

**700 MHz AUCTION: PUBLIC SAFETY
AND COMPETITION ISSUES**

HEARING

BEFORE THE

**COMMITTEE ON COMMERCE,
SCIENCE, AND TRANSPORTATION**

UNITED STATES SENATE

ONE HUNDRED TENTH CONGRESS

FIRST SESSION

JUNE 14, 2007

Printed for the use of the Committee on Commerce, Science, and Transportation



U.S. GOVERNMENT PRINTING OFFICE

74-104 PDF

WASHINGTON : 2012

For sale by the Superintendent of Documents, U.S. Government Printing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512-1800; DC area (202) 512-1800
Fax: (202) 512-2104 Mail: Stop IDCC, Washington, DC 20402-0001

SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

ONE HUNDRED TENTH CONGRESS

FIRST SESSION

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700 MHz AUCTION: PUBLIC SAFETY AND COMPETITION ISSUES

THURSDAY, JUNE 14, 2007

U.S. SENATE,
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
Washington, DC.

The Committee met, pursuant to notice, at 10:02 a.m. in room SR-253, Russell Senate Office Building, Hon. Daniel K. Inouye, Chairman of the Committee, presiding.

OPENING STATEMENT OF HON. DANIEL K. INOUE, U.S. SENATOR FROM HAWAII

The CHAIRMAN. The broadcasters are required by law to turn off their analog signals on February 17, 2009. As we approach this deadline, the FCC faces decisions that will shape the future of public safety and commercial communications services. The Commission appears ready, at long last, to adopt final service rules that will govern the auction and reuse of frequencies in the 700 MHz band. As with most communications policies that offer great promise, the 700 MHz band auction also offers great complexity. But if history is our guide, the decisions that the FCC will soon make in establishing service rules have the potential to revolutionize the communications landscape and to lay the foundation for the future development and deployment of new wireless broadband services.

Because radio waves operating in the 700 MHz band can travel long distances and can penetrate through walls, they are uniquely capable of extending next-generation broadband services to parts of America that current technologies fail to reach. As some have noted, these frequencies are the equivalent of the new beachfront property in the increasingly crowded market for spectrum real estate.

For public safety, the stakes are very high. In many cities, their narrow-band voice communications systems already chafe under capacity constraints. For that reason, we must ensure that our band clearing efforts stay on track.

In addition, our efforts must also recognize that the future of public safety does not depend on voice communications alone. The 700 MHz proceeding offers our country a unique—and perhaps historic—opportunity to establish rules that will promote the development and operation of next-generation broadband networks for public safety. With proper planning and safeguards, these networks could be designed, from the outset, to be interoperable. They could reap the benefits of greater economies of scale and promote greater efficiency in the use of scarce spectrum resources.

Without question, the concept of a partnership between public safety and a commercial operator, as some have suggested, would represent a paradigm shift in the way traditional public safety communications have been managed and operated. It raises many difficult questions that must be carefully considered and answered.

But the difficulty of the task should not alter the responsibility of our regulators to meet the needs of first responders and to facilitate the development and use of cutting-edge communications technologies that will be essential to protecting the safety of current and future generations.

In my opinion, we are well past the question of whether we should help first responders build and operate a nationwide interoperable broadband network. Instead, it is time that we focus on what we must do to accomplish this goal as quickly as possible.

In addition to the unique opportunities that service rules may offer for public safety, the upcoming auction of commercial spectrum has the potential to reward consumers with substantial benefits in the rollout of new wireless broadband services. Yet, despite such promise, there are lingering concerns that the FCC's current service rules, which favor large spectrum blocks and large geographic license areas will limit participation in the auction and will provide established incumbents with an opportunity to strengthen their control over existing spectrum resources.

While changes to these rules are under consideration, it is important that the Commission recognize the dangers of further consolidation and adopt rules that will attract new entrants and promote competition.

Similarly, it is my hope that the Commission will remember that a spectrum auction represents a means to an end, not an end in itself. There is no question that the auction of 700 MHz frequencies will yield the Treasury substantial sums of money, but we should not let that fact seduce us into forgetting the importance of designing service rules that also meet other critical policy goals. This auction must ensure a diversity of license ownership, promote Universal Service and the deployment of services beyond major cities and highways, and encourage entrepreneurship and the development of innovative technologies and applications that will stoke demand for highspeed service. In sum, there's a lot at stake.

We are fortunate today to have two distinguished panels of witnesses to assist us in examining these issues. And I look forward to their testimony and their answers to our questions.

But, before I do, may I call upon the distinguished Vice Chairman of the Committee?

Senator STEVENS. Well, I was late. If my friend is ready, go ahead.

Senator ROCKEFELLER. I'd yield to you.

Senator STEVENS. Thank you.

**STATEMENT OF HON. TED STEVENS,
U.S. SENATOR FROM ALASKA**

Senator STEVENS. Well, I applaud my good friend, the Chairman, for calling this hearing to examine the 700 MHz auction and the public safety issues.

We're now 4 months closer to the 700 MHz auction than the last time the Committee held a hearing looking at the public safety proposal that would use some of the auctioned spectrum. This new proposal involves less spectrum for auction, and does not fix the price in advance. Still, there are, to me, outstanding questions to be resolved, and I hope the witnesses will answer many of the questions regarding how this public service—how this will serve the public safety interests and the interests of the American taxpayers, as well as really control the spectrum. I think that's the primary issue, as far as I'm concerned. It's important that all proposals be examined to ensure that Congress is doing as much as we possibly can to save the lives of our first responders, and help them save other lives. But we must also be sure that we're not always examining, and never acting. We must make some decisions now on this proposal.

Separately, we'll hear, I understand, a discussion of new proposals for the rules surrounding the commercial side of the 700 MHz auction. Some of those issues are technical in nature, and impact business plans and business strategies. By the end of our hearing, I hope that some common themes will emerge so the FCC can move forward in conjunction with Congress, and so we can all agree, and, in a timely fashion, hold this auction in a way that will secure the 24 MHz of spectrum in the 700 MHz bands for public safety on time, provide new wireless opportunities for consumers and small businesses, and ensure that taxpayers receive the full value for the use of the spectrum that's dedicated to the public interest.

Thank you very much.
The CHAIRMAN. Thank you.
Senator DeMint?

**STATEMENT OF HON. JIM DEMINT,
U.S. SENATOR FROM SOUTH CAROLINA**

Senator DEMINT. Thank you, Mr. Chairman.
In the interest of time, I'd like to submit my entire statement here for the record and just make a couple of comments.

Thank you for——
The CHAIRMAN. Without objection.
Senator DEMINT. Thank you, sir.

[The prepared statement of Senator DeMint follows:]

PREPARED STATEMENT OF HON. JIM DEMINT, U.S. SENATOR FROM SOUTH CAROLINA

Thank you, Mr. Chairman, for scheduling this hearing. I also want to thank the panelists with us today.

The amount of activity and interest in this DTV transition just goes to show how very important and valuable this public asset—the 700 MHz spectrum—is to our economy, our public safety, and our individual constituents' daily lives.

After much hard work and many long years, we are finally close—within months—of realizing the opportunities that the 700 MHz spectrum presents. With this spectrum finally cleared and licensed, we will have more tools to attack difficult issues like public safety interoperability, universal service, and the digital divide.

It is vitally important that we move ahead with wireless broadband in this Nation. Beyond mobility and the potential “third pipe” it will offer into American homes, it presents us with a great chance to leapfrog where we are today with funding less efficient and more expensive technologies through our Universal Service Fund.

Innovation will only increase as commercial applications and consumer demand grow in this space. That is why it is vital that the FCC develop flexible rules that allow current providers as well as new entrants the ability to bid on this spectrum and develop it as the market demands.

But, we aren't there yet. The Commission has some big decisions to make, hopefully in the coming weeks, about the rules for this auction. Those include:

1. whether to competitively auction all of the 60 MHz remaining for commercial services;
2. the geographic sizes of the licenses to be auctioned;
3. and what, if any, usage rules to impose on the winning bidders.

Mr. Chairman, several of my fellow colleagues joined me in a letter this week to the FCC Commissioners outlining our thoughts on the proceedings currently underway. I would like to ask consent to make this part of the record.

I believe it is important that the entire 60 MHz of available spectrum be auctioned competitively. This means that there should not be special restrictions placed on any portion of it that would either suppress interest from other bidders or benefit a particular business model. I urge the Commission to avoid weakening or skewing the role of market forces in this auction process.

There are some who seek more spectrum for public safety interoperability in addition to the 24 MHz already set aside. While I appreciate their sincerity and good intentions, I do feel that they seem to have made up their minds before we have had a chance to actually get to the 24 MHz already set aside and fully develop its potential. Also, I feel there are great opportunities for the public safety community with the spectrum, technologies, and public/private partnerships already available today.

As for the appropriate size of licenses, I believe that the Commission should be guided by what is best for the American people and not individual bidders. The winners of this auction, if conducted properly, will be consumers. They should expect the benefits of more options, lower costs, and better services. There is a place for smaller, more localized licenses, and I feel the Commission's Lower-700 MHz band plan accounts for this.

But, there is clearly value in large-area licenses, as well. I know my constituents are ready for nationwide mobility and wireless broadband speeds comparable to DSL and cable. It seems to me that the most efficient way to get there is to offer bidders the opportunity to provide services immediately to a wide area and substantial population.

Finally, I urge the Commission to avoid imposing rules on the services provided by winning bidders like net neutrality or open access requirements. Government regulation has not created 200 million wireless phone users in our country. Neither has it made wireless Internet the viable option it is becoming today. These developments have occurred because the market has been allowed to work and innovate, and competition has been presented to consumers. As always, regulation in search of a problem should be avoided, and I urge the Commission to do so in this case.

Thank you again, Mr. Chairman. I look forward to hearing the thoughts of my colleagues and our panelists.

U.S. SENATE,
Washington, DC, June 13, 2007

Hon. KEVIN J. MARTIN,
Chairman,
Federal Communications Commission,
Washington, DC.

Dear Chairman Martin,

We are writing to express support for improving our Nation's public safety communications, expanding wireless broadband for consumers, and maximizing value to U.S. taxpayers. Specifically, we support your efforts to bring broadband capability to the 24 MHz Congress allocated for public safety use in the Digital Television Transition and Public Safety Act of 2005.

To facilitate wireless broadband, particularly in rural areas, we believe that a mix of license sizes for the 700 MHz auction is critical. Larger licenses are needed to facilitate next-generation wireless networks and will bring more broadband choices to U.S. consumers sooner, while smaller license areas are essential to create opportunities for small and mid-sized wireless carriers.

In the past, disregarding Congressional intent for market-driven auction policy has resulted in spectrum lying fallow for years, extensive litigation, and consumers being denied the benefits of wireless technology innovations. The FCC should not devise encumbering rules which suppress interest in the auction, including build-out requirements, restrictions on incumbent bidding, net neutrality, and open access mandates.

We hope that your auction rules will maximize the benefits of this important public asset and appreciate your prompt action in this proceeding.

Sincerely,

JIM DEMINT
JOHN ENSIGN
JOHN E. SUNUNU
MEL MARTINEZ
KAY BAILEY HUTCHISON
DAVID VITTER

Senator DEMINT. I want to thank both panels. I can't stay for both of them, but I appreciate the wisdom, hopefully, they'll bring today.

I know, Mr. Chairman, you mentioned some concerns about consolidation and the need for, really, a diversity of competition and to stir innovation, which is certainly my hope, as well.

We have to find a balance between the number of competitors and the ability of larger networks to provide national and international service. It's very important that the way this auction works would allow the larger companies to establish a seamless network. That form of consolidation is certainly not negative, and that's the balance I hope we can achieve, because ultimately it's what the customers need that matters, which is a seamless national/international network, and future of highspeed broadband that is wireless, which would require certain chunks of that spectrum be available to networks who want to provide it.

So, that's what I hope we can come out with today, is a way that we can encourage a lot of competition, innovation, the diversity of competition; at the same time, allow the networks, with the capability, to provide—or to purchase large enough chunks and bandwidth to provide the services that customers will need in the future.

Thank you, Mr. Chairman. I yield back.

The CHAIRMAN. I thank you.

Senator Rockefeller?

**STATEMENT OF HON. JOHN D. ROCKEFELLER IV,
U.S. SENATOR FROM WEST VIRGINIA**

Senator ROCKEFELLER. Thank you, Mr. Chairman.

I'll shorten this.

Obviously, we can't underestimate the potential for the 700 MHz auction to transform society. The FCC has to recognize, has to maximize, the public-interest benefit of this auction. Spectrum is highly valuable, it's very scarce, it does not belong to any broadcasters; it belongs only to the American people, and is only used with the consent of us.

Congress and the FCC, as guardians of this scarce public resource, must make sure all Americans benefit from this sale. In my opinion, the FCC must address two fundamental questions when developing the rules for this auction. First, we must make sure that the spectrum needs of the public safety community, as Senator

Stevens indicated, are addressed. We have totally failed with respect to this. We have added homeland security responsibilities without providing the resources to meet these new challenges. We have not adequately addressed the issue of interoperability. Now, if the FCC fails to develop an adequate spectrum plan that addresses the needs of public safety, policymakers will have failed them once again, and we may not be able to rectify that in the future.

As my good friend, Commissioner Copps has stated, the question of public safety is the first obligation of the public servant. In a more perfect world, our Nation's first responders would already have access to an interoperable and fully funded broadband network that makes use of dedicated public safety spectrum. We are a very long way from getting that, particularly in our rural areas, and this is something we should all be very much ashamed of.

I voted against the last spectrum bill, Mr. Chairman, because I thought it was just a money grab. It wasn't thought out. And I think—Senator Stevens might not agree on this, but I think it's really important that the FCC gets it right before it presents the auction. The American public does not understand spectrum. Committee attendance is sparse here today. Those who are here do care. But it's very much like aviation—very important subject, not a lot of attendance, not a lot of knowledge.

But the consequences of this are overwhelming. And if it meant that we had to give the FCC, depending upon where they stand—and I'm not confident of where they stand—an extra 2 months to prepare for an auction, then I think we should do that. But if this is just another effort to raise money for the Federal Government, I'm going to vote against it again.

Thank you.

[The prepared statement of Senator Rockefeller follows:]

PREPARED STATEMENT OF JOHN D. ROCKEFELLER IV,
U.S. SENATOR FROM WEST VIRGINIA

The 700 Megahertz (700 MHz) proceeding before the FCC is extraordinarily complex even for communications policy. I believe that the upcoming auction is perhaps the most important that the FCC will ever conduct. It is undeniable that the outcome of the FCC's decisions will have a significant impact on the development of next generation broadband networks for public safety and on the competitive landscape for wireless broadband services in the United States.

As this Committee has heard on numerous occasions, the soon-to-be freed-up 700 Megahertz (MHz) variety is among the most valuable spectrum of all because of its uniquely favorable propagation characteristics. This spectrum is crucial for bringing new wireless broadband services to our Nation. We cannot underestimate its potential to transform society.

The FCC must maximize the public interest benefit of this auction. Spectrum is a highly valuable and scarce resource. It belongs to West Virginians. It belongs to the American people. Congress and the FCC, as guardians of this scarce public resource, must make sure all Americans benefit from its sale.

In my opinion, the FCC must address two fundamental questions when developing the rules for this auction. First, we must make sure that the spectrum needs of the public safety community are addressed. For too long, Congress has failed our first responders. We have added homeland security responsibilities without providing the resources to meet these new challenges, and we have not adequately addressed the issue of interoperability. Now, if the FCC fails to develop an adequate spectrum plan that addresses the needs of public safety, policymakers will have failed them once again. And, we may not ever be able to rectify this failure.

As my good friend Commissioner Copps has stated, "the question of public safety is . . . the first obligation of the public servant." In a more perfect world, our Na-

tion's first responders would already have access to an interoperable and fully-funded broadband network that makes use of dedicated public safety spectrum. We are a long way from getting public safety this network, and that is something we all should be ashamed of.

The FCC should consider a number of innovative new approaches to addressing this issue. I am not ready to endorse any one of them, but it is incumbent upon the FCC to evaluate these proposals. The public interest demands it.

The basic idea of a network that will be used by both commercial and public safety users is deeply appealing to me, with commercial users generating enough revenue to build and operate the network and with public safety users able to preempt commercial users during an emergency. But, I understand the many challenges before the FCC and the industry in making this goal a reality.

I believe that the second issue the FCC must address, as it seeks to maximize the public benefit, is how to make sure all Americans, especially rural Americans, are provided the new and innovative wireless services that this auction is certain to bring.

Wireless services in my state are inadequate. Vast stretches of West Virginia do not have wireless voice coverage, much less data coverage. Again, let me state that spectrum belongs to all Americans and the FCC rules need to make sure all Americans benefit from the new services and competition that companies using this spectrum will bring to consumers.

When the Congress voted to auction the existing broadcast spectrum, this Committee's only concern was raising as much money for the Treasury as possible. I voted against that bill because without marrying it to good public policy, we achieve nothing. The FCC's highest priority is making sure that the 700 MHz auction is done to maximize the public interest and just not to maximize the revenue to the treasury.

The CHAIRMAN. Thank you very much.
Senator Lautenberg?

**STATEMENT OF HON. FRANK R. LAUTENBERG,
U.S. SENATOR FROM NEW JERSEY**

Senator LAUTENBERG. Thanks, Mr. Chairman.

Obviously, this is a fairly complicated subject, but one that we must deal with, and deal with as fairly and equitably as we can.

The 700 MHz spectrum has been described as the beachfront property of the spectrum, which implies the most valuable part of the land or the property. And so, first we have to make sure that we maximize its availability. It's a limited, valuable resource, and so, we've got to do the best that we can to use it.

Second, we want to protect it. Whoever controls that property must act with the interest of the public as its primary obligation. In terms of that analogy, the same is true for the 700 MHz spectrum. Spectrum is a valuable natural resource. It's a small portion of the public airwaves that could bring inexpensive highspeed and wireless Internet across to customers, the biggest companies, as well as to the ordinary American in a public park or a coffee shop, because of its ability to travel at great speeds and great distances, able to penetrate walls. Many said it could be the backbone of a national wireless broadband network. And we know we've got to improve access to broadband.

The United States lags 15th in the world in the percentage of people with broadband connections, according to the International Telecommunications Union. Considering that the Internet access today is essential for everything from communications to education, public safety, we've got to improve our situation, relative to the rest of the world and the needs of our people. We've got to explore every option for increasing broadband deployment. For example, I have proposed allowing cities and towns to provide broadband net-

works of their own to their residents, and the 700 MHz spectrum creates a new opportunity to provide widespread broadband access.

It has also got to improve public safety's ability to communicate. Senator Rockefeller mentioned something. A significant part of the casualties on 9/11 were people from New Jersey and we found out that the inability to communicate was a real deterrent to rescuing these people. And we still don't know what the aftereffects of exposure there are.

So, we've got to find a way to ensure that local police and fire-fighters in our large cities can speak to one another, and also look ahead to make sure that their equipment in the future is capable of exchanging data and video over broadband. The 700 MHz spectrum will also benefit those costs. As we explore this spectrum with the auction, we've got to make sure that a system is in place that both generates revenue for our businesses and guarantees this resource is used for the public good.

And, Mr. Chairman, one of the things that I'd like to make sure that we go into with a degree of depth, and that is this can't be an asset that's casually held and—I'll use the term "flipped"—for a profit, that this has to be put to the public use, and some warranties or guarantees that that's the objective.

So, I thank you, Mr. Chairman, and thank all of the witnesses for your participation.

Thank you, Mr. Chairman.

The CHAIRMAN. I thank you very much.
Senator Sununu?

**STATEMENT OF HON. JOHN E. SUNUNU,
U.S. SENATOR FROM NEW HAMPSHIRE**

Senator SUNUNU. Thank you, Mr. Chairman.

I'd like to just make three points in my opening statement, and the first is simple, and may be the most important, that we need to complete this process. We absolutely need to get this done. The law says we need to get this done—January 28, 2008. And we should certainly stick to the law. Completing the process in a timely way is right for consumers. And getting them access to the spectrum that Senator Lautenberg was talking about, whether it's additional wireless services, broadband, or other innovations that we can't quite foresee, completing the process is essential. It's right for public safety, as well, getting them access to the additional spectrum that really will make a difference, in the long run, to their ability to communicate, and also to adapt new services for their own public safety needs.

Second fundamental point is, we need to avoid regulations, mandates, encumbrances on the spectrum that's being auctioned off. Every regulation, every mandate, every additional requirement we place on this spectrum is going to reduce the number of competitors that come forward to bid, it's going to reduce investment in the systems, it's going to reduce innovation, and, ultimately, that's going to hurt the interested parties: consumers and public safety.

And, finally, with regard to the question of interoperability, we hear a lot of talk about interoperability, how important it is, how much we care about it. We're going to allocate funds to support interoperability, as we should, those funds coming from this auc-

tion. But the biggest problem that I see in the area of interoperability isn't the availability of funds, per se, but it's the reluctance, in many cases, of first responding organizations themselves to embrace open standards, to embrace new technologies, and even to coordinate their own purchasing across different organizations. There are counties, even some cities, in America where police and fire fighters still can't communicate effectively with one another. And that's not for a lack of spectrum. And, in many cases, it's not for a lack of funding, but for a lack of coordination and organization, setting aside turf issues and working together on a coordinated acquisition plan.

So, we need to focus on interoperability, insofar as getting the resources available at the Federal level to support some of these acquisition efforts, but I think there's also a change in approach and in mentality that needs to go along.

This is very important to get done, to get done in a timely way, and get done in a way that really supports the needs of consumers and public safety, and I hope some of the obstacles and hurdles to getting that done in a timely way are discussed in earnest today.

Thank you, Mr. Chairman.

The CHAIRMAN. I thank you very much.

Before proceeding, I'd like to recognize the presence of a very distinguished former Chairman of this Committee, Senator John C. Danforth.

Welcome, sir.

[Applause.]

The CHAIRMAN. You want to take over?

[Laughter.]

Senator STEVENS. Would you just say a prayer for us?

[Laughter.]

The CHAIRMAN. Senator Smith?

**STATEMENT OF HON. GORDON H. SMITH,
U.S. SENATOR FROM OREGON**

Senator SMITH. Thank you, Mr. Chairman, for this hearing.

The auction of 700 MHz band presents a unique opportunity to both improve our Nation's public safety communications and expand wireless broadband access for consumers. I encourage the FCC to expeditiously adopt service rules that facilitate expanded wireless broadband service offerings for consumers in rural communities and large cities, alike.

But I'd like to speak, this morning, a bit about the opportunity this auction presents for public safety and the tremendous work being done in my home State of Oregon regarding public safety communications.

The Oregon State Interoperability Executive Council is chaired by Chief Jeff Johnson of the Tualatin Valley Fire and Rescue, with whom I met earlier this year. The Council has been charged with achieving public safety interoperability in Oregon. The group has been meeting for a few years. The Council has spent countless hours, beyond their public service day jobs, to design a statewide interoperable network. Following completion of the design for the network, the Council took the plan of—for interoperability to the state government for funding. The Oregon State Legislature, unfor-

tunately, was unable to fund the \$665 million needed to build this network.

The Oregon State Legislature, like so many others across the country, having limited resources and any number of demands on it, determined it could not finance a statewide interoperability project for Oregon. I suspect this scenario will be replicated in every one of the 30-plus states that have state interoperability executive councils trying to resolve interoperability at the State level.

Knowing that these resources are largely unavailable at the State and local level, and predicting that it would be equally difficult to find funds at the national level, if we are to be pragmatic, we must turn to solutions that could include the private sector. This is not unprecedented. There are a number of occasions where collaboration between the public and commercial sectors has yielded highly effective results. In my view, the FCC and this Committee, where appropriate, must take an active role in making this work.

As many of us know, the FCC is already taking steps to facilitate such a nationwide shared network. While I do not necessarily agree with every aspect of this proposal being considered by the Commission, I applaud the steps that have been taken to recognize both the problem and the opportunity presented for public safety.

This endeavor must be made a nationwide priority. We must create the road to nationwide interoperability. The example of State and local experience demonstrates that the solution must come on a national level. Let's not wait until the next disaster to start working on the creation of a nationwide mobile public safety broadband network.

Thank you.

The CHAIRMAN. Thank you very much.

Senator Lott?

Senator LOTT. Mr. Chairman, thank you for having this hearing. And I'm anxious to hear the panel, so I will reserve my comments for later.

The CHAIRMAN. I thank you.

Senator Klobuchar?

**STATEMENT OF HON. AMY KLOBUCHAR,
U.S. SENATOR FROM MINNESOTA**

Senator KLOBUCHAR. Thank you, Mr. Chairman. Thank you for holding this hearing today.

The 700 MHz auction gives us a unique opportunity in the public safety area. I come to the Senate having been a prosecutor for 8 years and running an office of 400 people, with a county that has 1.1 million people. I was very proud of the work that our sheriff, Pat McGowan, who has recently retired, but he was head of the National Sheriffs Association, the work he did in bringing interoperability to our town. Some of this came out of a case that was in the metropolitan area in the Twin Cities, where a St. Paul police officer was shot. Several different police officers had to pitch in to find the killers. The helicopter pilots assisting in the search had to carry 12 different portable radios with them so that they could individually radio each police department. This obviously led to some serious discussions in our area. Now, not only does Hennepin

County, but the nine counties that make up the Twin Cities area are now all interoperable.

This truly isn't the case in all of our State. I was just up, 2 weeks ago, in the Grand Marais area, way up on the Canadian border, where we just, tragically, had weeks of wildfires that started in Minnesota and then went up to Canada. In Minnesota alone, 200 buildings were destroyed, acres and acres and acres of forest. And there, I heard the same story that we heard as in the St. Paul Police Department issue, where there just was not interoperability, and there are all kinds of problems with communicating, where you have situations where they have to get to a house and get the people evacuated. And what they ended up being able to use was the community radio station, which, luckily, stayed available in most of their homes so they could give alerts of when different parts of the State were being evacuated.

So, that's why I have come to this hearing with this very recent and poignant experience. And I'm hopeful that we will hear some good solutions to this very important issue.

Thank you.

The CHAIRMAN. Thank you very much.

For our first panel of witnesses, we are most pleased to have the following: the President of the Association of Public-Safety Communications Officials—International, and also the Operations Manager of the Tarrant County 9-1-1 District, Ms. Wanda S. McCarley; and a Partner in Frontline Wireless, Mr. James Barksdale; Professor of Law and Telecommunications and Executive Director of Silicon Flatirons Program of the University of Colorado School of Law, Professor Philip J. Weiser; and Commissioner of the New York City Department of Information Technology and Telecommunications, Commissioner Paul J. Cosgrave.

May we begin with Ms. McCarley.

STATEMENT OF WANDA S. MCCARLEY, OPERATIONS AND TRAINING MANAGER, TARRANT COUNTY 9-1-1 DISTRICT, FORT WORTH, TEXAS; PRESIDENT, ASSOCIATION OF PUBLIC-SAFETY COMMUNICATIONS OFFICIALS—INTERNATIONAL (APCO); BOARD MEMBER, NATIONAL PUBLIC SAFETY TELECOMMUNICATIONS COUNCIL (NPSTC)

Ms. MCCARLEY. Good morning.

The CHAIRMAN. Good morning.

Ms. MCCARLEY. Thank you, Chairman Inouye, Vice Chairman Stevens, and members of the Committee, for this opportunity to appear before you today on behalf of the Association of Public-Safety Communications Officials—International, APCO, and the National Public Safety Telecommunications Council, NPSTC.

My name is Wanda McCarley, and I am the Operations and Training Manager for the Tarrant County 9-1-1 District in Fort Worth, Texas. I am currently the President of APCO International, and also serve on the NPSTC governing board. APCO works very closely with the International Association of Chiefs of Police and the International Association of Fire Chiefs, and I speak on their behalf today here, as well.

Public safety agencies throughout the Nation have long had a critical need for additional spectrum to alleviate radio system con-

gestion, to accommodate new communications tools, and to promote improved interoperability. Our Nation's first responders will need further spectrum resources to deal with the ever-growing demand for expanded voice, data, video, and broadband capability.

We have also come to recognize that our country needs a national broadband network. This network must be built to public safety specifications, and it must be controlled by public safety entities. It should also leverage economies of scale while still meeting local needs. Such a network will allow for more efficient use of scarce spectrum, facilitate national standards, reduce costs for State and local governments, and, most importantly, promote nationwide interoperability.

The FCC now has before it a one-time opportunity to provide for a public safety broadband network through its consideration of the 700 MHz auction rules. The public safety community has strongly urged the Commission to use this opportunity to establish the foundation for a public/private partnership that would deploy a fully interoperable nationwide public safety broadband network.

Specifically, we have urged the FCC to impose conditions on the auction to promote a shared network that would create a synergy to provide first responders with access to additional spectrum while also leveraging the commercial spectrum.

We believe there is simply no other viable method to fund a national broadband network for public safety. With the funding mechanism some local agencies may have, they may be able to fund local networks, others will not, and this creates a patchwork of have and have-nots with access to the system.

Some have suggested that the Federal Government provide the dollars necessary to build a national network. While we would obviously welcome some Federal funding, we know how difficult that would be to achieve in this current budgetary environment. Others have suggested that public safety agencies simply rely on commercial networks. However, commercial-grade networks are not usually built to public safety specifications. Adequate coverage, reliability, functionality, and security are known issues. We believe the only viable option to fund a national public safety broadband network is through a public-private partnership.

The FCC first addressed the potential for a public/private partnership last year, when it proposed that a portion of the 700 MHz band already allocated for public safety be assigned to a single national public safety licensee. However, that licensee would not have the funding to deploy the network. Some have suggested that the national public safety licensee could simply issue an RFP seeking a partner to construct the network. The question still remains, how would the national public safety licensee pay for the network?

This brings us to the innovative conditional auction approach that we believe is the best alternative. A key component of this approach is a network-sharing agreement with the national public safety licensee. We have urged that the FCC rules ensure that public safety is not forced into an unacceptable network-sharing agreement, and that the agreement must be negotiated prior to the issuance of the license to the auction winner. We believe that these are key components for the deployment of a national broadband network.

Mr. Chairman, in conclusion, we believe that the FCC should adopt a conditional auction approach that requires the auction winner to build a broadband network that serves both public safety and commercial users, and is designed, built, and maintained to meet public safety requirements.

I thank you, again, for the opportunity to appear before you today.

[The prepared statement of Ms. McCarley follows:]

PREPARED STATEMENT OF WANDA S. MCCARLEY, OPERATIONS AND TRAINING MANAGER, TARRANT COUNTY 9-1-1 DISTRICT, FORT WORTH, TEXAS; PRESIDENT, ASSOCIATION OF PUBLIC-SAFETY COMMUNICATIONS OFFICIALS—INTERNATIONAL (APCO); BOARD MEMBER, NATIONAL PUBLIC SAFETY TELECOMMUNICATIONS COUNCIL (NPSTC)

Thank you Chairman Inouye, Vice Chairman Stevens, and Members of the Committee for this opportunity to appear before you today on behalf of the Association of Public-Safety Communications Officials—International (APCO) and the National Public Safety Telecommunications Council (NPSTC).

My name is Wanda McCarley and I am the Operations and Training Manager for Tarrant County 9-1-1 District in Fort Worth, Texas. I am currently the President of APCO and also serve on the NPSTC Governing Board. APCO works very closely with the International Association of Chiefs of Police (IACP) and the International Association of Fire Chiefs (IAFC), both of which are also members of NPSTC, and I speak on their behalf today as well.

APCO was established in 1935 and today it is the Nation's oldest and largest public safety communications organization, representing its 16,000 members who manage and operate communications systems and facilities for police, fire, emergency medical and other state and local government public safety agencies. APCO's mission is to be a member driven association of communications professionals that provides leadership; influences public safety communications decisions of government and industry; promotes professional development; and fosters the development and use of technology for the benefit of the public.

The National Public Safety Telecommunications Council (NPSTC) was formed 10 years ago to serve both as a resource and advocate for public safety organizations in the United States on matters relating to public safety telecommunications. NPSTC is a federation of public safety organizations dedicated to encouraging and facilitating, through its collective voice, the implementation of the Public Safety Wireless Advisory Committee (PSWAC) and the 700 MHz Public Safety National Coordination Committee (NCC) recommendations. NPSTC explores technologies and public policy involving public safety agencies, analyzes the ramifications of particular issues, and submits comments to governmental bodies with the objective of furthering public safety communications worldwide. NPSTC serves as a standing forum for the exchange of ideas and information for effective public safety telecommunications. The following 14 organizations participate in NPSTC:

- American Association of State Highway and Transportation Officials
- American Radio Relay League
- American Red Cross
- Association of Fish and Wildlife Agencies
- Association of Public-Safety Communications Officials—International
- Forestry Conservation Communications Association
- International Association of Chiefs of Police
- International Association of Emergency Managers
- International Association of Fire Chiefs
- International Municipal Signal Association
- National Association of State Chief Information Officers
- National Association of State Emergency Medical Services Officials
- National Association of State Foresters
- National Association of State Telecommunications Directors

Several Federal agencies are liaison members of NPSTC. These include the Department of Agriculture, Department of Homeland Security (SAFECOM Program

and the Federal Emergency Management Agency), Department of Commerce (National Telecommunications and Information Administration), Department of the Interior, and the Department of Justice (National Institute of Justice, CommTech Program).

Public safety agencies throughout the Nation have long had a critical need for additional spectrum to alleviate radio system congestion, to provide first responders with new communications tools, and to promote improved interoperability. Responding to some of those needs, Congress passed legislation 10 years ago to clear the 700 MHz band of TV broadcasters and to allocate 24 MHz of that spectrum for public safety, with the remaining spectrum designated for auction. The FCC has already established initial rules for the 700 MHz public safety spectrum, allocating half of the 24 MHz for narrowband voice channels (some of which are already in use), and the remainder for data and reserve channels.¹ However, in much of the Nation use of the spectrum is blocked by incumbent TV stations until February 17, 2009.

This allocation of 24 MHz of public safety spectrum was based upon needs identified over 10 years ago. However, even then, the Public Safety Wireless Advisory Committee had estimated that public safety would require an additional 70 MHz by the year 2010. The reality of course, is that public safety's spectrum needs have grown faster than anyone had anticipated, driven in part by 9/11 and the Nation's refocusing on public safety and homeland security requirements.

Our nation's first responders will need further spectrum resources to accommodate the ever growing demand for expanded voice, data, video and other "broadband" communications capability. We have also come to recognize that our country needs a *national* broadband network that is built to public safety specifications, is controlled by public safety entities, and accommodates local variations to address first responder agency requirements. Such a network will allow for more efficient use of scarce spectrum resources, facilitate national standards, reduce costs for state and local governments, and most importantly, promote nationwide interoperability on a state-of-the-art communications system.

The Federal Communications Commission (FCC) now has before it a one-time opportunity to provide for such a public safety broadband network through its consideration of the 700 MHz auction rules.² The public safety community has strongly urged the Commission to use this opportunity to establish the foundation for a public-private partnership that would deploy a fully interoperable, nationwide public safety broadband network. Specifically, we have urged the FCC to impose conditions on the auction of 10 MHz of spectrum to ensure that the auction winner will build a broadband network serving both the 10 MHz of auctioned spectrum and a portion of the public safety spectrum (the 12 MHz currently allocated for data and reserve channels). This "shared" network would provide public safety access to additional spectrum resources when needed, and will also facilitate more efficient use of the public safety spectrum.

Our support for such a public-private partnership flows from our realization that there is simply no other viable method to pay for a national broadband network that will meet public safety requirements. Some local agencies may have special access to the resources necessary to build a local or regional public safety broadband network of their own, as is being done here in Washington and in New York City. However, most agencies around the country will not have similar funding available to build their own broadband networks, and there is no way to pool funds beyond state or regional systems. The result will be widely dispersed networks covering mainly resource-rich jurisdictions, built to different standards on different portions of the radio spectrum, and with little or no interoperability.

A national broadband network, in contrast, could provide for nationwide interoperability, substantial cost efficiencies, and more effective and efficient use of scarce radio spectrum. We believe that such a network can and must be designed to provide these benefits while also accommodating the varying needs and resources of local agencies. The biggest challenge, however, is to identify viable sources of funding.

There are few potential funding options for a national public safety broadband network, most of which are simply unrealistic. One option that has been suggested is for the Federal Government to provide the tens of billions of dollars necessary to build a national network to serve state and local first responder agencies. While

¹The current rules limit the data channels to "wideband," (*i.e.*, channels of up to 150 kHz). A pending proposal would allow those data channels and the reserve channels to be consolidated to form "broadband" channels (*i.e.*, channels of at least 1.25 MHz).

²See *Further Notice of Proposed Rulemaking in WT Docket Nos. 06-150, 06-169, 96-86, and PS Docket No. 06-229*, FCC 07-72 (released Apr. 27, 2007).

we would obviously welcome such Federal funding, we know how difficult that would be to achieve in the current budgetary environment. Such highly speculative and uncertain funding should not deter the FCC from taking advantage of this one-time opportunity to address our needs through its auction rules.

Others have suggested that public safety agencies simply rely upon commercial networks to provide their broadband communications capability. However, commercial grade networks are not usually built to public safety specifications. Commercial networks will usually focus on densely populated areas, leaving out areas that public safety agencies need to reach. Commercial networks are also typically designed with higher potential outage rates than public safety can usually tolerate. Nor are commercial systems designed in most cases to withstand natural disasters to the same degree as a public safety systems. Public safety agencies also need substantial on-demand access to network capacity and user-specific functionalities (such as “one-to-one” and “one-to-many” communications) that are difficult to meet on a commercial network. Moreover, the critical nature of public safety communications is such that agencies are reluctant to place too much dependence on a commercial enterprise that could terminate operations or reduce service quality at any time.

The *only* viable option to fund a national public safety broadband network is to form a public-private partnership whereby spectrum resources can be shared among commercial and public safety users, but on a network that meets the requirements of first responder agencies and retains public safety control over public safety spectrum.

This concept of a public-private partnership was introduced last year in a legislative proposal from Cyren Call Communications. While we would still welcome legislation to implement some form of that proposal (as it provided for direct public safety licensing of significant spectrum resources), we are now focusing on more limited proposals that are before the FCC and within its authority to implement.

The FCC first addressed the potential for a public-private partnership last year in its Ninth Notice of Proposed Rulemaking in Docket 96–86 (“9th NPRM”) in which it proposed that a portion of the 700 MHz band spectrum already allocated for public safety be assigned to a single national public safety licensee. Until now, all public safety radio systems have been built pursuant to licenses issued directly to state or local governments. The Commission explained in the 9th NPRM that a national licensee (which would be a nonprofit entity representing the interests of public safety agencies) would be necessary for the successful development of a national public safety broadband network.

We previously expressed significant reservations about the 9th NPRM proposal. While the national licensee would have the benefit of national spectrum resources, it would not have access to the initial funding necessary to deploy a national broadband network. Unlike traditional public safety licensees at the state and local level, this national licensee would lack the ability to raise funds through taxes or municipal bonds. Nor would the spectrum resources available to the national licensee be sufficient to attract a commercial partner, as the amount of spectrum allocated for public safety alone could not support both public safety’s own needs and a viable commercial network, especially since any commercial use would necessarily be subject to ruthless preemption.

Some have suggested that the national public safety licensee could simply issue a request for proposals (RFP) seeking a private partner to construct a public safety grade network on public safety spectrum. What happens, however, if nobody responds? In fact, that is a likely result as few commercial entities would have the ability or incentive to build a nationwide system with the coverage, reliability, functionality and security that public safety requires. In any event, how would the national public safety licensee pay for such a network?

It was with these fundamental constraints in mind that we have considered the innovative “conditional auction” approach that Frontline Wireless has proposed. This approach assumes that a block of spectrum will be auctioned with specific conditions, including a requirement that, subject to a “network sharing agreement” with a national public safety licensee, the auction winner will construct a broadband network that incorporates the public safety broadband spectrum and is built to satisfy public safety requirements. Through the national public safety licensee, the network will be available for public safety use on a priority basis. While some commercial use of the public safety spectrum may be allowed, it would be on a “secondary” basis subject to unconditional preemption. Importantly, the auctioned spectrum will also be available for public safety use when currently allocated public safety spectrum is insufficient.

APCO and NPSTC have filed comments with the FCC explaining their support for a conditional auction approach, and specifying provisions necessary to ensure that public safety remains firmly in control of its own spectrum. A vital element of

the conditional auction approach is a network sharing agreement between the auction winner and the national public safety licensee. We have urged that the agreement must be negotiated prior to the issuance of the license to the auction winner, and that public safety must not be forced into an unacceptable network sharing with a party selected solely by auction. The agreement must also address issues related to the design and functionality of the network, limitations on commercial access to public safety spectrum, terms and conditions of public safety access to commercial spectrum, protections in the event of business failure by the auction block licensee, and assurances that local public safety agency variations can be accommodated. To the extent possible, some of these issues should be address in the FCC's rules.

Many national and local public safety organizations and agencies have indicated their support for a conditional auction approach and a national public safety broadband network. Some have raised concerns about certain aspects of the proposal, in particular whether local agencies will be able to deploy their own data communications systems (there are no changes proposed for the state/local licensing of "narrowband" voice systems). We share those underlying concerns and have therefore recommended a band plan and procedures to protect local autonomy, especially for deployment of "wideband" public safety data systems in areas where the national broadband network may be slow to deploy. We have also been adamant that public safety representatives must have the final word when it comes to the design, deployment, and management of the national public safety broadband network. We have no interest in simply allowing a commercial entity to take over our public safety spectrum.

Finally, because the FCC is necessarily moving at a vigorous pace, we have joined with other national public safety organizations to initiate the formation of a legal entity that could serve as the national public safety licensee if the FCC proceeds in that direction. Our goal is to ensure that the national licensee will represent the interests of our Nation's first responder agencies. Thus, the entity now under formation is to be a nonprofit corporation, known as the Public Safety Spectrum Trust Corporation, and will be led by a board of directors consisting of individuals selected by the Nation's leading public safety organizations, each of which has extensive knowledge regarding public safety radios systems and spectrum management. There would also be an advisory committee consisting of a broad range of organizations that also have an interest in the form and direction of a national broadband public safety network. Thus, if the FCC adopts a conditional auction process that requires a national public safety licensee, the Public Safety Spectrum Trust Corporation would be positioned to serve in that capacity.

Mr. Chairman, in conclusion, we believe that the FCC should adopt a conditional auction approach that requires the auction winner to build a broadband network that serves both public safety and commercial users, and is designed, built, and maintained to meet public safety requirements. I thank you again for the opportunity to appear before you today.

The CHAIRMAN. I thank you very much.
Mr. Barksdale?

**STATEMENT OF JAMES L. BARKSDALE, PARTNER,
FRONTLINE WIRELESS, LLC**

Mr. BARKSDALE. Thank you, sir.

Chairman Inouye, Vice Chairman Stevens, distinguished members of the Committee, thank you for the opportunity to address the vital issue of public safety communications and how the upcoming spectrum auction can solve this life-threatening problem.

Thirty years ago, I helped, and was Chief Information Officer for, Federal Express Corporation when we developed the tracking and tracing system. It was both a wireless and wireline system that now reaches around the globe and is the envy of all, and copied by all of its competitors, tracking billions of packages a year. As Chief Operating Officer at Federal Express, I was responsible then for deploying that around the world, along with many other logistical networks.

I then went to McCaw Cellular, then the largest independent, and became the largest, cellular carrier in the world, where I was President for 4 years. We sold that to AT&T.

And then, in the mid 1990s, I went to a little startup at Silicon Valley. We called it Netscape. It revolutionized the Internet by creating a browser that let mere mortals use the Internet, creating the fastest-growing software company in history. We sold that company in 1999.

And then, later, as I was trying to be in retirement, I happened to have been appointed by our Governor, Haley Barbour, in Mississippi, to chair the Governor's Commission for Rebuilding our Gulf Coast, where I became reembroiled in this subject of networks and how you pay for them. And I'll get to that.

As you said, the Nation is coming to the end of a long road in the transition to digital television. It's vitally important that we do this correctly. The good news is that now some 60 MHz of that spectrum can be used to address the vital needs of our country.

I'm here today out of frustration and out of hope. The frustration comes from the fact that 6 years after 9/11, and nearly 2 years after Hurricane Katrina, we are no closer to giving our brave first responders the basic communications tools they need to save lives and respond to disasters in the vast majority of the United States. There are certainly some exceptions. One is on the panel here today, from New York.

In the wake of Katrina, as I said, honored to serve as Chairman of Governor Haley Barbour's Commission on Recovery, Rebuilding, and Renewal in Mississippi, I understood the shared frustration among police officers, firefighters, and search-and-rescue teams who were forced to use human runners to coordinate an emergency response to the largest natural disaster in our Nation's history. This frustration runs deep, because it was the same problem the Nation witnessed in the wake of the 9/11 disaster.

But all problems bear the seeds of opportunity and hope. The hope comes because we have a tremendous opportunity to solve public safety's needs for a truly interoperable network. One of the key recommendations in my recovery report to the Governor was that Mississippi needs to build a statewide interoperable wireless network funded and developed through public/private partnerships. I would point out, Mississippi has now come up with such a network.

I went to the State legislature for \$250 million worth of bond issues. Didn't get passed. Marvelous network. Didn't get passed. Can't pay for it. These are the same taxpayers, now, who pay Federal taxes, who pay State taxes, who pay local taxes. Same people.

Then, when I was introduced to the Frontline plan, which set out to solve these problems in the same fashion on a national scale, joining as a partner seemed like a no-brainer to me. The proposal put forth by our company would seem to me to culminate a lifetime of work on my part. Frontline Wireless is to finance a nationwide, interoperable broadband network that does not require legislation, does not need a \$30 billion appropriation, and does not delay the upcoming auctions.

After months of careful planning with leaders of public safety, I am pleased to report that we agree on many of the essential fea-

tures of a proposal to solve public safety's needs. Specifically, we agree on: (1) the need for public/private partnership; (2) the requirement of additional public safety spectrum during emergencies, obviously; (3) the need for public safety to have the private sector pay for the build-out of the network; (4) the importance of public safety having a national licensee to coordinate its spectrum; (5) the requirement to build a network with unprecedented coverage, 99 percent of the U.S. population—99 percent of the U.S. population, including Alaska and Hawaii; (6) the need to protect public safety in the event of financial difficulty; (7) the ability of public safety to have ultimate say over whether this “E Block” network, as it's called, meets their needs; and (8) the importance of all bidders to understand that this network needs to be built to public safety standards.

Though other issues remain, in my experience these questions can, and should, be resolved relatively quickly in further discussion between public safety and whoever wins the auction to become the “E Block” licensee, which certainly may not be Frontline.

The upcoming 700 MHz auction marks an historic moment. If the FCC acts wisely, it can solve public safety's deadly deficit in interoperable and broadband communications. I'd like to commend Chairman Martin, of the FCC, and his fellow FCC Commissioners, for their remarkable flexibility and foresight in allowing our proposal to be heard in this late stage of the DTV transition.

If the FCC adopts the right set of rules, then whichever company wins the auction, Frontline or someone else, the FCC can achieve, at no cost to taxpayers, the interoperable broadband network that public safety desperately needs. And, I submit to you, will never be built if we don't do it this way, because most states and local governments will find other things to do with the money. It's no accident that Washington, D.C. and New York City are the leaders in building these networks. They're the only ones doing it right now. They also happen, coincidentally, to be the two cities hit by 9/11. They fear the clear and present danger, which is what generally causes people to get off the tax bases and fund these things.

The upcoming auction also has tremendous potential to foster competition and innovation in the broadband and wireless market, another thing desperately needed, as identified in this morning's *Wall Street Journal* right-hand major piece on why our current wireless system thwarts innovation and other uses for this vital national asset, why we're behind the rest of the world in these things.

The truth is that the wireless industry is rapidly consolidating. The choice before the FCC is whether it should take all the spectrum being freed up by the DTV transition and hand it to the incumbents, who have every incentive to simply warehouse their spectrum, or whether it should take small part of it—we propose just 10 MHz—and use that spectrum to help public safety and also create a vitally needed platform for innovation and competition.

The Commission can go a long way to lower the significant barriers to competition and innovation in wireless communications by designing the commercial side of the shared “E Block” network for open access. That's what *The Wall Street Journal* is talking about today. A shared network, the Frontline proposal, would be open to all handsets and devices that do no harm to the network, the exact

argument given in the *Carterfone* decision 40 years ago, to any kind of customer, from established retail providers to startups to device manufacturers to end-users, and to any of the kind of lawful content, whether streaming video, Voice over Internet Protocol, or the next big thing. The current wireless situation is not good for consumers, it's not good for innovators or the hope of creating a third pipe to the home.

The FCC can adopt a modest proposal, on just 10 MHz, that will fundamentally change the current static environment in which America lags the world on wireless development and innovation. Who benefits from this requirement? The short answer: everybody. This requirement means that regional and rural wireless carriers and telephone companies eager to improve coverage in broadband for their customers will at last have a nationwide provider.

In conclusion, we are long past the time to talk about what might happen, or should happen, or is going to happen for public safety. Any serious proposal must address how this costly network will be funded and built without relying on government funds which are not forthcoming, as was the case in Oregon, just mentioned.

Frontline's plan is the only proposal to provide a clear funding mechanism that capitalizes on this crucial opportunity by incorporating a public/private partnership for public safety into the 700 MHz auction.

Thank you all very much, and I'll look forward to your questions. [The prepared statement of Mr. Barksdale follows:]

PREPARED STATEMENT OF JAMES L. BARKSDALE, PARTNER,
FRONTLINE WIRELESS, LLC

I. Introduction and Summary

Chairman Inouye, Vice Chairman Stevens, and distinguished Members of the Committee, thank you for the opportunity to address the vital issue of public safety communications and how the upcoming radio spectrum auction can solve this life-threatening problem. I am a Partner in Frontline Wireless, LLC, which was founded by Haynes Griffin (CEO), Janice Obuchowski (Chairman), and Reed Hundt (Vice Chairman). I am pleased that Ram Shriram, who worked with me at Netscape and is now on Google's board, John Doerr, an accomplished Silicon Valley investor whose vision helped make companies like Netscape a reality, and Mark Fowler, Chairman of the FCC during the Reagan Administration, also have joined me as partners in Frontline. Together, we believe the upcoming 700 megahertz auction presents a once-in-a-generation opportunity for building a nationwide, interoperable public safety network while also enhancing competition and innovation in wireless broadband. Haynes Griffin and I were there in the early days of cellular and we both know how to make wireless ventures work. I've known former FCC Chairman Reed Hundt for over fifteen years and most recently co-chaired with him a study group on the future of public broadcasting for PBS. And I'm delighted to be teamed up with Janice Obuchowski, who has played an important role in tackling public safety's needs as former head of the NTIA and U.S. Ambassador to the World Radiocommunication Conference.

We as a Nation are coming to the end of a long road on the transition to digital television ("DTV"). This Committee has taken a leadership role in pushing our country forward to use the precious radio spectrum freed up by the DTV transition more efficiently, and to make that spectrum available for commercial and public safety use. The good news is that now some 60 megahertz of that spectrum can be used to address the vital needs of our country.

I am here today out of frustration, and out of hope. The frustration comes from the fact that 6 years after 9/11 and nearly 2 years after Hurricane Katrina, we are no closer to giving our brave first responders the basic communications tools they need to save lives and respond to disasters. In the wake of Katrina, I was honored to serve as Chair of Governor Haley Barbour's Commission on Recovery, Rebuilding

and Renewal in Mississippi. Through a series of town hall meetings and conferences with government officials immediately in the wake of Katrina, our recovery commission developed a comprehensive list of recommendations for rebuilding the Gulf Coast and better preparing for future hurricanes in that region. My role on the commission exposed me to the shared frustration among police officers, firefighters and search and rescue teams who were forced to resort to using human runners in order to coordinate an emergency response to the largest natural disaster in our Nation's history. This frustration runs deep because it was the same problem—the same problem!—that the Nation witnessed in the wake of the 9/11 disaster.

The hope comes because we as a Nation have a tremendous opportunity to solve public safety's needs for a truly interoperable network. The hope comes because for the first time there is a concrete proposal to finance a nationwide, interoperable, broadband network that does not require legislation, does not require a \$30 billion appropriation from the Federal or state government, and does not delay the important 700 megahertz auction. The hope comes from the fact that by working together—the public and private sectors—can solve the problem of public safety interoperability.

After months of careful planning with leaders in the public safety community, I am pleased to tell this Committee that while we have not completely agreed on all details of how the Frontline wireless business can serve public safety, we agree on many of the essential features. I want to give you a real time update on what Frontline has discussed with representatives of the public safety community, which is a heterogeneous group of hundreds of different local and regional police, fire departments and other first responders. Working with their representatives and after spending hundreds of hours in meetings all around the country, we have a Plan that includes the features most important to that community, namely:

1. in addition to the 24 megahertz of spectrum already set aside for public safety, a sixth of the spectrum that will be sold for commercial use at auction will be designated as an E Block for both emergency and commercial service;
2. the E Block will go to the highest bidder for that block of spectrum;
3. the FCC should create a national public safety licensee (“NPSL”) to make various decisions on behalf of the larger public safety community, including negotiation of a design and spectrum sharing agreement with the E Block licensee;
4. the license to use the E Block for commercial purposes will carry certain conditions subsequent that must be performed in an orderly fashion, including the duty to reach an agreement with the NPSL about the design of the network so that it will meet the specifications of the public safety community;
5. in order to assure that the private sector builds for free a network that can serve public safety all across the country, the E Block license will carry the obligation to build a network that covers at least 99 percent of the U.S. population;
6. public safety will participate in the design and operation of the network that will provide service across the E Block and the public safety spectrum;
7. local public safety agencies will have the right to build interim public safety systems while the national shared network is being constructed;
8. only the E Block licensee will have the duty to negotiate with the NPSL as to the terms discussed above;
9. the NPSL will be free to decide whether it wants to work with the E Block licensee or seek out a different spectrum licensee or some other firm that lacks spectrum; and
10. the network for the public safety should be interoperable at the choice of public safety—if public safety users want to connect to each other through this single national network they can. For example, if different units need to work together to respond to a crisis across jurisdictions, they can use the Frontline network to communicate vital information to each other in real time with high speed connectivity.

We have not agreed on certain other provisions. For instance, Frontline does not believe that the FCC can delegate the selection of the auction winner to an outside party, as would happen if the FCC gave the right to the NPSL to veto issuance of the E Block license to the highest bidder in the auction. The E Block licensee should be bound by an FCC arbitration of any disputes arising from the negotiation of the network sharing agreement, and to charge the arbitrator with the duty to determine what is commercially and technically reasonable. While in my experience all these issues can and should be resolved relatively quickly in the negotiations between the

NPSL and the E Block licensee, the help of this Committee, other Members of Congress and the FCC may well be helpful in achieving such resolution. Furthermore, some issues can well be resolved after the Commission reaches its conclusion on the service rules later this month.

Overall, the good news is that Frontline and the public safety community appear to have reached a consensus that a public/private partnership should be part of the 700 megahertz auction. We also note with pleasure that the consensus is reflected in a recent resolution of the Southern Governors' Association, which urged the FCC to "apply specific public safety requirements to at least 10 MHz of the spectrum currently scheduled to be auctioned." The State of Hawaii has perhaps stated it best: "the Frontline proposal seems to be an excellent compromise between various proposals for Commercial/Public Safety sharing of broadband resources."

The upcoming 700 megahertz auction marks an historic moment. If the FCC acts wisely, it can solve public safety's deadly deficit in interoperable and broadband communications. If it adopts the right set of rules, it can achieve, at no cost to taxpayers, the interoperable broadband network that has yet to be delivered after 9/11 and after Katrina. Think about it: fire fighters rushing into a burning building could access a video feed of the inside and share that with the rescue squad as they plan how to save lives—without worrying if their wireless devices were compatible. The FCC also can use this historic opportunity to infuse the broadband market with a much-needed dose of competition. This hope of finally addressing public safety's needs will not be met, in my opinion, if the FCC simply decides to turn this spectrum over to the national incumbent carriers, who have shown little desire to respond to public safety's dire needs.

Working with the public safety community, high-tech companies and public interest organizations, Frontline has put before the FCC a proposal that would require the winner of one slice of the upcoming 700 MHz auction to build a network that would serve public safety's needs as well as its commercial customers. If the FCC adopts this proposal, whichever company—whether Frontline or someone else—wins this spectrum, it will build for free a nationwide, interoperable broadband network designed to serve public safety while covering an unprecedented 99 percent of Americans.

The proposal is made economically viable because, outside of critical emergencies, the winning bidder of the E Block will be able to make efficient use of unused capacity on the public safety spectrum. But when an emergency results in high-capacity demands by public safety officials, they will get immediate access to additional spectrum on the commercial system. Before running Netscape, I was President and COO of McCaw Cellular, and built that system into a nationwide network before selling it to AT&T. I know what it takes to build and operate a network that meets customers' needs. The Frontline Plan represents the best in public/private partnerships. It uses the private sector to solve a crucial public need while generating the revenues necessary to attract private capital.

The 700 MHz auction also has tremendous potential to foster competition and innovation in the broadband and wireless market, which is rapidly consolidating. The choice before the Commission is whether it should take all the spectrum being freed-up by the DTV transition and turn it over to the major incumbents, who have every incentive to simply warehouse their spectrum; or whether it should take a small part of it—we propose just 10 MHz—and use that spectrum to help public safety and create a vitally needed platform for innovation and competition. The Commission can go a long way to lower the significant barriers to competition and innovation in wireless communications by designating the commercial side of the shared E Block network for sale of services to all comers on what is effectively a common carrier basis. We propose, and have asked the FCC to require, the E Block licensee to build a new network with advanced fourth generation capabilities and to sell this network capacity on an open basis. To me, "open" means the following:

- open to all customers, whether end-users, device makers, or other service providers;
- open to all communications protocols to the degree technically feasible, and with our software-defined radio plans Frontline intends to advance the limits of technical feasibility beyond anything seen to date in America;
- open to all lawful content, meaning we will not discriminate against music or software just because we do not own or control it;
- open to as many combinations of spectrum as are technically and commercially reasonable, meaning that our customers can use Frontline spectrum as well as any spectrum they may own, just as public safety will we hope agree to use its spectrum in conjunction with us.

Although the E Block represents only one-sixth of the spectrum to be auctioned, it will create a nationwide broadband license holder fully motivated to sell wireless network services to, among others: (a) regional wireless providers until now prevented from offering a nationwide service, (b) rural wireline providers seeking efficient ways to deliver to their customers the same high-speed broadband options available in urban and suburban communities, (c) public utility companies in need of secure and robust wireless communications, (d) companies needing additional capacity to offer a “third pipe” into the home, and (e) manufacturers of new mobile devices. This business approach overcomes the rational but unhealthy incentive of today’s vertically integrated wireless incumbents to *refuse* such access whenever it could compete with their own (or their wireline affiliates’) myriad retail offerings. This point is developed further in the attached white paper by our distinguished economists from Stanford University.

This Committee should encourage the FCC to take the right steps to put America on a new path, one that delivers to public safety an interoperable network and to consumers multiple choices for broadband service. The large wireless incumbents with an economic interest in the status quo are loudly stating that public safety “has enough spectrum.” That is not true. As our experience during 9/11 and Hurricane Katrina clearly demonstrated, public safety needs more spectrum in times of emergencies, and even Sprint Nextel, a national wireless carrier, stated that in testimony last month. I firmly agree with the Hawaii Firefighters Association, which has supported the essential elements of the Frontline Plan, when they told the Commission that “[t]hose who would rather keep the entire 700 MHz block for their own corporate interests are not focused on doing what is right for public safety.”

It is completely unrealistic to expect, as the incumbents seem to, that public money will pay for a nationwide build-out. Verizon, for example, has stated again and again that the “majority of funds” for a multibillion dollar public safety broadband network—estimated to be in the range of \$15 billion—must “come from public sources.” That is not going to happen. It did not happen after 9/11, nor after Katrina, and it is not going to happen now. You know that. Public safety knows that. And we know that.

Even worse, Verizon and others who expect taxpayers to pony up for this build-out miss the key point about taxpayer funds. Taxpayers pay taxes locally, and to their states and at the Federal level. Wherever taxed, they have to support public safety services. The Federal Government can provide a great boon to taxpayers everywhere by requiring the E Block licensee to build-out for public safety’s benefit by using its commercial business to fund that network. Then, taxpayers will know that their funds for public safety can go to hiring more cops on the beat, more fire engines, better equipment for first responders, and choice of any devices for first responders, because the shared network will be open to any and all equipment. Taxpayers will know their money was not wasted, as Verizon suggests, on funding a \$64 billion network that Frontline was willing to build at no cost to the taxpayer.

This national, interoperable network will serve a diverse group of public safety users, including local fire and police departments, county sheriffs, emergency managers, highway patrol, and municipalities. After building a new wireless broadband network according to specifications agreed upon by the NPSL, the new E Block network would be available to each and every public safety entity across the country. Verizon and AT&T, in contrast, do not propose to build anything new or even negotiate with public safety about redesigning commercial networks to make them feasible for public safety use.

Another area of great importance to public safety is the scope of coverage. The Washington, D.C. area is fortunate enough to be able to afford an interoperable system. The same is true for New York City and parts of Mississippi. But this is a big country, and you well know that those build-outs simply will not happen in all parts of West Virginia or South Carolina or Minnesota or North Dakota or almost any other state in the country. The large national carriers tell public safety they should just rely on the wireless retail carriers’ spotty commercial networks. In fact, they have not announced any plans to use the 700 MHz spectrum to expand the coverage or reliability of those networks to serve public safety’s higher standards. Verizon has told the Commission that *if* it adopts any coverage requirements (and Verizon, of course, opposes *any* requirement to make productive use of a 700 MHz license), the FCC should let carriers leave 25 percent of the public without coverage. Which one-fourth of America would they leave behind?

We are long past the time to talk about what might happen or should happen for public safety. Any serious proposal must address how this costly network will be funded and built without relying on government funds. Frontline’s plan is the only proposal to provide a clear funding mechanism that capitalizes on this crucial oppor-

tunity by incorporating a public/private partnership for public safety into the 700 megahertz auction.

II. We Must Fix Our Failing Public Safety Communications Systems

This Committee has rightly recognized that the public safety communications systems in this country have reached the point of crisis. As Chairman Inouye recently urged, “Congress must act quickly to give our first responders the tools they need to effectively do their jobs.”¹ Frontline agrees with the Chairman that we owe our first responders nothing less than the most modern, most reliable, most interoperable, and most flexible communications system available.

We have seen the results of communications failures all too clearly, most notably on September 11. Thomas Kean, Co-Chair of the 9/11 Commission, has stated bluntly, “On September 11, people died because police officers couldn’t talk to firemen.” The 9/11 Commission Report elaborated, providing examples of how the lack of interoperable radio frequencies between police and fire department officials hindered evacuation efforts:

At 9:00, the [police department] commanding officer of the World Trade Center ordered an evacuation of all civilians in the World Trade Center complex. . . . This order was given over World Trade Center police radio channel W, which could not be heard by the deputy fire safety director in the South Tower.

As we now know, the South Tower collapsed an hour after this unheard evacuation order was issued.

Four years later, the failures of our public safety communications networks were again on display during Hurricanes Katrina and Rita. Even though our first responders once again showed selfless courage and determination, the communications systems they relied upon failed both them and the public. It is clear that Vice Chairman Stevens was right when he commented shortly after those disasters that they “have shown that many first responders just cannot talk with one another because their radios and communications networks have been inoperable.”² An independent panel appointed by the FCC also documented some of the more disturbing examples of these communications breakdowns:

[C]ommunications between the military and first responders also appeared to suffer from lack of interoperability. In some cases, the military was reduced to using human runners to physically carry messages between deployed units and first responders. In another case, a military helicopter had to drop a message in a bottle to warn first responders about a dangerous gas leak.

While we have made important progress in some areas, the truth is that our public safety communications systems—and thus the American public—will remain highly vulnerable as long as the networks continue to rely on yesterday’s technology. As the Washington State Council of Firefighters told the FCC earlier this month: “We do not have sufficient spectrum and we do not have operable communications, let alone interoperable communications. As a Nation we have stood by for too long as our communications system time and again failed our Nation’s first responders.” This is unacceptable. The patience of Congress and the American public is wearing thin. The time has come to ensure that the public safety community has the 21st century communications systems it needs and deserves. This can happen if the FCC, with encouragement from Congress, designs the upcoming 700 MHz auction to ensure the creation of a nationwide, interoperable broadband network, as proposed by Frontline.

III. The Frontline Plan Provides the Answer—a Nationwide, Interoperable Network Built and Paid for by a Robust Public-Private Partnership

Public safety officials have clearly stated what they need to cure these communications deficiencies: a nationwide, interoperable network. This type of network—with the reliable, secure, diverse capabilities it enables—is the single best way to improve and modernize public safety communications systems. For this reason, the FCC recently designated half of the public safety spectrum set aside by Congress in the 700 MHz band for broadband use, which is key to IP-based interoperability. Interoperability means that persons from different parts of the public safety community can talk or exchange information with one another. But a rule that the network, *if built*, shall be nationwide and interoperable is only the first step. As I said at the outset, I am pleased to report to the Committee on the substantial areas of

¹ Press Release, *Chairmen Inouye and Stevens Introduce Measure to Improve Emergency Communications*, Jan. 24, 2007 (quoting Chairman Inouye).

² *Hearing on Interoperability*, 109th Cong. (2005) (Statement of Senator Stevens).

common ground that we have with public safety going into the 700 MHz auction. Thus, the Frontline Plan proposes service and auction rules to ensure that: (1) the public/private partnership will construct the public safety nationwide network with private sector capital, (2) the public safety network will have access to additional spectrum in times of emergency, (3) the network will be built to standards for coverage, security and local control that are worked out with public safety, and (4) public safety will maintain control over the spectrum allocated to it by Congress.

A. *Funding a Multibillion Dollar Network*

The reality public safety confronts is that a nationwide broadband network will be costly to construct, and the funds must be generated up-front. These up-front costs could easily exceed \$15 billion. Thus, while the laudable appropriation of \$1 billion from auction proceeds will improve public safety communications for many agencies, it cannot be relied upon to construct the nationwide network that will be key to solving the interoperability crisis. Given the obstacles that this Committee faced (and overcame) simply in making that \$1 billion appropriation a reality, it would be unrealistic to expect an appropriation of 15 times that amount in the near future. Nor should Congress be expected to do so when a public/private partnership can deliver the same or better results.

Accordingly, Frontline's Plan proposes auction and service rules to ensure that the E Block licensee will fund the build-out of public safety's nationwide, interoperable broadband network—built to a public safety grade of service—at no upfront cost to public safety or taxpayers. That is, the Frontline Plan would require the winning bidder of the E Block, whoever that may be, to build out a network for the public safety community and make commercial spectrum available to public safety in times of emergency. In return, the winning bidder would have preemptible access to the network capacity operating over the unused public safety spectrum, providing it with additional revenues to recoup its investment in the public safety network. There is nothing novel, let alone problematic, about the Commission's requiring the E Block licensee to use the public's spectrum resource to the public's interest. The FCC, as required by Congress, routinely does so for satellite and broadcast licenses. Indeed, Congress and the FCC have often required private license holders to assist public safety by, for example, imposing emergency warning system requirements on broadcasters and 9-1-1 requirements on cellular systems.

Thus, Frontline's Plan maximizes use of spectrum for public safety and commercial uses, makes available extra spectrum in emergency situations, and builds the network for free in state-of-the-art, 4G, IP-level configuration. If the FCC takes the right step and adopts the Frontline Plan, it will solve public safety's funding problem by ensuring that the broadband network infrastructure is built with private capital with public safety only paying for service. It will relieve public safety agencies of both the construction costs and the time-consuming and difficult task of securing investment.

Considering the crucial importance of a broadband public safety network and the lack of sufficient funding in the public sector, Congress and the FCC must disregard calls by the incumbent retail carriers to wait for massive government grants. AT&T, for example, argues that because a select few large cities have built broadband networks, every other town and county can be left to sink or swim on its own—ignoring the lack of sufficient financial resources that many communities face. As the Association for Public-Safety Communications Officials (“APCO”) explained in roundly denouncing such hollow arguments:

APCO rejects suggestions by some in the wireless industry that public safety's broadband needs can be addressed within current public safety spectrum and that there is no need for conditional auctions. What these and other parties ignore is that public safety alone cannot afford to build a broadband network.

In addition to suggesting that the Federal Government fund the creation of the public safety network, Verizon and AT&T have also advocated a “go it alone” approach for public safety that relies upon a hope that some retail party may some day decide to create the network if the price is right. In other words, Verizon and AT&T would “help” public safety if the U.S. Government paid them \$15 billion to do so. Congress and the FCC have before them the one and only opportunity to bring about a newly built fourth-generation network on spectrum adjacent to public safety's spectrum. Relying on incumbents to use existing retail networks to provide public safety with the necessary services would leave public safety with old technology on commercial grade networks. Only a new entrant has the incentive to build a public-safety grade network, and only a new network can offer these fourth-generation services, not only to consumers but also to public safety.

B. Access to Sufficient Spectrum in Times of Emergency

Public safety must have access to sufficient spectrum for emergency operations, when a public safety network is most necessary and its communications resources most tested. While Congress provided the foundational block of spectrum for public safety 10 years ago, the half of that block that can be dedicated to broadband use—10 MHz exclusive of guard bands—is not sufficient to sustain a nationwide broadband network. As the National Public Safety Telecommunications Council (“NPSTC”) has noted, “assertions that public safety has adequate spectrum are insulated from the reality facing the Nation’s emergency services.”³ The State of California echoed this finding and stated that it does not believe this to be “an adequate amount of spectrum to handle the expected load.”⁴

Frontline’s Plan addresses the clear need for additional spectrum by more than doubling the amount of peak broadband spectrum capacity available to public safety communications under emergency circumstances. It does so by requiring the adjacent, commercial E Block licensee to provide priority access to public safety broadband operations on its own commercial spectrum during emergencies. Consequently, under Frontline’s Plan, not only would public safety services have the highest priority access to network capacity operating on the 10 MHz of broadband spectrum allocated to public safety, but when necessary it also would have priority access to the E Block’s additional 10 MHz or more of network service capacity. This network capacity will save lives in times of emergency by allowing police, firefighters and other public safety officials and agencies to effectively communicate with one another whether the interoperable communication occurs within the same small town or from Hawaii to Massachusetts.

Although public safety must have access to far more than 10 MHz during emergencies, it will not fully use its own allocated spectrum day-in and day-out and all hours of the day. Thus, Frontline’s Plan also makes the most efficient use of spectrum in non-emergency times by allowing the E Block commercial licensee to sell valuable network capacity over the unused public safety spectrum. As the FCC has recognized, commercial use of public safety spectrum on a secondary basis is a viable option. This secondary commercial access will in no way disrupt public safety services, which will always have automatic, instantaneous and unquestioned priority over commercial users with respect to the full capacity of the 20 MHz or more shared network. The beauty of an IP-based network is that such prioritization occurs without “kicking off” the commercial users, as occurs today in the cellular and PCS Wireless Priority Service. Instead, when there is congestion, the public safety traffic is prioritized, and simply moves to the head of the line and is delivered to its destination prior to the commercial traffic. At its simplest level, this is like an emergency lane for a fire truck. Meanwhile, commercial traffic is not barred. It is just not given priority. Public safety emergency calls will always get through, and commercial users may have to wait their turn. The same thing happens when cars are obliged to pull over to let an ambulance through on a busy street.

Notably, the parties that have opposed the auction and service rules proposed by Frontline have themselves failed to propose alternatives for solving public safety’s spectrum shortfall—just as they have failed to address its funding shortfall, as described above. Throughout the course of this proceeding, the largest retail carriers have maintained that public safety “has enough” spectrum and the Commission should ignore public safety’s need for more. Indeed, despite clear evidence to the contrary that has been presented by leaders in the public safety community, as recently as last week AT&T told the FCC that “additional spectrum is not needed by public safety at this time.” Public safety and Frontline both strongly disagree. Frontline’s Plan remains the only viable solution to the capacity crunch faced by public safety.

C. Building to Public Safety Grade Coverage

The public safety community has made clear that a commercial grade network, built merely to serve population centers and immediately surrounding areas, will fall far short of public safety standards. NPSTC stated that “public safety needs a reliable system that has the best possible coverage. It is not enough to have coverage that merely mirrors traditional cellular coverage.”⁵ Based on the needs ex-

³Reply Comments of NPSTC, *Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band*, PS Docket No. 06–229, at 3 (Mar. 12, 2007) (“NPSTC Reply Comments”).

⁴Comments of the State of California, *Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band*, PS Docket No. 06–229, at 2 (Feb. 26, 2007).

⁵NPSTC Reply Comments at 12.

pressed by public safety, Frontline's proposed rules would require that the nationwide, interoperable, broadband network be built to cover 99 percent of the population within 10 years, with interim milestones of 75 percent of the population within 4 years and 95 percent within 7 years. Frontline's proposal for a very high, population-based coverage requirement serves the essential goal of a public safety network in not merely reaching population centers, but also more sparsely populated areas. Emergencies can and do occur in outlying towns and rural areas, just as they do in urban centers.

In contrast, the entrenched retail carriers, reflecting their equally entrenched business plans that leave little room for innovative public/private partnerships, have steadfastly opposed *any* buildout requirement for the E Block or, for that matter, other 700 MHz spectrum. Verizon begrudgingly has stated that if the FCC imposes a buildout requirement, there should be a carveout of at least *twenty-five percent* of the population that the licensee could leave completely without service. Such proposals should highlight to this Committee the danger of leaving the future of public safety communications in the hands of the retail incumbents.

D. Preserving Public Safety's Control Over the Spectrum Allocated to It

The Frontline Plan also provides for the public safety community's full and meaningful participation in administering the nationwide shared public safety network through the NPSL. Relatedly, it guarantees that public safety will maintain control over the spectrum allocated to it by Congress.

Frontline strongly agrees with leading public safety advocates that the public safety community agree upon and publish a "Statement of Requirements" as soon as possible, and hopefully within 30 days after the FCC's decision on the service rules. This Statement of Requirements would spell out key service requirements such as performance objectives that would inform the architecture of the shared public/private network while leaving details such as specific technology and service decisions to a later network sharing agreement. Issuance of the Statement of Requirements will ensure that all bidders for the E Block license will be fully aware of public safety's needs prior to bidding on the spectrum. Frontline has also encouraged the FCC to incorporate as many of these requirements into the final rules as appropriate with enough lead time for bidders to take them into account. This also will help to prevent disputes after the auction. Furthermore the E Block licensee should begin to negotiate the details of the network sharing arrangement as soon as the auction is over, and aim to resolve that negotiation with the NPSL within 6 months at most. In the unlikely event negotiation was not successful, the E Block licensee would be bound by an arbitrator's conclusion as to what is a commercially and technically reasonable network design.

The FCC will not be able to adopt rules that address all potential facets of the shared public/private network relationship, since some details will need to be worked out by the NPSL and the winning E Block bidder after the auction is concluded. The resulting network sharing agreement will determine the design and features of the shared network between the E Block licensee and the NPSL.

IV. The E Block Network's Commercial Capacity Should Be Made Available to All Carriers and Network Users to Create a Platform for Competition and Innovation

At the same time that it makes Americans safer by improving public safety communications, the plan which Frontline and its supporters have put before the FCC will give new and existing smaller wireless companies a future in the increasingly consolidated wireless and broadband markets. The telecommunications marketplace has shown us that when markets are competitive, American consumers win. But the truth is that the wireless industry is not nearly as competitive as it was a few years ago, and as a consequence the two largest national carriers are discouraging innovation by high-tech entrepreneurs. Apple's iPhone is going on sale later this month, but if Steve Jobs wanted to reach critical mass of the population he really could only call two people to offer his phone, the head of Verizon or the head of AT&T, which control access to more than half of the market. We think that the innovators of new devices should be able to ask more than two people before launching an exciting new product. In fact, in an ideal world, they should have to call no one. That is the way it has worked on the telephone network for thirty years, and that system works well. All we're saying is that the FCC should dedicate a small part of the spectrum, the E Block, for a network to be offered to all innovators and competitors. Such a policy ensures that the wireless industry remains entrepreneurial and open to innovation by Silicon Valley and other high-tech companies. It also ensures that companies serving rural America will have at last a provider of network capacity eager

and willing to offer service to enable these smaller carriers to offer their customers nationwide roaming.

Verizon and AT&T, as rational incumbents, presumably want to buy the E Block and all the other spectrum to be sold in this last auction and then warehouse it. While that makes sense for them, it doesn't make sense for public safety or for the American people. The shared network that Frontline proposes will be open to competition and innovation in all the following ways:

- Open to all handsets and devices that do not harm the network;
- Open to any kind of customer, from established retail providers to startups to device manufacturers to end-users;
- Open to any kind of lawful content, whether streaming video, VoIP, or the next big thing;
- Open to be used as a complement to any other network, regardless of communications protocols to the degree technically and commercially reasonable, especially including other 700 MHz networks.

The benefits of such openness will be many, but most notably will come in: (a) the lowering of barriers to entry in the wireless market; (b) a loosening of the tight controls that the wireless incumbents have held over the ability of online innovators to make new content and services available to consumers through wireless devices; and (c) a nationwide roaming provider for regional and rural wireless carriers eager to improve coverage for their consumers.

Lowering of Barriers to Entry. The primary goal of Frontline's proposed commercial service rules is to promote competition by reducing barriers in the wireless market. With a facilities-based provider open to all kinds of customers, both new and existing retail providers will be freed from the often prohibitive costs of purchasing low-frequency spectrum and constructing wireless networks. As a result, these providers—currently under intense pressure to offer their customers nationwide roaming capability—will be able to compete in their local and regional markets against the huge national firms that have their own national networks that enable them to offer national roaming to all customers at no extra charge.

It bears mention that Sprint Nextel currently provides roaming and other services to smaller carriers and so-called "mobile virtual network operators." But the two largest carriers insist that they do not want to be obliged to provide roaming in the future to small local and regional carriers. And frankly they are entitled not to use their networks to enable their rivals to compete with them. We understand that. But precisely because that is their economic incentive, the FCC needs to address the problem of competition by requiring the E Block licensee to sell service to any and all buyers.

Notably, parties who routinely struggle with such formidable barriers of entry have endorsed such openness for the E Block. A group of mid-sized wireline carriers consisting of Embarq, CenturyTel, and Citizens/Frontier—which each have a significant presence in rural communities—specifically described to the Commission the prohibitive costs of network build-out: "Broadband deployment in rural areas is costly, in significant measure because of the challenges caused by low population densities, which make it difficult to aggregate the customer demand needed to justify large network investments." These companies added that there are *no* network operators who simply sell network services and do not choose to compete with their customers.

These comments from mid-size and rural telephone companies demonstrate in concrete detail how and why a network that offers service to all parties can translate into greater broadband deployment, particularly in rural areas. In these areas, it is often economically irrational for providers to build state-of-the-art wireless broadband facilities. (As discussed above, it is this same incentive that makes existing retail networks poor options for public safety communications.) As a result, rural buildout is stymied. Frontline's service proposal provides a way around this economic reality by making rural wireless service cost-effective for retail service providers.

The open service proposed for the E Block would also encourage and rely on market-based forces, rather than command-and-control regulation, to meet the concerns identified by companies like Embarq, CenturyTel, and Citizens/Frontier. Instead of relying on universal service support, Frontline's Plan addresses the critical problem of rural broadband deployment with private sector solutions that do not burden taxpayers. Further, a requirement that the E Block licensee sell service to anyone, end-users or other companies, will create market-based incentives to complement build-out requirements, which Frontline supports.

Consumer choice. Frontline’s proposed open service rules are also intended to promote competition and innovation by ensuring that service providers (*e.g.*, content companies, applications providers) can freely offer new wireless services to consumers without having to ask permission from Verizon or AT&T.

Several high-tech innovators have confirmed the need for an open service network and provide examples of the benefits that such a network will bring to them and to the state of competition in the broader broadband market. Google, for instance, outlined its critical need for guaranteed access to its customers:

The greater challenge [Google faces] is . . . universal accessibility. Like other Internet-based companies, Google relies on the communications infrastructure provided by underlying carriers in order to reach our ultimate end-users. In particular, in the United States, the telephone companies and cable companies control the only means of broadband access to Google’s customers.

I already mentioned another example, Apple’s iPhone, which had to go through the gates marked AT&T or Verizon if it wanted to bring its exciting new product to market.

Objections to a network that may not act as a gatekeeper between companies and consumers came, predictably, from those powerful incumbents whose retail businesses have the most to lose from competition and innovation. I want to highlight that this is a very modest proposal. We are not proposing to impose this open service requirement on all wireless providers. And we are not proposing to impose this requirement *retroactively* on incumbents. Rather, Frontline’s open service proposal simply says on a prospective basis that a fraction of the 700 MHz spectrum should be made available as a platform for competition and innovation. We think that is a small investment that will pay huge dividends for the future of our information technology economy.

Roaming. This Committee has long demonstrated leadership in bringing advanced telecommunications services to rural Americans, who deserve access to the same advanced services as their counterparts in urban centers. Frontline’s proposed open service rules will further these goals. By definition, a network making service available to any buyer will serve as a nationwide roaming provider to regional and rural wireless carriers. The emergence of such a roaming provider would encourage wireless competition in rural areas by freeing existing competitors from the need to construct facilities or purchase access from entrenched national incumbents who offer competing retail services.

Comments filed with the FCC in support of the Frontline Plan confirm the need for competitive roaming arrangements. Cellular South, for example, describes both the lack of existing competitive options for mid-sized carriers and its causes and consequences:

Frontline’s proposal would provide a much-needed broadband roaming partner for small and regional wireless providers. Today, small and regional carriers find it increasingly difficult, if not outright impossible, to negotiate high-speed data roaming agreements with national wireless providers. This hurts the small carriers but, more importantly, it hurts the rural consumer.

The open service requirement will not only help ensure widespread and robust wireless service in rural areas, but will allow smaller and mid-sized carriers to “go national,” and offer additional competitive choices to American consumers. Without the ability to offer national service, these carriers cannot provide a competitive alternative to larger carriers’ service.

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Finally, in terms of *who* can bid on the E Block and thereby make this open service available to the marketplace, it is important to remember that when Congress adopted the law creating auctions in 1993, this Committee recognized that it would be bad policy if the spectrum simply went to large incumbents that have little incentive to innovate and bring new technologies to market. The Committee required that the FCC adopt policies to ensure that small businesses would have a chance to participate in the auctions by giving them bidding credits if they qualify. The FCC recently adopted rules that say these credits would not be available to an entity that leases or resells more than fifty percent of its bare spectrum capacity to entities. The E Block licensee, however, will not be leasing or reselling spectrum. Instead, it will be required to *build facilities and construct a national network over which it will offer services*. It will operate thousands of towers and radios and utilize this network as a facilities-based provider. Because these build-out requirements will apply to any E Block licensee (whether Frontline or anyone else), the leasing and resale restrictions are not relevant and the FCC should so clarify. Moreover, the li-

censee should sell network capacity to anyone including end-users. Under these circumstances, an entity is acting as a small business and, if it otherwise qualifies as a small business under the FCC's rules, should get the bidding credit established by Congress.

V. The Frontline Plan Ensures That the Commercial Network Will Sustain the Public Safety Network

AT&T and Verizon, in a naked effort to keep the E Block free of any obligation to serve public safety, have tried to say that the FCC should not adopt those obligations because the E Block licensee will not succeed as a business. Well, making money, particularly with a wireless business, happens to be a topic my partners and I know something about, so I want to offer a few comments. Of course, like any smart entrepreneur, we are keeping the details of our business model to ourselves, but it has been tested by sophisticated investors and is both viable and distinctive. The need for confidentiality is especially important going into a highly competitive auction. And we are working with Citigroup to arrange financing and additional investment as we look toward the upcoming auction and construction of the network.

In general terms, I can say that we envision a wide range of potential customers for E Block network services. Of course, we all know that public safety and the related critical private sector infrastructure segment is the most important group. But there are many others on the commercial side, and in fact it is these commercial uses that make the economics work for public safety. As any Wall Street analyst or high-tech player can attest, mobile Internet is the next growth frontier in the wireless industry and the potential is simply enormous. Just as the Internet supplanted voice as the growth engine in wireline telecommunications, the same will happen in wireless. At McCaw Cellular, we recognized early on the demand for ubiquitous mobile communications, and we built a multi-billion dollar business. At Netscape we recognized early on the power of the Internet and we built a multi-billion dollar business. Now I look to the future and see the intersection of these two markets and I expect to be able to build another multi-billion dollar business.

The U.S. wireless market now has over 230 million voice subscribers, but only a small fraction of these have mobile Internet. Over the next decade, many if not most (and perhaps even all) of the people who now use cell phones will come to adopt mobile Internet. That is a huge, disruptive and exciting market opportunity.

The business opportunity for the E Block winner will come from device makers such as Apple that want to launch a new product. Imagine going on vacation and using your camera—not a crude camera phone, but an honest-to-goodness camera—to take pictures and immediately send them to relatives through the air. You get the picture (so to speak). So it's easy to see how one could sell network connectivity not only to service providers but to device makers as well. Google could be a customer, if they want to test a mobile broadband service in a region of the country. Demand could come from a rural telephone company like Embarq, who wants to offer broadband service in high-cost areas, and "triple play" mobility. It could come from Clearwire, who hopes to be the "third pipe" into the home and needs a complementary coverage network. It could come from smaller wireless carriers, like Mississippi's own Cellular South, eager to deliver customers a truly national service through roaming arrangements. Also, there are large enterprise customers who would like to buy wide area, coverage-rich connectivity. My former company FedEx comes to mind. What if FedEx could track every package in real-time across the entire United States? Not just at hubs or transaction points, but everywhere and for every package? Now extrapolate to the entire logistics sector. This is another big opportunity, and there are many more opportunities out there for a company, like Frontline, willing to take advantage of them. Demand for this service also could come directly from consumers, who do not like the idea of being locked in long-term contracts with expensive termination fees.

In short, I see this as an exciting business opportunity for whatever company wins the E Block auction. That is why I think the E Block auction will attract many bidders. It offers the chance of becoming the wireless version of Level 3, which has built a strong business offering network capacity to a range of buyers.

* * * * *

The FCC will soon auction what is perhaps the most important piece of spectrum ever allocated by Congress, and it is expected to set the rules for that auction in the next month. It will be decades before such a large amount of versatile spectrum is auctioned again. Thus, it is critical that the FCC use this historic opportunity to improve our public safety communications systems and promote competition within the market. In my opinion, it would be a mistake to construct an auction that will solely serve the interests of the dominant national carriers. When the next emer-

agency strikes, our communications systems must be a tool that saves lives rather than a source of confusion and tragedy.

This Committee has overcome multiple obstacles over the past decade to bring the DTV transition to a successful conclusion so that our Nation's first responders can make urgent changes to the way they communicate. Now, all that remains between success and failure are a few, critical last steps which the FCC must take to finish the job. To make sure that happens, I respectfully urge the members of this Committee make clear their expectation that the FCC adopt the following elements for the upcoming 700 MHz auction:

- Meet the urgent need for a nationwide, public safety wireless broadband network by providing that the E Block licensee must construct that network and design it to public safety grade specifications.
- Meet the needs of rural wireline carriers, smaller wireless companies and online entrepreneurs to access low-frequency networks by requiring the E Block licensee to offer network services to commercial customers, including by offering roaming to requesting carriers.
- Promote competition and innovation by ensuring that the E Block's network service is offered without unreasonable discrimination against particular types of services, applications, and content.
- Clarify that the Designated Entity restrictions on lease or resale of raw spectrum do not apply to the potential E Block licensee given that it is required to construct its own facilities and offer services upon them.

In these first years of the 21st Century, you and I have too many times seen the devastating effects of communications failures. Given the stakes involved, I and my partners at Frontline hope this Committee will urge the Commission take the steps necessary to make this Committee's vision for public safety communications a reality. I thank you again for the opportunity to be here today.

Economic Comments on the Design of the 700 MHz Spectrum Auction

Peter Cramton, Andrzej Skrzypacz, and Robert Wilson¹

11 June 2007

1 Introduction

Our previous submission in response to the Report and Order and Further Notice of Proposed Rule Making (FCC 07-72, 27 April 2007) presented economic analysis that supports Frontline's proposal that a national license for the E Block of the 700 MHz band should mandate open access. Open access means that

1. wholesale contracting is transparent and nondiscriminatory, and
2. there is neither exclusion nor discrimination among devices and communications that conform to the licensee's published standards and operating protocols.

The motivation is straightforward. Extending to the wireless sphere the huge gains to communication and commerce of the wireline Internet will greatly benefit the American public. The creation of the Wireless Internet requires an open network comparable to the wireline network that has made the Internet so beneficial. The 700 MHz auction is the Commission's main opportunity to give the public the full benefits of wireless services from competitive providers of digital telephony, Internet connections, and broadband.

This paper extends the economic analysis by addressing claims from opponents of this open access proposal. We argue that the current state of the wireless market, and the potential for improving consumer welfare, justify the following conclusions:

- Open access for the E Block is necessary and will improve the efficiency of the auction outcome. Further, it is essential to address open access in this proceeding. The open-access and wholesale provisions for the E Block are narrowly-tailored remedies and fully consistent with the Commission's goals.
- There is an important market failure in auctions with dominant incumbents. Auction rules that level the playing field between incumbents and new entrants are necessary to assure efficient assignment of the licenses. In particular, the

¹This paper was funded by Frontline Wireless, LLC. Curriculum vitae of Andrzej Skrzypacz and Robert Wilson were attached to our comments, "Report of Andrzej Skrzypacz and Robert Wilson" filed with Comments of Frontline Wireless, 23 May 2007.

previous AWS auction of high-frequency spectrum was not comparable to the upcoming 700 MHz auction of low-frequency spectrum. If the AWS auction rules are used for the 700 MHz auction then incumbents can block entry and consolidate their dominant positions.

In the next section we justify these conclusions in the context of our replies to others' comments.

2 Responses to Open Access Opponents' Claims

This section explains why the points listed in the Introduction are true, contrary to claims made by some opponents of the open access proposal. It also explains why opposition serves the narrow interests of incumbents rather than the public welfare.

2.1 *The open-access requirement on the E Block is necessary to obtain an efficient auction outcome*

As we explained in detail in our previous comments, the wireless market is highly concentrated and on a path toward even greater concentration that could eventually justify antitrust actions. Indeed, the concentration level is well above levels that normally trigger antitrust scrutiny in merger situations were it not for the FCC's pre-emption of regulation in communication industries. Such concentration can harm consumers in general, and it is especially noxious when incumbent firms can stifle innovative entry straightforwardly in auctions conducted by the FCC. Their exclusions of roaming and selected devices and communications could be interpreted as vertical foreclosure.

Two firms, Verizon and AT&T, now control much of the access to the low-frequency spectrum in the 800 MHz range. Low-frequency spectrum is necessary for low-cost nationwide coverage and robust service. It allows these two firms to charge higher prices and yet have lower churn rates and a higher share of new subscriptions. The financial interests of these two companies are to exclude access by any provider of retail wireless services that might capture market share by competing against their own retail arms and dependent affiliates.

The Wireless Internet can be a source of great benefits to customers. It will greatly improve the efficiency of the markets for communications services, which is the most important policy goal of the Commission. The benefits are likely to accrue mostly to consumers and reduce incumbents' profits. Therefore, the Commission cannot realistically hope that any incumbent will create the Wireless Internet on its own initiative. Hence the Commission must act in the interest of the consumers to designate the E Block for open access and to sell the right to build and operate it to the highest bidder.

Consumer welfare has been enhanced by the introduction and expansion of mobile wireless services. But the absolute level of consumers' gain is not the appropriate metric—instead it should be measured against the gain in consumer welfare that is possible. The introduction of additional competition—competition engendered by an open access E block—can accelerate and magnify the gains in consumer welfare from wireless services. It is this opportunity that the Commission risks missing were it to allow the incumbents to forestall entry in the 700 MHz auction.

2.2 *There is an important market failure in spectrum auctions with dominant incumbents*

Some opponents of open access argue that selling a license with no restrictions to the highest bidder should result in the most efficient assignment of the spectrum.² Subject to various qualifiers, this view can sometimes be a valid guide when all potential bidders are on equal footing. But it is severely wrong when some bidders are new entrants and some are incumbents motivated to protect their market shares.

The reason is that entrants and incumbents have very different motives. A new entrant's incentive is to maximize its profits from the license alone, while an incumbent maximizes the sum of its profits from the combination of its existing licenses and new licenses. When its existing profits would be threatened by a new entrant, an incumbent is willing to pay more for a new license to prevent competition than any entrant would pay for the license.

- To gain market share, an entrant prices services on its newly acquired spectrum to undercut the incumbents' prices. Customers benefit from this downward pressure on prices due to increased competition. To gain further market

²For example, see "Comments of Verizon Wireless" pages 51–53, or "Reply Comments of AT&T Inc." Section IV.

share, a new entrant also wants to offer technical innovations valued by customers.

- In contrast, an incumbent realizes that any competing service offered on the new spectrum steals business from its existing retail service plans. Hence it has muted incentives to offer lower prices or new technologies that compete with its existing offerings. To prevent losing business to new competitors and being forced to reduce prices, an incumbent is willing to pay a premium to acquire the spectrum—and the larger its current market share, the larger is the premium it is willing to pay. It is crucial to realize that under these circumstances, even though an incumbent values winning the license more than an entrant does, that additional valuation does not represent true value added, but rather the incremental value of thwarting competition from entrants.

This is why allowing bidders with large market shares to compete on equal terms with entrants yields an allocation that is distorted away from an efficient allocation. Equal competition among unequal bidders is biased toward those with market shares to protect. The resulting allocation is inefficient in that it displaces entrants who could otherwise have invigorated competition and thus lowered prices to consumers.

2.3 Auction rules that level the field between incumbents and new entrants are necessary to assure the most efficient assignment of licenses

To enable an efficient assignment of the new spectrum, the Commission cannot take a hands-off approach to the design of the service and auction rules. In the early spectrum auctions a spectrum cap prevented each cellular duopolist from obtaining additional licenses in its cellular regions. Comparable intervention is needed now to prevent the current low-frequency carriers from capturing the 700 MHz spectrum to solidify their dominant positions. Because the spectrum cap that the FCC established before the PCS auctions was removed, the chief remaining instruments available now focus on exclusion of the 800 MHz licensees and/or bidding credits for small businesses. Measures of this kind are necessary lest the 800 MHz duopoly is extended to the 700 MHz spectrum to fully and permanently consolidate their dominance. By enabling entrants to compete effectively in the auction, bidding credits for small businesses encourage an assignment of the licenses that is more efficient and ultimately more beneficial to consumers.

This conclusion accords with the argument for restrictions on the E Block license. Nondiscriminatory wholesale contracts for open access to the E Block licensee's network level the field for regional licensees and retailers who compete in retail markets with the retail arms of the incumbents' nationwide vertically integrated proprietary networks.

2.4 It is important to create the Wireless Internet now, not in separate proceedings after the auction

Some parties want the open access and *Carterfone* issues to be addressed in other proceedings, and thus they argue that Commission should not address them separately for this auction.³ We disagree: it is essential to address open access and other provisions of the E Block license in this proceeding.

The Commission cannot readily impose open access on selected licenses after the license assignment and the licenses' prices have been previously determined by an auction process conducted without the bidders' knowing the service rules that will ultimately prevail. A decision before the auction allows the two business models (open-access and proprietary vertically integrated networks) to compete in the auction and subsequently to co-exist and compete for customers. It is better policy to establish the licenses' specifications before the auction, to allow firms competing in the auction to assess their valuations without uncertainty about the future outcomes of additional proceedings.

2.5 The AWS auction is not an appropriate analogy for the upcoming 700 MHz auction, and it did not perform as well as some commenters argue

Dr. Hazlett in his paper "Competition, Auction Receipts and Economic Welfare" submitted on behalf of Verizon in response to the Notice states that the recent AWS auction attracted competitive bidding and no anticompetitive behavior by the incumbents. His supposition that there is an analogy between the AWS auction and the 700 MHz auction is incorrect. The AWS auction allocated very different spectrum—high-frequency spectrum that is not economical for development of a robust nationwide network that could compete with the coverage of existing networks in the 800

³For example, see "Reply Comments of CTIA—The Wireless Association" (filed on 4 June 2007), Section V.

MHz band. The AWS auction did not allow any entrant to challenge the position of AT&T and Verizon as the two leading firms with the requisite low-frequency spectrum that is necessary for developing nationwide products. Nor did it create a major threat to the duopoly rents that they earn from their exclusive holds on licenses for low-frequency spectrum.

The situation is very different in the upcoming auction of 700 MHz spectrum. The 700 MHz auction is not “just another auction”. It will assign spectrum with physical properties greatly superior to the PCS and AWS spectrum, and indeed, directly comparable to the incumbents’ 800 MHz spectrum. The 700 MHz auction is a unique opportunity to prevent entrenchment of the dominant positions of the current incumbents. The FCC should ensure that new entrants have a chance to pursue their business plans and that the “incumbent bias” of auctions described in Section 2.2 does not yield an inefficient allocation of this precious spectrum.

Moreover, the view that the AWS auction was a boon for competition is not correct. In reality, the participation of one new entrant with a nationwide strategy was hampered by the auction rules. The DBS bidders dropped out of the auction when the total of the prices for nationwide coverage by aggregating smaller blocks was evidently well below their willingness to pay. We say this based on the DBS bidders’ actual bids for large regional licenses, which might also have reflected discounts from their willingness to pay for nationwide coverage because of exposure risk (as we explained in our previous filing). It is impossible to say whether the DBS bidders would have been successful with different auction rules, but one can say that the AWS auction rules frustrated the participation of this potential nationwide entrant.

Given that vastly more is at stake for AT&T and Verizon in the auction of the 700 MHz spectrum, it is clear that if the Commission does not level the playing field then these two firms will have both incentive and ability to discourage new competition in wireless markets at the national level.

2.6 The open access provisions for the E Block are narrowly tailored remedies, fully consistent with the Commission’s goals

Some parties before the Commission argue that the open-access provisions are heavy-handed regulation and contrary to the Commission’s goals. We disagree with both parts of this statement. Rather than being heavy-handed, the proposal asks for a modest restriction on a single 10 MHz block out of the 78 MHz of spectrum licensed for commercial use in the 700 MHz band and no restrictions on the other low-frequency CMRS spectrum. This restriction is no more than minimally necessary to assure open access on nondiscriminatory terms. Without it America will likely never see open access.

Any decision the Commission makes about the service and auction rules is ultimately a decision about the structure of the market for decades to come. Extreme concentration of the low-frequency spectrum in the hands of two firms sets the stage for continued domination by these two companies, unless the FCC takes action now.

Imposing modest restrictions on the E Block license is much less intrusive than the two main alternatives: (a) endorsing continued domination of the low-frequency spectrum by Verizon and AT&T’s vertically integrated proprietary networks, or (b) requiring open access on all spectrum by requiring mandatory roaming at regulated rates. The provisions of the E Block license are confined to the minimal requirements for open access on nondiscriminatory terms. This is the least intrusive of the ways the Commission can establish an infrastructure for wireless communication that is not controlled and manipulated by firms with a chokehold on nearly every aspect of America’s digital technology.

The Commission’s goal is to allocate spectrum, a very scarce and valuable resource, to its highest and best use as measured by the public welfare. This outcome will not be achieved by selling the 700 MHz spectrum without restrictions to the 800 MHz incumbents, whose high valuations stem from their incentives to protect their current profits by stifling competition rather than creating value added for the public.

Lastly, we add that the effect on the Treasury’s revenue of the E Block provisions is much less than the incumbents argue in their comments, and under some scenarios may generate higher bids. Establishment of the Wireless Internet will make all the regional licenses more valuable and hence it will increase the revenue from auctioning other blocks. Further, if the Commission chooses to take no action and adopts rules that perpetuate the incumbents’ dominant positions, then the auction will likely be over before it starts—if potential bidders expect the incumbents to win then there will be little competition and low revenue for the Treasury. Evidence from many European countries has shown clearly that auction prices were much lower when incumbents could acquire all 3G licenses than when the auction rules

guaranteed a level field for new entry.⁴ Given the dramatic evidence from Europe's sad experience, there is no excuse for repeating such a mistake in the upcoming auction of 700 MHz spectrum. Importantly, similar rules worked well in some countries' auctions and terribly in others' auctions—what did matter was the incumbents' ability in the auction to dwarf competition from potential entrants. The erroneous expectation that the same rules—closely comparable to those for the FCC's auction of PCS spectrum—will work well for many different auctions with differing competitive environments, was a major mistake in the designs used in Europe. In several countries the unexpectedly small revenues brought dismay at the relevant Treasury departments.

3 Conclusion

We see the Commission having three main alternatives: (a) do nothing and thus continue the dominance of the vertically integrated incumbents, (b) enforce open access on all spectrum by imposing service rules requiring nondiscriminatory terms for roaming on all spectrum, or (c) establish an open-access license on a slice of the 700 MHz spectrum to create room for both business structures to co-exist and to compete for customers on price, quality and variety.

We stress that the last alternative is available only now, in the band plan, service rules, and auction design for the licenses to be sold in the upcoming auction of 700 MHz spectrum. It is also the propitious moment for extending to wireless services the advantages of the Internet. We believe that the dire situation implied by (a) and the heavy-handed intervention implied by (b) can be avoided with minimal intervention by the Commission. Applying pro-competitive open access rules to just a single slice of the 700 MHz spectrum leaves most of the spectrum available for other business plans. The E Block license provides the Nation a minimal public infrastructure for wireless communication, one comparable to the wireline Internet that has yielded vast benefits.

If an open access license is not created then thereafter the FCC will be limited to forcing selected license owners to open access to retail entry. Doubtlessly the vertically integrated networks will offer solutions for many retail customers, but we emphasize that competition from new retail providers using the open access network will force incumbents to improve their services and lower prices.

The CHAIRMAN. I thank you very much, Mr. Barksdale.
Professor Weiser?

STATEMENT OF PHILIP J. WEISER, PROFESSOR OF LAW AND TELECOMMUNICATIONS, EXECUTIVE DIRECTOR, SILICON FLATIRONS PROGRAM, UNIVERSITY OF COLORADO

Mr. WEISER. Thank you, Chairman Inouye, Vice Chairman Stevens, members of this distinguished Committee. I appreciate the opportunity to testify here on a very important public policy issue, which is, how can this upcoming auction help facilitate the development of advanced technologies for use by public safety?

My approach to this issue comes from my standpoint as Professor of Law and Telecommunications at the University of Colorado, where I also serve as the Executive Director of the Silicon Flatirons Program.

More particularly, over the last year I've focused on this issue intensely, working on a report for the Aspen Institute, writing an article for the *Federal Communications Commission Law Journal*, and, most recently, convening a roundtable supported by CTIA, which published a report on this topic.

Today, I testify on my own behalf, and the views are only mine. And I'm not here affiliated with any other entity.

I want to underscore three basic points in my oral remarks today that are elaborated in my testimony, the only one, you'll note, with footnotes today, as appropriate for a professor.

⁴ See for example Paul Klemperer "Auctions: Theory and Practice" Chapter D, Princeton University Press, 2004.

The main points I want to emphasize are the following:

One is, there's an emerging new policy strategy that is far better than anything that has been done with public safety communications to date.

Number two is, the lynchpin of this strategy is the idea of a public safety spectrum licensee, which can be very effective, with some safeguards that I'll note.

And, number three, we should all appreciate how difficult the transition will be from the old model of public safety communications to a new one.

So, let me quickly underscore this first point.

There was an old model, where public safety agencies managed their own networks. They operated networks on a local level, buying highly specialized and expensive equipment to do so. The result, as has been emphasized quite a bit by members of this Committee, was non-interoperable and generally antiquated equipment used by public safety that is inferior to that available through commercial providers. Moreover, because public safety communications systems often are intermittent in their use—sometimes they're used intensely, and other times not at all—spectrum often went underutilized.

In short, this old model left the agencies using antiquated equipment. It was difficult to facilitate interoperability, and it was at odds with spurring next-generation technologies. This new model, which can be facilitated by this upcoming auction and related policy initiatives, would allow public safety agencies to get cutting-edge technology and equipment that is as powerful as used by commercial sectors and the military. This new model will enable this new network to be adapted and to meet the requirements of public safety.

So, rather than have spectrum dedicated only to public safety, public safety agencies can embrace an opportunity to share spectrum with a commercial partner, thereby enabling greater efficiencies and the buildout of a next-generation network.

To spur this network, as I've mentioned, the FCC has wisely introduced—and I commend its leadership on this—the concept of a public safety spectrum licensee, which would control 12 MHz of spectrum that could be used to develop this new advanced network. This policy innovation can bring great benefits to the public, to public safety, as long as the licensee can negotiate an effective framework with a commercial partner.

And for this framework to be effective, it has to be able to adapt to changing circumstances as new requirements emerge, and it needs qualified advisors to help it come up with a framework that can protect its prerogatives and ensure that the partner follows through on its promises.

Finally, I want to emphasize that, even with the right framework in place, this transition to a new technological architecture is going to be difficult. As Senator Sununu mentioned, this culture of public safety communications as operating a silo is deeply ingrained, and it's very important to bring local public safety agencies onboard with this new transition, where they'll operate virtual private networks along the lines of those used by corporate America.

In any event, the development and deployment of a next-generation network has to happen at higher levels. It's not going to happen effectively locally, and it's not going to happen if local agencies are unable to break out of the cultural mindset where they need to operate their own networks. Rather than operating and controlling their own networks, they need to become smart users of them.

I know this is not going to happen overnight. It's going to take a lot of political leadership, continued attention from this Committee and the FCC, and I commend you all on this important work.

Thank you.

[The prepared statement of Mr. Weiser follows:]

PREPARED STATEMENT OF PHILIP J. WEISER, PROFESSOR OF LAW AND TELECOMMUNICATIONS, EXECUTIVE DIRECTOR, SILICON FLATIRONS PROGRAM, UNIVERSITY OF COLORADO

I. Introduction

Thank you, Mr. Chairman, Senator Stevens, and Members of this Committee for the opportunity to testify on the important public policy challenge of ensuring that the upcoming 700 MHz auction and related policy initiatives facilitate the development and deployment of advanced communications technologies for use by public safety agencies. I approach this issue from the standpoint of my position as a Professor of Law and Telecommunications at the University of Colorado, where I also serve as the Executive Director of the Silicon Flatirons Program. More particularly, my testimony reflects my intense research focus on this issue over the past year, during which I authored a report for the Aspen Institute, wrote an article recently published in the *Federal Communications Law Journal*, and co-authored a report informed by a roundtable recently sponsored by CTIA—The Wireless Association.¹ My testimony today, however, reflects solely my own views and any recommendations I offer should not be ascribed to any of the entities I have worked with on this issue.

In my remarks today, I will focus on four themes that merit particular attention as this Committee and the Federal Communications Commission wrap up their important work related to public safety communications and the upcoming 700 MHz auction. *First*, I will discuss the need for a national public safety entity to manage a block of spectrum (*i.e.*, “a public safety spectrum licensee”) to promote the rollout of a wireless broadband network to support the use of advanced information and communications technologies by public safety. *Second*, I will address the concept of a shared public safety/commercial wireless network, explaining the powerful logic behind this proposal both with regard to enabling public safety agencies to use advanced technologies and in promoting spectral efficiency. *Third*, I will discuss the issues of governance and enforcement that must be addressed in order to make a public safety spectrum licensee model a success. *Fourth*, I will emphasize the importance of moving forward quickly with the auction, managing expectations, supporting ongoing innovation in this area, and not letting the perfect be the enemy of the good. In short, promoting the development and widespread deployment of an advanced communications infrastructure for use by public safety is critically important, difficult, and likely to take some time. Before I develop these themes, however, I will begin by detailing some important background information.

¹The Aspen Institute report, *Clearing the Air: Convergence and the Safety Enterprise*, can be found at <http://www.aspeninstitute.org/atf/cf/%7bDEB6F227-659B-4EC8-8F84-8DF23CA704F5%7d/C&S%20FINALAIRSREPO6.PDF>. The article, *Communicating During Emergencies: Toward Interoperability and Effective Information Management*, 59 Fed. Comm. L.J. 547 (2007), can be found at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=980285. The CTIA-sponsored roundtable report, *Toward A Next Generation Network for Public Safety Communications*, can be found at http://www.silicon-flatirons.org/conferences/Hatfieldt_Weisert_PublicSafetyCommunications.pdf (hereinafter, “*Next Generation Network Report*”). I have also co-authored a paper discussing the role of satellites in a next-generation architecture. See Phil Weiser et al, *Toward A Next Generation Architecture For Public Safety Communications*, available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=903151. That earlier work emerged from a project undertaken on behalf of MSV. See Dale Hatfield & Phil Weiser, *Toward A Next Generation Strategy*, available at http://www.msvlp.com/newst_docs/papers/NextGenOct21R2.pdf.

II. Background

For many years, the development of communications infrastructure for public safety agencies remained largely an afterthought in telecommunications policy. This reflected the conventional wisdom that local public safety agencies should be assigned specific blocks of spectrum and use that spectrum to operate their own wireless telecommunications networks. This policy was arguably a sensible one when public safety agencies were among the relatively few established entities that operated wireless networks. Over the last several years, however, two distinct concerns have arisen as to the state of public safety communications: (1) different agencies cannot communicate with one another using their legacy equipment; and (2) advanced communications technologies increasingly being offered by commercial wireless providers are not available to public safety agencies. I will address each point in turn.

A. The Traditional Interoperability Concern

The concerns related to the inability of public safety agencies to communicate with one another reflects the continuing lack of interoperability between many legacy public safety radio systems. In general, legacy radio systems are engineered to meet specific requirements articulated by public safety agencies—such as a very quick call setup time to enable communication during “shoot-don’t shoot” situations, effective talk group functionality, and “talk-around” capability. Radio systems manufactured to meet these specifications, however, are produced solely for public safety agencies, often rely on proprietary technology, and are generally quite expensive. Consequently, if one public safety agency adopts a particular system and another public safety agency adopts a different system, there often is no easy way for the two systems to communicate with one another. As you all appreciate, this lack of interoperability can be at best challenging (by making communication between different first responders difficult or impossible) or at worst tragic (as in the case of 9/11 when lives were lost because messages were not relayed between different agencies).

The often touted solution for addressing the lack of interoperability between public safety radio systems is that all public safety agencies should purchase new equipment that can enable them to talk to one another. Under this strategy, local agencies would all purchase new equipment and operate that equipment using the same spectrum bands. Indeed, the Project 25 initiative rests on this vision, as it aimed to develop an open standard for digital trunked radio systems that would enable agencies to cooperate with one another, share spectrum between them, and, ideally, enjoy interoperable communications across jurisdictions. As a recent GAO report detailed, however, the Project 25 initiative has failed to deliver on its promise, largely because the relevant standards never facilitated a more competitive market in equipment.² Stated simply, “the Project 25 [initiative] made the mistake of treating public safety communications as a distinct island, giving rise to proprietary technologies that are not compatible with commercially developed (and far cheaper) alternatives.”³ Finally, Project 25 radios are designed to support narrowband voice communications, but not broadband communications that can enable public safety agencies to gain access to useful information and communicate more effectively.

A second interoperability solution is the use of gateways that use Internet Protocol technology to connect otherwise incompatible systems. Such gateway solutions are considerably cheaper than purchasing new Project 25 radios for a particular area, but they do not necessarily enable as effective or efficient communications as direct radio connections. Nonetheless, as a cost effective method of enabling different agencies to communicate at all (which is often what is needed), such solutions are quite promising and continue to improve in terms of their level of functionality.

A third interoperability solution is for agencies to adopt new wireless broadband systems that enable them to use Internet-based communications (such as Voice over Internet Protocol) that can communicate directly to other agencies equipped with broadband systems or indirectly through gateways solutions (such as those described above). Unlike the Project 25 model, the purchase of wireless broadband systems is relatively inexpensive (as they rely on commercially marketed products) and can support an array of applications other than voice communications. Like the gateway solution, however, the use of interoperability at the Internet layer—i.e., Voice over IP connections—does not provide the same level of operability (at least using today’s technology) as traditional dispatch systems. But again, in many situa-

²U.S. Government Accountability Office, *First Responders: Much Work Remains to Improve Communications Interoperability* 3 (Apr. 2007), available at <http://www.gao.gov/new.items/d07301.pdf> [hereinafter GAO Report].

³*Next Generation Network Report*, *supra* note 1, at 36.

tions, such as the often cited failings at the Columbine tragedy, 9/11, and the aftermath of Hurricane Katrina, the critical problem was an inability to communicate at all, not an inability to communicate at the required call setup times that public safety agencies sometimes need.

The case for promoting wireless broadband and advanced information and communications technologies is not merely that it constitutes a potential interoperability solution. Rather, such technologies can enable public safety agencies to operate more efficiently and effectively. Indeed, such technologies are increasingly a source of important efficiencies in the hands of corporate America and the military—think of how FedEx tracks packages or how Walmart tracks its inventory—and there is every reason to believe that advanced information and communications technologies can empower public safety agencies in numerous ways. The challenge, however, is to develop a policy strategy to promote the development of a next-generation network for public safety agencies.

Before I discuss the opportunities created by and the strategy necessary to develop next generation networks for public safety, let me emphasize two sobering points about the above discussion. First, it is important to appreciate that the need for short term interoperability solutions—such as the gateway model—will not disappear once we embark on the road toward a next generation network. Second, the next generation network will not, at least in the reasonably near term, function as a replacement for the traditional public safety dispatch systems. Rather, over at least the next decade (while a next generation network is developed, deployed, and proven out as sufficient to meet the requirements of public safety), it is likely that public safety agencies will need to support *both* their traditional dispatch systems and a next generation system. Among other things, this means that the funding needs of public safety agencies with respect to information and communications technologies are likely to increase in the near term.

B. A Next-Generation Network Architecture

During my initial exposure to the issue of how to develop a next generation network for public safety, the conventional wisdom was that public safety agencies would never face up to a challenging cultural shift as to how public safety communications should operate. In particular, the prevailing wisdom was that public safety agencies would always insist on operating their own networks and would never accept an architecture that would call for the sharing of spectrum between public safety and commercial services. In my experience, however, a number of public safety officials have led the way in embracing the logic behind the move to a new technological architecture and a new policy strategy to deliver next generation network services to public safety agencies. For that progressive vision, I applaud their leadership and willingness to break from the old model.

The increasing interest in a policy strategy to promote next generation networks for public safety reflects the realization that broadband networks are critical to the future of public safety communications and the services now available to corporate America should be adapted to meet their needs. As one public safety official put it, “[n]ew public safety applications and capabilities involving broadband communications, IP technologies and flexible radios and spectrum sharing opportunities with commercial providers where appropriate are all in public safety’s future.”⁴ The public policy challenge is how to facilitate the emergence of this future.

To spur the development of broadband networks, it is reasonably clear that the old model of networks operated and used solely by public safety agencies themselves is inefficient and unsustainable. That model, which was borne of necessity in an era where there were no suitable commercial wireless services, ignores a powerful case for using spectrum more efficiently. After all, public safety agencies use spectrum intensely at particular moments, but often use their spectrum on a limited basis. Consequently, the ability to share spectrum between a public safety entity and other customers can ensure that the network and spectrum is used more efficiently.

On a practical level, it makes sense to develop and operate broadband infrastructure for public safety in concert with other providers. After all, we do not expect public safety agencies to manufacture their own uniforms or cars. As with uniforms and cars, it is not difficult to develop next generation technologies that can be adapted to the needs of public safety. The advantage of relying on commercial technologies is that public safety agencies will be able to benefit from commercial economies of scale and purchase equipment far more economically than they have been able to with respect to their traditional dispatch networks. Consider, for example, that “a cell phone with voice, video, and data capability costs about seven times less

⁴Testimony of Stephen T. Devine, Missouri State Highway Patrol, House Comm. on Energy and Commerce Subcomm. on Telecommunications and the Internet (Mar. 22, 2007).

than a public safety digital portable radio that cannot even take a digital photo, much less send it to another person.”⁵

The bottom line in terms of the policy strategy for next generation networks for public safety is that the traditional approach for supporting public safety communications will not work effectively. Consequently, policymakers need to appreciate that our Nation’s effort to develop next generation networks for public safety agencies will turn on our ability to spur a new model of governance, new cultural mindsets amongst the relevant stakeholders, and new funding models to support a new technological architecture. As I will emphasize in closing, these are difficult transitions and policymakers should both be vigilant in prodding them forward as well as understanding that they will not take place overnight.

III. The Importance of a National Public Safety Spectrum Licensee

The Federal Communications Commission initially assumed that the traditional policy model would govern the use of the 700 MHz spectrum dedicated to public safety. In particular, the vision animating early discussions of how the spectrum would be used assumed that agencies would purchase new systems, such as Project 25 radios, and operate them at the same frequencies. Over the last several years, however, it has become clear that this solution is neither cost effective nor would it enable public safety agencies to use advanced broadband technologies. Indeed, this model is often associated with the “narrowbanding” concept that is antithetical to the development of broadband networks.

Over the last year, the Federal Communications Commission has moved in a new direction. This new direction has made the Commission’s work on the relevant rules for the soon-to-be assigned spectrum far more challenging, but I applaud Chairman Martin and his fellow Commissioners for their leadership on this issue. If, for example, the Commission carved up the entire 24 MHz of spectrum devoted to public safety into narrowband channels and distributed them to local agencies, it would have undermined the ability to use this spectrum for broadband. Instead of following the old model, however, the Commission created a new one. In particular, it proposed the creation of a public safety spectrum licensee that would receive a nationwide 12 MHz license and use it to spearhead the development and deployment of a broadband network (or network of networks) to be used by public safety.

The model of a national public safety spectrum licensee is one that poses a number of risks, but I believe that these risks can be managed. Moreover, I believe that the principle that networks should be operated at higher levels than local agencies—*i.e.*, regional or state—is essential to enabling next generation networks to be deployed. In other words, the development of regional and national cellular networks is not an accident; there are real economies of scale in deploying such networks at higher levels. For both cost purposes and expertise purposes, the development of next generation networks by a public safety spectrum licensee is a considerably better bet than expecting localities to do so themselves.

The national public safety spectrum licensee would enjoy several important advantages not available to local agencies who have traditionally managed public safety’s communications systems. In particular, this licensee would be uniquely positioned both to develop a more attractive bargain for public safety (by purchasing in bulk and using its assembled expertise) and could ensure a level of consistency as to the technology adopted by public safety. Today, for example, early next generation public safety systems being developed in New York and Washington use different technologies and different bands of spectrum, meaning that a radio devised for the New York City system will not operate in Washington. By contrast, a public safety spectrum licensee would be in a position—presumably in concert with a commercial operator—to develop a standardized air interface (or a relatively economical commitment to a multi-mode device) that would afford public safety agencies a similar mobility with their devices to that enjoyed by customers of commercial wireless firms.

One of the principal risks of a national public safety spectrum licensee is that this entity will be insufficiently attentive to the needs of local public safety agencies and will attempt to craft a “one size fits all” solution. To guard against this risk, localities should be afforded an effective voice as to what kind of offering should be available to them. (An alternative safeguard is that local public safety agencies would be able to receive Federal grant money and not use the offering sponsored by the national public safety spectrum licensee provided that they demonstrated that they were adopting another effective interoperability solution.) Finally, state, regional, or local planning efforts will be critical to developing the appropriate rules for how different agencies receive priority to the network in different scenarios.

⁵ Robert Rouleau, *Connecting Data Networks*, Public Safety Rep., Aug. 2006, at 98, 102.

Fortunately, the nature of Internet Protocol-supported applications are that they can easily be adapted to deliver different functionalities and to empower local agencies to operate their own virtual private networks—even if local agencies do not control the physical infrastructure. In fact, that is exactly the model used by almost every major American enterprise company. Ideally, leadership at the state level will emerge (and be encouraged to emerge by Federal policy⁶) to spearhead the development of these networks, public safety-centric applications, and wired Internet Protocol backbones that can interface with other critical systems (such as E-911 services, electric utility information, and public health information). To date, however, such state leadership is the exception, not the rule.⁷

IV. The Shared Public Safety/Commercial Wireless Network Concept

The creation of a national public safety spectrum licensee is the essential starting point for the development of an effective next generation network. The FCC's proposal to create such a licensee is thus an important start for ensuring the development and deployment of a next generation network. The next question is whether that is the only necessary step. As I will explain, I believe that the Federal Government will either need to provide significant funding to subsidize the development of this network directly or, as a second best option, enable spectrum to be monetized as an asset to support the network development and deployment. Let me be clear at the outset—I would prefer to see government fund the development of such networks directly, but in the absence of this development, the other model may well be a second best strategy. Indeed, in the ideal world, such funding might come through a reform of the Federal Government's own wireless network project (the IWN initiative), which is estimated to run between \$5 billion to \$10 billion and to only serve a limited number of Federal agencies.⁸

In its proposal for a public safety spectrum licensee, the FCC states that the 12 MHz to be licensed to the public safety spectrum licensee can be leased to commercial users when not being used by public safety (on a preemptible basis). This policy innovation—and it is a progressive step away from the silo-mentality that often has characterized spectrum policy—offers the licensee a revenue source to support the development of a next generation network. Moreover, Frontline has suggested that this policy be supplemented with a further encumbered 10 MHz band of spectrum that would be auctioned to an entity willing to develop a next generation network that would be used by public safety (as well as others). In principle, the encumbering of spectrum with a requirement to serve public safety would depress the price of the relevant spectrum and thereby constitute an indirect subsidy to public safety.

In developing its proposal, Frontline has suggested that an open access requirement should be coupled with a commitment to serve public safety. The theory behind this proposal appears to be that the current wireless operators are insufficiently motivated to support a variety of applications and equipment developers, thereby stifling innovation.⁹ If this suggestion is indeed valid, policymakers should be concerned about a lack of competition in the wireless industry. After all, competition is the most powerful and effective facilitator of innovation; that is, even in the best of worlds, regulatory responses are only a second best strategy. To that end, I am very sympathetic to the goal of attracting new entrants (particularly wireless broadband providers) via this auction and believe the rules for the auction should be hospitable to them. But the proposal to attach an open access mandate to spectrum encumbered with a requirement to serve public safety seems to me like a mis-

⁶To date, Federal policy has not always effectively encouraged strategic leadership at the state level. See U.S. Government Accountability Office, *First Responders: Much Work Remains to Improve Communications Interoperability* 20–21 (Apr. 2007), available at <http://www.gao.gov/new.items/d07301.pdf> 21 (“Although DHS has required states to implement statewide plans by the end of 2007, no process has been established for ensuring that states’ grant requests are consistent with their statewide plans”).

⁷The Aspen Institute report, see note 1, *supra*, discusses the importance of such leadership. And, in a promising development, the Southern Governors Association is investigating a strategy for providing such leadership on a regional basis. See <http://www.southerngovernors.org/resolutions/Interoperability.html>.

⁸See *Next Generation Network Report*, *supra* note 1, at 35.

⁹To put the issue in terms of economic analysis, it boils down to whether the incumbent platform providers view applications developers hospitably (*i.e.*, because they make their platform more valuable) or as a threat (for any number of possible reasons). For a comprehensive discussion on how information platform providers view applications developers, see Joseph Farrell & Philip J. Weiser, *Modularity, Vertical Integration and Open Access Policies: Toward A Convergence of Antitrust and Regulation in The Internet Age*, 17 Harv. J. L. Tech. (2003).

fit as it would limit the number of eligible bidders, potentially compromising on the goal of finding the best possible partner for public safety.

As I emphasized above, the relevant question is how much money public safety will be given directly to support the development of next generation networks. With enough money, public safety agencies can lease spectrum in the marketplace and build a next generation network—as is currently happening in New York City. Without a commitment of serious resources, however, the encumbered spectrum model becomes a possible second best strategy. I am not opposed to this strategy and appreciate that in the current environment, it might be the best opportunity available and a risk worth taking. But if the FCC decides to take this risk, I believe it needs to implement a series of measures to enhance its chances of success.

V. The Public Safety Spectrum Licensee and the Importance of Effective Governance

The public safety spectrum licensee concept, whether or not coupled with encumbered spectrum such as that proposed by Frontline, must be implemented with a number of safeguards to ensure that it will be able to deliver on its promise. The first, and in some ways the most critical, challenge is to ensure that the public safety spectrum licensee is assisted by able and independent advisors so that it can negotiate effectively as to how the 12 MHz of spectrum will be used and how a next generation network system will be developed and deployed. There are a number of important details that will need to be hammered out and, just like corporate America relies on specialized consultants to craft contracts related to their information and communications technology needs, public safety will similarly need the aid of highly qualified advisors. Thus, I would emphasize the importance of hiring of qualified consultants to aid the public safety spectrum licensee in its series of important decisions.

The second principal strategy related to the public safety spectrum licensee concept is that this entity must be held accountable for its decisions and the FCC will need to exercise its oversight of the relevant licensee to ensure that it is operating responsibly. Notably, the FCC's oversight should not entail second guessing of that licensee's decisions or invite appellate review of them. It should, however, stand ready to investigate any concerns that the licensee is abusing its authority.

The final two strategies related to ensuring an effective public safety spectrum licensee function address directly the challenges that emerge from the proposal to encumber 10 MHz of spectrum with a requirement to serve public safety. Again, whether or not the Frontline proposal is adopted, it is both likely and desirable that public safety cooperate with commercial firms to develop a joint public safety-commercial network. In principle, this network would both meet the requirements of public safety (to the extent reasonably practicable) and enjoy the economies of scale that emerge from a shared network that relies on commercially produced equipment (as opposed to equipment specially produced for public safety). In short, the Frontline proposal raises two wrinkles that require special attention: (1) public safety agencies must be afforded with the right to walk away from the proposed partnership; and (2) the FCC must ensure that some level of enforcement be self-executing (say, binding arbitration) in the event that the winner of an auction for encumbered spectrum failed to follow through on its commitments.

As I noted above, a proposal like the Frontline model reflects a second best strategy in the absence of an available revenue source to support the development and deployment of a next generation network for public safety. Significantly, the Frontline proposal is not premised on any need by public safety agencies to gain access to more spectrum to deploy such a network. Indeed, without any additional spectrum assignment at all, the City of New York is contracting for the development and deployment of a next generation network. But the City of New York is able to contract for that network because it possesses the necessary financial resources to do so. Thus, unless there is a more robust funding commitment from the Federal Government, the option of using encumbered spectrum becomes a plausible second best strategy.

The advantage of simply endowing the public safety spectrum licensee with a funding commitment is that this model makes clear that they are in the driver's seat when it comes to negotiating the relevant contractual terms. In the case of an encumbered spectrum solution, the nature of the negotiation becomes more complex and, in the worst possible case, it might represent a "forced marriage" whereby the public safety spectrum licensee is, in effect, coerced to deal (and share its spectrum) with an entity that it views as either unqualified or untrustworthy to deliver on its promises. To avoid this scenario, the public safety spectrum licensee must be in a position to walk away from any possible deal with the winner of an auction for encumbered spectrum. Moreover, if the public safety spectrum licensee did walk away

from such a partnership for “reasonable grounds,” the winner of the encumbered spectrum would necessarily be judged unable to deliver on its commitment to facilitate the development of a next generation network for public safety.¹⁰ Going forward, it will be important that the public safety spectrum licensee and its commercial partner develop strategies for instituting new requirements to meet the needs of public safety and ensure that the commercial partner is not able to take advantage of public safety—*i.e.*, in effect becoming an unregulated monopoly.¹¹

The second important safeguard that should accompany the award of a spectrum license with a commitment to provide a next generation network to public safety is that there must be real and self-executing enforcement mechanisms. The history of spectrum policy is littered with the commitments of spectrum licensees who made, and have failed to keep, any number of assorted commitments. As noted above (and as I have argued elsewhere¹²), the use of a spectrum license to generate public interest benefits is suboptimal to using direct fiscal support to achieve those benefits. But the fact that this approach has failed elsewhere does not mean it is destined to failure here—only that regulators should approach any regulatory bargain with their eyes open and a well devised strategy to hold a licensee to its commitments.

In terms of the relevant commitments that a licensee should be forced to make, I am aware that overly onerous commitments could backfire insofar as they might undermine the ability of the licensee to attract sufficient funding via the capital markets. This concern, however, only means that the relevant performance bond, lien on the spectrum, or lien on the infrastructure should be triggered with sufficient sensitivity so that public safety does not possess an ability to pull out the rug from the licensee unfairly. Again, the historical concern tends to argue that the more realistic scenario would be an overly forgiving posture toward a failure to perform rather than an overly harsh judgment as to whether a licensee had actually performed. In short, an appropriately balanced enforcement mechanism should be clear, provide fair warning, be self-executing (*i.e.*, not require a lengthy proceeding), and provide significant consequences so as to ensure effective performance.

VI. The Importance of Ongoing Innovation and Responsible Leadership

Before I conclude, I must emphasize that the current focus on the upcoming auction and the proposals now taking center stage should be kept in appropriate perspective. In particular, the current 700 MHz auction is not the last opportunity to facilitate improvements in public safety communications. Rather, it is merely one important chapter in an ongoing effort to improve the use of information and communications technology by public safety.

As I have discussed above, a next generation network offers enormous opportunities for public safety agencies to operate more efficiently. Indeed, if the public safety spectrum licensee can help facilitate the development of a hybrid traditional land mobile radio and broadband device, that development will provide public safety agencies with access to capabilities that will enable them to perform far more effectively, more efficiently, and facilitate improved interoperability using Internet Protocol connections. The development of such a device, however, should only be the beginning of an ongoing technological development cycle that will enable public safety agencies to operate more effectively. Indeed, one important architectural feature of a next generation network is that it can allow ongoing modular development and the use of secondary systems (*e.g.*, commercial cellular systems, municipal WiFi systems, and satellite technology) to supplement the principal communications systems.

The traditional model of buying expensive and specialized equipment dedicated to public safety has disserved public safety agencies by ensuring that they operate networks using equipment that is quickly antiquated and expensive to replace. A new

¹⁰ It is critical that any consequences to the winner of an auction for encumbered spectrum be confined to a “reasonable grounds” scenario. Otherwise, the public safety spectrum licensee would have an incentive to use its hold-out leverage to extract unfair and inappropriate concessions from the encumbered spectrum licensee.

¹¹ The public safety spectrum licensee and its commercial partner will, in all likelihood, enter into what economists call a “bilateral monopoly relationship.” Such partnerships are generally characterized by mechanisms to guard against undue opportunistic behavior by one side, including a stylized “hostage exchange” scenario, where each side gives something of value to the other and can threaten to keep it in the event the other side acts unreasonably. See Oliver Williamson, *The Mechanisms of Governance* (1996).

¹² See Phil Weiser, “Promoting Informed Deliberation and A First Amendment Doctrine For A Digital Age: Toward A New Regulatory Regime for Broadcast Regulation,” *Deliberation, Democracy, and the Media* (Costain and Chambers, eds., 2000). As Richard Posner explained in his classic article, the use of a spectrum license—or any regulatory program—to achieve such benefits indirectly can be termed “taxation by regulation.” Richard Posner, *Taxation by Regulation*, 3 *Bell J. Econ.* 22 (1971). As Posner explained, such an approach has certain merits, but also comes with notable risks. *Id.*

model whereby public safety agencies purchase equipment premised on commercially developed standards would break from this tradition by enabling public safety agencies to benefit from technological advancements on an ongoing basis. Consider, for example, that cognitive radio technology continues to improve and should be able to ultimately facilitate the use of radios that can operate both at different frequencies and using different modes, thereby providing a promising interoperability solution.¹³ Similarly, the ongoing development of satellite technology that can operate in conjunction with terrestrial wireless networks (the so called “ancillary terrestrial component” systems) could also have a significant impact on public agencies by enabling them to have a redundant communications connection as well as a way to reach all outdoor coverage areas.¹⁴

The new policy model necessary to promote a next generation network will take time for the relevant stakeholders to adjust to a new opportunity. For this model to be successful, it is critical that, in addition to spectrum policy decisions by the FCC, other governmental actors (such as the Department of Homeland Security, the National Telecommunications and Information Administration, and state and local governments) all embrace and support this new policy strategy. Even with the effective focus of all involved, this process will take years to succeed and, even when complete, it will, by necessity, be imperfect in terms of its overall coverage and capacity. This model, however, provides a far more effective solution to the ongoing failings of public safety communications than any other strategy I can fathom.

Conclusion

In short, I commend the Federal Communications Commission for recognizing that public safety must take advantage of new information and communications technology opportunities—*i.e.*, the promise of a next generation network built around broadband technology—by acting as an enterprise that seeks to leverage the advances of a converged ecosystem. That ecosystem features ongoing development of new technologies for commercial users and, with a commitment by public safety to adapt such technologies for its own needs, it can avoid the mistake of the Project 25 initiative. In that case, public safety operated in an environment where it was confined to its own silo and could only use equipment produced uniquely for it. By embracing a strategy whereby it shares spectrum with one or more commercial partners, public safety will facilitate a win-win arrangement where unused public safety spectrum can be put to good use, money from that leasing arrangement can be dedicated to supporting public safety’s advanced communications needs, and public safety can have access to more spectrum (than it would itself control) when it needs it.

The opportunity to develop a next generation network to afford public safety access to cutting edge technologies will require a major reorientation on the part of all stakeholders as to how public safety agencies use communications technology. This reorientation will require leadership on the Federal, state, and local levels as well as a compelling explanation as to how the public safety spectrum licensee concept can facilitate opportunities that will otherwise not become available or will be prohibitively expensive for most agencies. I recognize that the public safety spectrum licensee concept comes with some risks, but provided that this licensee is supported by able advisors and with a sensitivity toward the needs of individual localities, I believe this policy strategy is a sound linchpin of the effort to spur the development of a next generation network. It can only succeed, however, if other stakeholders rally around this strategy and embrace the importance of a next generation network and work hard to make it a success.

The CHAIRMAN. I thank you very much.
And may I call upon Commissioner Cosgrave.

¹³SDR Forum, *Software Defined Radio Technology for Public Safety* 26 (Apr. 14, 2006), http://www.sdrforum.org/uploads/pub_36302706_a_0001_v_0_00_public_safety_04_14_06.pdf (“the flexibility inherent in [software defined radio] technology facilitates multi-protocol, multi-band and multi-service devices that can operate across multiple systems, thereby supporting the ‘system of systems’ concept for public safety communications.”); Testimony of Stephen Devine, *supra* note 4 (suggesting that “new frequency agile software based radios, capable of operating on multiple public safety frequency bands, can soon be used as a tool to bridge existing gaps between frequency bands”).

¹⁴This point is more fully elaborated upon in Phil Weiser, Dale Hatfield and Brad Bernthal, *Toward A Next Generation Architecture For Public Safety Communications*, available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=903151.

**STATEMENT OF PAUL J. COSGRAVE, COMMISSIONER AND CIO,
DEPARTMENT OF INFORMATION TECHNOLOGY AND
TELECOMMUNICATIONS, CITY OF NEW YORK**

Mr. COSGRAVE. Thank you, Chairman Inouye, Vice Chairman Stevens, and Members of the Committee.

My name is Paul Cosgrave. I am the Commissioner of New York City's Department of Information Technology Telecommunications. I also serve as New York City's Chief Information Officer. Some of you may also remember me when I worked here as the CIO for the Internal Revenue Service.

On behalf of the City of New York, thank you for the opportunity to appear before you today to discuss how the interests of public safety communications can be safeguarded in the upcoming 700 MHz band auctions. Clearly, public safety communications continue to face significant challenges and uncertainties, even as the February 2009 deadline for a transition of 700 MHz spectrum to public safety and commercial use fast approaches. New York City appreciates the FCC's interest in potentially utilizing the upcoming 700 MHz spectrum auction to advance public safety communications and this Committee's examination of the issue.

At the same time, however, we're deeply concerned about the potential consequences of any FCC decision that mandates establishment of a nationwide public/private broadband network which would be shared by public safety and commercial users. Under the Frontline Wireless plan, a nationwide public/private network would be deployed in 22 MHz of spectrum in the 700 MHz band—as you know, 12 MHz of which has been currently allocated to public safety, and 10 MHz which is scheduled for commercial auction. The auction winner would build a nationwide network and negotiate with a newly established national public safety licensee over respective access rights. Commercial users would receive secondary access to the public safety segment, and public safety would receive emergency access to the commercial segment.

The City of New York certainly welcomes the establishment of rules that would make more spectrum available in the 700 MHz and other frequency bands for public/private partnerships on a voluntary basis for both voice and data communications. However, we're concerned about the imposition of such a sweeping mandate, particularly after only, at most, 2 months of consideration and debate.

Ultimately, New York City's present view is that public/private partnerships should be optional. Furthermore, decisions to enter in such partnerships, along with coordination decisions, should take place at the regional, rather than at the national, level. And, finally, the Federal Government must not dictate use of particular frequency bands or technologies.

The sudden emergence and popularity of proposals for public/private partnership appears at least partly due to a misperception that the public safety community is unable to solve its own communications and interoperability needs. This is typically accompanied by the view that the Federal Government has invested massive funding and allocated a great deal of spectrum to support local public safety efforts and that commercial intervention is now necessary.

Consequently, I believe it is relevant to this hearing for me to share, briefly, New York City's perspective on Federal funding in spectrum allocations for public safety communications and to describe the state-of-the-art broadband wireless network New York City is deploying virtually without Federal support.

Unfortunately, for more than a decade the Federal Government's provisioning of funding and spectrum to State and local public safety communications has, in fact, been inadequate. New York City, which is at the highest risk for another terrorist attack, has committed more than \$1 billion of local taxpayer money since the 9/11 attacks to enhance our public safety voice and data communications networks and to upgrade and to harden our E-911 infrastructure. At the same time, we receive less than 20 cents on the dollar in federally-funded support to assist these homeland security-related initiatives.

Equally distressing is the perception that public safety has inefficiently used radio spectrum. Nearly 11 years ago, on September 11, 1996, a high-level Federal advisory committee summarized, "Not only does the shortage of spectrum jeopardize the lives and health of public safety officials, it threatens their ability to fully discharge their duty to protect the lives and property of all Americans."

Regrettably, since that warning cry 11 years ago, there has been no national provision of spectrum to support emergency responder voice communications. Indeed, absent action by this Committee last year, public safety would have been forced to wait well beyond 2009 for the 700 MHz spectrum. In addition, there has only been a single—much appreciated, but exceedingly inadequate—provision of 4.9 GHz spectrum to support data applications.

So, to summarize, the lack of Federal financial support and spectrum, rather than the flawed or inadequate efforts by the State and local public safety communities, are at the heart of the challenge to achieve advanced broadband services and interoperability.

In March 2004, New York City issued a request for proposal for the implementation of a broadband wireless network for public safety to support our own highspeed public safety data needs. The solicitation, which was agnostic as to spectrum and technology, challenged the country's leading systems integrators to propose the best-available solution. At the time, no Federal programs were available to assist us in this initiative, and the public safety segment of the 700 MHz band was earmarked by the FCC for narrowband and wideband applications rather than for broadband use. Consequently, the city, at considerable local expense, went it alone.

In September 2006, after evaluating and testing several competing solutions, New York City contracted with Northrop Grumman to deploy a \$500 million highspeed data network for public safety. The network, known as New York City Wireless Network, or NYCWiN, will enable a wealth of mobile and fixed applications, including real-time video, rapid-response lookup, and exchange of rich graphical information. NYCWiN will provide critical real-time information to the city's first responders when and where they need it.

The network, which is already operational in Lower Manhattan and scheduled for citywide deployment by March 2008, utilizes 10

MHz of licensed spectrum in the 2.5 GHz band, spectrum which New York City has, indeed, purchased at market rates. NYCWiN employs UMTS technology, which is well suited for highspeed mobile data applications. Moreover, NYCWiN is an IP-based network enabling fully interoperable data communications. Essentially, information can be shared instantaneously among multiple agencies. New York City is working through its existing interoperable communications relationships with its partners in the State, Federal, and regional public safety agencies to ensure their access to the network, as well.

The FCC is now considering a nationwide buildout of a public/private network for first responders on the 700 MHz frequency, which aims for capabilities similar to what we've done with NYCWiN. New York City has described, in comments filed with the FCC, various factors that the FCC should consider in evaluating the merits of such a proposal. In the interest of time, I'll outline only our two most pressing concerns:

First, a national network based on one-size-fits-all approach may not meet the disparate communications needs of emergency responders throughout the country.

And, second, it's not clear such a network would be engineered to meet the demanding mission-critical needs of public safety.

With respect to the one-size-fits-all approach, as I just described, New York City is implementing a broadband data network that utilizes UMTS technology on the 2.5 GHz band. Recently, the District of Columbia opted to deploy a broadband network, as well, that utilizes a different technology—EV-DO technology—and different frequency; they're deploying on 700 MHz.

These cities' respective decisions were dictated by the fact that New York City and the Capital region must contend with much different physical environments and different operational priorities. Any scheme for a national network must, from technology and spectrum-related standpoints, ensure that each implementing public safety jurisdiction has the flexibility to evaluate and respond to its own circumstances, both physical and operational. It should be no surprise that the same technology and spectrum that works well in New York City may not work well in Los Angeles, Boise, or, for that matter, even in Buffalo, New York.

So, to accommodate these differences, the policies and rules governing the 700 MHz band must recognize the need for flexibility and discretion at the local, State, and regional levels. New York City has implemented citywide and regional interoperability protocols between and among our emergency responders and those of neighboring counties in New York, as well as in New Jersey, along with regional authorities and various State and Federal agencies.

New York City participates in several regional planning bodies, including the Region 8 Regional Planning Committee, which currently coordinates use of 700 MHz and 800 MHz channels. The regional role in interoperability planning should be preserved with respect to broadband. Nor does the proposal for a national public safety licensee officially address how channel allocation and frequency coordination will take place among various local, State, and Federal entities operating in a common area and/or responding to the same emergency.

New York City's second major concern is that the proposed 700 MHz public/private network will, in fact, be dominated by commercial interests, and that deployment and maintenance will be undertaken based on a return of investment rather than effectiveness of emergency response.

The current FCC rulemaking includes no parameters to uphold mission-critical standards, and public safety agencies have no recognizable right, such as a license, to protect their interests. Moreover, the current proposal provides no indication of how the FCC will address the complex issues of ensuring that public safety has priority access, *vis-à-vis* commercial interests, and that access among various public safety authorities is appropriately prioritized.

Ultimately, emergency responders must not be forced to rely on a carrier-grade network, which would most likely not be available to them when it is most needed. Anyone who's ever experienced a large-scale emergency knows that cell phone communications quickly deteriorate and soon become impossible. This is a result of several factors, including competition among callers for access to cell antennas, possible degradation of the wired backbone interconnecting the network, and frequently the loss of both commercial and backup power to the network.

Compare this to NYCWiN. In the event of a major emergency, New York City Government will be able to prioritize network access among various agencies and users. The network is being built with redundant backbones, overlapping coverage, and a minimum of 24-hour backup power at every site. One cannot imagine that a commercial carrier would be willing to invest the capital required to build such a robust, redundant network in New York City.

Public safety cannot be put in the position of sharing a plain vanilla network, which, quite frankly, is really no option at all.

In the final analysis, public safety systems stand in stark contrast to commercial systems. Deploying and maintaining public safety systems entail much more detailed requirements, analysis, engineering, testing, and training. Heightened requirements include capacity, coverage, system restoration, reliability, and security. Public safety networks require greater diversity and redundancy. Moreover, there can be no experimentation in the public sector. As I think you all know, lives are at stake.

In conclusion, the public/private partnership model holds promise and should continue to be developed as a means of deploying next-generation voice and data networks using various frequency bands. However, this model is also very new and, frankly, untested. Mandating that a portion of the limited spectrum currently allocated to public safety be used for a nationwide public/private broadband network in the 700 MHz band is fraught with uncertainties and risks.

Chairman Inouye, this completes my statement. The City of New York greatly appreciates the privilege to be here today.

Thank you.

[The prepared statement of Mr. Cosgrave follows.]

PREPARED STATEMENT OF PAUL J. COSGRAVE, COMMISSIONER AND CIO, DEPARTMENT OF INFORMATION TECHNOLOGY AND TELECOMMUNICATIONS, CITY OF NEW YORK

Chairman Inouye, Vice Chairman Stevens, Members of the Committee:

My name is Paul Cosgrave. I am the Commissioner of New York City's Department of Information Technology and Telecommunications. I also serve as New York City's Chief Information Officer.

On behalf of the City of New York, thank you for the opportunity to appear before you today to discuss how the interests of public safety communications can be safeguarded in the upcoming 700 MHz band auctions.

Clearly, public safety communications continue to face significant challenges and uncertainties—even as the February 2009 deadline for transition of 700 MHz spectrum to public safety and commercial use fast approaches.

New York City appreciates the FCC's interest in potentially utilizing the upcoming 700 MHz spectrum auction to advance public safety communications, and this Committee's examination of the issue. At the same time, however, we are deeply concerned about the potential consequences of any FCC decision that *mandates* establishment of a nationwide, public-private broadband network, which would be shared by public safety and commercial users.

Under the Frontline Wireless plan, a nationwide, public-private network would be deployed on 22 MHz of spectrum in the 700 MHz band—12 MHz of which is currently allocated to public safety, and 10 MHz of which is scheduled for commercial auction. The auction winner would build a nationwide network, and negotiate with a newly established national public safety licensee over respective access rights. Commercial users would receive "secondary access" to the public safety segment, and public safety would receive "emergency access" to the commercial segment.

The City of New York certainly welcomes the establishment of rules that would make more spectrum available in the 700 MHz and other frequency bands for public-private partnerships on a *voluntary basis*—for both voice and data communications. However, we are concerned about the imposition of such a sweeping mandate, particularly after only a few months of consideration and debate. Ultimately, New York City's present view is that public-private partnerships should be optional. Furthermore, decisions to enter into such partnerships, along with coordination decisions, should take place at the regional, rather than at the national level. And, finally, the Federal Government must not dictate use of particular frequency bands or technologies.

The sudden emergence and popularity of proposals for public-private partnerships appears at least partly due to a misperception that the public safety community is unable to "solve" its own communications and interoperability needs. This is typically accompanied by the view that the Federal Government has invested massive funding and allocated a great deal of spectrum to support local public safety efforts—and that commercial intervention is now necessary.

Consequently, I believe it is relevant to this hearing for me to share, briefly, New York City's perspective on Federal funding and spectrum allocations for public safety communications; and to describe the state-of-the-art broadband wireless network New York City is deploying—virtually without Federal support.

Unfortunately, for more than a decade, the Federal Government's provision of funding and spectrum to state and local public safety communications has been inadequate. New York City, which is at highest risk for another terrorist attack, has committed more than \$1 billion of local taxpayer money since the 9/11 attacks—to enhance our public safety voice and data communications networks, and to upgrade and "harden" our E-911 infrastructure. At the same time, we have received less than twenty cents on the dollar in Federal financial support to assist these homeland security-related initiatives.

Equally distressing is the perception that public safety has inefficiently used radio spectrum. Nearly eleven years ago, on September 11, 1996, a high-level Federal advisory committee summarized: "Not only does the shortage of spectrum jeopardize the lives and health of public safety officials, it threatens their ability to fully discharge their duty to protect the lives and property of all Americans."

Regrettably, since that warning cry, there has been no national provision of spectrum to support emergency responder voice communications. Indeed, absent action by this Committee last year, public safety would have been forced to wait well beyond 2009 for the 700 MHz spectrum. In addition, there has been only a single—much appreciated but exceedingly inadequate—provision of 4.9 GHz spectrum to support data applications.

To summarize, the lack of Federal financial support and spectrum—rather than flawed or inadequate efforts by the state and local public safety communities—are

at the heart of the challenge to achieve advanced broadband services and interoperability.

In March 2004, New York City issued a Request for Proposals for the implementation of a broadband wireless network for public safety to support our own high-speed public safety data needs. The solicitation, which was agnostic as to spectrum and technology, challenged the country's leading systems integrators to propose the best available solution.

At the time, no Federal programs were available to assist the City in this initiative; and the public safety segment of the 700 MHz band was earmarked by the FCC for narrowband and wideband applications, rather than for broadband use. Consequently, the City, at considerable local expense, "went it alone."

In September 2006, after evaluating and testing several competing solutions, New York City contracted with Northrop Grumman to deploy a \$500 million high-speed data network for public safety. The network, known as the New York City Wireless Network, or "NYCWiN," will enable a wealth of mobile and fixed applications, including real-time video, rapid database lookup and the exchange of rich graphical information. NYCWiN will provide critical, real-time information to the City's first responders where and when they need it.

The network, which is already operational in Lower Manhattan, and scheduled for citywide deployment by March 2008, utilizes 10 MHz of licensed spectrum in the 2.5 GHz band—spectrum which New York City has indeed purchased at market rates. NYCWiN employs UMTS technology, which is well suited for high-speed mobile data applications. Moreover, NYCWiN is an IP-based network, enabling fully interoperable data communications. Essential information can be shared instantaneously among multiple agencies. New York City is working through its existing interoperable communications relationships with its partners in state, Federal and regional public safety agencies to ensure access to the network.

The FCC is now considering a nationwide buildout of a public-private network for first responders, on the 700 MHz frequency band, which aims for capabilities similar to those of NYCWiN.

New York City has described in comments filed with the FCC various factors that the FCC should consider in evaluating the merits of such a proposal. In the interest of time, I will outline our two most pressing concerns.

First, a national network, based on a "one-size-fits-all" approach, may not meet the disparate communications needs of emergency responders throughout the country. Second, it is not clear such a network would be engineered to meet the demanding, mission-critical needs of public safety.

With respect to the one-size-fits all approach, as I just described, New York City is implementing a broadband data network that utilizes UMTS technology and the 2.5 GHz band. Recently, the District of Columbia opted to deploy a broadband network that utilizes a different technology (EV-DO), and different frequency band (700 MHz). These cities' respective decisions were dictated by the fact that New York City and the Capital Region must contend with much different physical environments and different operational priorities.

Any scheme for a national network must, from technology- and spectrum-related standpoints, ensure that each implementing public safety jurisdiction has the flexibility to evaluate and respond to its own circumstances, both physical and operational. It should surprise no one that the same technology and spectrum that "works" for New York City may not be very well suited to Los Angeles, and Boise, and Buffalo.

To accommodate these differences, the policies and rules governing the 700 MHz band must recognize the need for flexibility and discretion at the local, state and regional levels. New York City has implemented citywide and regional interoperability protocols between and among our emergency responders and those of neighboring counties in New York and New Jersey, along with regional authorities and various state and Federal agencies.

Toward this end, the City participates in several regional planning bodies, including the Region 8 Regional Planning Committee, which currently coordinates use of 700 MHz and 800 MHz channels. The regional role in interoperability planning should be preserved with respect to broadband. Nor does the proposal for a national public safety licensee sufficiently address how channel allocation and frequency coordination will take place among various local, state and Federal entities operating in a common area and/or responding to the same emergency.

New York City's second major concern is that the proposed 700 MHz "public-private" network will, in fact, be dominated by commercial interests, and that deployment and maintenance will be undertaken based on a return on investment, rather than effectiveness of emergency response. The current FCC rulemaking includes no parameters to uphold mission-critical standards; and public safety agencies have no

recognizable right, such as a license, to protect their interests. Moreover, the current proposal provides no indication of how the FCC will address the complex issues of ensuring that public safety has priority access *vis-à-vis* commercial interests, and that access amongst various public safety authorities is appropriately prioritized.

Ultimately, emergency responders must not be forced to rely on a carrier-grade network, which would most likely not be available to them when it is most needed. Anyone who has ever experienced a large-scale emergency knows that cell phone communications quickly deteriorate and soon become impossible. This is the result of several factors, including “competition” among callers for access to cell antennas; possible degradation of the wired backbone interconnecting the network; and, frequently, the loss of both commercial and backup power to the network.

Compare this to NYCWiN. In the event of a major emergency, New York City government will be able to prioritize network access among various agencies and users. The network is being built with redundant backbones, overlapping coverage and a minimum of 24-hour backup power at each site. One cannot imagine that a commercial carrier would be willing to invest the capital required to build such a robust network in New York City. Public safety cannot be put in the position of sharing a “plain vanilla” network, which, quite frankly, is no option at all.

In the final analysis, public safety systems stand in stark contrast to commercial systems. Deploying and maintaining public safety systems entail much more detailed requirements analyses, engineering, testing and training. Heightened requirements include capacity, coverage, system restoration, reliability and security. Public safety networks require greater diversity and redundancy. There can be no experimentation in the public safety sector, because lives are at stake.

In conclusion, the public-private partnership model holds promise; and should continue to be developed as a means of deploying next-generation voice and data networks utilizing various frequency bands. However, this model is also new and untested. Mandating that a portion of the limited spectrum currently allocated to public safety be used for a nationwide, public-private broadband network on the 700 MHz band is fraught with uncertainties and risks.

Chairman Inouye, this completes my statement. The City of New York appreciates very much the privilege to participate in the Committee’s hearing. I would be pleased to respond to your questions.

Senator LOTT. Mr. Chairman?
The CHAIRMAN. Senator Lott?

**STATEMENT OF HON. TRENT LOTT,
U.S. SENATOR FROM MISSISSIPPI**

Senator LOTT. At this point—could I ask unanimous consent to include in the record, a letter to the FCC from the Rural Cellular Association and Cellular South, Incorporated?

The CHAIRMAN. Without objection, so ordered.

[The information previously referred to follows:]

LUKAS, NACE, GUTIERREZ & SACHS
McLean, VA, June 13, 2007

Via Electronic Filing
MARLENE H. DORTCH,
Secretary,
Federal Communications Commission,
Washington, DC.

RE: RESPONSE TO CTIA COORDINATED EX PARTE COMMUNICATION—PS DOCKET
No. 06–229; WT DOCKET NOS. 96–86, 06–150, 06–16

Dear Ms. Dortch:

On behalf of Rural Cellular Association¹ and Cellular South, Inc.,² this letter is to respond to the *Ex Parte Communication* coordinated by CTIA on behalf of 55 enti-

¹ RCA is an association representing the interests of approximately 100 small and rural wireless licensees providing commercial services to subscribers throughout the Nation. RCA’s wireless carriers operate in rural markets and in a few small metropolitan areas. No member has as many as 1 million customers, and all but two of RCA’s members serve fewer than 500,000 customers.

² Cellular South is the Nation’s largest privately-owned wireless carrier serving all of Mississippi and portions of Alabama, Tennessee, Arkansas and Florida. Most of the area served by Cellular South is rural in nature.

ties that oppose adoption of the Commission's proposed geographic build-out requirements in the 700 MHz *Service Rules* proceeding.

The CTIA letter misconstrues the Commission's geographic build-out proposal as one that would "force" or "compel" 700 MHz licensees to construct facilities beyond the areas the licensees prefer to serve. That is simply not the case. In the Commission's words the proposal in question ". . . combines performance requirements based on geographic benchmarks and a 'keep what you use' rule."³ This arrangement would allow licensees to make economically sound business decisions based on their ability and willingness to serve consumers in any area. To the extent that any licensee chooses not to serve a part of its license area the spectrum rights to that area would be relinquished, but not before the licensee has opportunities after three, five and 8 years to protect a percentage of the market adjacent to the served areas. The licensee would always be in control of decisionmaking over what areas would be served, protected or relinquished.

A "keep what you use" system is consistent with the pursuit of market-based solutions and has the added value of curbing potential inefficiencies such as spectrum stockpiling or a licensee's inability to build-out the areas for which it is licensed. Secondary market transactions including spectrum leasing likewise could allow a licensee to work with other companies that are willing to serve areas not a priority for the original licensee.

Strict performance requirements based on geographic coverage are vital to promoting near-term availability of wireless broadband services in rural areas. The Commission's proposal properly recognizes that effective use of 700 MHz spectrum to be auctioned will best serve consumer interests. Rural communities deserve the opportunity to experience all the advantages that wireless broadband can offer. The alternative proposed in the CTIA letter is equivalent to proceeding without a safety net to guard against market failure and consumer harm.

Respectfully submitted,

DAVID L. NACE

cc: Christopher Guttman-McCabe, CTIA

Senator LOTT. And I would like to just like to thank the panel for their testimony. In particular, I'd like to recognize Mr. Barksdale, from my home State, college contemporary, a real leader in telecommunications and business. We appreciate all you do, and we appreciate, in this instance, once again, your willingness to get involved, even though it's not something you particularly need; you're involved in it, because of your interest in public service. And whether people agree or disagree with what you're trying to do, I think you should be commended for your effort, and I thank you for that.

Thank you.

The CHAIRMAN. I thank you very much.

Because of the time element, I will be submitting my questions to the panel.

But my primary interest with respect to public safety is to determine which option we've been discussing would give our first responders the best chance of building a nationwide interoperable broadband-capable network.

As I see it, first, we can rely on local and regional public safety networks, as we do now; or, second, we can use the 12 MHz already allocated to public safety for a national network; or, three, we can do something like the Frontline proposal and use public safety's 12 MHz along with 10 MHz of commercial spectrum.

Under each of these scenarios, I'd like to know, what is your best estimate as to how much it will cost public safety to build and operate a next-generation broadband network? And how long will it take to build this network across the Nation?

³*Report and Order and Further Notice of Proposed Rulemaking* in WT Docket No. 06-150, et al (FCC 0772), at para. 212.

So, this is a complex question that takes some consideration, so I would hope that you will carefully respond to this question.

May I now call on Senator Stevens?

Senator STEVENS. Well, thank you, Mr. Chairman.

I will submit some questions also.

But I want to try to examine this, and I don't want to be offensive, but it sort of looks like this is "Cyren Call" like proposal, that we really rejected the past approach, and we're approaching, now, a different concept, but it comes back to the same thing, as I see it.

Now—I could be disabused of that—now, Mr. Barksdale, it's my understanding that Frontline has indicated it will not comply with 9-1-1 requirements or CALEA, in terms of public safety, in terms of handling the mandatory court-ordered wiretaps for public safety, and you will not handle 9-1-1. Is that right?

Mr. BARKSDALE. That is not correct, Senator.

Senator STEVENS. What?

Mr. BARKSDALE. I'm sorry, I need to turn this on.

That is not correct. We would be supportive of that, and we've already told the FCC that we would support those.

Senator STEVENS. You would comply—

Mr. BARKSDALE. I don't know where the—

Senator STEVENS.—with them?

Mr. BARKSDALE. Sir—yes, sir.

Senator STEVENS. I'm told that Frontline indicated to the FCC it does not want to take on those requirements, and asked to be absolved from complying.

Mr. BARKSDALE. I do not know where that came from, but we have now told the FCC we'd be happy to do that. I also would point out—

Senator STEVENS. I only have 5 minutes, now. And—

Mr. BARKSDALE. Yes, sir.

Senator STEVENS.—this is from the FCC, "We seek comment, as well, on Frontline's view there's no need to impose CALEA, E-911, or similar obligations on the 'E Block' licensee, because it believes that retail service provides that spectrum and already is subject to similar requirements"—

Mr. BARKSDALE. Yes.

Senator STEVENS.—"for the blocks that they already have"—not this—

Mr. BARKSDALE. Yes—

Senator STEVENS.—block, but the block—

Mr. BARKSDALE.—that was the FCC's language. We submitted technical papers that said that we could comply with it.

Senator STEVENS. Well, it's my understanding that that's what Frontline submitted to FCC. All right, well, I'd like to have that straightened out.

Mr. BARKSDALE. That's not true. This man who wrote the document—

Senator STEVENS. I'd appreciate it if you'd straighten it out for the record.

Mr. BARKSDALE. Yes, sir, I—we will get you the—

Senator STEVENS. Our counsel—

Mr. BARKSDALE.—exact answer.

Senator STEVENS.—says that was filed with the FCC.

Mr. BARKSDALE. I will make sure you get the exact answer—

Senator STEVENS. All right.

Mr. BARKSDALE.—in response—

Senator STEVENS. Now—

Mr. BARKSDALE.—to that.

Senator STEVENS.—the Frontline proposal calls for allowing anyone anywhere to access their dual-use network, as I understand it. If that's the case, then how can we say this is a public safety network?

Mr. BARKSDALE. Because normally we're not having hurricanes and 9/11, and public safety, the amount of the 20 MHz it would be using, in most markets—not all, certainly, and maybe more in New York than in Boise—is a lower percentage of this enormous amount of spectrum. And then, when there is—

Senator STEVENS. But, now, wait—

Mr. BARKSDALE.—an emergency, we would have—

Senator STEVENS.—what do you do with it, if it's not used by public safety? Are you leasing it out?

Mr. BARKSDALE. Yes, sir. We are leasing or selling that service. We operate a network—as opposed to previous people who put up money and tried to resell spectrum, we would actually operate a nationwide network. We will build it out in 10 years, covering 99 percent of the population, we'll put the money up front for the auction—

Senator STEVENS. But where's the partnership, if you're operating it and you're selling it, you're getting money, and—are you going to buy equipment for public safety?

Mr. BARKSDALE. We are going to build the network. Public safety would—

Senator STEVENS. That's not what I asked, now. Are you going to buy equipment for public safety with the income from this public partnership?

Mr. BARKSDALE. Which equipment?

Senator STEVENS. The equipment for them to go into—new equipment for interoperability.

Mr. BARKSDALE. Well, there are two pieces. One is the network, the switching equipment. We build and—we buy that, yes, sir, every bit of it.

Senator STEVENS. I understand that. But they—

Mr. BARKSDALE. Those handsets—

Senator STEVENS.—have a requirement for equipment to become interoperable—they have a requirement—public safety has enormous requirements. So, I want to see—and the Cyren Call said they would take some of their income and help public safety buy that equipment.

Mr. BARKSDALE. This is not Cyren Call.

Senator STEVENS. I understand that. Are you going to buy the public—

Mr. BARKSDALE. We're going to buy the network—

Senator STEVENS.—are you going to buy the public safety any equipment, Mr. Barksdale?

Mr. BARKSDALE. Yes, sir, \$12 billion worth of it, at least, which is the network that will be interoperable. They would have to pro-

vide their own handsets. They are certainly free to use different technologies that, in New York, might fit differently than others, but they would use this spectrum. We would put up at least the \$12 billion to build the network—from private funds, not from public funds—and then that would be an interoperable network, just like the cellular system works today. It's interoperable.

Senator STEVENS. We only have—each of us have just so much time. I'd really appreciate it—

Mr. BARKSDALE. Yes.

Senator STEVENS.—if you'd answer my questions. I understand what you said before. I'm just asking you questions. All right?

Mr. BARKSDALE. Yes.

Senator STEVENS. Now, what are the costs of this network. This network you wish to build out, what would be the cost of it?

Mr. BARKSDALE. Approximately \$12 billion.

Senator STEVENS. And where will that money come from?

Mr. BARKSDALE. From private investors.

Senator STEVENS. It won't come from the leasing of the spectrum?

Mr. BARKSDALE. Well, that's how you get the capital of the company from private investors. Then they would resell the use of this network to commercial users, to wholesale users, to innovators, and to others, who would pay by the minute for the service, and that would be the revenue stream that would pay for the long-term business.

Senator STEVENS. But other people at this auction are going to pay enormous sums of money for spectrum.

Mr. BARKSDALE. Yes, sir.

Senator STEVENS. They will have the ability to build networks, too.

Mr. BARKSDALE. Yes, sir.

Senator STEVENS. And those networks would be accessible by public safety people also, right?

Mr. BARKSDALE. Not necessarily.

Senator STEVENS. Why not? They're just—anyone can access—

Mr. BARKSDALE. Well, they're as accessible as they are today, but they're not built. As was pointed out by the gentleman from New York, this network will be built specifically to withstand some of the hardened requirements of public safety.

Senator STEVENS. I'm trying to understand the difference between Mr. Cosgrave and your position, as far as this network is concerned. I support getting public safety all the network and all the money we can possibly get them to provide an interoperable—

Mr. BARKSDALE. Right.

Senator STEVENS.—system. Cyren Call led us to believe that the money that they would get from leasing the spectrum would be used for public safety. When we examined that, that wasn't quite the case.

Mr. BARKSDALE. This proposal is not the Cyren Call proposal, has nothing to do with it.

Senator STEVENS. But what's the difference?

Mr. BARKSDALE. On this proposal, we take the public safety spectrum and this other 10 MHz, put them together, build a network

right down the middle, covering 99 percent of the people. Private interests build the network. We sell out the portions that public safety doesn't use. When public safety needs more for emergencies, they can absorb all of this commercial, through written agreements that are well in existence before this, so that they can expand the network. In a case of Hurricane Katrina or 9/11, they get all the spectrum. But most of the time, you don't have that; therefore, the spectrum lays fallow. We're submitting that we would be able to wholesale that spectrum to the people—to small cellular carriers who can't get national coverage, to innovators who can't get on AT&T or Verizon's system, as indicated in today's *Wall Street Journal*, the people who are willing to pay for it. That's the business risk we take. We're willing to take the risk. Others may bid higher than we, and they may get the spectrum. But that's the idea, that private interests would love to do this, and, as a great benefit to public safety, build it out.

But, to Mr. Cosgrave's point, we're not requiring New York City to participate in this. It would be their option.

Senator STEVENS. Really, you know, I'm out of time already. I'm trying to get questions. Would you please just answer my question?

Mr. BARKSDALE. Yes, sir.

Senator STEVENS. Now—

Mr. BARKSDALE. I apologize.

Senator STEVENS.—we have—as I understand it, we have 84 MHz before us, in terms of the total concept of what's going to be available after the digital change in 2008.

Mr. BARKSDALE. I think that's correct.

Senator STEVENS. And if I understand it, the public safety has 24 MHz reserved already.

Mr. BARKSDALE. Yes, sir.

Senator STEVENS. And you want to add 10 to that.

Mr. BARKSDALE. Yes, sir.

Senator STEVENS. But you would take 12 MHz of the existing 24 MHz, and that 10 MHz, and you would control it by this private partnership that you create. Now, this is a stock company, right?

Mr. BARKSDALE. Yes, sir.

Senator STEVENS. Well, where's the partnership?

Mr. BARKSDALE. Well, before we can get the bid, before we start, we have to have signed agreements, as Ms. McCarley said, with the public safety entity that we're proposing, which would be a public safety spectrum trust that has to be signed and agreed to. And that is the partnership. They're our principal customer. They would be treated—they would be our largest customer.

Senator STEVENS. You would be able to lease to them before all this demand of accessibility for the public safety comes, you'd be able to lease 34 MHz—well, you'll control 24—24 MHz to those who might otherwise bid for it at the public auction, right?

Mr. BARKSDALE. Well, 10 of it to others, because public safety has already got 10.

Senator STEVENS. But you're going to control 12 from public safety, plus the 10 that you want—

Mr. BARKSDALE. Yes, sir.

Senator STEVENS.—to be allocated to this—

Mr. BARKSDALE. Yes, sir.

Senator STEVENS.—to Frontline.

Mr. BARKSDALE. Yes, sir.

Senator STEVENS. You're not going to pay anything for that.

Mr. BARKSDALE. We're going to pay whatever the bid price is, billions of dollars. It could cost 20, 40 billion dollars to pay for it.

Senator STEVENS. You're going to bid on the 10 MHz?

Mr. BARKSDALE. Yes, sir. That's the whole point. We're not asking anybody to give us this spectrum. We're going to bid on it. There are others who are going to bid on it. And then, in addition, public safety gets the free ride of the network. That's a heck of a deal.

Senator STEVENS. Well, it is, if it really—and I see my light's on—it is, if the commitment is there to public safety.

Mr. BARKSDALE. Of course.

Senator STEVENS. And I think—

Mr. BARKSDALE. And only if that's true.

Senator STEVENS.—if part of this is leased out, how does public safety get it after it's leased out?

Mr. BARKSDALE. Well, it's just like the network works today, sir, everybody participates, but some have higher priorities. Public safety would have the highest priority.

Senator STEVENS. All right. Well, then, the last question is, if it doesn't achieve the goal, how does FCC get control again?

Mr. BARKSDALE. Well, that's part of the agreement that would have to be nailed down. We've made some suggestions on that subject, which I think would be acceptable. But the main thing is, we would have to put the money up front. That's different than any prior new entrant has had to do.

Senator STEVENS. I applaud the difference between that and Cyren Call, but I want to know, if it doesn't achieve its result, how do we get it back so it can be auctioned again, and that money applied, the money that's coming in, from—

Mr. BARKSDALE. Yes, sir.

Senator STEVENS.—the auction is first dedicated to public safety. And—

Mr. BARKSDALE. But a very small amount.

Senator STEVENS. Well, it's a billion dollars. Then we—

Mr. BARKSDALE. That's not near enough, Senator.

Senator STEVENS. I understand that, but we had earmarked some money to repay money we previously put up, then it comes back and it—

Mr. BARKSDALE. Yes, sir.

Senator STEVENS.—deals with public safety again.

Mr. BARKSDALE. Correct.

Senator STEVENS. So, if it brings in the kind of money that we think it's going to bring in. It's going to be a tremendous amount. Yours will be bid as part of the total of the 50 MHz that's—no, the 60 MHz available now? You're going to be in competitive bid for up to 10 MHz, is that what you're telling me?

Mr. BARKSDALE. Yes, sir. A portion of that 60 MHz—10 MHz of it.

Senator STEVENS. Who do you compete with on that?

Mr. BARKSDALE. People who buy spectrum to build out networks—AT&T, Verizon, anybody who wants to step up, private investors, public investors.

Senator STEVENS. Well, I'm taking too much time. I'll have some more questions, but I do apologize. In terms of the concept that you're going to be part of the—

Senator DORGAN. Could I ask him to yield—

Senator STEVENS.—auction.

Mr. BARKSDALE. Yes, sir.

Senator STEVENS. And you're going to go in and bid for 10 MHz.

Mr. BARKSDALE. Yes, sir.

Senator STEVENS. If you don't get it, this doesn't work. If someone—

Mr. BARKSDALE. No, somebody else will get it. We ask that the FCC set it aside for this purpose—public safety—

Senator STEVENS. All right. Well—

Mr. BARKSDALE.—and combined with—

Senator STEVENS.—if it's not in—

Mr. BARKSDALE.—their other.

Senator STEVENS.—the public auction—

Mr. BARKSDALE. And if they do that, somebody will bid on it. If they—if nobody bids on it, it goes back into the—

Senator STEVENS. Well, they can only bid on it to compete with you within your plan, right?

Mr. BARKSDALE. Only bid on it—I didn't understand the question.

Senator STEVENS. You want 10 MHz set aside to—

Mr. BARKSDALE. Yes.

Senator STEVENS.—join the 12—

Mr. BARKSDALE. Yes, sir.

Senator STEVENS.—and—

Mr. BARKSDALE. Exactly.

Senator STEVENS.—you can bid on that.

Mr. BARKSDALE. Yes, sir.

Senator STEVENS. But for the purpose outlined in your Frontline proposal.

Mr. BARKSDALE. And contractually agreed to with the representatives of the public safety community and the FCC in the United States.

Senator STEVENS. But the people that are competing with you have to agree with your plan on that 10 MHz.

Mr. BARKSDALE. For that 10 MHz, whoever competes with us would have to agree to that plan, yes, sir.

Senator DORGAN. Senator Stevens, could—would you yield just for—

Senator STEVENS. Yes. I'm sorry to take so much time. I had a problem with Cyren Call, and—

Senator DORGAN. I understand.

Senator STEVENS.—I'm developing another problem with this, I want you to know.

[Laughter.]

Mr. BARKSDALE. Please don't pick on me because of Cyren Call. This has nothing to do with that.

[Laughter.]

Senator DORGAN. But if you would yield just for—

Mr. BARKSDALE. This was a gift.

Senator DORGAN.—so that I can understand the point. I appreciate the questions you've asked.

Is it a business model that says you will go out and bid on, and hopefully achieve, the 10 MHz, and you'll pay for that, and then you block that with the 12 MHz that's public safety. You—

Mr. BARKSDALE. Yes.

Senator DORGAN. You will not be paying for that. And that—

Senator STEVENS. Well, he's just said he wants 10 MHz set aside—

Mr. BARKSDALE. Right.

Senator STEVENS.—to comply with his plan, and anyone else can compete and bid to fulfill that plan—

Senator LAUTENBERG. There is an order here, Mr. Chairman.

Senator STEVENS.—fulfill that plan. But it's not to compete—to go and have a nationwide plan that would include service to public safety.

Senator LAUTENBERG. I've been waiting a long time.

Senator STEVENS. Thank you. I'm sorry.

The CHAIRMAN. Senator Lautenberg?

Senator LAUTENBERG. Mr. Chairman, there are fairly complicated issues here, and—

Senator STEVENS. Yes.

Senator LAUTENBERG.—and I really do think it's hard to thread through, with the volume of testimony, and then the things that we'd like to know more about.

I'm going to focus on Mr. Cosgrave, because we're neighboring States, and we both shared very significantly in the tragedy of 9/11, and saw what happened when police departments couldn't communicate with fire departments. It compounded that tragedy by a major factor. It just was very painful throughout. It has been, even in the later years.

So, now, New York City is in the process of—is your interoperability requirement fully met, at this time?

Mr. COSGRAVE. Well, we've certainly—in New York City, have made significant progress since 9/11. Commissioner Kelly and Commissioner Scapetta would certainly tell you, if they were here, that they feel the police department and fire department, respectively, have much better communications today, and that they are, in fact, capable of being interoperable.

You know, there's a lot of confusion on this whole question of interoperability. Fire departments—first responder organizations, fire departments, police departments, are, in effect, paramilitary organizations, and they run with a chain of command. And you don't want every fireman to be able to talk to every policeman. So, this notion of interoperability being, sort of, everybody's got to talk to everybody, is a false notion, to start with. What—

Senator LAUTENBERG. But—

Mr. COSGRAVE.—you want to do is have the chains of command be able to talk, and we certainly can effect that today very effectively.

Senator LAUTENBERG. So, today, that part of the process—

Mr. COSGRAVE. Absolutely.

Senator LAUTENBERG.—is complete. All right. Now, how about the same question related to communities, let's say, in New Jersey. We're, after all, part of the same metropolitan area. So, has New York City addressed that part of the question?

Mr. COSGRAVE. We work together, we have committees that——

Senator LAUTENBERG. Professor Weiser's shaking——

[Laughter.]

Mr. COSGRAVE. Yes, I noticed, as I looked at the right side, here. We work together, we have committees that do that. But I would agree with Professor Weiser's negative nod that it's not where it needs to be.

Senator LAUTENBERG. OK. So, then the objective of a nationwide service is still the right way to go, because if we can't, across our river, be clear in which fire department, which police department, which boats, et cetera, are operating to respond to——

Mr. COSGRAVE. There's no question about that. And the need for capital to build the infrastructure to allow this is a very real point. Clearly, New York City, recognizing the need, and Washington, D.C., recognizing the need, were able to raise the capital. But I understand the problem that other areas have——

Senator LAUTENBERG. Yes.

Mr. COSGRAVE.—where they, maybe, don't have the resources to raise the capital. So——

Senator LAUTENBERG. That——

Mr. COSGRAVE.—absolutely, the financing of this is a major, major issue.

Senator LAUTENBERG. Yes. And that will be a problem throughout the country. I mean, we're——

Mr. COSGRAVE. Correct.

Senator LAUTENBERG.—especially areas that are close to one another, and metropolitan areas, across a river, across a boundary.

Mr. BARKSDALE, I just want to be sure that I heard something correctly that you said, and that was that safety—did I hear you say—would get a free ride—public safety would get a free ride?

Mr. BARKSDALE. Public safety would not have to pay for the \$12 billion network that we would build nationwide, that they could use; that is—that would be built out. It is certainly our intention that we would make it available. But, for example, in New York, if they already have a system, they don't want to participate, they don't have to participate.

Senator LAUTENBERG. Right. But I think that the suggestion that safety gets a free ride——

Mr. BARKSDALE. Well, let me put it this way——

Senator LAUTENBERG.—people probably applaud that one.

Mr. BARKSDALE. Well, they ought to. *The Wall Street Journal* said, "This would lower the auction price if they compromise it with this public safety thing." What they forgot is the \$12 billion to build the network, that we all dream of for the future, is going to be paid for by the same taxpayers, whether they're State, local, or Federal. Add that to the auction price, and it is a terrific deal for the government, for the taxpayers. They will spend less money on our proposal than any other proposal entertained.

And I couldn't disagree more with this Cyren Call thing. It requires no legislation. We participate in the auction. It has nothing to do with that sort of proposal.

This is a great deal for public safety. Does it solve everything? Heck no. There are a lot of things public safety has to do. But it would allow them to focus on those important issues without worrying about this nationwide network, which will be a godsend for them. This is what the Governors reported in Mississippi—we begged people to come in and do this after Katrina.

Senator LAUTENBERG. Well, since the threat of attack, the threat of a major catastrophe still looms large, we're going to have to spend some portion of our annual budget in these areas, because we spend \$3 billion a week on the war that we're presently in, and with supplementals boosting that. So, we pay for the things that we want to get done. And—

Mr. BARKSDALE. Yes, sir, but one other thing—

Senator LAUTENBERG. And the protection of the public, right now, is uppermost. When I see—and I have a responsibility for safety and security in transportation, harbors, and so forth, as a Chairman of the Subcommittee, and I see that—how pitifully small the budgeting is for these things, and yet, we find other ways to put money into programs that we question very sharply.

Thanks, Mr. Chairman. Thank you all.

The CHAIRMAN. Thank you very much.

Senator Smith?

Senator SMITH. Mr. Barksdale, if I understand your model, the 10 MHz you're going to add so that there's private money to build out, what would then be available to the public—

Mr. BARKSDALE. Yes, sir.

Senator SMITH.—it would be leased—the 10 MHz would be leased commercially, but those leases would be subject to the call of public safety.

Mr. BARKSDALE. Yes, sir.

Senator SMITH. Who would trigger that requirement?

Mr. BARKSDALE. Well, the agreement that would be specified between whoever wins the auction and the public safety spectrum trust.

Senator SMITH. And without the involvement of public or private money, the point you've made, and the point I made in my opening statement, is that there just isn't going to be the money to build this out.

Mr. BARKSDALE. No, sir, they won't be built. The networks won't be built.

Senator SMITH. OK.

I wonder, Mr. Weiser—

Mr. BARKSDALE. Now—some will, now. Obviously, New York, Washington, some others. But nobody else is building them right now.

Senator SMITH. But your point is, it won't be built on a national-enough scale.

Mr. BARKSDALE. No way.

Senator SMITH. OK.

Mr. Weiser, if adopted, the Frontline proposal would impose many requirements on the "E Block" license.

Mr. WEISER. Right.

Senator SMITH. What do you think would be the impact on the amount of money the auction participants would be willing to pay for the “E Block” license licensee if they were—if requirements are proposed?

Mr. WEISER. It would probably be less. It’s hard to say exactly how much, but the encumbered requirement of serving public safety, as Mr. Barksdale has outlined, is a fairly demanding responsibility. There is some opportunity that comes with it, which is to work with public safety and to use the 12 MHz of the national public safety licensee. So, that is some offsetting benefit. But, on net, I would imagine it would be less than otherwise would be obtained.

Senator SMITH. If these regulations that Frontline’s proposed were adopted in a general rulemaking that applied to all wireless now—or should they be applied to all broadband providers, in your view?

Mr. WEISER. Sir, there are different sorts of regulations that are at issue. One is the requirement to serve public safety. That’s the principal one. And that one, I think, is best done in a focused manner, because public safety has particular needs, and it needs to be done in a coordinated fashion. So, I don’t think it—that would work effectively across the board.

Senator SMITH. So, you don’t think the FCC should be adopting rules for certain providers that do not apply to others.

Mr. WEISER. I wouldn’t necessarily say it that way. I think that, you know, in the context of auction, this proposal has a particular goal in mind, to serve public safety with one part of the spectrum, and I think, as I believe Senator Inouye said at the beginning, the only goal shouldn’t simply be to maximize the amount of auction revenue. This is a proposal that could, you know, provide the roll-out of the next-generation network. And I think that is a proposal that, although a risk, can be managed, and can facilitate some good benefits.

Senator SMITH. Thank you, Mr. Chairman.

Senator STEVENS. Could you ask him one—if you would yield—

Do you perceive competition to bid on that 10 MHz, based on this plan that’s prepared, by Frontline?

Mr. WEISER. Sir, I do think there can, and should, be competition. I will say—

Senator STEVENS. Wait, wait. From whom?

Mr. WEISER. Sir—

Senator STEVENS. Who would compete with Frontline?

Mr. WEISER. Sir, I think there could be a number of providers out there who would see this opportunity. The opportunity is to build a next-generation network, from the ground up, with public safety as an anchor tenant, and have the option not only for that 10 MHz, but to partner with public safety for an additional 12 MHz. So, I do think Frontline will not be the only bidder who would come forward. And they’ll have to compete at auction to win this license.

Senator SMITH. But that’s where the competition occurs, is at the auction. No other place.

Senator STEVENS. Who’s going to bid to compete with him and his plan?

Mr. WEISER. Sir, there are a lot of companies out there who could bid. Now, I will say one thing, which I explain in my testimony. The requirement to serve this participation spectrum with an open-access requirement might limit some bidders. And, although I understand the rationale behind that, I don't know that it necessarily helps public safety, per se. So, that could be limiting the bidding. But, even with that, I still think there are going to be others who will come forward. This is an opportunity; and for great entrepreneurs, like Mr. Barksdale, they'll see it, and they'll try to seize it.

Senator SMITH. Thank you, Mr. Chairman.
The CHAIRMAN. Senator Dorgan?

**STATEMENT OF HON. BYRON L. DORGAN,
U.S. SENATOR FROM NORTH DAKOTA**

Senator DORGAN. Mr. Chairman, thank you very much.

I think it's safe to say this is beachfront property, and it's very valuable, will be auctioned once, by and large, and establish policy choices for our country for the long period. I want to try to understand, based on Senator Stevens' question, exactly the construct.

Mr. Barksdale, my understanding is this—and correct me if I'm wrong. You would propose to take 12 MHz that is reserved for public safety, combine it with the purchase, in auction—presumably a winning bid in auction—of 10 MHz, and have a 22 MHz system. You don't pay for the 12 MHz. You do pay for the 10 MHz. Is that correct?

Mr. BARKSDALE. Actually, it's—the 12 MHz becomes 10 MHz, because 2 MHz are guard bands and are not—

Senator DORGAN. Right.

Mr. BARKSDALE.—usable. So, it's really 20 MHz, yes, sir, 10 MHz of which would be public safety's part, 10 MHz of which we would bid at auction. Yes, sir.

Senator DORGAN. OK, 10 MHz of which you purchase at auction. You take the public safety piece, 12 MHz—or 10 MHz. You don't pay for that. And then you have 22 MHz, and from that, you build out a system and use it commercially, with a caveat that the public safety is going to have certain preferential rights and so on.

So, I think I understand that. Now, the question is, at what price do you lease back that system to public safety? Or does public safety access that without cost?

Mr. BARKSDALE. No, sir, public safety would agree to a lease price, based on usage, that would be part of this agreement, agreed to by the public safety spectrum trust—

Senator DORGAN. And you're leasing back—

Mr. BARKSDALE.—over time.

Senator DORGAN.—you're leasing back to the public safety use, that those that would use it for revenue for your for-profit enterprise, and the reason that you're extracting revenue from them, even though it was their spectrum, is because you spent \$10 billion creating the infrastructure—

Mr. BARKSDALE. Correct.

Senator DORGAN.—that allows the system to exist. All right. I think I now understand what it is you're doing. I suspect that if the FCC sets aside the 10 MHz, I suspect that there's less value

to it, because you have fewer bidders. So, I don't know what that "less value" is, but I think that's one of the questions that Senator Smith was asking. What "less value" will we have? Now, you might say, "We'll gain value on the other side, to the extent that we have an interoperable network nationally to be used by public safety."

Mr. BARKSDALE. Right.

Senator DORGAN. So, you have one consideration of how much less revenue with fewer bidders for the 10 MHz, number one.

Number two, what is the cost to public safety, and will they be able to afford it? And under what conditions will you be restricted in determining reasonable cost, as opposed to saying to the folks in Fargo, North Dakota, "Look, here's the system, we built it, here's what we charge. If you don't like the charge, tough luck." You'll be the only system out there, so you'll have a substantial amount of power with respect to what you decide to charge public safety. Is that covered in the contractual relationship—

Mr. BARKSDALE. Yes, sir, it would be. And, obviously, as the anchor tenant would—of any development, the anchor tenant gets a better deal than anybody else, and would be probably based on the cost of the system as deployed, and not a retail price. It would probably be based on a very favorable deal. We understand an obligation to public safety.

As to your first question, the taxpayer is benefited, because the taxpayer gets the auction money, plus they don't have to pay for the network. They're the same taxpayers. So, you add the two together, and that's the value of the auction.

To the third part of your question, I think that it is vitally important that the agreement that—whoever wins the agreement, that they sign with the public safety trust, that it be a good, well-thought-out, agreed-to proposition that is in favor, on most—in most every area, toward public safety and not toward the commercial interest.

Senator DORGAN. Mr. Barksdale—

Mr. BARKSDALE. But there has to be a written agreement, yes, sir.

Senator DORGAN. Mr. Barksdale, you made the point about it increasing concentration, I should say, in all of these areas, and that's a point that I'm concerned about. I did read *The Wall Street Journal* piece that you referred to, and I think it raises, also, policy questions.

I'd like to ask, with respect to the commercial side of your business, because—you're doing this because you're creating a commercial national network, and you're using the public—

Mr. BARKSDALE. Right.

Senator DORGAN.—safety piece in order to create a commercial national network that'll have private sector investors, it'll have stockholders and so on.

Mr. BARKSDALE. Yes.

Senator DORGAN. And so, it's a profit-motive system, and with respect to that piece of what you're doing, I'd like to ask your intentions with respect to the issue of open access, for example, as a policy matter.

Mr. BARKSDALE. It is our intention that it be an open-access system.

Senator DORGAN. And how would you provide that guarantee to the FCC and to the Congress?

Mr. BARKSDALE. That there are certain—there are about three or four requirements of what “open access” means. And that would be identified in our agreement with the FCC. It’s part of the rules—it would be part—hopefully, part of the rulemaking that the FCC will provide, here in the next few weeks, that will drive the auction, because it needs to be identified. “Open access,” to some means something different than “open access” to others.

Senator DORGAN. Well, it does, and it’s a particularly important policy choice, at this point, given—I mean, you reference it in your—

Mr. BARKSDALE. Yes.

Senator DORGAN.—testimony, and show us *The Wall Street Journal* article of this morning.

Mr. BARKSDALE. Right.

Senator DORGAN. The other that will cause an apoplectic seizure here on the Committee whenever I mention it is the issue of network neutrality. We’ve had some pretty aggressive discussions on this Committee about the policy of network neutrality.

Have you taken a look at those discussions? And how do you see your commercial enterprise with respect to those issues? Because we’ve had some suggest that they’d like to be gatekeepers.

Mr. BARKSDALE. Right. Well, I’m not an expert on net neutrality. I’ll give you a written response.

But, in general, all of this service will be wholesaled, other than that provided to public safety, which will be, basically, at cost. And the wholesale purchaser of this can run it however they choose to run it. If it’s open access, they can use whatever technology they want to run. So, the issue of net neutrality, it seems to me, is a lot less on a system like this than it is for an ingrained incumbent carrier.

Senator DORGAN. And, finally, you indicated that your service would cover 99 percent of the country. One hopes that the 1 percent isn’t in Hettinger County, North Dakota, or—

[Laughter.]

Senator DORGAN.—similar area. You were careful to point out that—

Mr. BARKSDALE. Senator, I can assure you—

Senator DORGAN.—you cover Hawaii and—

Mr. BARKSDALE.—it won’t—

Senator DORGAN.—Alaska.

[Laughter.]

Mr. BARKSDALE. I guarantee it won’t be.

[Laughter.]

Senator DORGAN. Mr. Chairman, thank you. I think, you know, these questions are really interesting and important, and I think we’re understanding much more about these policy choices. Thank you very much.

And I thank the rest of the witnesses, as well.

Senator STEVENS. Mr. Chairman, just one comment, if I may.

Senator Inouye and I battled for two Congresses to get the right to auction spectrum, to start with. And we earmarked, in existing law, the first billion dollars for public safety. I think we should

amend the existing law and increase it to, say, \$5 billion, whatever is required, to build out the public safety needs, and let the spectrum continue to be auctioned on the basis of who will pay to get a system. They're all going to build out broadband. As a practical matter, this is the new broadband frequencies that we're talking about. As I understand it, there will be broadband built out.

Mr. BARKSDALE. Right.

Senator STEVENS. And what the public safety really needs is the money to organize and do what New York has tried to do, but they haven't had enough money to even complete there, right, Mr. Cosgrave I said I wouldn't ask you any questions. But—

[Laughter.]

Senator STEVENS.—the concept we have here, as far as I'm concerned, is splitting off from our original concept that we're going to auction all this spectrum. This 10 MHz would be auctioned only to people who would comply with the Frontline plan, and I think that will lower the value of it, and will lower the value of the other spectrum. Much better to raise the value of it all and let public safety have what they need now, and depend upon the Treasury for the future. We could give them as much as \$5 billion out of this one, I'm sure. The original bid was estimated to bring in, what, \$250 million. Did you know that? It brought in \$18 billion.

Mr. BARKSDALE. I was a bidder.

Senator STEVENS. I hope you were successful—you were successful, yes.

Mr. BARKSDALE. Yes, sir.

Senator STEVENS. You profited very greatly off of it, as I understand, and I congratulate you for that. There's no reason why this should not go into the private sector and be profitable, too. And future income from all of that will assist the development beyond what we could do with the initial bid.

So, I'm going to look at increasing the allocation to public safety on the original bid.

Mr. BARKSDALE. All I'm saying is, it'll take a lot more than \$5 billion.

Senator STEVENS. I agree. But \$5 billion for the first initial part of it, that would cover at least 4 or 5 years.

Thank you.

The CHAIRMAN. Thank you.

Senator Thune?

Senator THUNE. Thank you, Mr. Chairman.

I appreciate you holding the hearing. I don't have any questions for this panel. I'll wait until we—let you get the next panel started.

Thanks.

The CHAIRMAN. It is obvious that the issue of the proposal submitted by Frontline will be the determining factor in the outcome of this measure. And this measure, this part, concerns first responders and public safety officials. And we haven't heard from them.

So, Ms. McCarley, what do you think of this proposal of Frontline?

Ms. MCCARLEY. Thank you, Chairman Inouye.

The Frontline proposal is very interesting, and it's very innovative, and it points us in a direction that I think leads us to a solution.

Now, a thing, I think, that needs to be stressed more fully here is that a critical component is the public safety trust, and what public safety would suggest to you is, through that trust, both the public safety spectrum and the commercial spectrum could be combined to create a system, a broadband system, with control, leaving that in control of public safety agencies through the trust. And we have even explored how we would put that trust together. And, you know, we would suggest that ownership would be public safety. It would be representative of public safety, under the advisement of public safety, and under the control of public safety at all times. Many of the issues that have been put on the table here could be solved by a strong single licensee, if you will, who could negotiate a very good contract.

So, I think we've heard some very interesting dialogue here, and it reinforces, even more, the principle that we need a very strong single licensee to address the issues.

The CHAIRMAN. Well, I'd like to thank the panel.

Mr. Barksdale, you should get time-and-a-half for your performance here.

[Laughter.]

The CHAIRMAN. And, if I may, I'd like to submit my questions to you, and would look forward to receiving your response.

Thank you very much.

Our next panel consists of the Executive Vice President and Chief Technical Officer of Verizon Wireless, Mr. Dick Lynch; the Chief Executive Officer, Centennial Communications Corporation, Mr. Michael Small; and the Chief Executive Officer of Txtbl, Dr. Amol R. Sarva.

May I call upon Mr. Lynch.

STATEMENT OF RICHARD J. LYNCH, EXECUTIVE VICE PRESIDENT AND CHIEF TECHNICAL OFFICER, VERIZON WIRELESS

Mr. LYNCH. Yes, thank you, Senator.

Good morning to you, Chairman Inouye and Co-Chairman Stevens, and members of the Committee.

It's a privilege to be with you this morning to discuss the 700 MHz auction. Thank you for affording me this opportunity to share with you the views of Verizon Wireless on this, obviously, very important topic.

Congress, the Administration, and the FCC have all declared that the deployment of broadband services to the American public is a critical goal. The auction has the potential to make a major contribution to delivering the benefits of broadband to consumers and businesses, while helping to sustain America's leadership in the world economy. However, I did use the word "potential," because to achieve these benefits, the auction must make the spectrum available in ways that will promote, not cripple, broadband deployment. My years of experience in building wireless networks tell me that the 700 MHz auction can unlock even more benefits, but only if it's done correctly.

I'd like to discuss what I see as two critical actions that the FCC should take to help deliver on the 700 MHz promise for broadband.

First, the FCC should adopt a band plan that will enable rapid deployment of next-generation wireless broadband networks.

Second, the FCC should decline to impose eligibility, wholesale, open access, or net neutrality requirements on the band. Those requirements are unwarranted, would deter innovation, and would not benefit consumers.

The upcoming auction will enable the development and deployment of new fourth-generation, or 4G, wireless technologies and set in place the platform for services that will yield tremendous benefits to consumers, businesses, and first responders, alike.

Verizon Wireless believes firmly in the broadband future, as envisioned by Congress, the FCC, and the Administration. We have spent billions of dollars over the past several years to deploy wireless broadband across this Nation. The FCC has offered a variety of band plans for auctioning the 700 MHz spectrum.

Verizon Wireless supports FCC proposal number 3, with regional licenses in the upper band. We believe that this plan is the only one that meets the government's goals for this spectrum. It would make available a wide variety of licenses to meet varying bidders' needs, including a 20 MHz spectrum block that will enable very high data speeds for broadband. It would also include public safety's need for spectrum alignment along the Canadian border.

Now, let me talk for a minute about open access and net neutrality. These terms have been subject to much discussion, but, I'd submit, with little or no real specificity.

Frontline offers some vague requirements that the licensee must permit a wireless device to connect to the network, and that the licensee operates solely as a wholesale service provider. Many public safety agencies have raised doubts about how much such open-access requirements would impact them. And, as an operator, I can tell you I have similar concerns. Saddling the spectrum with these open access obligations would reduce interest in the spectrum at auction, positioning Frontline to acquire the spectrum at a price substantially below market value.

I have similar concerns about a net neutrality mandate, as I do open access. Generally, proponents of the concept focus on issues involving traffic routing and management. If what the proponents are talking about are the rights of users to access the public Internet, and access applications of their choice, wireless customers can already do that. If, however, they want to preclude wireless carriers from offering their own value-added products and services, then I disagree.

The reliability of our wireless network and its ability to serve over 60 million customers, including hundreds of thousands of public safety users, is directly tied to our ability to manage the devices, ensuring that they do not monopolize all available capacity, block other users, or allow spam and viruses to invade the network. Open access and net neutrality regulations would strip away our ability to manage our network for the benefit of all of our customers.

So, in conclusion, Verizon Wireless urges the 700 MHz auction be held as soon as possible, utilizing proposed band plan 3, and

without rules that would foreclose bidders or impose unfounded and ill-advised requirements.

And, if I might add, Senator Stevens, I believe you focused us, this morning, on a very important issue. Focusing on the dollars necessary to equip public safety at the terminal end, as well as the network end, is a very significant part of what public safety really needs. And I think one clear way to do that is to maximize the auction proceeds that we could achieve with this auction.

With that, I'd like to thank you for the opportunity to appear today, and look forward to your questions.

Thank you.

[The prepared statement of Mr. Lynch follows:]

PREPARED STATEMENT OF RICHARD J. LYNCH, EXECUTIVE VICE PRESIDENT AND
CHIEF TECHNICAL OFFICER, VERIZON WIRELESS

Good morning, Chairman Inouye, Co-Chairman Stevens, and members of the Committee. It is a privilege to be with you this morning to discuss "The 700 MHz Auction: Public Safety and Competition Issues." Thank you for affording me this opportunity to share with you the views of Verizon Wireless on this important topic.

Introduction and Summary

Congress, the Administration and the FCC have all declared that the deployment of broadband services to the American public is a critical goal. The 700 MHz auction has the potential to make a major contribution to expanding broadband and to delivering the many benefits of broadband to consumers, businesses, and America's leadership in the world economy. I say, however, the *potential*—because to achieve these benefits, the auction needs to make the spectrum available in ways that will promote, not cripple, broadband. My years of experience in building wireless networks tells me that the 700 MHz auction can unlock even more benefits—but only if it's done right.

I thus want to discuss what I see as two critical actions the FCC should take to help deliver on 700 MHz's promise for broadband.

First, the FCC should adopt a band plan for 700 MHz that will enable rapid deployment of next generation wireless broadband networks.

Second, the FCC should not impose eligibility, wholesale, open access or net neutrality requirements on the 700 MHz band. Those requirements are unwarranted, would deter innovation, and would not benefit consumers.

The 700 MHz Band Plan Should Promote Broadband Deployment While Making Available a Mix of License Sizes, and FCC Proposal 3 Does That

The upcoming auction will enable the development and wide deployment of new fourth generation—or "4G"—wireless technologies and services that will yield tremendous benefits to consumers, businesses, and first responders alike.

In 1997, when Congress adopted the DTV transition plan, wireless data services were very limited—typically providing only about 15–20 kilobits per second. Today, broadband wireless technologies like CDMA EV-DO have been widely deployed, supporting data rates of *hundreds* of kilobits per second and a wide variety of mobile applications. Verizon Wireless' mobile broadband network, the first in the nation, is available to more than 200 million people who can access broadband services on their laptops, e-mail on their PDAs, and V-CAST Video and Music on their wireless phones. We are now deploying the latest enhancement to CDMA technology, EV-DO Revision A, which will increase data speeds further and support new broadband applications.

New "4G" technologies are being developed that will support mobile data rates of *tens of megabits* per second. They will unleash a host of new broadband applications that will rival anything available today on wired broadband networks. Doctors will be able to access medical records and CAT scans wirelessly; firefighters will have wireless access to images of building interiors and floor plans. These wireless broadband technologies promise to improve the lives of American citizens in many ways.

Verizon Wireless believes firmly in the broadband future envisioned by Congress, the FCC and the Administration. We have spent billions of dollars over the past several years to bring wireless broadband to the nation, participating in spectrum auctions and investing many billions more on technology and infrastructure. We believe

we are the most efficient spectrum user in the nation—and perhaps the world—and proud of it. We serve more customers with less spectrum than any other operator.

However, the ability of Verizon Wireless—and the entire industry—to continue to deliver on this broadband vision requires access to additional spectrum, auction rules that are open and competitive, and service rules that are flexible and market-based. The 700 MHz spectrum will enable qualified and committed operators to make a real difference in expanding the reach of broadband services, if it is auctioned in ways that will facilitate, not hamper, deployment of those new 4G technologies.

The FCC has offered a variety of band plans for auctioning the 700 MHz spectrum. Verizon Wireless supports FCC Proposal 3, with regional licenses in the upper band. A copy of this band plan is attached to my testimony. We believe this plan is the only one that meets the government's goals for this spectrum.

- By using regional area licenses in the upper band, coupled with smaller area licenses in the lower band, it makes available the right mix of license sizes and creates opportunities for a variety of applicants, business plans, and technologies. More than 900 licenses would be available for auction.
- It provides adequate contiguous spectrum—22 MHz—to support very high data speeds for 4G broadband deployment.
- It accommodates public safety's need for useable narrowband spectrum along the Canadian border.

Let me elaborate on why this band plan should be adopted. First, it is important to keep in mind that the entire 700 MHz commercial band should be considered as a whole. With the DTV transition, Congress provided a total of 84 MHz of new commercial spectrum, including 24 MHz that has already been auctioned. This leaves 60 MHz—30 MHz in each of the upper and lower bands—left to be auctioned. Thanks to technical rules the FCC already put in place, both bands are well suited for mobile broadband services. Any band plan should reflect what has already been auctioned.

Second, we agree with the FCC that the 700 MHz band should include a mix of different license sizes. The FCC has already achieved part of that goal by licensing a significant amount of 700 MHz spectrum in the lower band in small blocks to smaller wireless companies, and it plans to license all remaining “paired” spectrum in the lower band based on smaller markets, including another 700-plus licenses in the smallest areas, cellular market areas, which can be as small as one county. The lower band will thus provide 36 MHz of spectrum licensed on a small market basis, providing ample opportunities for smaller carriers.

What the FCC has *not* done to date is to auction larger 700 MHz licenses. It can accomplish this by including a 20 MHz paired block of spectrum, to be licensed across wide geographical areas, such as the Regional Economic Area Groupings (REAGs) used by the FCC in last year's auctions for the Advanced Wireless Services (“AWS”). This band plan will help ensure the near-term deployment of next generation wireless broadband networks and to provide the best opportunity for the United States to lead the world in 4G wireless development and deployment.

A contiguous 20 MHz block is important because it will encourage optimized use of that spectrum for 4G technologies and the services it can provide. It is essential that the 700 MHz band plan include at least one spectrum block of at least 20 MHz in total bandwidth, as it did in the band plans for cellular, PCS and AWS.

Larger regional licenses such as REAGs are important because, for over a decade now, we have witnessed the benefits of wide area licenses in promoting nationwide deployment of new technologies. Consumers demand nationwide service and carriers must meet that demand. History has shown, almost without exception, that smaller-sized licenses wind up becoming aggregated so that carriers can achieve economies of scope and scale and operate as viable businesses, enabling them to compete and deliver better products at lower prices to consumers. Aggregating spectrum post auction takes many years and is expensive to carriers and costly to consumers. If Congress wants next generation wireless networks to be a near-term reality, the FCC must auction and license sufficient spectrum on a REAG basis.

The 700 MHz Rules Should Provide Spectrum Opportunity for All Without Unjustified Constraints That Will Undermine Innovation and Harm Consumers

Beyond questions of technology lies the critical need to maintain integrity in the auction process. The Commission should set auction rules that allow for full and fair competition by qualified bidders, without artificial and unwarranted constraints.

Spectrum auctions for commercial spectrum licenses have been one of the great success stories of communications policy. Over the past 10 years, these auctions

have raised many billions of dollars for the U.S. Treasury and accelerated the roll-out of new and innovative services for consumers. The resulting competition in the mobile marketplace has provided a broad range of digital offerings, extensive coverage, Email high quality, and low prices. In short, competitive spectrum auctions have been a good deal for American consumers. The government should not depart from that success.

1. Auction Eligibility Restrictions. Some parties have sought to game the auction process by proposing to exclude or restrict local exchange carriers, cable operators, and wireless carriers from eligibility for licenses in the 700 MHz band. Such discriminatory eligibility restrictions are aimed at the companies most ready to deploy next generation broadband networks. Restricting participation would depress revenues needed by the Treasury, and delay introduction of new services.

The FCC has repeatedly found that open competitive bidding will ensure that scarce, valuable spectrum resources are put to the highest and best use. Restricting bidding to a limited class of entities strongly suggests that the license may not be granted to the highest and best use. It increases the risk that spectrum would go to entities incapable of putting it to timely, effective use. The Commission should maintain its policy of rejecting all calls for closed bidding.

Restricting eligibility would unquestionably reduce the economic benefits of the auction. Proceeds from the 700 MHz auction will fund multiple programs for the DTV transition and the deployment of interoperable communications systems for public safety. By limiting eligibility, the resulting reduction in competition will ensure that the spectrum will be auctioned at a price lower than its true market value. As a result, the viability of these valuable and necessary programs will be at risk.

Existing carriers have proven track records of designing and deploying highly sophisticated networks. Every year in its CMRS competition reports, the Commission has pointed to vigorous competition in the CMR market through the competing networks built by Verizon Wireless and our competitors. There is no basis for barring current providers from the auction; doing so would deprive companies of the additional spectrum they would want to acquire to expand their offering of high quality, spectrum-intensive advanced services.

2. Wholesale Only Requirement. Frontline Wireless has proposed that a portion of the 700 MHz spectrum be licensed subject to several onerous conditions. The first of these is that the licensee cannot use the spectrum itself but must operate as a wholesale-only provider. This is, frankly, an absurd requirement. It makes sense only if you are trying to foreclose any existing carrier from acquiring the spectrum. Verizon Wireless provides both wholesale and retail services, as do many other carriers; and the FCC has consistently found that the industry is robustly competitive. There is simply no credible basis for the FCC to accept Frontline's proposal to strip the very carriers who have built a competitive industry from serving retail customers in the 700 MHz band.

3. Open Access Requirement. Frontline also proposes something it calls "open access." This term has been the subject of much discussion but little or no definition or specificity. Frontline provides almost no meaning to this concept, other than vague requirements that the licensee permit any wireless device to connect to the network, and that the licensee operate solely as a wholesale service provider. Frontline claims that these requirements are important components of its proposal to build public safety a broadband network. However, many public safety agencies have raised doubts about how Frontline's open access requirements would impact them. Moreover, saddling the spectrum with these obligations would reduce interest in the spectrum at auction, positioning Frontline to acquire the spectrum at a price substantially below market value.

Frontline's request for "open access" should be viewed as defining requirements for *physical* access to existing networks. These requirements disregard the way wireless networks are designed and operated to meet the needs of subscribers. On Verizon Wireless' and others' networks, the cell phone or PDA is in fact part of the network. It is constantly communicating with the network, and we are responsible for its operation under our FCC licenses. This is why we put all wireless devices through rigorous quality testing. Further, and just as importantly, customers see their service as inclusive of the device they use and have come to expect the carrier to ensure its performance.

Imposing physical access conditions would risk harm to the network and undermine the quality of service provided to our customers. Moreover, experimenting with such an uncontrolled regime for a system that is specifically designed to be used for public safety communications, as Frontline proposes, would be particularly dangerous. Frontline's plan contains no safeguards to ensure that customers' untested devices and novel uses of spectrum would not reduce the quality of service provided to public safety or commercial users, or cause harmful interference to other users

operating within the licensed spectrum or others operating in adjacent spectrum. For example:

- E-911 Service could be compromised. A mandate that carriers allow customers to attach any device to the network would make it more difficult for carriers to comply with their E-911 obligations. The handsets that customers would attach to the network would not necessarily be E-911 capable; and even if they were, the network might not be able to communicate with the handset to determine the caller's location.
- Handset prices will likely increase. Handsets designed to operate with multiple, or all available, wireless networks will require additional hardware and software to ensure basic operability. Some applications may need to be loaded in multiple formats. Think of a computer that has to be both Apple and Windows capable and must support game-playing on Playstation, Xbox, Game Boy, and Nintendo platforms, etc. Interoperability has a price, with very few practical benefits. You generally use only one network at a time.
- Harms to wireless users would occur. Because wireless devices share a network's spectrum resources, every device has an impact on the spectrum available to other users. An unapproved device can impact the network and its capacity to serve the maximum number of customers. It can also cause interference to other users, blocking their access to the network. Wireless operators today ensure that every device is subject to rigorous testing and meets certain quality standards to guard against these risks. An open access regime would deprive operators of that ability and thereby protect their customers.

4. *Net Neutrality.* Perhaps encouraged by Frontline's proposal, several groups want to seize on the 700 MHz auction as a way to impose broader "net neutrality" rules on wireless carriers. They are demanding that the FCC somehow dictate net neutrality, even though each of these groups would appear to define it in different way. I have the same concerns about a broader net neutrality mandate as I do for open access. Generally, proponents of the concept focus on issues involving traffic routing and management along proprietary networks. If what the proponents are talking about are the rights of users to access the public Internet and applications of their choice, wireless customers can already do just that. If, however, they want to preclude wireless carriers from offering their own value-added products and services, or to require wireless carriers to permit customers to download any application they want onto their handsets, I have the same fundamental disagreement. On a wireless network, applications have the potential to cause serious harm. For example:

- The user experience could be compromised. In the wireless context, air interface signal-to-noise conditions vary by user with time. More packets can be delivered to the user when the signal-to-noise ratio is good than when it's bad. The wireless industry uses sophisticated queuing and scheduling algorithms at each base station to optimize throughput by sending packets to users during times of good signal-to-noise conditions. Would these practices be precluded? These practices improve the user experience for all subscribers.
- Users could find network access more difficult. In the wireless broadband context, users on-line within a certain geographic area share the available spectrum resource; therefore, the bandwidth requirements of one user can affect those of all users in the same geographic area. A few users operating "bandwidth hog" applications can actually prevent other users from obtaining access to the network. If the wireless operator cannot manage the bandwidth hog applications in some principled way, it cannot achieve a fair allocation of the available resources for as many subscribers as possible.
- Just as Internet content and applications vary in size, they also vary in their sensitivity to latency, or delay. E-mail delivery and web searches are generally not overly sensitive to latency. On the other hand, certain applications are very sensitive to latency, and require "fast lane" delivery of packets. An operator must have the flexibility to provide priority transmissions if the quality of service requires.
- Security risks would increase. Hostile content and applications are common on the Internet in the form of viruses and denial of services attacks, among others. Network operators address and deal with such risks by filtering them out, thereby ensuring improved user experiences for all subscribers on-line.
- Beneficial content filters could be jeopardized. Broadband networks can establish filters that protect children from adult content, or some computers from any specified content. There is no reason why consumers should not be able to sub-

scribe to filters of their own choosing, whether by subject matter or size or point of origin, if the technology is available. Again, the network operator would have to manage against certain packets to benefit consumers.

Having spent many years building and operating wireless networks, I strongly believe that open access and net neutrality requirements would do a huge disservice to wireless industry and our customers. Wireless companies have delivered enormous benefits to the economy and consumers by being free to innovate and differentiate their products. It is bad enough that there is no problem that could justify such regulation. Worse, imposing open access and net neutrality would cause real harms to one of the Nation's most successful industries, to innovation, and to our customers.

Conclusion

Verizon Wireless urges that the 700 MHz auction be held as soon as possible, without rules that foreclose bidders or impose unfounded and ill-advised requirements. The 700 MHz auction, if conducted fairly, and without the sorts of risky and counterproductive conditions discussed above, holds the promise of raising billions for the U.S. Treasury while delivering the benefits of the most advanced wireless technology to the American public. There will be plenty of winners, in the form of innovation, job creation, economic growth, and increasing U.S. global competitiveness. But if we get it wrong, and use this auction as a platform for forcing unjustified and risky spectrum policy onto the wireless industry, the only losers will be the American public.

FCC 700 MHz Band Plan “Proposal 3”
with REAGs in Upper Band

Lower Band
(698-746 MHz)

A	B	C	D	E	A	B	C
Ch 52	Ch 53	Ch 54	Ch 55	Ch 56	Ch 57	Ch 58	Ch 59

<u>Block</u>	<u>Frequencies</u>	<u>Bandwidth</u>	<u>Pairing</u>	<u>Area Type</u>	<u>Licenses</u>
A	698-704, 728-734	12 MHz	2 x 6 MHz	EA	176
B	704-710, 734-740	12 MHz	2 x 6 MHz	CMA	734
C	710-716, 740-746	12 MHz	2 x 6 MHz	CMA	734
D	716-722	6 MHz	unpaired	EAG	6
E	722-728	6 MHz	unpaired	REAG	12

Already auctioned

Upper Band
(746-806 MHz)

C	D	A	Public Safety	B	C	D	A	Public Safety	B
Ch 60	Ch 61	Ch 62	Ch 63	Ch 64	Ch 65	Ch 66	Ch 67	Ch 68	Ch 69

<u>Block</u>	<u>Frequencies</u>	<u>Bandwidth</u>	<u>Pairing</u>	<u>Area Type</u>	<u>Licenses</u>
A	762-763, 792-793	2 MHz	2 x 1 MHz	MEA	52
B	775-776, 805-806	2 MHz	2 x 1 MHz	MEA	52
C	746-757, 776-787	22 MHz	2 x 11 MHz	REAG	12
D	757-762, 787-792	10 MHz	2 x 5 MHz	REAG	12

Already auctioned

The CHAIRMAN. I thank you very much, Mr. Lynch.
May I now recognize Mr. Small.

**STATEMENT OF MICHAEL SMALL, CHIEF EXECUTIVE
OFFICER, CENTENNIAL COMMUNICATIONS CORPORATION**

Mr. SMALL. Chairman Inouye, Vice Chairman Stevens, members of the Committee, thank you for allowing me this opportunity to appear today.

For the last 9 years, I have served as the CEO of Centennial Communications, a regional provider of wireless and integrated communications services with over 1 million customers across parts of six states in the Midwest and South, as well as Puerto Rico and

the U.S. Virgin Islands. Previously, I worked for larger and smaller providers of wireline, wireless, and cable TV services.

At Centennial, we have been in business for almost 20 years, and succeed in the competitive wireless industry by focusing on the needs of customers in small cities and rural markets. We get off the highways and provide coverage in communities often underserved by national carriers. In many markets, like Paw Paw, Michigan, or Eunice, Louisiana, we are the only carrier with a retail presence. Centennial's well-trained associates are "the" source for wireless advice on service and assistance in these markets.

Yet, our business is coming to a crossroads. Consumers are now demanding 3G broadband services. To deploy these services, carriers like Centennial need more spectrum.

The 700 MHz spectrum is the critical element to furthering broadband deployment of services to rural America. With its outstanding propagation characteristics, 700 MHz spectrum will help bring wireless broadband to areas where terrain, technology, and economics make the provision of wireline broadband service difficult or impossible.

The buildout cost differential between existing PCS or AWS spectrum and 700 MHz should be at least three to one, making buildout in rural America uneconomical without 700 MHz spectrum.

I would like to address three issues regarding the 700 MHz auction, including the appropriate mix of band plans, the potentially harmful nature of the proposed geographic buildout mandate, and why additional regulatory encumbrances are counterproductive and unnecessary.

First, with regard to the band plans, Centennial agrees with the Commission, that providing a mix of CMA, EA, and REAG licenses will maximize competition and geographic reach. We support the Commission's proposal for the lower 700 MHz band. In the upper 700 MHz band, Centennial opposes the Frontline plan and strongly urges adoption of a band plan that includes at least one CMA license.

Licenses awarded on the basis of large geographic areas unreasonably favor large national carriers and handicap regional carriers like Centennial. Using the recently completed AWS auction as an example, CMA licenses align well with our existing U.S. footprint of 8.6 million POPs. But, to cover our territory with larger EA licenses would have forced us to purchase four times as many POPs, including expansion to cities like Detroit and Chicago. The resulting cost increase of more than \$200 million is an insurmountable hurdle for a company like Centennial, with under \$1 billion in revenue.

Currently, carriers like Centennial provide the best, and sometimes only, service in many small and rural markets. National carrier coverage is often limited to major highways in rural areas, like I-10 in the Southeast, where Centennial and our roaming partners each have excellent coverage. But, off the interstate, in places like Kinder, Louisiana, and Prentiss, Mississippi, Centennial provides the best coverage. The best way to make sure that future 3G and 4G services make it to rural America is to allow regional carriers to compete for spectrum, that spectrum needed to bolster our service offerings.

Ensuring rural markets have comparable service to urban markets is not only in Centennial's customers' best interests, but serves the public interest by providing robust networks for local public safety and for customers of national providers who roam in our area.

Second, Centennial shares the Commission's desire for widespread provision of mobile wireless services, but we oppose the Commission's proposal to impose a geographic buildout mandate based on arbitrary deadlines. Centennial is not alone in this view, and we agree with many commentators who have demonstrated that arbitrary geographic buildout rules are contrary to this objective, and will undoubtedly chill interest in the auction, particularly for licenses that include large rural areas.

And, finally, Centennial opposes unnecessary, untested, and often self-serving proposals to encumber all or part of the 700 MHz band with regulatory obligations such as wholesale-only business obligations or open access or net neutrality requirements.

The Commission's nearly 15-year evolution toward a flexible-use policy has been a tremendous success. These poison-pill proposals, including Frontline's, should be recognized for what they are and rejected as solutions in search of a problem if the tremendous success of the AWS auction is to be replicated and the huge success and innovation of the wireless industry is to be perpetuated.

Thank you for the opportunity to appear before the Committee today. I look forward to answering your questions.

[The prepared statement of Mr. Small follows:]

PREPARED STATEMENT OF MICHAEL SMALL, CHIEF EXECUTIVE OFFICER,
CENTENNIAL COMMUNICATIONS CORPORATION

Chairman Inouye, Vice Chairman Stevens, and members of the Committee, thank you for the opportunity to testify at today's hearing. I am Michael Small, and I serve as the CEO of Centennial Communications Corporation, headquartered in Wall, New Jersey. I also serve on the Executive Committee of CTIA—The Wireless Association®.

Centennial is a provider of regional wireless and integrated communications services in the United States and the Caribbean. In the United States, we operate GSM-based wireless networks in parts of six states in the Midwest and South. Our mid-western service area covers parts of Michigan, Ohio, and Indiana, including mid-sized cities such as Grand Rapids, Lansing, South Bend, and Ft. Wayne. Our southern service area covers parts of Texas, Louisiana, and Mississippi, including mid-sized cities such as Beaumont, Lafayette, Alexandria, and Natchez. Centennial's Caribbean business owns and operates CDMA-based wireless networks that provide both mobility and residential broadband services in Puerto Rico and the U.S. Virgin Islands. In total, Centennial serves approximately 1.1 million wireless subscribers. We also operate a fiber-based CLEC in Puerto Rico, bringing state-of-the-art, high-bandwidth solutions to many Fortune 500 companies with operations there.

Since our creation in the 1980s, Centennial has focused on serving small cities and rural America. Today, we are successful in a highly competitive marketplace because we are intensely focused on serving the local needs of the people who live, work, and play in our small city and rural markets. To succeed, we must serve these regional areas much better than our national competitors.

At the outset, I would like to thank the Committee for its work on the DTV Act, the legislation that made the 700 megahertz auction possible by facilitating the DTV transition. It is critically important that the Federal Communications Commission meet the auction schedule set forth by Congress in the DTV Act, and that it promptly issue simple and straight-forward service and technical rules that will ensure that the wireless industry has the spectrum it needs to continue to innovate and serve the needs of more than 230 million existing wireless subscribers, as well as the tens of millions of new subscribers that the industry is projected to add over the next several years.

At Centennial, we view the 700 megahertz auction as an opportunity to augment our spectrum holdings in a way that will enhance our ability to bring robust, high-quality broadband service to our customers. The 700 megahertz spectrum is “rural-front” spectrum with propagation characteristics that make it orders of magnitude more efficient than the recently auctioned AWS spectrum for serving very rural areas. The 700 megahertz spectrum will help us to make wireless broadband access available in areas where terrain, technology, and economics render the provision of wireline broadband access difficult or impossible.

I would like to address three issues, including:

- the appropriate mix of band plans for the 60 megahertz intended for auction to commercial service providers;
- the harmful nature of the proposed geographic buildout mandate; and
- why additional regulatory encumbrances are counterproductive and unnecessary.

The Commission’s Service Rules Should Provide for a Mix of Licensing Opportunities

Centennial agrees with the Commission’s conclusion that “by providing a mix of CMA, EA, and REAG licenses in the 700 MHz Commercial Services spectrum, we provide a more balanced set of initial licensing opportunities that provide an effective means of access to spectrum especially in rural areas, while effectively meeting other Commission goals.” Centennial, whose licensed service areas are regional and often rural in nature, applauds the Commission’s commitment to providing continuing opportunity for regional carriers to expand their product offerings to customers living, working and traveling outside of the large metropolitan areas of the country.

The existing band plan for the lower 700 megahertz band divides the spectrum into five blocks: three 12 megahertz paired blocks (consisting of two 6 megahertz segments each) and two unpaired 6 megahertz blocks. One of these 12 megahertz blocks and one of the 6 megahertz unpaired blocks have already been auctioned. In a prior notice, the Commission announced a preference to retain this band plan because of its mix of geographic market sizes and spectrum allocations.

The upper 700 megahertz commercial services band plan now consists of 30 megahertz of spectrum currently divided into two blocks: a 10-megahertz paired block consisting of two 5-megahertz segments (C Block) and a 20-megahertz paired block consisting of two 10-megahertz segments (D Block). In the 700 MHz Commercial Services Notice, the Commission sought comment on the band plan and whether it should reconfigure the size of these spectrum blocks. As a result, five proposals for the upper 700 megahertz band are now before the Commission.

To ensure the optimal mix of licenses, Centennial strongly urges adoption of a band plan for the upper 700 megahertz band that includes at least one CMA license. Licenses awarded on the basis of large geographic areas favor the large, national wireless carriers and handicap regional and rural carriers, like Centennial, whose service areas tend to be defined by CMA boundaries. This is not an issue of favoring small companies in the spectrum policy; rather, it is an acknowledgement that an auction with only large licenses effectively forecloses participation by small carriers, while an auction with CMA-sized licenses permits carriers of all sizes an opportunity to compete.

From the beginning of telephone service, the large telecommunications companies have focused on metropolitan areas with smaller companies providing service to the small and rural markets of the country. Data provided to the Commission by the national carriers shows that they place their emphasis on high-density markets. Ten years after the original PCS licenses were granted, national carriers had covered less than 70 percent of their MTA POPs in states like Alaska, Arkansas, Kansas, Mississippi, and New Mexico. Even when constructing in less-populated areas, the national carriers tend to build along major thoroughfares without venturing far into the less populated hamlets. For example, Centennial and its roaming partners all have excellent coverage along major thoroughfares like I-10 in Louisiana, but off the interstate, it is companies like Centennial that are providing coverage in places like Kinder, Louisiana and Prentiss, Mississippi. Through roaming arrangements with Centennial and other carriers like us, customers of nationwide carriers are able to enjoy all of their regular wireless features when business or pleasure takes them to these remote areas.

In addition, Centennial frequently is the only carrier to have a retail presence in these markets. In places like Paw Paw, Michigan; Peru, Indiana; and Eunice, Louisiana, we operate company-owned retail outlets for wireless service that are not merely points of sale, but also full-service operations designed to meet all of the

needs of our customers, including bill payment, customer support, and post-sale technical assistance.

To roll-out high-speed broadband wireless services, regional carriers like Centennial need additional spectrum to enable the delivery of these new and exciting capabilities. If the only additional spectrum available is limited to blocks of large geographic service areas, it will be uneconomical for Centennial to acquire the spectrum we need because we would be forced to vastly expand our footprint rather than focusing on improving services in our existing territory. For example, using the license areas defined in Auction 66, acquiring spectrum covering our existing domestic footprint of 8.6 million POPs would require the purchase of 41 CMAs with 9.7 million POPs. To cover the same footprint on an EA basis would require 18 EAs with over 34.3 million POPs. This is an insurmountable hurdle for a company the size of Centennial.

By bidding for CMA-based licenses, we can continue the important work of providing modern, state-of-the-art service in the less-populated and remote areas of the country. In doing so, we can ensure the continued and expanded availability of modern wireless communications in the markets we serve, benefiting not only those who live there, but everyone who travels to those areas as well. Ensuring this level of service in small markets creates economic and educational opportunities for those who live there, consistent with the Nation's long-standing commitment to Universal Service.

The most logical way for the Commission to ensure that the service rules provide for CMA licenses in the upper band is to reject the proposal submitted by Frontline. As I will discuss later in my testimony, the conditions sought by Frontline are inappropriate and would needlessly constrain the number of parties likely to compete at auction for the spectrum in the upper band. Frontline's proposal is not necessary to meet the needs of public safety, and it inappropriately and unlawfully converts public safety spectrum, licensed to a qualified public safety organization, into a resource that Frontline plans to use to provide for profit commercial service. By dismissing Frontline's proposal, the Commission can adopt a plan that supports CMA licenses with paired spectrum in the upper 700 megahertz band.

The Commission Should Not Impose a Geographic Build-Out Requirement on 700 MHz Licensees

Centennial shares the Commission's desire for widespread provision of mobile wireless services, and as our long history demonstrates, we are firmly committed to serving rural markets. Nonetheless, we have serious concerns about the Commission's proposal to impose a geographic buildout mandate based on arbitrary deadlines.

From where I work in New Jersey, I cannot effectively and do not dictate on-the-ground investment decisions in Pineville, Louisiana, or Angola, Indiana. I need my associates in the field to determine the best and most economical way to meet the needs of our customers. A build-out requirement that limits our ability to focus on places where demand and need are greatest could in fact have the opposite of its intended effect—consumers might see lower quality and less service. Being forced to build to meet arbitrary deadlines might force companies like Centennial to make decisions to purchase equipment based on what is available now, rather than on the basis of what might be available in the near future. As a result, many consumers will have to wait to enjoy full 3G and ultimately 4G technology. Further, if we fail to meet these arbitrary deadlines, we could be forced to return spectrum that we have every intention of using in the future. This outcome would hurt Centennial, and it cannot help consumers.

Less than 3 years ago, the Commission considered the issue of performance requirements in the *Rural Wireless Order* and affirmed the current trend in favor of substantial service. The Commission rejected calls to revert back to geographic- or population-based buildout requirements and instead concluded that mandated build-out was economically counterproductive and inconsistent with a reliance on market forces. Commissioner Copps echoed this point in his separate statement accompanying the *Further Notice*, saying that "[W]e also need to make sure that we do not unfairly punish licensees—especially in rural areas—who cannot engage in aggressive build-out for perfectly good economic reasons."

The notion that every hertz of licensed spectrum must be put into use throughout each licensed area does not make sound economic sense. A policy of government-imposed, forced investment would result in uneconomic and unsustainable deployment. The stringency of the proposed build-out requirement is even more objectionable when coupled with the proposed cap on CETC support proposed recently by the Federal-State Joint Board on Universal Service.

There are numerous examples of Universal Service being used to extend networks to areas that would be bypassed without access to universal service support. In some cases, wireless carriers have used high cost universal service support to deliver service to areas that previously had no access to telecommunications—wireless or wireline.

Universal Service support has been important to Centennial in places like Louisiana. Centennial used support from the Universal Service program to bring service to two Concordia Parish communities—Shaw and Blackhawk—that did not have any telephone service at all until we made it available a little more than 2 years ago.

Centennial also used support from the Universal Service Fund to deploy facilities that performed reliably during and after Hurricane Katrina. The resiliency of the Centennial network allowed us to provide critical recovery services to other wireless providers whose networks failed, the U.S. Coast Guard, FEMA, and the Red Cross, and to help those in shelters to call and text message loved ones to let them know they were safe.

The proposed cap on CETC access to universal service support threatens the progress that has been made in bringing high-quality, reliable wireless service to rural America, and it would do harm to the rural communities Centennial serves or aspires to serve. Neither the proposed cap nor the proposed geographic build-out requirement serve the interests of rural consumers, and neither should be adopted.

The Commission Should Not Impose Additional Regulatory Encumbrances on 700 MHz Bidders

The Commission's nearly 15-year evolution toward a flexible use policy has been a tremendous success, and there is no evidence to suggest that a return to the command-and-control spectrum regulation of the 1980s is warranted. Accordingly, Centennial opposes unnecessary, untested, and often self-serving proposals to encumber all or parts of the 700 megahertz band with regulatory obligations such as wholesale-only business obligations or "open access" or "net neutrality" requirements. These "poison pill" proposals should be recognized for what they are and rejected.

The proposals by Frontline, the Ad Hoc Public Interest Spectrum Coalition, and the Media Access Project to impose an "open access" regime would require 700 megahertz licensees to enable any customer to attach "any compatible device" subject to minimal do-no-harm rules and to permit such devices to reach any website, post any information, provide any service and access or provide any application, without regard to the need for a carrier to manage its network efficiently and for the benefit of its entire customer base. The Ad Hoc proposal also advocates for a wholesale-only business plan with an exception for the provision of retail service through a structurally separate affiliate, subject to further limits if the licensee currently holds spectrum in the market.

These proposals are deeply misguided. As CTIA observed in response to the Skype petition seeking wireless *Carterfone* and "open access" policies, "exposing wireless networks to untested mobile handsets and applications would degrade network performance, create harmful interference, prevent carrier compliance with important social policy obligations, and open networks to greater security threats." Carrier management and certification of phones must be permitted because these steps ensure that network elements work in tandem with handsets to provide the highest quality voice and data services. Moreover, in order to maximize spectral efficiency, carriers must be able to manage the use of applications that require large amounts of bandwidth or near-constant connection to the network, such as streaming media and peer-to-peer services.

There is no economic basis to impose open access or other intrusive forms of regulatory intervention on the wireless industry. Indeed, in light of the competitiveness of the U.S. mobile wireless service and equipment markets, which will only become more competitive as a result of the 700 megahertz auction, the Ad Hoc proposal represents the very definition of a solution in search of a problem. It, along with the Frontline and Media Access Project proposals, should be rejected and the government should refrain from imposing any single business plan—including those that are novel and untested—or any other departure from the Commission's successful flexible use policies on the 700 megahertz spectrum. Instead, the auction should proceed with few, if any, encumbrances, and the market should determine which business plans and competitors will prevail. The Commission must avoid calls to substitute its judgment for that of the marketplace if the success of the AWS auction is to be replicated.

Mr. Chairman, I thank you again for the opportunity to appear before the Committee, and I thank you and your colleagues for your attention to the 700 megahertz auction process. With proper execution, the 700 megahertz auction holds great promise for Centennial, for other wireless carriers, and, most importantly, for America's consumers.

I look forward to answering any questions you may have.

The CHAIRMAN. Thank you very much.
Dr. Sarva?

STATEMENT OF AMOL R. SARVA, CEO, TxBTL

Dr. SARVA. Thank you, Chairman Inouye, Vice Chairman Stevens, and distinguished members of the Committee, for the opportunity to address a critically important topic for the future of the wireless industry.

As a leader of a group of wireless entrepreneurs and myself among the founders of one of the prominent companies in this industry, I'm here to bring a different perspective. My colleagues and I have taken new ideas to market. We've built things from scratch. We've created thousands of jobs and billions of dollars in value. We've even done this in collaboration with the "big guys." Virgin Mobile was one of my first ventures. It has over a billion dollars in revenues today, and this year it's gone—it's filed to go public.

I'm currently working on my third wireless startup, Txbtl. I'd love to tell you all about it, but today I'll focus on what you can do to make more stories like mine possible in America.

Fifteen of us wrote a letter, last week, to FCC Chairman Martin in support of an open access "E Block." We believe the wireless industry is full of opportunities for innovation. There are billion-dollar ideas all over the place. But today, the large wireless carriers have the keys to the castle. Getting your innovation into the national market is difficult and a lot more time-consuming than it should be. These negotiations add months or years. They make it harder to raise initial capital. They force you to bet big, early, instead of betting small, the trial-and-error approach essential to the entrepreneurial process.

An open-access framework in part of the 700 MHz band, by contrast, would enable innovation at Internet speed. My own experience at Virgin Mobile is a good example. My colleague John Tantum was the Founding President, and I was the second person he hired.

Virgin is a success story, but it was risky in the early days. We spent nearly 2 years traveling around to all the carriers to see if anyone would deal with us. In general, the answer was no. And at numerous points, I thought we were finished. By far, the scarcest commodity in this process was network access. It was far easier to raise capital. Once the network deal was done, we had offers for hundreds of millions of additional investment.

In the end, only Sprint, one of the lagging large players, was willing to deal with us. And all this with the high profile backers and major capital that Virgin had provided. The young Steve Jobs, despite all of his visionary ideas, would never have had a chance.

Even still, we had to make compromises to get a deal done with Sprint. We agreed to market a prepaid product that would not directly compete with Sprint's contract plans. Unsurprisingly, the

door to new ideas is only open when you serve the network partner's self-interests directly.

So for much of what the typical marketing departments required of us the engineering departments of carriers get their say, too. Only approved devices or applications are permitted, lest one is unsafe for the network. It's a reasonable constraint. But the U.S. operators are notorious for running the longest and most difficult certification processes in the world, around 9 months for a new device. These days, it can take only 3 months to design a new device from scratch, but 9 months to certify it. Top-class carriers in other countries around the world need much less time, sometimes just a few weeks. Big device makers have told me this privately; they wouldn't say it here.

On the other hand, the carriers seem to get their devices done faster than their partner's devices, ours. With one carrier, we changed the ring tones on the phone that had already been approved, and were told this would require a 45-day recertification process.

And the marketing department gets a vote here, too. You need their authorization to even submit a device. I think carriers sometimes confuse "safe for the network" and "safe for the bottom line." The old Ma Bell monopoly used the same line to keep competition and innovation out for years. When the FCC finally called their bluff, consumers got inventions, like the fax machine, the cordless phone, the modem, and billions of dollars in economic growth.

In closing, as entrepreneurs we are pragmatic. We are not here asking for changes regarding existing spectrum. It's out there. We want to open a portion—10 MHz—of the upcoming auction, less than 3 percent of the licensed mobile spectrum. Here's why. It'll be a sandbox for entrepreneurs. I can tell you this, my colleagues and I will be out there creating new services in spectrum like this. "Open access" means three things. We think it has a clear meaning. Number one, open devices. And, number two, open services. It means the freedom to connect any compatible device with published safety rules that let users access any complying device or service. And, number three, an open auction, requiring the license holder to auction off a portion of network capacity through an open and transparent auction mechanism. That's the market at work.

Finally, we applaud Congress and the Commission for paving the way with the DTV transition. Now is the chance to capture the upside by setting aside a portion of the public's airwaves for use by the public—innovators, startups, entrepreneurs. Broadband, the mobile, Internet, next-generation wireless, we've been talking a lot about it, and they're all coming soon. Let's set up America to lead the way.

Thank you very much.

[The prepared statement of Dr. Sarva follows:]

PREPARED STATEMENT OF AMOL R. SARVA, CEO, TXTBL

I. Background

Thank you Chairman Inouye, Vice Chairman Stevens, and distinguished Members of the Committee for the opportunity to address the Committee on a topic that I see as critically important to the future of the wireless industry in America. I am here today as a leader of the Wireless Founders Coalition for Innovation, which is a group of seasoned wireless industry entrepreneurs who have founded wireless

companies that now generate billions of dollars of revenue and have created thousands of jobs. We have brought innovation to the wireless industry by creating new business models, launching new services, and addressing pressing consumer needs that were previously overlooked by the large wireless carriers.

I am what is sometimes referred to as a serial entrepreneur. Currently I am Co-Founder and CEO of Txtbl, a startup wireless company based in New York which is just leaving the “garage stage” and closing its first round of venture financing. I would like to say more about Txtbl, but the U.S. Senate is no place for free advertising and besides we are still in “stealth mode.” Let’s just say for now that we have ambitious plans to change the way millions of Americans communicate. This is my third wireless startup. In 2000, I was among the first four team members of Virgin Mobile USA, my first wireless venture. The first and most successful mobile virtual network operator (MVNO) in the United States, Virgin Mobile pioneered pre-paid calling plans and has made wireless service accessible to millions of customers—especially younger people, lower income and low-credit people and ethnic minorities—who were previously underserved by the major operators. In just the 5 years since our launch, Virgin Mobile has gone from zero to nearly 5 million customers and achieved over \$1 billion in revenues. It recently filed for its initial public offering. In addition to my entrepreneurial experience, I was also a management consultant with McKinsey & Company, where I provided strategic advice to large telecommunications companies. I attended New York City public schools including Stuyvesant High School, received my B.A. in Economics and Philosophy from Columbia University and my Ph.D. from Stanford University in Cognitive Science.

Other members of our Coalition are also responsible for a number of “firsts” in the U.S. wireless market. For example:

- Fabrice Grinda founded Zingy, one of the first mobile content companies, which built the market for ringtones and mobile entertainment in the United States. Zingy grew from \$0 to over \$50 million in revenue in 4 years.
- John Tantum, mentioned above, co-founded Virgin Mobile USA as its first President and has been my partner in subsequent ventures.
- Jason Devitt was the founder of Vindigo, which publishes more than twenty different applications for mobile phones including its famous city guide.
- Pat McVeigh was CEO of Omnisky, one of the first service providers to market a national wireless data product. He was CEO of PalmSource, the company that created the revolutionary Palm operating system.
- Sam Leinhardt founded Penthera, which has created one of the world’s first software platforms for mobile television broadcasting, as well as founding three prior technology companies and having served as CEO of a mobile e-mail software maker acquired by Nokia.
- Alex Asseily founded Aliph, which created revolutionary, military-grade audio technology for wireless phones and the Jawbone wireless headset.
- Martin Frid-Nielsen founded Soonr, a novel service that very flexibly gives consumers access to their PC data from any mobile device or network, and holds four patents in wireless data synchronization.

These are just a few examples: the full group of 15 founders is listed in Appendix A. Most of us are now working on our second, third, or fourth wireless startups, many of which are still in the “garage stage.” We continue to seek new applications for wireless technology and to push the envelope to help Americans be more productive, save money, feel more secure, and—not to be ignored—have more fun by using wireless services.

Additionally, I want to emphasize that several other very successful and ambitious entrepreneurs have shared their support for this approach with us in private as colleagues, but are stifled from articulating these views publicly for fear of reprisals by the large carriers who control access to national wireless networks today. I can sympathize with their position. I’ve been there too.

II. Executive Summary

Last week the Wireless Founders Coalition for Innovation wrote a letter to FCC Chairman Martin in support of an Open Access E Block, as described in Frontline’s proposal. We believe the wireless industry is ripe with opportunities for innovation and economic growth, but the large wireless carriers currently act as gatekeepers to block or deter many of these opportunities. From firsthand experience we know that negotiating with the large carriers for access to their networks can be a difficult and time-consuming process that can add months if not years to the launch of a new venture and hinder the “trial-and-error” process intrinsic to the entrepre-

neurial process. An Open Access framework, by contrast, would enable innovation at “Internet speed.”

My personal experience working with the large carriers as an MVNO is instructive on these points. Virgin Mobile USA was successful *in spite* of a huge number of hurdles raised by the wireless incumbents. We almost failed to get a network deal with any carrier. We almost failed to navigate the arduous device certification process. Who knows how many other ventures have failed to pass through the “star chamber” of the wireless incumbents’ technical and business requirements processes?

As entrepreneurs we are not only visionaries, we are pragmatists. We know it is difficult too for the FCC to force the large carriers to open up their existing networks retroactively. Nor do we ask the FCC to apply Open Access rules to the entire 700 MHz band. However, we think it is eminently reasonable for the FCC to designate a single 10 MHz block in the upcoming auction—a small fraction of the 700 MHz spectrum allocated to commercial use—as a sandbox for entrepreneurs or an incubation tank where young, fragile ideas have a chance to live. We applaud the Commission for paving the way for the DTV transition and freeing this valuable spectrum for new and exciting services. We believe, however, that this effort will have been wasted if it does not create opportunities for entrepreneurs to freely explore new ideas, services, and business models.

The 700 MHz auction could prove to be a pivotal event in the history of the wireless industry, marking the transition to the age of the “wireless Internet”. But this will only happen if the FCC makes the right decisions, if it seizes the entrepreneurial opportunity and gives the American people a chance to participate in the upside from a new and improved approach to wireless policy.

III. Protecting Network Harm vs. Prohibiting Network Uses

For decades prior to the FCC’s seminal *Carterfone* decision, consumers were prohibited from attaching *any* device to the telephone network unless it was expressly sanctioned (and sold) by Ma’ Bell. Basically, the phone company kept competition at bay by arguing that it couldn’t keep phone service running without “absolute control” over the network. Finally, in 1968, the FCC called their bluff, and said that so long as a manufacturer shows that its device won’t harm the network, there’s no reason to keep it out of the hands of the public. As a result, we got the fax machine, the answering machine, the modem, and billions upon billions of dollars of new economic productivity.

Yet today, wireless carriers control subscribers’ wireless devices much as AT&T once controlled the wireline experience. One can get a sense of the operators’ proprietary control over the networks by looking at the restrictions they place on their retail customers. By way of example, here is an excerpt from the Terms of Service that currently apply to Verizon Wireless’s data services (emphasis included in the original):

Data Plans and Features

Data Plans and Features (such as NationalAccess, BroadbandAccess, GlobalAccess, Push to Talk, and certain VZEmail services) may ONLY be used with wireless devices for the following purposes: (i) Internet browsing; (ii) e-mail; and (iii) intranet access (including access to corporate intranets, email, and individual productivity applications like customer relationship management, sales force, and field service automation). *The Data Plans and Features MAY NOT be used for any other purpose. Examples of prohibited uses include, without limitation, the following: (i) continuous uploading, downloading or streaming of audio or video programming or games; (ii) server devices or host computer applications, including, but not limited to, web camera posts or broadcasts, automatic data feeds, automated machine-to-machine connections or peer-to-peer (P2P) file sharing; or (iii) as a substitute or backup for private lines or dedicated data connections. This means, by way of example only, that checking e-mail, surfing the Internet, downloading legally acquired songs, and/or visiting corporate intranets is permitted, but downloading movies using P2P file sharing services and/or redirecting television signals for viewing on laptops is prohibited. A person engaged in prohibited uses, continuously for 1 hour, could typically use 100 to 200 MBs, or, if engaged in prohibited uses for 10 hours a day, 7 days a week, could use more than 5 GBs in a month.*

As you can see, Verizon spills quite a bit of ink telling users what they are *not* allowed to do using their wireless data connections. You may use your wireless connection for simple e-mail or web browsing, or corporate applications but *not* for “any other purpose.” Not for instant messaging. Not for Voice over IP. Not for Internet video. Not for downloading games. Not for any other lawful consumer Internet appli-

cation invented in the past 15 years, really. Customers are on notice that using the network in lawful but non-approved ways puts them at risk of having their service terminated.

Like the old AT&T monopoly, wireless carriers argue that unless they dictate exactly *how* and *with what* device a consumer uses the wireless network, it will all come tumbling down. Indeed, in response to the Coalition's call for an open access network on the E Block, one of the incumbent carriers responded that just four Slingboxes can take down a cell site. But is a Slingbox, or any other device designed to allow consumers to remotely watch video, inherently "unsafe"? And are other prohibited services—like VoIP or free text-messaging services—inherently harmful to the network? Of course not.

Instead, like any use of the network, some applications may make more use of the network than others, and regardless of the use, some consumers will use the network more intensively than others. This is not a new problem. Carriers deal with the issue of voice capacity by charging for minutes of use on the network. Customers who use lots of minutes pay more than those who do not, and the price mechanism gives customers an incentive to ration their usage. Equally important, the pricing mechanism gives carriers an incentive to increase capacity so that they can generate more minutes and hence more revenue. What if carriers simply charged data users for the amount of capacity they use, just as they charge voice users for minutes of use? In that case, streaming video users would pay more for using more network capacity and, if the price was too high, they might reduce their use of streaming video applications.

Carriers also argue that they need absolute control over the consumer experience, lest the consumer should stumble upon a device or use that provides a lesser quality or otherwise different experience than that offered by the carrier. But if a consumer wishes to use a free instant messaging service, instead of the carrier's own paid messaging service, how is that a "harm" to the network? It simply means that the consumer is free to make their own decision as to a tradeoff between price, quality and a host of other variables. Maybe the consumer is an "early adopter" who is willing to try out a new product on the leading edge of technology. Early adopters are notoriously willing to accept tradeoffs in product quality in order to have the "newest thing". Fortunately for the rest of us, it is these early users who allow innovative products to "cross the chasm" from laboratory to the mass market.

Simply put, there is no reason, apart from commercial self-interest, why a carrier needs to ban streaming video devices, webcams, Voice over IP, or any other such application. These prohibitions are akin to telling subscribers what conversations they can or cannot have on their mobile phones (*e.g.*, quick chats about what to pick up for dinner are OK, long conversations with old friends are not). The only devices and uses that shouldn't be allowed are those that would actually harm the network. For example, a device that would operate above acceptable power limits would cause interference to other users, and certainly it is reasonable for a carrier to ban it. But particularly as we move to an all-IP wireless world, there is no inherent reason that one byte of traffic should be allowed while another byte is deemed "harmful". Similarly, if a device meets a published technical specification of acceptable "behavior" (or, for that matter, if it is type approved by the FCC), there is no reason to require special permission from the carrier before it can connect to the network.

IV. Obstacles to Innovation in Wireless

Wireless entrepreneurship is not for the faint of heart. The wireless industry is dominated by four large nationwide carriers: Verizon, AT&T, Sprint, and T-Mobile, *a.k.a.*, "The Big 4." Members of our Coalition have dealt extensively with the Big 4, as partners, suppliers, customers, and competitors. We have developed business relationships at all levels of management and some of these relationships have even grown into friendships. The Big 4 counts among its ranks many bright and talented people, including more than a few visionaries and technical wizards. Dealing with these people is often a pleasure; dealing with their organizations is more difficult. The Big 4 are large, generally risk-averse companies which exercise very tight control over their networks.

An entrepreneur looking to create a new device or service that somehow touches one of these networks typically has to get some measure of approval from the carrier. For a new device this might involve waiting 6 months or longer while it undergoes "device certification," even when the device is merely a cosmetically-altered variant of some previously tested device. For a new software application this might involve lengthy negotiations over "deck placement" of the software, which may compete with an inferior product offered directly by the carrier itself. For an MVNO, the approval often requires convincing the carrier's wholesale arm that a new retail service targets an under-served market niche and will not compete for customers

with the carrier's retail arm. And as discussed above, the carriers' Terms of Service also prohibit many cutting edge applications that involve passing data traffic "over the top" of carrier networks. Each of these barriers significantly raises the cost and risk of bringing a mobile product or service to market.

My own experience starting Virgin Mobile USA is instructive. Virgin Mobile is a success story, but one whose fate was by no means assured. While any new venture must confront the slings and arrows of outrageous fortune, we faced the additional risk of having to find a Big 4 carrier that would support, if not endorse, our business plan. We started in late 1999 with the idea for a product that addressed youth and other segments of the market that the incumbents saw as "unattractive" because they were too poor, too low credit, and too hard to serve with existing models. We spent nearly 2 years traveling around to all the carriers to see if anyone would deal with us. In general, the answer was "no" and for a long time we were uncertain whether anyone would let us get off the ground. By far the scarcest commodity in this process was network access—it was far easier to raise capital (Virgin invested millions)—and once the network deal was complete we had offers for additional investment from outside investors for hundreds of millions more. In the end, only one of the weakest large players was willing to deal with us: Verizon and Cingular were dominant, T-Mobile had a powerful corporate parent, but Sprint was a lagging #3 player.

We had to compromise away many degrees of freedom to get a deal done with the network partner, Sprint. We agreed to market a prepaid product that would not directly compete with Sprint's products nor compete for Sprint's mainstream customers. At the time we launched, 95 percent of the market was postpaid. Sprint was 100 percent postpaid. Virgin markets only to youth, only offers prepaid, only runs on the Sprint network, and Sprint has significant representation on the board of directors. We were only able to create the Virgin service by operating within the direct self-interest of a weaker player that needed help, by avoiding any direct competition with what they do, and by giving them a measure of control in our company. In general, this frame of "complementarity" applies to almost every wholesale-style relationship that the major carriers have done. Moreover, the additional frame of "credible partners" with track record and capital also widely applies. Few pure upstarts gain the privilege of access to carrier networks. Of course, this limits the potential for innovation by new firms with new ideas. After Virgin Mobile paved the way, the large carriers have done additional MVNO deals, but who knows what great new idea is sitting in wireless purgatory, waiting for approval from the Big 4.

A wholesale deal with Sprint was only the beginning of our treacherous journey for Virgin Mobile. We had to navigate many arcane business processes in order to get our phones into the market. One of the best examples is the device certification process mentioned above. Device certification is a big deal. It is always the subject of major, detailed negotiation in the MVNO relationships I have been a part of (I have negotiated Virgin's, several as a McKinsey consultant, and one for each of my subsequent ventures Blue and Txtbl). Almost all MVNOs end up taking "table scraps" from the big carrier, *i.e.*, they use devices that have already been approved by the big carrier but which the carrier has cast aside. We followed this pattern at Virgin Mobile, simply releasing devices that Sprint had already certified months before and wasn't currently marketing. We did this because certification is so tedious. It is estimated to take 6–9 months for a new phone. These days, the state of phone technology is such that a new phone can be designed in less than 3 months. Yet the carriers take three times as much time to certify. Most non-U.S. networks take much less time—any device maker will tell you—which is why many cutting edge devices are introduced in Europe or Asia before the U.S. For one of my other companies, a different large carrier made us go through a 45-day process to get approval for changing the wallpaper and ringtones . . . *on a phone that had already been certified.*

The certification process is also inequitable. One's position in the certification queue is influenced by the carrier's marketing staff. MVNO devices get pushed down the queue for later approval. Exceptions are not usually made for wholesale partners but I have often heard of partially-certified, not-properly-working devices being released by the retail carrier for "marketing impact".

Of course, it is possible to navigate through these obstacles. We have done it before. Our experience tells us, however, that the path can be arduous, especially when compared to our experiences in other sectors of the telecom industry, especially the Internet. Experience also tells us that these efforts often do not succeed or do so slowly or at substantial costs. For every Virgin Mobile there are several other ventures that were not able to navigate the carrier maze.

V. Requirements for Innovation in Wireless

Wireless entrepreneurship would take a huge step forward if wireless was more like the Internet. What makes the wireline Internet so friendly from an entrepreneur's perspective is its Openness. One does not have to ask Comcast or Time Warner Cable or even Verizon's DSL division for permission to launch a new product, service, or device. To borrow the Nike slogan, you can "just do it." In wireless, on the other hand, you can "just ask the Big 4." If you are skillful—or lucky—enough to make it through to the other side, the upside can be large. Yet entrepreneurship is an iterative, trial-and-error process. Having to engage with the Big 4 at each cycle in the process can slow time to market and increase risks and costs for the entrepreneur. One should not have to negotiate with an access provider to offer a product elsewhere in the value chain. Based on my experiences and those of my fellow Coalition members, I would like to offer a few observations about what it takes to innovate in wireless.

First, innovation requires small bets with real customer feedback and iterations. This is the "try, try again" rule. Entrepreneurs need "laboratory" settings to commercialize ideas that may initially look small but turn out to be quite big. This means access to real, live customers using real, live networks. The bar was very high for us when we launched Virgin Mobile in the U.S.—we spent \$40 million simply to put together the basic systems to run the service and meet Sprint's integration requirements. This was quite a high bar to trial our ideas. By contrast, most Internet services can be developed, trialed, refined, and redeployed multiple times in a fraction of the time and at a fraction of the cost. This is one reason the Internet is such a great breeding ground for innovation.

Second, freedom to enter the market is essential. It is very difficult to know, *a priori*, where the good new ideas will come from or the magnitude of their impact on the market. For example, IBM gave up the rights to the Microsoft operating system. Yahoo! declined to acquire Google's search engine. And of course AT&T believed the cell phone would never become a "mass market" product. Innovation often happens from the edge of a market. Some of the most important inventions in telecommunications, including the Hayes Smartmodem, online services, the answering machine, and speakerphones were all commercialized by outsiders to the Bell System. Yet these new products and services were only made possible by the FCC's *Carterfone* decision and Part 68 rules, which removed the Bell companies from their traditional role as gatekeeper of the network.

Third, the most disruptive innovations are typically the ones most easily dismissed by market incumbents. Some innovation is merely incremental and accretive to the existing business franchises of the incumbents. But the big changes are often disruptive (or appear so initially) and threaten them. When we started Virgin, the only carrier who was willing to deal with us was also the only big carrier with no prepaid mobile phone service and the distant number three player with little hope of catching the top spot. More fundamentally, it is easy to see why a market leader such as Verizon Wireless so fiercely opposes opening up its networks. They have a closed business model that makes a lot of money and they fear that a loss of network control will mean a loss of their position.

The upshot is that America is not innovating in wireless at nearly the rate it could be. While all the ingredients for innovation—wireless broadband networks, IP networking stacks, advanced multimedia devices—are readily available, the incumbent operators are too hesitant to try a new recipe for change. We think the industry needs a good test kitchen.

VI. The Open Access Solution

Our Coalition believes that an Open Access requirement on the E Block provides a concrete and actionable way to carve out a portion of the wireless market for entrepreneurial activity. Specifically, we believe the FCC can unlock a wave of entrepreneurial energy if it implements three forms of Open Access in the E Block: Open Services, Open Devices, and Open Auction.

Open Services

An Open Services rule would require that the E Block service provider allow customers to access "over the top" Internet-style applications of all kinds. These would include many kinds of services currently prohibited under the Big 4 subscriber contracts. Verizon Wireless, for example, prohibits the use of VoIP, webcams, and other media services. Under the Open Access rule, these kinds of Terms of Service would not be allowed. Entrepreneurs would be free to create a low-cost voice offering or, say, a mobile social network with videoblogging capabilities. The only limits on new service ideas would be the entrepreneur's imagination, not the wireless operator's Terms of Service.

Open Devices

The Open Devices rule would ensure that users can connect any device of their choosing to their wireless network, provided it meets certain publicly specified technical standards. The consumer device industry has undergone a revolution in the past few years. Modular design and contract manufacturing now make it possible for even an upstart to sell sophisticated, purpose-built devices. In particular, RF technology is becoming increasingly commoditized, which means that it is now possible to embed wireless capabilities into devices using off-the-shelf component parts. We envision a wave of opportunity in the device space, including the evolution of cell phones toward “broadband communicators”, the addition of wireless community features to portable media and gaming devices, and even using wireless to provide cheap connectivity to otherwise “dumb” appliances. We are starting to see these kinds of devices emerge with local area WiFi capabilities, but the possibilities are even greater once the devices can access the sort of wide area 4G networks that will operate in the 700 MHz band. Bringing a new product to market is always a risky proposition, but it is made more risky by the need to pass a carrier’s certification process, which as noted above is filled with uncertainty, is non-transparent, and can take many months. Under the proposed Open Devices rule, entrepreneurs would be free to bring new devices to market, gauge customer reaction, and evolve the product all in the time that it otherwise would have spent languishing in a Big 4 lab somewhere. Especially when the underlying RF components have been shown to meet a “do no harm” technical standard, there is no reason to subject the entrepreneur—or her customers—to needless bottlenecks.

Open Auction

Finally, we applaud the recent suggestion made by Google and Frontline that a portion of the E Block network capacity be made available to all comers via an auction. This will ensure a range of new MVNO opportunities at fair and transparent market-clearing prices. Moreover, we can envision the connectivity being used in some non-traditional ways. For instance, someone could offer an inexpensive wireless service subsidized by location-based advertising. Or, in another example, an entrepreneur starting an “over-the-air” online music store could include the cost of wireless connectivity in the price of the song download, so that the customer never has to subscribe to a wireless service to gain access to the music store. And of course there are many more ideas that we haven’t even thought of yet (if the proposal is adopted).

VII. Pragmatic Considerations: the E Block as Starting Point

Perhaps the best aspect of the E Block proposal, in our view, is that while it is forward thinking, it is also realistic. We believe it would be an eminently reasonable approach to apply Open Access only to the E Block. We observe that 10 MHz is a relatively small portion of the commercial 700 MHz spectrum and only about 2.7 percent of more than 350 MHz that will have been allocated for CMRS use following this auction and last year’s AWS auction.¹ Over time, the provision of Open Access services by at least one carrier in the market could apply competitive pressure to the others to open up as well. A slight regulatory nudge could result in a major push by market forces.

Finally, we want to point out that the Open Access proposal also raises the possibility that entrepreneurs like us can bring new ideas and energy to the public safety market. Open Access would create new opportunities for specialized public safety devices and services, just as it would for commercial uses. Indeed, we note that the openness of the Internet has spawned many important and vital technologies such as firewalls, VPNs, routers, and other products geared toward network security. An Open Access regime, by unbundling network functionalities, allows for the development of “best of breed” security tools that bring state-of-the-art thinking to each layer of the network stack. Openness increases competition to meet public safety’s unique requirements, by enabling customers to assemble an end-to-end framework using the best available component piece parts.

As entrepreneurs, we subscribe to the old maxim, “nothing ventured, nothing gained.” In our opinion, an Open Access E Block is a venture worth pursuing, because the gains are potentially enormous.

¹After the 700 MHz auction there will be approximately 358 MHz allocated for CMRS. This includes 50 MHz for cellular licenses, 120 MHz for Broadband PCS, 14 MHz for ESMR, 90 MHz for AWS, and 84 MHz at 700 MHz. This does not include nearly 200 MHz of EBS/BRS spectrum and over 50 MHz of MSS/ATC spectrum becoming available for CMRS-like services.

APPENDIX A: WIRELESS FOUNDERS COALITION FOR INNOVATION MEMBERS

Amol Sarva, Ph.D.
Co-Founder, Virgin Mobile USA
Co-Founder, Blue Mobile
Co-Founder and CEO, Txtbl

John Tantum
Co-Founder and former President, Virgin Mobile USA
Co-Founder and former Managing Director, Blue Mobile
Co-Founder and Chairman, Txtbl

Fabrice Grinda
Founder and former CEO, Zingy
Founder and CEO, OLX

Alex Asseily
Co-Founder and CEO, Aliph

Pat McVeigh
Former CEO, Omnisky
Former CEO, PalmSource
Early employee of Palm

DP Venkatesh
Founder and CEO, mPortal

Jason Devitt
Co-Founder and former CEO, Vindigo
Founder and CEO, Skydeck

Ram Fish
Founder and CEO, Fonav

Joel Jewitt
Co-Founder and VP of Business Development, Good Technology
Early employee of Palm

Martin Frid-Nielsen
Co-Founder and CEO, Soonr

Dr. Sam Leinhardt
Co-Founder and CEO, Penthera
Co-Founder of Leinhardt-McCormick Associates, FORMTEK, and STORM

Dennis Crowley
Co-Founder and former CEO, Dodgeball.com

Kent Thexton
Chairman and former CEO, Seven Networks

Peter Semmelhack
Founder and CTO, Antenna Software Founder and CEO, buglabs

Russell Cyr
Founder and CEO, BitWave Semiconductor

APPENDIX B: ATTRIBUTES OF CLOSED VS. OPEN NETWORKS

	“Closed”	“Open”
<i>Devices</i>	<ul style="list-style-type: none"> Carrier certification required before new device allowed to operate on the network 	<ul style="list-style-type: none"> New devices do not have to be approved by carrier as long as they meet published technical specification
<i>Services</i>	<ul style="list-style-type: none"> Carrier limits content and applications that may be accessed over the network Carrier hides protocols needed to access network features (e.g., geographical positioning data) 	<ul style="list-style-type: none"> Users may access any content or service just as they can with the Internet Public APIs allow independent developers to create services using network “hooks”
<i>Access</i>	<ul style="list-style-type: none"> Carriers very selective about which companies may buy wholesale network access, look for “complementary” (i.e., non-threatening) business models 	<ul style="list-style-type: none"> Any service provider may purchase network capacity via an open auction that prevents favoritism and ensures price transparency

The CHAIRMAN. I thank you very much.

If one of the goals of this auction is to encourage better participation, would the establishment of a smaller block size help? May I ask the panel?

Mr. Small?

Mr. SMALL. Clearly, smaller block sizes are determinative to our ability to participate in the auction. We can bid on virtually all CMAs, occasionally an EA, and the REAGs are totally out of the question. And we believe—we make our money by serving rural and small cities, and we think licenses should get in the hands of the people who want to do that, not be put in the hands of national players only, who then have to be induced, or forced, to kind of serve the rural areas.

The CHAIRMAN. Mr. Lynch?

Mr. LYNCH. Senator, the band plan that I mentioned in my opening remarks—band plan 3—provides for licenses of all sizes, from the very smallest licenses that Mr. Small's talking about, to the regional areas, which I'm a significant proponent of.

I think that you have to balance, in assigning license sizes, two different drivers here. Number one, to entice the smaller companies to participate in the auction, I think you need the smaller license sizes. That's a given. I would agree with Mr. Small on that. But when you look at our business plan, at Verizon Wireless, my goal is to deliver a 4G experience across the country. And historically, because of many of the smaller licenses that we have had to aggregate over time, it takes many years. In fact, we're going to close, in July, on a couple of licenses that have been out there for years and years, that we've been trying to fill in a piece of the upper west part of the country.

So, to us, a REAG, or the larger license, provides us a more expeditious opportunity to deploy 4G services than would an attempt to aggregate in the secondary market, which is, in fact, what we would end up having to do, over years.

So, I believe there's a need for both.

The CHAIRMAN. Dr. Sarva?

Dr. SARVA. I don't have a strong view about the large or the small size of the auction, about the blocks, but I do have a view about the value of openness in that context.

If there's a band of the spectrum which is open for many different types of providers, innovators, and entrepreneurs, but also smaller carriers to use, it provides them an immediate access to a national coverage area using that open band.

I believe the open-access band actually increases the value of every individual block whether it's large or small, because it makes the winner of a block able to offer a service that runs nationally. And that's a very important aspect of the open-access proposal.

The CHAIRMAN. Because of the complexity before us, I'll be submitting my questions to you, and I hope you can respond to them.

Senator Stevens?

Senator STEVENS. Well, I, also, will submit some specific questions.

But let me ask one.

There are some who argue that we should have a buildout based on population, others argue we should have a geographic-based

buildout. And I have the opinion that one size doesn't fit all. Is there any way we could develop a sliding scale to ensure that rural America is not left out, but, at the same time, that the demands of the major markets, such as New York, would be met?

What do you think? Anyone have an opinion?

Mr. Lynch?

Mr. LYNCH. Yes, Senator. I believe that that can best be achieved in the following way. And what I mean by that is that I believe a POP-based regime is the correct one to use on the overall basis. However, what's important, beyond that, is the amount of years that the carrier who wins that license has to build-out the footprint. And to entice build-out over a fairly rapid period of time without making it inordinately—let's say, financially impossible, maybe a better term—I think you need to think in terms of 5 years to a reasonable percentage of the POPs to be built. That would certainly, based upon how you achieve that percentage, would drive the carrier who won that spectrum to have to go into the rural areas. I mean, as an example, Senator, we, today, go into many areas that you would consider to be very rural. If we define "rural" as under 100 POPs per square mile, much of the territory that Verizon Wireless already covers would be considered rural. But I will also be the first to admit to you that there are parts of the country where we're down to one and two people per square mile that we have not, at this point in time, managed to reach yet.

The new spectrum, because of its propagation characteristics, I believe, will allow us to get there much more quickly.

Senator STEVENS. Thank you.

Mr. Small, any comment?

Mr. SMALL. I would add to that, that I believe geographic build-out requirements are wrong, in general, but they're extremely detrimental to rural areas, because it'll become uneconomic to cover 25 percent, even, of your State in total geography. And I believe a recent letter was sent by 55 rural companies to the FCC stating exactly that. So, it will have the perverse action of making it uneconomic to even accept a license—or bid for a license in a rural area.

Senator STEVENS. Thank you.

Dr. Sarva? I take it you are supporting, Dr. Sarva, the position that was presented by the last panel, on Frontline. Now, let me ask you, in addition to that question, of geography versus population, don't you believe that if we agree with you, that that would reduce the overall bid for all spectrum?

Dr. SARVA. The element that we're here to support, that I believe very strongly in, is the open access element. The comment I made just a moment ago, Senator, is that I think the open access proposal increases the value of any individual block of spectrum, because the winner in a State like Alaska or Hawaii is willing to bid more to own that particular block, because they know they have access to a national coverage area around the rest of the country. They can build a franchise in their locality, and offer their customers national reach whenever they travel. It's an important aspect that's not available today. It's a very expensive roaming regime of interconnection fees that are paid. Those are difficult. And I think Mr. Small can comment on that.

So, I believe open access enhances the value of the spectrum, for that reason, number one. Number two, I think——

Senator STEVENS. Well, that's not quite the answer——

Dr. SARVA.—innovation leads to——

Senator STEVENS.—to the question.

Dr. SARVA. I'm sorry.

Senator STEVENS. Will it decrease the total receipt of the Federal Government for the spectrum?

Dr. SARVA. Sir, my hunch is that you'd get more money as a result, because in localities, folks are willing to pay more for their particular piece of that spectrum instead of just having one or two bidders who can play at the national scale.

Mr. LYNCH. Senator, if I might, I respectfully disagree with Dr. Sarva, and I agree with you. The geographic requirement will, in fact, dictate a lower auction bid, because there would be a more immediate and more apparent obligation to make more investment into that property early on. So, the total net value that we would be willing to pay isn't going to change. But what will happen is that we would put less into the auction because we knew we were going to have to put more into the buildout.

Senator STEVENS. That was my opinion.

Thank you very much.

Dr. SARVA. Oh, I'm sorry. I'm sorry, Senator, I didn't actually mean to suggest that I disagreed with Mr. Lynch there. I think population's very important, and building the biggest national market as quickly as possible creates the most opportunities to take services to market.

The CHAIRMAN. Thank you.

Senator Thune?

**STATEMENT OF HON. JOHN THUNE,
U.S. SENATOR FROM SOUTH DAKOTA**

Senator THUNE. Thank you, Mr. Chairman.

For a state like South Dakota, having access to needed technology is a critical issue. And I guess the question I have is that—many of you have stated your opposition to buildout requirements. And the question is, if the FCC does not include buildout requirements in its rulemaking, what incentive is there to serve rural areas?

Mr. LYNCH. Senator, if I might, first of all, I don't think that Verizon Wireless is positing a position that we disagree with all buildouts. We are willing to step up to the obligatory buildout that goes with the license. The point that we were making before to Senator Stevens' question, of course, was, the amount we would bid on that license would be very different depending upon what the buildout requirements were.

But I happen to believe that, particularly in your State, I'm familiar with the buildout that we've been doing in your State over time, and we've still got more to go—but that has as much to do with the spectrum that we've used to deploy that as anything else.

But, as we continue to deploy—and I've spent about \$6 billion a year expanding the network—every year, we move further and further into the very rural part of the country. And I believe that 700 MHz—regardless of the buildout requirements, the business oppor-

tunities will drive us to utilize the better propagation characteristics of that spectrum to move further out into the rural markets than we can do with any of the spectrum we have today.

Mr. SMALL. And, Senator, I feel strongly that allowing regional players to have spectrum in bite-sized chunks that we can deal with is what drives investment in rural America. For us to compete against the larger national players, we have to differentiate ourselves, and that's by taking better care of our local communities and in building more cell sites, opening stores with our associates in communities that wouldn't otherwise be there, and even seeking universal service funds to do that. For example, we just built, about 2 years ago, cell sites in Shaw and Black Hawk, Louisiana, which brought telephone service to those communities for the first time. There had been no landline, there had been nothing, despite all the perceived universal service requirements that have been in this country for, you know, dozens of years.

So, I think, incentivizing regional providers is the best way to accomplish your objective.

Senator THUNE. If—and you all seem to be in favor of offering both small and large licensing blocks, but I guess my question is—and you, sort of, gave an answer to that, Mr. Small—but is that regulation, alone, enough to ensure that smaller telecom providers are going to be able to competitively be engaged in the process?

Mr. SMALL. I think having the two CMA blocks gives us a good opportunity. And you need to balance the interests of all, but we would be pleased with that outcome. I know Centennial will be in the auction, and, I do believe, other regional providers as well. Will that answer the needs of every community everywhere? No. In many cases, large national carriers will buy the smaller licenses. They've done that in past auctions, and I would expect that would happen in the future. When you look at your real policy choices, the best way to get more coverage to rural areas is, first and foremost, to get the 700 MHz out there, because of its better propagation, and, second, to give a diversity of owners to that spectrum.

Mr. Lynch mentioned 100 POPs per square mile. They go down as far as that, and that's our average. And we serve areas with two and three POPs per square mile.

Senator THUNE. Mr. Chairman, I may have a statement to include in the record, and I will yield back. I understand we have a vote underway. So, I yield back.

Thank you.

The CHAIRMAN. Thank you very much.

Senator Kerry?

**STATEMENT OF HON. JOHN F. KERRY,
U.S. SENATOR FROM MASSACHUSETTS**

Senator KERRY. Thank you, Mr. Chairman. And I know we do have a vote on, and I'll try to go through this.

First of all, thank you for doing this hearing. This is a critical hearing, and I appreciate your leadership on it, and getting the Committee involved, at this stage.

I have a couple of questions, but I'd like to just make a few comments, if I can, Mr. Chairman.

First of all, this upcoming auction of spectrum in the 700 MHz band has profound implications beyond just the question of revenue. And I know revenue is something some people are concerned on. And we had a discussion here in this Committee, I guess about the level we could anticipate on the sale. I think we set it somewhere in the twelve and a half billion or something, with many people suggesting more may come. But I want to emphasize that the profound implications of this—for consumers, for schools, for businesses, small businesses, for emergency first responders, and for the rural communities we just heard about—can't be underestimated at all that this is a unique opportunity.

The Chair and the Vice Chair have been here through a long developing stage of America's communications systems, and we've seen a lot of promises made, a lot of promises broken, and we've seen a huge transformation. When we sat here in 1996 and talked about what we were going to do in that bill, the entire discussion was telephony, and not many people thought about data. And, within a matter of months, it was obsolete, and we didn't see the promises fulfilled by the Baby Bells and others as to market entry. So, we have to, sort of, think about this with the history that we've traveled on in this Committee.

And with this auction, we stand at a crossroads. We can either provide extraordinary benefits to millions of Americans, or we can tilt bandwidth policy to improve the already significant position of a few powerful deliverers of this service.

I think there's a clear path that we have to take. The airwaves belong to the American people, and their use must always, even as we serve the marketplace that we are, it must also serve the public interest. So, the rules of this auction are critical. We've got to encourage competitive entry into the wireless market. We have to spur innovation. We have to increase affordability. And we have to increase the availability of broadband services.

The fact is—and there's no argument about this—we're lagging in deployment. More than 60 percent of Americans do not subscribe to broadband services, primarily because they don't have access or they can't afford it.

In my own State of Massachusetts, which is a recognized leader in innovation and technological advancement, we have a 49 percent broadband penetration rate. And, guess what? We're the fourth best in the country.

So, this auction of very valuable spectrum—some people have called this the beachfront property of communications—the key is, how do we serve this importance? How do we ensure that it works for the American people?

And, I think, first the Commission must promote the broadest level of participation in the auction, as a guiding rule; encourage competition; and enable entrepreneurs to think innovatively and provide affordable highspeed wireless broadband services.

Auction rules must be directed at promoting additional market entrants, not just serving those most powerful, capable of winning the auction bid based on their purchasing power today. Open access proposals and innovative bidding rules have got to be closely considered.

And, second, I believe the FCC must settle on a strict buildout requirement that compels auction winners to offer services. I understand the fears of the industry about this. Some say that if you're forced to build a network, it can delay service and innovation. I'm absolutely confident that the Commission can find the appropriate balance. The spectrum has to be deployed in a reasonable time, but also in a reasonable manner. And what would be unacceptable is a set of rules that allow large companies to scoop up and warehouse this spectrum.

I've been very, very encouraged, Mr. Chairman, by your attention on this matter. And I'm confident that you, also, want to seek strong requirements.

I'm also encouraged that the Commission is taking a close look at solutions for public safety. And I see our friends, first responders, here in the room. We've been working on interoperability for quite some time, Mr. Chairman; and, despite our efforts, interoperability remains one of our most vexing policy challenges, despite the lessons of 9/11 and Hurricanes Katrina and Rita.

So, providing an effective public safety communications network is of paramount importance, and I'm encouraged that the industry leaders are thinking about this, also, in an innovative way.

Every American has an opportunity to benefit from this auction. And I, once again, emphasize, the long-term revenue stream that will come by adequately fostering the market growth that can come with this, and the market penetration that can come with this, far exceeds that, sort of, up-front quick hit that you look at in the auction itself, and we need to keep that in mind. When you look at the 60 percent of penetration, if we can get that, and get small businesses and parts of our rural States that suddenly become places where business can move and get into this fourth-generation world, we're going to be a much stronger economy, with a stronger tax base, with a stronger job base, and more competitive than the global community. And I think we need to look to that long-term strength.

So, for schools, for our economy, for our families, for our first responders, this is a pretty critical process, and I appreciate the attention of the Committee to it.

The big question—I have just one or two questions, if we have time, quickly—Mr. Lynch, is, if Verizon and other incumbent broadband service providers win most of the spectrum, is there any guarantee, then, that a third-pipe provider is going to be able to enter the market; a guarantee?

Mr. LYNCH. Senator, I'm not sure exactly how to answer your question with a very few words, but let me say this. With 900 licenses at auction in the band plan that we've been recommending, which is band plan 3, I think that there is a tremendous opportunity for new entrants, as well as existing providers, who, like us, have a commitment to putting fourth-generation out there.

Again, I'm saying I'm not sure exactly how to answer the question that you've asked.

Senator KERRY. Well, maybe rather than be rushed like this, because I know we've got a vote, and I don't want to tie us up, maybe I could pursue this, Mr. Chairman, in a couple of written questions, and just follow up in a way that would develop the record on it,

which I'd like to do, and that would serve all of us, perhaps, more effectively.

Mr. LYNCH. Thank you. We'll do that.

Senator KERRY. I really thank the Chair.

[The prepared statement of Senator Kerry follows:]

PREPARED STATEMENT OF HON. JOHN F. KERRY,
U.S. SENATOR FROM MASSACHUSETTS

Mr. Chairman, the upcoming auction of spectrum in the 700 band has profound implications for consumers, schools, businesses, emergency first responders, and rural communities. We are presented with a unique opportunity to shape the future of wireless communication and innovation in America.

With this auction, we stand at a crossroads—we can either provide extraordinary benefits to millions of Americans or tilt bandwidth policy to line the pockets of a privileged few.

There is a clear path I believe must be taken: the airwaves belong to the American people, and their use should serve the public interest.

We must establish rules in this auction that encourage competitive entry into the wireless market, spur innovation and increase affordability and availability of broadband services.

There is no argument that we are lagging in deployment. More than 60 percent of Americans do not subscribe to broadband service—primarily because they don't have access or can't afford it.

My own state of Massachusetts, a recognized leader in innovation and technological advancement, has a 49 percent broadband penetration rate. And it is 4th best in the country.

So this auction of very valuable spectrum, takes on heightened importance. How do we ensure it works for the American people?

First, the Commission must promote the broadest level of participation in the auction, to encourage competition—and enable entrepreneurs to think innovatively, and provide affordable, high-speed wireless broadband services. Auction rules should be directed at promoting additional market entrants. Open access proposals and innovative bidding rules must be closely considered.

Secondly, the FCC must settle on strict build out requirements that compel auction winners to offer services. Now, I understand the fears of industry in this area. If we are forced to build networks, it delays service and innovation.

I am confident the Commission can find the appropriate balance—The spectrum must be deployed in a reasonable time. What would be unacceptable is a set of rules that allow large companies to scoop up and warehouse this spectrum. I have been encouraged by the Chairman's attention to this matter, and I will be looking for a strong set of requirements.

Finally, I am encouraged that the Commission is taking a close look at solutions for public safety. We have been working on the interoperability for quite some time. And despite our efforts, Mr. Chairman, interoperability remains one of our most vexing policy challenges—despite the lessons of 9/11 and Hurricane Katrina.

Providing an effective public safety communications network is of paramount importance, and I am encouraged that industry leaders are thinking about the topic in an innovative way.

All Americans have an opportunity to benefit from this auction. This is more than an issue of Government revenue—it is also about expanded access to revolutionary new technology for every American. Our economy, our schools, our families and our first responders are counting on the FCC to conduct a fair auction in the spirit of competition and innovation that drives our country.

I, for one, will be watching closely.

Mr. LYNCH. Thank you.

The CHAIRMAN. With that, we thank the panel, and we've got to go to vote.

[Whereupon, at 12:15 p.m., the hearing was adjourned.]

A P P E N D I X

PREPARED STATEMENT OF PAM MONTANARI, RADIO SYSTEMS MANAGER, PINELLAS COUNTY, FLORIDA; CHAIRPERSON, TAMPA BAY URBAN AREA INTEROPERABLE COMMUNICATIONS

Mr. Chairman and Members of the Committee, my name is Pam Montanari and I am Radio Systems Manager for Pinellas County, Florida. I also serve as the Chairperson for Interoperable Communications for the Tampa Bay Urban Area. Thank you for this opportunity to share with you the views of Pinellas County and the Tampa Bay urban area on the pending decision by the Federal Communications Commission (FCC) to establish rules and policy for the auction of 700 MHz spectrum. This is an issue of great importance to public safety organizations throughout the Nation and will determine our ability to provide life saving services to our citizens for many years to come.

Pinellas County, Florida is among the largest counties in the United States and serves a permanent population of over 925,000 in west central Florida. We are dedicated to providing state-of-the-art radio communications for over 9,500 public safety personnel. The Pinellas County Emergency Communications Department is committed to providing high quality, efficient service to the citizens of Pinellas County.

Pinellas County embraces new technology and has a history of leading field tests for advanced high speed data and video communications. Starting in 2001, Pinellas County conducted the first test of wideband technology, using an experimental license on wideband channels in the 700 MHz band and it performed well for the exchange of public safety data and video. Currently, Pinellas County is also conducting tests of various broadband technologies in the 4.9 GHz public safety broadband spectrum. Pinellas County is actively involved with neighboring public safety agencies in the Tampa Bay urban area to achieve interoperability in both voice and data communications solutions.

Pinellas County and the Tampa Bay urban area support the concept of a nationwide broadband network designed to meet public safety communications requirements, however, it would be unfortunate if public safety is unnecessarily restricted to this one technology for future data services. We have filed comments at the FCC stating that public safety should be provided the flexibility to deploy either wideband or broadband data solutions in the 700 MHz band.

If a nationwide broadband network-only proposal is adopted without allowing for wideband deployment in the 700 MHz band, there will not be sufficient public safety frequencies available in the Tampa Bay area for implementing both regional voice and high speed data solutions. Our public safety agencies must have the flexibility to implement these advanced high speed data communications technologies, whether broadband or wideband. We support using the 700 MHz data spectrum to provide the best combination of public and private high speed data systems that meet our coverage and operational requirements.

Pinellas County strongly agrees with the many comments filed by all public safety representatives that overwhelmingly urged the Commission to ensure flexibility of solution choices in this band. As we noted above, Pinellas County is evaluating several technology solutions, both broadband and wideband, and we must continue to have the ability to choose the technologies that best fit our local requirements. To our knowledge, no public safety organizations filing comments at the FCC objected to having the flexibility to choose between broadband or wideband solutions.

Pinellas County notes that while a nationwide broadband network built and operated by a commercial provider should be explored, there are a number of details that must be decided before public safety organizations can place the lives and property of our citizens in the hands of a commercial communications provider with no other allowed options. The FCC must guarantee certain minimum standards will be met by any commercial licensee who acquires through auction the adjacent commercial spectrum and commits to build out a nationwide broadband network targeted for both public safety and commercial use.

The FCC must ensure that commercial communications providers and public safety leadership and agencies participate equally in defining the specifics of a proposed nationwide broadband network. For example, we propose that the specifications include the following minimum benchmarks:

1. *When fully built out, the nationwide network should cover at least 95 percent of the jurisdictional area of the public safety agencies on the broadband network.* This means that a city fire department must have city-wide coverage, a county sheriff must have county-wide coverage, and a state police department must have state-wide coverage. Each agency must have at least 95 percent coverage at a minimum specified data rate and level of reliability. Further, in order to provide mutual aid and interoperability with neighboring agencies, these coverage requirements should extend into the jurisdictional areas of our neighboring agencies. Previously, the Commission recognized the need for coverage into adjacent jurisdictions when it established rules for the 800 MHz public safety band regional planning. For a broadband network to be nationwide when fully built out, coverage requirements tied to population alone are not sufficient.
2. *Incident commanders and first responders must have immediate access to communications resources in times of emergency incidents and disasters.* This includes adequate channel capacity and operational control over the system, both the commercial as well as the public safety channels. We cannot wait for a national licensee or associated commercial carrier(s) to be contacted for a decision. On-scene command and control is responsible for orchestrating resources as needed to control the emergency. These resources today include local responders, assisting agencies, equipment and mission critical voice communications. Going forward, agencies and incident commanders will also need control of high speed data and video communications resources at the incident as well.
3. *Reliability and security of the high speed data communications must be assured by the commercial provider.* Public safety, especially law enforcement, must have the capability to encrypt sensitive communications, including imaging and video transfers and to control who has access to this information. These requirements are of special concern for a network which is proposed to accommodate both public safety and commercial traffic. Today's dedicated public safety networks are not open to the public to use, however, this may not be the case under the Commission's proposed concept for a nationwide broadband network in the 700 MHz spectrum. Also, reliability requirements would dictate that the network must be built to provide transmission redundancy, back-up power in case of electric outages, and site, as well as network, security.
4. *The nationwide broadband network must have provisions for high speed data applications that meet local and regional public safety needs.* For nationwide broadband interoperability, public safety applications on the network must have some degree of uniformity across all public safety agencies. At the same time, applications must meet the different requirements of functional agencies (law enforcement, fire, EMS), as well as the differing requirements of agencies in varying demographics across the country. This includes interfaces with existing local networks and databases, some of which are not compatible today.

Regardless of the governance structure the Commission provides for the nationwide broadband public safety network, local and regional public safety entities must have input into the development of the requirements for such a network. The concept of a nationwide broadband network funded by commercial licensees in adjacent spectrum is appealing. However, given the many outstanding unknowns, there is currently no certainty that this proposed network would meet the operational and monthly cost requirements of Pinellas County and the Tampa Bay urban area agencies. In addition, the proposed build out schedule for the broadband network is 8–10 years, and it is likely that there could be geographic areas that still would not be covered by this network.

Under the Commission's tentative conclusion, public safety agencies would have no option to deploy their own system if the promise of the nationwide network were not realized or if it were delayed in their area. Pinellas County and the Tampa Bay urban area believe that we must be able to implement a high speed data solution while we are waiting for the nationwide broadband carrier to roll out the network to cover our jurisdictional region. Further, we need the option to maintain that network at least until there is certainty that the nationwide broadband network as built in our area meets our specific operational requirements.

Mr. Chairman, Pinellas County commends you for holding this hearing. It is important that the Congress, which first promised 700 MHz spectrum to public safety a decade ago, maintain oversight over the implementation by the Commission.

Available spectrum in these most desirable bands draws the attention of many who would like to gain access to public safety's resources. The promise of a nationwide broadband network constructed and paid for by a commercial licensee is appealing, but we must remember the adage that "there is no such thing as a free lunch."

Pinellas County and the Tampa Bay urban area request the Committee to urge the Commission to provide local and state agencies the flexibility on at least a portion of the public safety data spectrum to implement the solution that best meets our high speed data requirements and budget. The options must include the ability to choose a local or regional network, whether broadband or wideband, especially while we await the nationwide roll out of a commercially-based broadband network. Public safety agencies can work through their regional planning committees to enable implementation of these choices on a local and regional basis.

Again, Mr. Chairman and Members of the Committee, Pinellas County and the Tampa Bay urban area thanks you for the opportunity to testify today on our concerns about the 700 MHz auction and its potential impact on public safety.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. DANIEL K. INOUE TO
WANDA S. MCCARLEY

Question 1. All parties appear to agree on the need to build a broadband network for public safety. However, the cost of building such a network and the length of time it would take to complete varies significantly, depending upon the approach that is taken. There are essentially 3 options. Option 1 is that public safety can try to build and operate this network itself at the local and regional level, as has traditionally been the case. Option 2 is similar to what was proposed in the FCC's ninth Notice of Proposed Rulemaking, where a national public safety licensee would partner with a commercial operator to build a shared public safety commercial network using the 12 megahertz of spectrum already allocated to public safety. Option 3 follows the Frontline proposal, where a national public safety licensee would partner with a commercial operator to build a shared network that not only uses 12 megahertz of existing public safety spectrum *but also* 10 megahertz of commercial spectrum that will soon be put out for auction. Under each of these scenarios, what is your best estimate as to how much it will cost public safety to build and operate a next-generation, broadband network, and how long will it take to build out this network across the nation?

Answer. The actual cost to public safety would depend on numerous factors—many of which are out of our current control. It's safe to say, however, that construction alone of a network such as this, that meets public safety's needs will cost many billions of dollars. Some estimates place the amount in the range of \$22 billion. The cost is generally the same under each of Options, though the decentralized approach in Option 1 could be higher due to the lack of economies of scale. The primary difference is whether and how those costs are paid.

Under Option 1, the costs would be localized for each separate broadband system, as is currently the case with state/local public safety systems. We believe the result of this approach for broadband is that wealthy areas, or those few areas with special access to Federal funds (*e.g.*, National Capital Area), will ultimately build systems, but much of the Nation will be left unserved as the cost of a broadband network will be well-beyond the means of most local agencies. Under Option 2, there would be a single licensee, and theoretically a commercial partner. However, with only 12 MHz available, there would not be sufficient capacity to address both public safety requirements and sufficient commercial use to justify commercial investment and partnership. The national licensee would also lack tax and bonding authority, leaving it without any means to construct the national network. Option 3, or some variation of it, is what we favor, and what the FCC appears to have adopted in its order adopted on July 31. This approach provides sufficient spectrum for a joint system that meets public safety broadband requirements and a viable commercial network.

We believe that Option 3, or a variation thereof, is the only way to build a broadband network "across the nation". We have advocated that the network be built to cover 99.3 percent of the Nation's population within 10 years, with significant interim benchmarks that we believe are addressed in the FCC's July 31 order.

Question 2. One of the elements of proposals to create a public safety-private sector partnership is the creation of national public safety licensee to negotiate a network services agreement with a private operator. In your view, how should this national public safety licensee ensure that the needs of local first responders are met?

Answer. We believe that the national licensee must be representative of local first responders. Thus, nine national public safety organizations have formed a nonprofit corporation that intends to apply for the FCC license. Each of the organizations

shall select board members to the entity, and there will also be advisory committees of additional organizations and regional representatives.

Question 2a. What benefits would result from the creation of a public safety licensee?

Answer. A national public safety licensee could more effectively negotiate a national network sharing agreement with a commercial partner. It could also coordinate standards and interoperability procedures to ensure seamless interoperability across the Nation.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. BILL NELSON TO
WANDA S. MCCARLEY

Question 1. Current 700 MHz proposals seem to contemplate 24 MHz of spectrum for public safety. Is that enough to meet future needs—particularly in light of new broadband applications?

Answer. It is not sufficient. Even when the 24 MHz was first allocated (per legislation passed in 1997), we knew it would not be sufficient to address all future data requirements. Half of the 24 MHz is dedicated for narrowband voice systems, for which there is substantial demand and existing deployments in some areas. The remaining half, standing alone, would not address all public safety requirements for broadband, especially in urban areas. It is also insufficient for a public-private partnership approach as there would not be “excess” capacity for commercial operation.

Question 2. Does the additional 10 megahertz of public-private spectrum in the Frontline proposal help solve any shortage?

Answer. Absolutely. It provides additional capacity when needed for major emergencies, and it provides the capacity needed for a viable public-private partnership. We note, however, that there are some aspects of what Frontline proposed that we do not support. Based on what we believe is in the FCC’s July 31 order, the FCC appears to have found the right balance.

Question 3. As you are all aware, one of the biggest problems facing public safety is interoperability. All too often, we see jurisdictional and technological barriers that inhibit public safety officials in one area from speaking to officials in an adjoining area. Of the solutions currently before the FCC, which solution does the most to foster interoperability?

Answer. We support approaches that promote viable public-private partnerships to build a nationwide, interoperable broadband network. A national network can be built with a single standard and provide the widest possible coverage to ensure seamless service and interoperability for first responders. There will still need to be a need for many years to tie together existing public safety radio networks operating in various frequency bands.

Question 4. If a public-private partnership—of some sort—is formed to manage a portion of the spectrum, how should disputes between public safety users and private entities be resolved?

Answer. Clearly, public safety must be the primary factor in resolving disputes. We do not believe that the license for the relevant commercial spectrum should be granted unless and until a network sharing agreement is reached with the national public safety licensee. There should not be mandatory third-party mediation, as the disputes are likely to involve non-commercial, public policy issues regarding public safety communications. Thus, if there is to be dispute resolution, it should be managed by the FCC.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. DANIEL K. INOUE TO
JAMES L. BARKSDALE

Question 1. All parties appear to agree on the need to build a broadband network for public safety. However, the cost of building such a network and the length of time it would take to complete varies significantly, depending upon the approach that is taken. There are essentially 3 options. Option 1 is that public safety can try to build and operate this network itself at the local and regional level, as has traditionally been the case. Option 2 is similar to what was proposed in the FCC’s Ninth Notice of Proposed Rulemaking, where a national public safety licensee would partner with a commercial operator to build a shared public safety commercial network using the 12 megahertz of spectrum already allocated to public safety. Option 3 follows the Frontline proposal, where a national public safety licensee would partner with a commercial operator to build a shared network that not only uses 12 megahertz of existing public safety spectrum *but also* 10 megahertz of commercial spec-

trum that will soon be put out for auction. Under each of these scenarios, what is your best estimate as to how much it will cost public safety to build and operate a next-generation, broadband network, and how long will it take to build out this network across the Nation?

Answer. While the figures that follow are only our best estimates, the one thing that is certain is that Frontline's proposal for a public-private partnership will guarantee the construction of a nationwide, interoperable public safety network at no cost to public safety and the American taxpayers. Frontline approximates a cost of \$10 billion or less to construct a shared network with public safety, and all costs will be borne by the commercial licensee. Further, this option is the most economical, approximately doubling the spectrum available for public safety during peak capacity while dramatically reducing the need for cell splitting. This translates into a need for at least 40 percent fewer towers, which is pure savings of what economists call "deadweight loss."

In contrast, under "Option 1," public safety and the taxpayers will bear the cost of constructing a public safety network. This option is by far the most expensive, and will cost somewhere between \$15-\$20 billion (or possibly more) to construct, because it will require far more towers than the shared network proposed by Frontline. Further, public safety will be forced to fund the construction itself, which it has stated time and time again will not be possible. Similarly, "Option 2" will also cost at least \$15 billion to construct. While "Option 2" does alleviate some of the concerns about where public safety will receive funding to construct a network, the lack of a sufficient amount of spectrum for a shared network will certainly limit public safety's ability to secure a commercial partner and that partner's willingness to fund the build-out will be significantly reduced. Further, it will not provide public safety with additional spectrum in times of emergency.

In terms of the time frames for construction of a nationwide, interoperable public safety network, a 10 year buildout requirement is very achievable under Frontline's Plan. Under "Option 1" and "Option 2," however, it is very difficult to estimate how long construction will take. Option 1 is likely to take decades because of the need to use taxpayer funding, likely generated at the state and local level. Moreover, under Option 1 with different networks being build at the state and local level, interoperability is likely to be a major problem. The construction will also take longer due to the additional cell towers required.

Only Frontline's Plan will guarantee the construction of the much-needed nationwide, interoperable public safety network within 10 years and without any cost to public safety and taxpayers.

Question 2. Some opponents of the Frontline proposal have argued that placing conditions on the auction of certain commercial frequencies should be rejected because it would reduce potential auction revenues. How do you respond to this charge?

Answer. The conditions proposed in the Frontline plan—open access and wholesale requirements on a nationwide license block—will encourage new entrants in the wireless market to bid in the auction, thereby increasing auction revenue. Open access will promote bidding by entities with diverse business plans, some of whom will have no intention to provide retail service or otherwise bundle access, software and services. Even entities that already operate wireless networks may choose to participate. Indeed, in recent days both Verizon and AT&T have indicated their intention to bid actively in the upcoming auction, so claims that such conditions are a "poison pill" to artificially set bid prices lower by keeping incumbent bidders away have proven to be false.

A wholesale requirement would have a similarly positive effect on auction revenue. By unbundling network connectivity and retail service, a wholesale only requirement reduces the significant barriers to entry that have caused two wireless broadband incumbents to control more than half the market. If barriers to entry into wireless broadband service are not mitigated through measures such as open access and wholesale requirements on a small part of the spectrum up for auction, incumbents will have no competitors against whom to bid—resulting in a *deflated* price paid for that spectrum, and reduced funds to the Treasury.

Frontline's plan also seeks to encourage auction participation by new entrants by allowing eligible entities to qualify for bidding credits. Previous FCC auctions demonstrate that where new entrants and small businesses participate, greater revenues result. To take just one example, in the Commission's PCS auction, bidding preferences for eligible businesses increased the government's revenues by more than 12 percent—an increase in total revenues of nearly \$45 million. Giving bidding credits to designated entities created extra competition in the auctions and induced established firms to bid higher. By contrast, past auctions also show that where incumbents have the opportunity to bid on spectrum without any limitations on its

use, other potential bidders stay home, and incumbents—those entities with the most ability to pay—win their spectrum at a reduced price.

Finally, regardless of the merits of the by-now-discredited position that auction rules reduce bidders' flexibility, which in turn reduces auction revenue, Section 309(j)(7) of the Communications Act clearly bars the Commission from basing a finding of public interest, convenience and necessity on the basis of such revenues. Congress should make sure the FCC follows that provision of the law.

Question 2a. Would there be benefits that might outweigh any potential costs?

Answer. As noted, the benefits of the Frontline Plan *already* outweigh potential "costs" to the Treasury, since new entrants' participation in the auction has been shown to increase auction revenues, and there is every reason to believe that this truism will hold in the 700 MHz auction. To the extent the Commission considers *other* benefits associated with the Frontline plan—as the Communications Act requires it to do—it should find that open access, wholesale and promoting small business opportunities are all consumer-friendly policies directly in the public interest.

Simply put, an open network benefits consumers more than a locked one. Recall the last time you went to a retailer to purchase a cellular phone. Most likely, your choice of phone was more or less dictated by your present service provider. Choosing a network circumscribed your choice of phone. Prior to the Commission's rule on cellphone number portability—an action Verizon and CTIA vigorously opposed, challenged in court, and excoriated in the press as unnecessary—the barriers to choice were even higher.

The wireless broadband market, as presently constituted, results in even greater costs to consumers. In a highly concentrated market (see below), companies that control access to both the network and the consumer collect duopoly rents at the retail level while reducing choice. Unbundling network access from retail service, however, creates several new points of entry in wireless broadband delivery to the consumer. By creating opportunities for new entrants to specialize in different areas, benefits will inure to consumers due to more competition and lower prices in services, software and devices. Spurred by innovation, broadband networks (and the benefits associated with them) will roll out faster.

Consumers don't participate in auctions. Therefore, the Commission, as auction designer, must represent the interests of those consumers in developing auction rules. Frontline's Plan benefits the public interest. These conditions are not just beneficial, moreover; they are needed—a point illustrated in more detail below.

Question 2b. In your view why are such conditions needed?

Answer. These conditions are absolutely essential to create competition and innovation in the wireless market. Incumbent providers currently operate in a consolidated marketplace that has essentially become a duopoly. The Commission's most recent *CMRS Competition Report*, for example, found that the wireless industry's HHI index, measuring market concentration, was 2700, up from 2450 in the previous year alone. To put this in context, the Department of Justice's Antitrust Division classifies any market with an HHI index above 1800 as "highly concentrated." Furthermore, the number of national wireless carriers has dropped from six to four, with the top two—AT&T and Verizon Wireless—accounting for nearly two-thirds of all new subscribers.

Spectrum is a scarce commodity, particularly 700 MHz spectrum, and because of market consolidation the incumbent retailers have a monopoly on this scarce resource. Control over this low-frequency spectrum provides control over network services. Incumbents have every incentive to leverage this control over the network to corner the market on retail services. Consequently, these providers will rationally create vertically integrated businesses that raise prices to super-competitive levels and thwart innovation and new entry.

The proposed open access and wholesale-only conditions will prevent incumbents from bottlenecking spectrum and continuing to hinder competition. If the FCC does not create a "new build" national network open to all content and devices, the likely outcome is that the United States will fall far behind other countries in wireless broadband development and deployment. On the other hand, should the FCC decide to create rules requiring a licensee to operate a wholesale open access network, the result will be a vibrant industry as dynamic as the Internet sector, and it will be headquartered on American soil.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. BILL NELSON TO
JAMES L. BARKSDALE

Question 1. Current 700 MHz proposals seem to contemplate 24 MHz of spectrum for public safety. Is that enough to meet future needs—particularly in light of new broadband applications?

Answer. Public safety's communications needs reflect the nature of their job, which is sometimes steady but is frequently punctuated by huge spikes in demand. That makes it challenging to meet public safety's needs. On a daily basis, public safety will not utilize all of its spectrum, let alone additional spectrum. In emergencies, however, public safety might well need access to additional spectrum. This means that valuable spectrum will sit unused much of the time but public safety still may not have sufficient access in times of emergency.

This problem spurred Frontline to propose the creation of a public-private partnership for a shared network on the public safety broadband spectrum and the adjacent commercial block. The beauty of Frontline's proposed public-private partnership is that it efficiently utilizes scarce spectrum resources and simultaneously helps to solve spectrum shortages that may occur during public safety emergencies.

Question 2. Does the additional 10 megahertz of public-private spectrum in the Frontline proposal help solve any shortage?

Answer. As mentioned above, public safety will not typically utilize the entire 12 MHz of broadband spectrum it has been allocated. During emergencies, however, public safety may need access to additional spectrum, particularly during national emergencies. Under the Frontline Plan, public safety will have instantaneous and automatic access to take over the adjacent commercial spectrum during emergencies, approximately doubling the amount of spectrum available to public safety when it needs it most and alleviating concerns about the insufficiency of the current public safety allocation.

Question 3. As you are all aware, one of the biggest problems facing public safety is interoperability. All too often, we see jurisdictional and technological barriers that inhibit public safety officials in one area from speaking to officials in an adjoining area. Of the solutions currently before the FCC, which solution does the most to foster interoperability?

Answer. Frontline has proposed a solution specifically designed to address the problems associated with the current lack of interoperability in our public safety communication networks. Namely, Frontline has proposed a public-private partnership to facilitate the construction of a nationwide, interoperable, wireless broadband network for the public safety community. This network would be built at the expense of a national commercial licensee who would construct the network as a condition of the license.

This plan presents the only realistic opportunity to facilitate much-needed interoperability by creating a solution for the funding of a such a nationwide network. By working with the National Public Safety Licensee ("NPSL"), the commercial licensee would be able to construct a network to public safety standards and ensure interoperability throughout the nationwide network.

Question 4. If a public-private partnership—of some sort—is formed to manage a portion of the spectrum, how should disputes between public safety users and private entities be resolved?

Answer. Frontline recognizes the importance of ensuring that the NPSL is able to decide whom it chooses as its network sharing partner and successfully negotiate an agreement with that entity. This is why Frontline proposed service rules which would give the NPSL the freedom to negotiate an agreement with *any* network partner, while having a guaranteed option via one-way arbitration that binds the D Block Licensee but not the NPSL.

Under Frontline's proposed rules, the commercial licensee of the block adjacent to public safety would enter into good faith negotiations with the NPSL to form a network sharing agreement. Given the incentives of both parties, an agreement would likely be reached without Commission intervention.

If there are any remaining disputes, as a last resort, Frontline has proposed that these be submitted to the FCC for one-way binding arbitration. The FCC's arbitral decision would only be binding on the commercial licensee and the NPSL would remain free to walk away and negotiate with another party. The bottom line is that the decision to proceed with a partnership would rest solely with the NPSL. If the NPSL does choose to walk away, provided the commercial licensee has acted in good faith and is willing to abide by the Commission's decision, the commercial entity would remain the licensee of the adjacent block.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. DANIEL K. INOUE TO
PHILIP J. WEISER

Question 1. All parties appear to agree on the need to build a broadband network for public safety. However, the cost of building such a network and the length of time it would take to complete varies significantly, depending upon the approach that is taken. There are essentially 3 options. Option 1 is that public safety can try to build and operate this network itself at the local and regional level, as has traditionally been the case. Option 2 is similar to what was proposed in the FCC's Ninth Notice of Proposed Rulemaking, where a national public safety licensee would partner with a commercial operator to build a shared public safety commercial network using the 12 megahertz of spectrum already allocated to public safety. Option 3 follows the Frontline proposal, where a national public safety licensee would partner with a commercial operator to build a shared network that not only uses 12 megahertz of existing public safety spectrum *but also* 10 megahertz of commercial spectrum that will soon be put out for auction. Under each of these scenarios, what is your best estimate as to how much it will cost public safety to build and operate a next-generation, broadband network, and how long will it take to build out this network across the nation?

Answer. The question is exactly the right question to ask and, unfortunately, I am not in a position to give a good answer to it. I can say that I am skeptical, as my testimony explains, that public safety can develop, own, and operate such a network itself. As between the last two options, it is fair to say that, in principle, the second option would require public safety to put up more of the money itself insofar as third option uses the encumbered spectrum as a form of subsidy to support the build-out of a next generation network.

Question 2. Mr. Weiser, in your testimony, you describe some of the benefits of a next generation architecture for public safety and note that a partnership with a commercial provider could lead to a more efficient use of spectrum and to lower costs through greater economies of scale. Could you describe why a partnership might achieve these benefits and why the *status quo* does not?

Answer. The *status quo*, whereby public safety agencies operate networks for themselves, involves the inefficient use of spectrum whereby each locality builds networks that they operate for themselves. Moreover, under the *status quo*, public safety agencies are left outside of the commercial ecosystem whereby large economies of scale accrue to the users of commercial networks. By partnering with a commercial entity and developing a network at a higher level, public safety can address both of these two failings—using a system that is architected efficiently, uses spectrum more economically as well as benefits from more options, more enhanced functionalities, and cheaper equipment than is currently available.

Question 2a. Is it possible to quantify how substantial these benefits might be?

Answer. Such a study is no doubt possible, but I am in no position to offer any substantiation of these benefits. By way of anecdote, however, consider that “a cell phone with voice, video, and data capability costs about seven times less than a public safety digital portable radio that cannot even take a digital photo, much less send it to another person.” Robert Rouleau, *Connecting Data Networks*, PUBLIC SAFETY REP., Aug. 2006, at 98, 102. On the spectrum side of the equation, I cannot quantify just how much more efficiently a shared network would be (as opposed to individual local networks), but it would be very substantial and, given the value of spectrum as a resource, the savings to society from more efficient use of spectrum would be considerable.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. BILL NELSON TO
PHILIP J. WEISER

Question 1. Current 700 MHz proposals seem to contemplate 24 MHz of spectrum for public safety. Is that enough to meet future needs—particularly in light of new broadband applications?

Answer. As I note in my testimony, public safety agencies use spectrum in bursts, meaning that, for those times of emergencies, 24 MHz is unlikely to be enough. For other times, however, it will be considerably more than enough—particularly if public safety networks are architected and operated efficiently. To address the nature of public safety's usage pattern, a shared commercial/public safety network capitalizes on a powerful insight—when public safety is not using its spectrum, it can be used by a commercial operator. By contrast, when public safety needs access to spectrum, this network would enable it to receive priority access to additional spectrum. Consequently, the major policy challenge is not finding public safety more spectrum

that needs to be dedicated exclusively to public safety agencies, but rather developing a policy strategy that will facilitate the emergence of a new network that provides public safety agencies with access to the spectrum they need when and where they need it as well as with access to modern, Internet-based, broadband technologies.

Question 2. Does the additional 10 megahertz of public-private spectrum in the Frontline proposal help solve any shortage?

Answer. It does solve a shortage concern insofar as it virtually guarantees a commercial partner that would be willing to, when necessary, give public safety agencies access to additional spectrum when they need it.

Question 3. As you are all aware, one of the biggest problems facing public safety is interoperability. All too often, we see jurisdictional and technological barriers that inhibit public safety officials in one area from speaking to officials in an adjoining area. Of the solutions currently before the FCC, which solution does the most to foster interoperability?

Answer. The interoperability challenge has both a longer term and a nearer term component to it. On the long term front, the development of a next generation network—say, one spearheaded by a public safety spectrum licensee in partnership with a commercial provider—can provide a solution insofar as it promises to equip all public safety agencies with compatible equipment and network access. Over the nearer term (*i.e.*, while such a network is developed and deployed), there are two options I am aware of for addressing interoperability issues. The first option is to equip all relevant agencies with compatible equipment—say, Project 25 radio systems. I am, however, very skeptical of that model because of its considerable costs and the limited functionality of such equipment. A second, and to my mind more appealing, option is to encourage all agencies to adopt Internet Protocol-based connections and interoperate using Internet-based applications. Such an option can be attained through the use of Internet gateways accessible through legacy radios or by adopting broadband, Internet technology directly (say, through a local WiFi network or EV—DO platform). This solution, to be sure, is imperfect, but, at least on a near term basis, it appears reasonably promising. For more details on this concept, see Philip J. Weiser, The Aspen Institute, *Clearing the Air: Convergence and the Safety Enterprise 24–25* (2006).

Question 4. If a public-private partnership—of some sort—is formed to manage a portion of the spectrum, how should disputes between public safety users and private entities be resolved?

Answer. This concern is a paramount question in the development of any such partnership. As I see it, the public safety licensee and its commercial partner would need to develop a framework that ensures that both parties cooperate effectively with one another. Such frameworks have numerous analogs in commercial relationships and I believe that such an agreement can be developed in this context as well. Presumably, the agreement itself will contemplate a dispute resolution mechanism (say, arbitration) and I would expect that mechanism to be the most effective and expeditious one. Nonetheless, if the obligations of a commercial partner with an obligation to serve public safety was at issue (as contemplated by the Frontline proposal), that obligation would ultimately need to be enforced by the FCC.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. DANIEL K. INOUE TO
PAUL J. COSGRAVE

Question 1. All parties appear to agree on the need to build a broadband network for public safety. However, the cost of building such a network and the length of time it would take to complete varies significantly, depending upon the approach that is taken. There are essentially 3 options. Option 1 is that public safety can try to build and operate this network itself at the local and regional level, as has traditionally been the case. Option 2 is similar to what was proposed in the FCC's Ninth Notice of Proposed Rulemaking, where a national public safety licensee would partner with a commercial operator to build a shared public safety commercial network using the 12 megahertz of spectrum already allocated to public safety. Option 3 follows the Frontline proposal, where a national public safety licensee would partner with a commercial operator to build a shared network that not only uses 12 megahertz of existing public safety spectrum *but also* 10 megahertz of commercial spectrum that will soon be put out for auction. Under each of these scenarios, what is your best estimate as to how much it will cost public safety to build and operate a next-generation, broadband network, and how long will it take to build out this network across the Nation?

Answer. It would be exceedingly difficult for the City of New York even to begin to estimate the costs and construction times associated with these options. Among other considerations, the answer depends on the unique network construction and operational requirements of each and every jurisdiction to be served by the broadband network. It would also depend on the nature of the network itself—the technology, spectrum, coverage, throughput, security, quality of service and backup power requirements, for example. Finally, in arriving at a cost estimate, it is important to focus not only on the costs of initially building the infrastructure, including real estate, but also the costs of maintenance, network applications and associated end-user devices.

As for New York City, as I testified, we contracted in September 2006 with Northrop Grumman for a \$500 million high-speed data network for public safety that is scheduled for citywide deployment by March 2008. The New York City Wireless Network (“NYCWiN”) will enable a wealth of mobile and fixed applications, including real-time video, rapid database lookup and the exchange of rich graphical information. The cost of NYCWiN covers infrastructure and the integration of certain applications and end-user devices over 5 years of operation.

Indeed, the uncertainties associated with the cost of building, operating, and maintaining a national network are among the reasons why the City is concerned about utilizing a large segment of the 700 MHz spectrum allocated to public safety by Congress. If the proposed network does not succeed, then this valuable spectrum could be “lost.” Consequently, notwithstanding the FCC’s recent Report and Order, the City believes that the concept of a national network must be analyzed much more closely, and that a great deal of clarification is in order.

Question 2. Mr. Cosgrave, you note in your testimony that New York City recently paid \$500 million to develop a high-speed data network for public safety personnel. How many square miles does this network cover?

Answer. The system will cover approximately the 320 square miles that encompass all 5 boroughs of the City of New York.

Question 2a. Is the equipment for this network interoperable with other broadband networks such as the one here in Washington, D.C.?

Answer. The equipment being used is fully interoperable with all Internet protocol systems, including Washington, D.C.’s network. The City of New York required the implementation of architectural elements that conform to existing standards. The radio system is based on the international standard known as UMTS, whose footprint currently covers 80 percent of the world’s wireless users. Moreover, the entire infrastructure is based on Internet protocol, which will allow interconnection of this system with those of other cities using standards-based protocols.

Question 2b. If other jurisdictions were to contract for similar systems, what would the cost be of building broadband networks across the Nation?

Answer. As I suggested in response to Question 1, above, the costs of even this particular technology would vary greatly from jurisdiction to jurisdiction depending on such variables as network construction and operational requirements. New York City is building-out an infrastructure with approximately 400 sites, with redundant backhaul and network operating centers. We are requiring demanding coverage, throughput, quality of service and backup power installations. We also must contend with a combination of tall buildings (or “urban canyons”), on the one hand, and, at the same time, of covering a large geographical area. A jurisdiction with a different topography and different requirements would face different costs even using the same system.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. BILL NELSON TO
PAUL J. COSGRAVE

Question 1. Current 700 MHz proposals seem to contemplate 24 MHz of spectrum for public safety. Is that enough to meet future needs—particularly in light of new broadband applications?

Answer. No. To respond to the ever increasing number of anti-crime and homeland security-related needs, there has been substantially increased demand for wireless network applications, which, in turn, translates into a fast growing need for spectrum. New York City, and other high-risk jurisdictions, are continuing to experience great spectrum challenges to meet these required public safety services. As I discussed in my testimony, New York City has actually been required to go to the “secondary spectrum market” to purchase spectrum at commercial rates. It is unacceptable for our taxpayers to be required to bear the cost of purchasing publicly-owned spectrum in large measure to meet national security mandates. Therefore,

we strongly urge Congress to encourage allocation of additional spectrum to local public safety entities.

Moreover, I should note that, based on the currently available information about the FCC's recently voted, but yet to be released, Report and Order, it seems that those local public safety entities who choose not to participate in the nationwide broadband network would lose half of the 24 MHz of spectrum that was allocated to them by Congress. Finally, even for those public safety entities who do sign on to the network, a portion of their 24 MHz of spectrum will now be comprised by commercial usage on a secondary basis.

Question 2. Does the additional 10 megahertz of public-private spectrum in the Frontline proposal help solve any shortage?

Answer. While New York City appreciates every effort to make more spectrum available for public safety use, it must be noted that public safety would have access to this spectrum on a shared basis with commercial providers. Details regarding the nature of the network being contemplated, and how this sharing arrangement would work, were not provided in the Frontline proposal (nor in the information that is available about the yet to be released FCC Report and Order). Consequently, I am not in a position to assess whether, or to what extent, this 10 MHz of spectrum might address the shortage of public safety spectrum.

Question 3. As you are all aware, one of the biggest problems facing public safety is interoperability. All too often, we see jurisdictional and technological barriers that inhibit public safety officials in one area from speaking to officials in an adjoining area. Of the solutions currently before the FCC, which solution does the most to foster interoperability?

Answer. Prior to addressing the specific question regarding which of the proposed solutions might be preferable from an interoperability perspective, let me first touch upon a misconception about interoperability in the context of emergency response. Interoperability does not mean that everyone with a radio or data device must be capable of communicating on the same frequency with everyone who has a radio or data device. This would lead to chaotic, rather than interoperable, communications. Interoperability means managed access via pre-defined protocols within a disciplined command and control structure. Designated individuals, including command and control officials, communicate with each other and, then, to their respective "ranks." Interoperability requires detailed, advanced planning and coordination between local first responders to implement communications protocols. Consequently, in looking at any of the proposed solutions, it is important to bear in mind that having an appropriate network infrastructure in place (which may not necessarily require having all users on a common frequency) is just one part of resolving the interoperability puzzle. A nationwide network is not a "magic bullet" to achieving interoperability. Most of the required work involves planning at the local and regional levels, prior to an event, to ensure that the appropriate agencies are communicating with one another in a coordinated manner during an emergency.

Setting aside, for the moment, the practical concerns about deploying a nationwide network, which I raised in my testimony, I would suggest that theoretically each of the proposals have the potential to *contribute* to improving interoperability. From an infrastructure perspective, the key to ensuring that interoperability becomes a reality is to ensure that the *true* first responders (*i.e.*, the emergency officials who command incident response) have control in designing the network in such a way as to meet their needs. Then, the work of developing the appropriate communication protocols is needed.

Question 4. If a public-private partnership—of some sort—is formed to manage a portion of the spectrum, how should disputes between public safety users and private entities be resolved?

Answer. The City does not believe that such a responsibility should be delegated to nongovernment entities, such as private mediators or administrators, nor should all such disputes be resolved at the Federal level without input from local entities. Given that many of the disputes will involve local or regional matters, any dispute resolution mechanism must allow for input from the affected local/regional public safety entities. A "top down" approach involving only a national public safety licensee and a national commercial licensee will not account for the legitimate needs of local first responders, who are ultimately the first on the scene in any emergency. The FCC must establish a process that is both expeditious and allows for local input.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. DANIEL K. INOUE TO
RICHARD J. LYNCH

Question 1. What lessons can be learned from the recent Advanced Wireless Service (AWS) auction about the proper geographic size of license areas? Should we be concerned that 153 of the 168 eligible bidders in the AWS auction failed to even bid on large, Regional Economic Area Group licenses, which are often referred to as REAG licenses?

Answer. An important lesson to be learned from the AWS auction is the value of the Regional Economic Area Grouping (REAG) licenses and the importance of a band plan that includes a mixture of license sizes, such as that just adopted by the FCC for the 700 MHz band.

In the AWS auction, the demand for REAGs was much more intense than for the other, smaller license areas. The 40 MHz of spectrum that was auctioned as REAGs sold for an average of \$.66 per MHz-POP. By contrast, Economic Areas (EA) licenses sold for \$.45 per MHz-POP, and Cellular Market Areas (CMA) licenses sold for only \$.39 per MHz-POP. Overall, EA prices were 32 percent below REAG prices, and CMA prices were 41 percent below REAG prices. These substantial price differences demonstrate the strong demand for large licenses.

Finally, the 158 bidders mentioned above were primarily small and rural companies interested in only a few of the more than 1,000 licenses available in that auction. The structure of the AWS auction was clearly successful in that, of these smaller bidders, more than 100 actually won licenses.

Question 2. Does the AWS auction also demonstrate that bidders can aggregate smaller license areas to create larger geographic footprints? Do smaller license areas result in a more aggressive build out of infrastructure within a license area?

Answer. To a certain degree, bidders may be able to aggregate smaller licenses into larger geographic footprints. The questions are how efficient will that be, and will the bidder be able to aggregate enough spectrum to implement its business plan?

In an auction with only small licenses, bidders wanting to implement a nationwide or regional strategy would be hampered by the exposure problem. That is, bidders would not be able to aggregate their preferred combination of licenses, either winning licenses that they do not need or not winning licenses they do need. If a band plan includes a mix of licenses, both large and small bidders benefit.

A band plan of all small licenses could, in fact, impede an aggressive buildout. At least some large licenses in the mix will help promote nationwide deployment of new technologies by creating greater economies of scope and scale, which, in turn, result in lower prices for consumers.

Band plans of smaller licenses will likely result in an uneven and even illogical coverage for the consumer. This happens because each individual licensee will build out to optimize the one specific license he/she holds. Since the typical consumer knows nothing of license boundaries and is only looking for contiguous coverage, such "Swiss cheese" coverage will frustrate the consumer. We have experienced this for years with current licenses and it is one of the big drivers for why some carriers, attempting to be responsive to consumer frustration, attempt to buy smaller licenses and eliminate the "Swiss cheese" holes. With larger licenses, logical and contiguous build outs can be achieved much sooner and will minimize such customer frustrations.

History has also shown, almost without exception, that carriers aggregate smaller-sized licenses so that they can achieve and operate as viable businesses, enabling them to compete and deliver better products at lower prices to consumers. Aggregating spectrum post auction takes many years and is expensive to carriers and costly to consumers. To avoid these costly delays and ensure that next generation wireless networks are a near-term reality, the FCC must auction and license sufficient spectrum on a REAG basis.

Question 3. If one goal of the auction of 700 megahertz spectrum is to encourage bidder participation, would smaller block sizes help in that regard?

Answer. The band plan that the Commission just adopted for 700 MHz should be more than enough licenses to encourage bidder participation.

FCC auction history shows us that there is not as much demand for CMAs as for larger licenses. Not only did the large AWS licenses sell for more per MHz-POP than the small licenses, but it took three separate auctions to sell the 12 MHz CMAs that the FCC sold in the lower 700 MHz band. At the first auction of these licenses, which the FCC held in 2002 at the request of small businesses and rural telcos, more than one-third of the licenses didn't receive a bid.

Question 4. Given recent testimony before the Committee regarding the spotty nature of wireless coverage in places like Maine, what mechanisms can the FCC use to ensure that new operators extend coverage ubiquitously? What effect would a so-called “keep-what-you-use” mechanism have in which a licensee would, over a reasonable period of time, be required to either provide service or return parts of a license area to the Commission for reauction?

Answer. Service to rural areas is not blocked by lack of spectrum, and as such a “keep what you use” or benchmark requirements would do little to extend coverage into more rural areas. In most rural areas, it is not economically feasible to make use of all spectrum in every square mile of geography according to a regulatory mandated timetable. It is unlikely that services to rural areas are being denied or unreasonably delayed because interested entities lack access to spectrum. Rather, a lack of market incentives to build-out a network is the real problem.

We believe that marketplace dynamics—not prescriptive regulation—have worked to extend service in rural areas. Wireless carriers build out where people are. Indeed, rural wireless coverage has continued to expand and investment in rural areas has continued to grow long after the original cellular licensees were required to build out their networks or lose parts of their geographic area licenses.

The Commission has other tools at its disposal that are better suited to encourage rural deployment. The Commission’s substantial service safe harbors, for example, provide increased certainty for how carriers can meet the substantial service requirement through deployment in rural areas.

If Congress believes that the current pace of deployment in rural America still lags behind its goals, then it would be far more effective to direct the Commission to use the economic tools at its disposal, rather than a policy of seizing unbuilt spectrum. The FCC could award bidding credits for carriers who choose to meet their substantial service requirement through the rural area safe harbor. Or the FCC could develop a program similar to programs available to rural utilities, designed to target areas for wireless investment.

Question 5. Are the commercial frequencies that will be made available in the upper and lower 700 megahertz bands equally viable for mobile broadband uses? Does the fact that the Commission may allow high-power operations in certain blocks of the lower 700 megahertz band frequencies raise any concerns about interference in adjacent blocks? Would larger license areas in the lower 700 megahertz band be as attractive as large license areas in the upper 700 megahertz band?

Answer. The upper and lower 700 MHz bands have comparable characteristics that would enable them to be used for mobile broadband systems and to provide wide-area and in-building coverage. Both would also facilitate more economical deployment in rural areas, as compared to existing spectrum bands used for commercial mobile systems (850 MHz cellular and 1.9 GHz PCS).

Operation of high-powered broadcast systems can cause harmful interference to commercial mobile systems if operated in close physical proximity. This problem is especially acute if both systems use the same radio spectrum, *e.g.*, operating on the same channel in adjacent markets. However, there is also a potential for interference if the two disparate systems operate on adjacent spectrum. The Commission recognized the incompatibility of mobile and broadcast systems when it adopted its recent *Report and Order* in April of this year. At that time, it modified its 700 MHz rules to prohibit the lower A and B blocks from being used for high-power broadcast services. (Note: The lower C and D block licenses, which have already been auctioned, and the unauctioned and unpaired E block may continue to be used for high-powered systems). These changes will reduce the potential for interference in the lower 700 MHz band and will make the band significantly more suitable for mobile broadband systems.

Verizon Wireless believes that larger license areas provide significant benefits over smaller areas, regardless of whether they are made available in the lower or upper 700 MHz bands.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JOHN F. KERRY TO
RICHARD J. LYNCH

Question 1. If Verizon plans to fully use spectrum won in the 700 MHz auction, then why does it oppose “use it or lose it” rules?

Answer. Verizon Wireless is committed to rapid roll-out of services. We believe that micro-managing carrier build-out goes against everything we have learned about market-based regulation.

In particular, geographic coverage and so-called “use it or lose it” or “keep what you use” mandates could be in conflict with the FCC’s market-driven policies for

CMRS. That being said, in the recent 700 MHz proceeding, we opposed strict geographic build out requirements as unnecessary, believing that such rules would skew economic investment to the ultimate detriment of the consumer, but actually proposed a build out rule with a “keep what you use” component.

Our build-out proposal for the 700 MHz spectrum was more stringent than any other build-out requirement imposed by the FCC on commercial market area licenses.

We proposed a population-based build out with a provision that if the licensee did not reach at least 75 percent of the POPS in its area at the end of its license term, it would lose the entire uncovered area of its license.

A population based coverage requirement can promote a faster build out because the operator is generating revenue from serving people instead of a designated land mass. The revenue generated helps the operator fund more build out in the licensed area.

Question 2. Do you think competition in the wireless market has been good for consumers? Do you think it has been good for the industry? What do you make of the vertical consolidation in the wireless industry, can the market still be competitive in these circumstances?

Answer. Competition has been a boon to consumers. In its annual report to Congress on the state of competition in the wireless industry, the FCC has chronicled the positive impact of competition on the consumer. Most notable is that since 1995, the price of service has dropped precipitously, from \$.43 per minute to \$.07 per minute in 2005. This price drop is only the tip of the iceberg—in 1995, the consumer had minimal choices in terms of carriers, handsets and services. Now there is much more available to the U.S. wireless consumers, in terms of coverage, devices, and advanced services.

There is no vertical integration in the wireless industry similar to the vertically integrated AT&T/Western Electric relationship at the time of the FCC’s *Carterfone* decision. In fact, no wireless service provider in the United States manufactures wireless devices and the market for those devices is fiercely competitive. Across the United States, there are currently more than 800 wireless phones and devices available to consumers, from nearly three dozen manufacturers. The four national wireless carriers currently offer a total of more than 100 phones, 95 percent of which are unique to a single provider.

A number of innovative new devices, by new manufacturers, such as Apple’s iPhone and HP’s iPAQ Voice Messenger are entering the market. Major handset manufacturers like Motorola are facing an extremely competitive environment and face strong pressure to keep prices low while continuing to innovate. Wireless carriers must compete vigorously to provide consumers with the most advanced and desired devices, given the carrier’s particular business model, technology constraints, and the competitive availability of various phones.

Question 3. If Verizon and other incumbent broadband service providers win most of the auctioned spectrum, is there any guarantee that a third broadband competitor will be able to enter the market?

Answer. Multiple wireless carriers, both with and without ties to incumbent LECs, are making enormous investment in wireless broadband infrastructure in various parts of the spectrum today, and will continue to do so in the recently licensed AWS spectrum and soon to be auctioned 700 MHz spectrum.

Verizon Wireless invested billions to deploy its EV-DO Rev. A wireless broadband service on its currently licensed spectrum. Moreover, CTIA reports that other carriers deploying high-speed offerings include: Sprint (EV-DO covering more than 200 million people now and rising to 280 million by the end of next year); Alltel (EV-DO to more than 44 million people in more than 100 cities); AT&T (HSDPA to 73 of the top 100 markets); T-Mobile (deploying HSDPA).

Sprint has begun constructing a next-generation mobile wireless broadband network (WiMax) that it claims will reach 100 million consumers by the end of 2008. It just announced that it would be joining with startup wireless-Internet firm Clearwire Corp., founded by telecom pioneer Craig McCaw, in building what would be the Nation’s first mobile network based on fast WiMax technology.

Cable companies, which were major license winners in the 2006 spectrum auction, plan to deploy next-generation wireless services to complement their current broadband offerings.

Companies such as T-Mobile, Earthlink, Google, and even AT&T are investing in the deployment of WiFi. It is therefore no surprise that WiFi is more prevalent in the United States than anywhere else in the world, with the United States, accounting for approximately one-third of all WiFi hot spots worldwide.

Question 4. What are your plans to deploy broadband to rural and underserved communities? How will you build out your network to ensure all Americans are served?

Answer. Verizon Wireless continues to expand its coverage in rural America both through aggressive build out of our existing licenses as well as acquisition of rural licenses and customers.

Nearly half the counties where Verizon Wireless has substantial coverage (defining substantial as covering more than 25 percent of the geography of the county) are “rural” under the FCC’s definition of less than 100 people per square mile.

We recently acquired several properties in rural West Virginia and just announced the acquisition of Rural Cellular Corporation, a company that built its business on serving rural areas across the country.

Not just Verizon Wireless, but all carriers continue to spend capital and build throughout the United States, including rural America. The FCC’s reports to Congress indicate that carriers spent \$25 billion on capital expenditures in 2005, a substantial increase over 2004. That same report documented that 98 percent of the U.S. population lives in counties with three or more mobile carriers. Without regulatory mandates, carriers continue to invest in extending the scale and scope of their networks and those networks—including advanced services—are reaching the Nation’s rural population.

Question 5. Do you think that your customers should be free to use any device on your wireless networks, provided that the device is certified to not harm the network?

Answer. We have concerns about attaching subscriber-supplied devices to the Verizon Wireless network.

Putting aside generally recognized harms such as radio interference to other users and viruses, snoopware, and malware, we would have concerns about devices that demand a disproportionate amount of scarce spectrum resources. Such devices make it more difficult and more expensive for us to serve other users. We would also have concerns about devices that are not E-911 compliant, or may not meet other regulatory obligations that are the carrier’s responsibility under the FCC rules.

Finally, a very important part of our internal device certification process is achieving a high quality user experience. If use of a foreign device fails to satisfy a consumer, the network operator may still be blamed, and for something it cannot fix. That’s not how Verizon Wireless has achieved the high marks for customer satisfaction that we enjoy today. We provide reliability and a superior user experience, and we would like to continue to do so, even if subscribers are allowed to bring foreign devices to the network.

Question 6. How would anonymous bidding prevent anti-competitive behavior, thereby increasing auction revenue?

Answer. We are pleased that the Commission appears to have adopted anonymous bidding rules without an “eligibility ratio threshold” for the 700 MHz auction.

Imposing limitations on the release of bidder information prior to and during the course of an auction ensures that bidders will be appropriately focused on the licenses and their value, not on other bidders and their bidding strategies.

Disclosure of bidder information beyond that required to comply with the Commission’s rules is at best unnecessary and, at worst, may facilitate bid signaling or other collusive behavior.

Anonymous bidding rules will prevent strategies whose sole purpose is to block a bidder from aggregating licenses at auction.

RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. BILL NELSON TO
RICHARD J. LYNCH

Question. Proponents of all open access policy for portions of the 700 megahertz spectrum have noted that open access could bring about new innovative technologies and applications. Can the members of the panel provide some examples of these technologies and applications? Also, are there any pitfalls of an “open access” approach?

Answer. I assume that by “open access” you refer to the proposal that a wireless carrier must permit users to attach devices of their choosing, with applications of their choosing, to the licensee’s network. Open access requirements risk significant harm to the network which negatively impacts the quality of service provided to our customers.

Open access requirements could impair the ability of the carrier to manage its network to accomplish essential tasks such as maximizing spectrum efficiency and optimizing service quality. Open access will present the carrier with numerous net-

work operational problems that must be resolved for the “open” regime. Open access could take away the carrier’s ability to use proprietary network applications and controls that would limit the introduction of viruses, malware and snoopware, and prevent illegal downloads and invasions of subscriber privacy.

Currently, wireless devices and networks are designed to work closely to optimize reliable performance, spectrum efficiency, and network security. Moreover, the integration of devices and network has allowed Congress and the FCC to achieve numerous public interest goals, including deployment of wireless E-911 and wireless number portability, increased availability of hearing aid compatible wireless devices, and, most recently, the future availability of wireless emergency alerts pursuant to the WARN Act. If a user can supply a device to attach to the network, and can decide what features and functions to download to the device, there is simply no guarantee that resulting device will not degrade network performance or will comply with these regulatory mandates.

Consumers will also likely see increased prices for “open” devices. Currently, we offer subsidies to subscribers for handsets that are designed and certified to work on our network. When consumers buy handsets from others they will likely pay full retail prices a significant increase over what consumers pay today.

“Open access” proposals present significant problems because they ignore the enormous efforts and resources that a wireless network operator must expend in order to provide a secure environment and reliable network performance.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. FRANK R. LAUTENBERG TO
RICHARD J. LYNCH

Question 1. You advocate large license blocks and large geographic areas. Will that approach advantage large companies and disadvantage new entrants who can’t afford to bid on such large blocks or does your plan have sufficient flexibility to serve both?

Answer. The 700 MHz band plan recommended by Verizon Wireless contains a mix of licenses for large and small service areas as well as large and small spectrum blocks. This approach provides opportunities for companies of all sizes, existing operators or new entrants, to acquire spectrum and pursue their specific business plans. The Commission appears to have adopted a plan that takes such an approach.

The FCC’s past auctions have demonstrated the benefits of both large spectrum blocks and large market sizes. The recent Advanced Wireless Service auction, concluded last summer, used a broad mix of licenses and was very successful.

Larger spectrum blocks are important to enable operators to use 4G technologies to provide the greatest possible benefit for consumers. A 20 MHz or larger block, for example, is needed, to provide the fastest data rates possible.

Larger licenses will help promote nationwide deployment of new technologies by creating greater economies of scope and scale, which, in turn, result in less expensive equipment and lower prices for consumers.

Consumers demand nationwide service and carriers must meet that demand. History has also shown, almost without exception, that carriers aggregate smaller-sized licenses so that they can achieve and operate as viable businesses, enabling them to compete and deliver better products at lower prices to consumers. Aggregating spectrum post auction takes many years and is expensive to carriers and costly to consumers. To avoid these costly delays and ensure that next generation wireless networks are a near-term reality, the FCC must auction and license sufficient spectrum on a REAG basis.

Question 2. Some have argued that there should be limits on bids for spectrum by providers like Verizon Wireless in order to make way for new market entrants. How would Verizon Wireless use the 700 megahertz spectrum in addition to the spectrum it already controls?

Answer. There is no basis for excluding or limiting participation of providers like Verizon Wireless. On the contrary, we and other wireless providers have proven track records of designing and deploying highly sophisticated communications networks. Every year in its CMRS competition reports, the Commission has pointed to the vigorous competition in the CMRS market that has resulted from the competing networks built by these and many other companies. Although other entities could obtain the necessary financial resources and technical experience to deploy such complex networks, there is no basis for barring current providers of communications services from the auction.

We make the best possible use of the limited cellular and PCS spectrum we have and believe we are the most efficient spectrum user in the Nation. In fact, Verizon

Wireless uses less spectrum to serve more customers than any other carrier in the industry, 50 percent more customers per MHz than the industry average. Such efficiencies will drive any future use of spectrum.

The upcoming auction will enable the development and wide deployment of new fourth generation—or “4G”—wireless technologies and services that will yield tremendous benefits to consumers, businesses, and first responders alike.

Verizon Wireless’ mobile broadband network, the first in the Nation, is available to more than 200 million people who can access broadband services on their laptops, e-mail on their PDAs, and V-CAST Video and Music on their wireless phones, supporting data rates of *hundreds* of kilobits per second and a wide variety of mobile applications. We are now deploying the latest enhancement to CDMA technology, EV-DO Revision A, which will increase data speeds further and support new broadband applications.

New “4G” technologies are being developed that will support mobile data rates of *tens of megabits* per second. They will unleash a host of new broadband applications that will rival anything available today on wired broadband networks. Doctors will be able to access medical records and CAT scans wirelessly; firefighters will have wireless access to images of building interiors and floor plans.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. DANIEL K. INOUE TO
MICHAEL SMALL

Question 1. What lessons can be learned from the recent Advanced Wireless Service (AWS) auction about the proper geographic size of license areas? Should we be concerned that 153 of the 168 eligible bidders in the AWS auction failed to even bid on large, Regional Economic Area Group licenses, which are often referred to as REAG licenses?

Answer. The success of the AWS auction shows that the pool of potential bidders is largely interested in smaller markets. There are several reasons for this interest. First, many existing carriers seek to augment their spectrum holdings in targeted areas to serve increasing demand for voice and information services. Other carriers seek incremental additions to their service footprints so they can exploit population shifts and development related to their existing licensed service territory. Some carriers seek to exploit markets connected to their existing businesses or related to their presence in the service area. These carriers often believe that their close connection with a particular area gives them an advantage in the marketplace. Those carriers who seek very large—or even national—markets are carriers who already have a nationwide presence. By definition, there are but a few of these carriers and designing auctions that predominately offer large geographic license areas necessarily reduces the number of bidders because of the acquisition costs, development costs, and lack of interest in large licenses by most bidders.

Question 2. Does the AWS auction also demonstrate that bidders can aggregate smaller license areas to create larger geographic footprints? Do smaller license areas result in a more aggressive build out of infrastructure within a license area?

Answer. There is no doubt that licenses can be easily aggregated. Since the introduction of cellular service, assorted carriers have aggregated licenses in various combinations. The four largest wireless carriers each acquired their extensive service areas through aggregation of cellular, PCS, and now AWS licenses. Nothing prevents further aggregation or various sorts of cooperative arrangements among carriers to extend service areas and product offerings.

Question 3. If one goal of the auction of 700 megahertz spectrum is to encourage bidder participation, would smaller block sizes help in that regard?

Answer. Smaller block sizes will encourage more bidders to enter the 700 MHz auction because these bidders can match territories to their existing markets, to contingent areas where population growth and development have spread from the core areas of existing service areas, or because new bidders can match their financial and business capabilities to the smaller territories.

Question 4. Given recent testimony before the Committee regarding the spotty nature of wireless coverage in places like Maine, what mechanisms can the FCC use to ensure that new operators extend coverage ubiquitously? What effect would a so-called “keep-what-you-use” mechanism have in which a licensee would, over a reasonable period of time, be required to either provide service or return parts of a license area to the Commission for reauction?

Answer. The problem of coverage in high cost, low population density areas like parts of Maine and elsewhere is a financial problem. The cost of building facilities in these areas cannot be justified by the amount of traffic available to support them.

There is, of course, a program in place to deal with this problem: the high cost program of the Universal Service Fund. If the FCC wants to ensure coverage in these areas, it should continue to make USF support available to wireless carriers.

Question 5. Are the commercial frequencies that will be made available in the upper and lower 700 megahertz bands equally viable for mobile broadband uses? Does the fact that the Commission may allow high-power operations in certain blocks of the lower 700 megahertz band frequencies raise any concerns about interference in adjacent blocks? Would larger license areas in the lower 700 megahertz band be as attractive as large license areas in the upper 700 megahertz band?

Answer. Yes, we believe that commercial frequencies made available in both the upper and lower 700 MHz bands are viable for mobile broadband uses. Some parties have expressed concerns about the proximity of higher- and lower-power operations in 700 MHz, while other parties believe that proper coordination among licensees and power limits will address this concern. We have not taken a position on this issue. We believe it is important to have a mix of both large and small license service areas to accommodate a variety of potential licensees and services.

RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. BILL NELSON TO
MICHAEL SMALL

Question. Proponents of all open access policy for portions of the 700 megahertz spectrum have noted that open access could bring about new innovative technologies and applications. Can the members of the panel provide some examples of these technologies and applications? Also, are there any pitfalls of an “open access” approach?

Answer. There are at several pitfalls to the open access approach. First, if the winning bidders are required to open their networks to third parties to use any device or application of their choice and/or on a wholesale basis, potential bidders will naturally find the offered spectrum of less value as a result of these onerous conditions and bid accordingly. Second, it is unclear how such a policy would operate. Are carriers to offer wholesale access to the networks they construct, or are they to lease the bare spectrum for which they hold what has (up to now) been an exclusive license? Because wireless networks, in general, use one of two access modulation schemes, customers are still limited in the number of networks on which their handsets will work if resale of network access is what is intended. Moreover, even if wholesale access to bare spectrum is intended, the result forces a choice between competing access schemes if a customer is to have nationwide roaming capability. Finally, wireless networks are unique—and quite distinct from traditional, circuit-switched networks—in that they dynamically share limited spectrum and constantly adjust to account for growth and load factors. Because handsets are a functional part of the wireless network, introducing additional variables in the form of untested handsets and applications would harm network performance, create interference, and potentially limit carriers’ ability to comply with critical obligations such as E-911 and CALEA. It is important to note that in this shared network environment, a single device or application can interfere with other users. By the time the interference is detected, however, the harm to the network and other users has already occurred and service quality to consumers suffers. In sum, I firmly believe that an open access approach is deeply misguided, would skew investment and innovation to the detriment of consumers, and should be rejected.

RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. FRANK R. LAUTENBERG TO
MICHAEL SMALL

Question. You have expressed concerns that FCC requirements for a company to “build-out” and provide service to their entire spectrum area may not be economical. How can the FCC ensure that winning bidders use the spectrum, and do not just hold on to it to prevent competition?

Answer. Current FCC rules require licensees to meet construction requirements at various points during the term of their licenses. These requirements are generally focused on covering percentages of population in the licensed service area and, as such, reflect the financial constraints of a capital construction program. These rules should be continued for holders of 700 MHz licenses. This will ensure that the licenses are put to use (and not warehoused) and provide service to a large percentage of the population covered by the license. For construction of facilities in high cost, hard to serve areas, the FCC should continue to allow wireless carriers access to the Universal Service Fund’s high cost program. Access to these funds requires

carriers to spend the support they receive in the areas for which they are earmarked.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. DANIEL K. INOUE TO
AMOL R. SARVA

Question 1. How does the current marketplace for wireless services affect the development of wireless devices and applications?

Answer. The wireless industry is ripe with opportunities for innovation and economic growth, but the “Big 4” carriers currently act as gatekeepers to block or deter many of these opportunities. An entrepreneur looking to create a new device or service that somehow touches one of their networks typically must go through an unduly burdensome “certification process,” which is driven more by the carrier’s own self interest than any legitimate technical considerations. Consumers have lost out on the benefits of far too many innovations that failed to pass through the “star chamber” of the wireless incumbents’ processes.

Question 2. Is the trend toward wireless consolidation getting better or worse, and what effect would the adoption of an open access model have on competition in this area?

Answer. Wireless consolidation is a worsening trend, as the Sprint/Nextel and Cingular/AT&T, and other “mega-mergers” have dramatically changed the competitive landscape. Today, the top two carriers, Verizon and AT&T, control over half of the subscribers in the market. More importantly, they garner two-thirds of the “net additions” (*i.e.*, new customers), so their market power is increasing. The FCC’s most recent report on the subject found that the wireless industry’s HHI index—a key measure of market concentration—has reached 2700, well above the 1800 marker above which a market is considered “highly concentrated.” The HHI has increased about 600 points in the past 3 years it has been measured.

By licensing a slice of spectrum in the 700 MHz band according to Open Access principles, the FCC could substantially alleviate the competitive harms of this remarkable consolidation. Whereas today the Big 4 carriers can choose which devices and applications succeed and which fail, with Open Access, entrepreneurs would be free to innovate. The only limits on new service ideas would be the entrepreneur’s imagination, not the wireless operator’s Terms of Service.

Question 3. In your view, how would such a model be commercially viable for a network operator?

Answer. There is great demand among consumers and businesses for a network operated according to Open Access principles. The incumbents, and particularly AT&T and Verizon, have resisted an Open Access model because they are vertically integrated carriers with a legacy business model to protect. A new entrant with an Open Access network will not be constrained by these concerns, and will thus be able to generate substantial revenues from device makers looking to add network connectivity, rural telephone companies eager for a partner to assist them in deploying wireless service to rural areas, and consumers who seek freedom from long-term contracts with costly termination fees (to name a few). Highlighting the commercial promise of an Open Access model, Google recently indicated its intention to commit a minimum of \$4.6 billion in the 700 MHz auction if the FCC adopts “specific, enforceable, and enduring” rules for an open platform on a portion of that spectrum.

Question 4. What consumer benefits would you expect?

Answer. If the FCC allocates a slice of 700 MHz spectrum for Open Access, we envision a wave of opportunity in services, applications and devices. These innovations include the evolution of cell phones toward “broadband communicators”, the addition of wireless community features to portable media and gaming devices, and even using wireless to provide cheap connectivity to otherwise “dumb” appliances. We are starting to see these kinds of devices emerge with local area WiFi capabilities, but the possibilities are even greater once the devices can access the sort of wide-area 4G networks that will operate in the 700 MHz band. Open Access will also bring wireless consumers a wealth of choices akin to the services that they currently enjoy via fixed Internet connections, such as video, user-generated content, VoIP, and social networking.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JOHN F. KERRY TO
AMOL R. SARVA

Question 1. Is there merit to the notion of “open access” and will it increase competition in the wireless market? If so, how? What companies will bid in this type of system?

Answer. Open Access is an antidote to the sorry state of competition in the wireless market. Today, consumers are largely limited to the services and devices hand-picked for them by the vertically integrated carriers like AT&T and Verizon. But if the FCC allocates a slice of 700 MHz spectrum according to Open Access principles, entrepreneurs will be free to bring new products and services to market. This means that a consumer won’t be limited to Verizon’s own offering or those of its business partners every time she wants to watch a mobile video, download a ringtone, or otherwise make a legitimate use of the network.

In terms of bidders, we expect a vigorous auction for any 700 MHz spectrum licensed with an Open Access framework. Indeed, Google recently announced that if the FCC adopts a truly open platform, it will commit no less than \$4.6 billion to the auction. Moreover, even a bidder for a small geographic license will value that spectrum more highly if other licenses across the country are auctioned on an Open Access basis, as Open Access ensures that the bidder can access a national coverage area through roaming and other arrangements.

Question 2. Opponents of open access say that it is a failed business model. Do you agree? Did it fail in the wireline industry? If so, why?

Answer. The Open Access principles to which we refer have been wildly successful in the wireline market. For decades prior to the FCC’s seminal *Carterfone* decision, consumers were prohibited from attaching *any* device to the telephone network unless it was expressly sanctioned (and sold) by Ma’ Bell. Basically, the phone company kept competition at bay by arguing that it couldn’t keep phone service running without “absolute control” over the network. Finally, in 1968, the FCC called their bluff, and said that so long as a manufacturer shows that its device won’t harm the network, there’s no reason to keep it out of the hands of the public. As a result, we got the fax machine, the answering machine, the modem, and billions upon billions of dollars of new economic productivity. Carving out just a small slice of spectrum for a similarly open network in the 700 MHz band can unlock a wave of entrepreneurial energy for wireless and broadband users.

Question 3. What benefits do smaller and rural wireless service providers have to gain from open access, that they will be denied if there is no open access requirement? What types of services can be rolled out in urban areas to compete?

Answer. Smaller and rural wireless service providers will especially benefit from Open Access. As this Committee is aware, the current inability of many rural carriers to offer a national roaming service has stifled their ability to compete against larger carriers. For example, in comments to the FCC supporting Open Access in the upper 700 MHz band, Cellular South noted that “small and regional carriers find it increasingly difficult, if not outright impossible, to negotiate high-speed data roaming agreements with national wireless providers.” Also, by attracting a new entrant, an Open Access framework will further the creation of a “third pipe” that will provide rural consumers with affordable and reliable broadband access.

Open Access also holds promise for urban areas, where “on-the-go” consumers will obtain access to the same wealth of choices among IP-based applications and services that today they can enjoy only at home, the office or their dorm room. The increased ability to bring new devices and applications to the wireless market will particularly benefit the economies of tech centers like Silicon Valley and the Route 128 corridor.

RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. BILL NELSON TO
AMOL R. SARVA

Question. Proponents of all open access policy for portions of the 700 megahertz spectrum have noted that open access could bring about new innovative technologies and applications. Can the members of the panel provide some examples of these technologies and applications? Also, are there any pitfalls of an “open access” approach?

Answer. In short, an Open Access framework can deliver to the wireless market the same wealth of technologies and applications that today consumers can only enjoy when tethered to their PCs at home or work. It means that a consumer won’t be limited to Verizon’s own, limited offerings or those of its business partners every time she wants to watch a mobile video, download a ringtone, or otherwise make

legitimate use of the network. Innovations in the near term include the evolution of cell phones toward “broadband communicators”, the addition of wireless community features to portable media and gaming devices, and even using wireless to provide cheap connectivity to otherwise “dumb” appliances. And just as no one could predict that we’d get the fax machine and modem when the FCC adopted similar principles for the wireline market four decades ago, the wireless marketplace will experience innovations that today we could barely imagine.

The only pitfall will come if the FCC adopts an allocation that is Open in name but which opens loopholes for the network owners to lock down devices and block content as they do today. As Google recently explained in comments to the FCC, the commitment to Open Access to which the licensee will be held must be specific, enduring, and enforceable.

