.2 billion, I would conclude that costs of 3 years of delay would be more than made up by the additional value created by pairing the AWS III band.

National Emergency Number Association
The Voice of 9-1-1™



July 27, 2010

The Honorable Henry A. Waxman
Chairman
Committee on Energy and Commerce
U.S. House of Representatives
2125 Rayburn House Office Building
Washington, DC 20515

Dear Chairman Waxman:

Thank you for your leadership on 9-1-1 and emergency communications matters. Your efforts are vitally important in this critical public safety area and we look forward to working with you to ensure full and effective deployment of 9-1-1 and Next Generation 9-1-1 services.

Attached please find responses to two additional post-hearing questions from my appearance before the Subcommittee on June 16, 2010, regarding the staff discussion draft of the Public Safety Broadband Act of 2010, and H.R. 4829, the Next Generation 911 Preservation Act of 2010.

Please let me know if there is anything I can do to be of further assistance.

Sincerely,

Brian Fontes
Chief Executive Officer

National Emergency Number Association
The Voice of 9-1-1™



Question 1: Thank you for supporting the NG9-1-1 bill and for working with the staff to improve the current version of the bill. As you know, Mr. Shimkus and I have an appreciation for the work done at NHTSA to develop and operate the E9-1-1 Coordination Office. How do you see the coordinating offices functions and what role would each agency play – NHTSA, NTIA and the FCC under your view of the bill?

Answer to Question 1: As I noted in my testimony, the E9-1-1 Coordination Office plays a central role in facilitating collaborative efforts among all 9-1-1 stakeholders. This collaboration is essential to ensure that Federal policies and efforts are consistent and coordinated and do not contradict the objective of all parties -- to advance the availability of E9-1-1 for all consumers. To date, the bulk of the work has been done by the Department of Transportation (DoT) and specifically the NHTSA staff. NHTSA staff has invested considerable time and effort to establish effective working relationships with the various 9-1-1 stakeholders -- both public and private entities. We believe that the DoT's NG9-1-1 Initiative is a positive example of appropriately reaching out and seeking input from all stakeholders relevant to all aspects of the project. The NHTSA has utilized a consensus process for the projects they fund. This process helps to ensure that the project deliverables are utilized by the stakeholders and thus further enables activities that will result in the deployment of NG9-1-1. If the bill were to continue the joint responsibilities in this area among Federal agencies, then NHTSA could appropriately continue to administer the grant program; the necessary infrastructure is already in place in the event that an appropriation is made to fund the authorized grant program and NTIA could continue to provide important assistance and insights to the process. The NHTSA and NTIA could also continue to share responsibilities of working with their respective Congressional committees of jurisdiction.

NENA strongly believes that the FCC should be involved in the coordination function, especially since there is a substantial effort included in the National Broadband Plan (NBP) addressing NG9-1-1. The FCC has noted there will be a series of proceedings stemming from the NBP addressing NG9-1-1 issues. Again, to ensure a consistency in Federal policy, NENA believes that expressly including the FCC in this collaborative effort would be beneficial to all stakeholders involved and will improve public safety efforts. Given the review of the FCC, NHTS/NTIA, and DHS/OEC, a Federal framework that enables these agencies to work together would provide needed coordination and information exchange to facilitate the timely deployment of a truly interoperable system.

Question 2: As you probably know, Rep. Shimkus and Senator Klobuchar and Burr recently joined me in sending a letter to the FCC in advance of its yearly report on the diversion of state funds from E9-1-1 programming. What tools do you think are available to discourage diversion other than tying grants to non-diversion? Do we need to consider providing additional authority to the FCC to handle this issue?

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Answer to Question 2: To start, your question seeks a response regarding the tools that would discourage diversion of state 9-1-1 funds for non 9-1-1 activities. This is difficult. The most effective way to date has been the requirements to return grant money if funds are diverted. The downside of this approach is that some PSAPs may be harmed financially in their efforts by the actions of certain state officials who simply do not view 9-1-1 as a priority. Nonetheless, this approach has proven to be successful in some states. Perhaps tying the diversion of 9-1-1 fees to other federal grants to the states within the purview of the Committee may also strengthen the disincentive to divert 9-1-1 funds.

Additionally, the question of redirecting 9-1-1 funds could potentially be raised in truth-in-billing proceedings by the FTC and the FCC. In the truth-in-billing context, the FCC could consider mechanisms to facilitate disclosure of this information to consumers (by billing or website materials) so that they are notified that the states in question have redirected 9-1-1 funds for non-9-1-1 uses.

Certainly, the requirement of the FCC to collect information on states that redirect 9-1-1 funds and report this information is important. The information can be used in the media and by policy makers, at the Federal, state and local levels. If well-publicized, the information can help underscore the public safety impacts of such diversions, and help to prevent future occurrences.

The FCC's primary jurisdiction is over its licensees, not the actions of states in their non-licensee role. And so there are understandable limits there. One alternative could include conditioning licenses held by state or authorities of the state on the premise that there is no redirection of 9-1-1 funds. This approach has the unfortunate, unintended consequences of potentially harming these licensees if the state does not have 9-1-1 as a priority. It is not NENA's intent to harm these licensees. Using federal grant authority conditions and disclosure tools regarding state diversion practices may prove more effective in dealing with this serious issue.

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