U.S. DEPLOYMENT OF THIRD GENERATION WIRELESS SERVICES: WHEN WILL IT HAPPEN AND WHERE WILL IT HAPPEN?

HEARING

BEFORE THE

SUBCOMMITTEE ON TELECOMMUNICATIONS AND THE INTERNET

OF THE

COMMITTEE ON ENERGY AND COMMERCE

HOUSE OF REPRESENTATIVES

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U.S. DEPLOYMENT OF THIRD GENERATION WIRELESS SERVICES: WHEN WILL IT HAPPEN AND WHERE WILL IT HAPPEN?

TUESDAY, JULY 24, 2001

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

The subcommittee met, pursuant to notice, at 9:30 a.m., in room 2123, Rayburn House Office Building, Hon. Fred Upton (chairman) presiding.

Members present: Representatives Upton, Stearns, Cox, Deal, Largent, Cubin, Shimkus, Wilson, Pickering, Davis, Terry, Markey, Gordon, Rush, Eshoo, Engel, Green, McCarthy, Luther, Harman, Sawyer, and Dingell (ex officio).

Staff present: Howard Waltzman, majority counsel; Yong Choe, legislative clerk; Andy Levin, minority counsel; and Brendan Kelsay, minority professional staff.

Mr. UPTON. I've been told that my colleague, Mr. Markey, is running a little bit late, but we're going to get started and I would, I guess, before we start, I'm going to ask unanimous consent that all members of the subcommittee be allowed to put their opening statements into the record, so, without objection, that is now done.

Good morning. Today's hearing is appropriately titled "U.S. Deployment of Third Generation Wireless Services: When Will It Happen and Where Will It Happen?"

It is important to note that the title of this hearing is not whether this deployment will happen. There is much at stake for the economy and competitiveness of our Nation and particularly, the United States tech sector, not to mention our Nation's consumers. In October 2000, the Council of Economic Advisors found that the appropriate allocation of commercial spectrum licenses that favor investment have the potential to unleash a wave of innovation in 3G applications. The President's Council of Economic Advisers concluded that an additional 150 megahertz of spectrum could bring an additional $35.7 billion of service revenues each year. In addition, billions of dollars would be spent on 3G phones and networks. The economic growth that would be prompted by an auction of spectrum for 3G services is exactly the right medicine for our slumping technology sector and the U.S. economy as a whole.

With so much at stake, to quote the great movie Apollo 13, "failure is not an option." Does this mean that the challenges to make

3G a reality are not daunting? No. Does this mean that we do not need to carefully seek consensus among all of the affected parties to make it a reality? No. But as chairman of this subcommittee, I'm committed to trying to make this work.

I also want to mention that with the concurrence of the chairman of the full committee, Mr. Tauzin, I'm working with our subcommittee colleague, Mr. Pickering and others, to craft bipartisan legislation which will provide a win-win solution for our country.

I am hopeful that we can unveil this legislation some time early this fall and begin the legislative process in earnest in this subcommittee. As we explore the how to relocated and compensate incumbent government users of spectrum to make way for 3G, we need to recognize that if this involves the Department of Defense, there are critically important national security considerations which demand our fullest attention and respect.

Proudly, the U.S. is the world's sole superpower and we cannot diminish our military's sophisticated battlefield communications nor its training communication needs. Indeed, it is our military's superior communications and intelligence capabilities which makes its power so awesome and enables our Nation to achieve military superiority with a minimum exposure of our troops to harm's way.

However, I would note that under its current spectrum allocation, the DOD encounters enormous interference issues in parts of the world because our military communications equipment is calibrated to frequencies which have crowded commercial use. This is not ideal and presumably will only get worse as the industrialized world moves toward even more wireless use. In this regard, I am reminded of General John Herr, Chief of the Calvary when he sat before a Congressional Committee in 1941 on the dawn of our Nation's entry into World War II and he said, with great confidence, that four mounted Cavalrymen spaced 100 yards apart could charge half a mile across an open field and destroy an enemy machine gun nest without injury to themselves. If the Congress had chosen to not even explore the replacement of horses with tanks, where would we have been? I do not suggest that the answers in the case of 3G are simple, but I do believe that we need to continue looking to the future and planning accordingly. I am optimistic that we will find a win-win for all involved.

At the outset, I want to highlight my personal view that we need to see a solution which ensures that our Nation's 3G allocation is harmonized with that of the rest of our major trading partners. If not, we will lose the competitive benefits in the economy of scale which harmonization would provide.

So today, I look forward to the testimony our witnesses who will help us answer the very difficult, yet hopefully, noble questions of when and where we are to deploy 3G in our country and I yield to my friend, the ranking member of the subcommittee, Mr. Markey from Massachusetts.

[The prepared statement of Hon. Fred Upton follows:]

PREPARED STATEMENT OF HON. FRED UPTON, CHAIRMAN, SUBCOMMITTEE ON TELECOMMUNICATIONS AND THE INTERNET

Good morning. Today's hearing is appropriately titled: U.S. Deployment of Third Generation Wireless Services: When Will it Happen and Where Will it Happen? It is important to note that title of this hearing is not "WHETHER" this deployment

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In October 2000, the Council of Economic Advisers (CEA) found that "[a]n appropriate allocation of commercial spectrum licenses that favor investment have the potential to unleash a wave of innovation in 3G applications." CEA concluded that "an additional 150 MHz of spectrum could bring an additional $35.7 billion of service revenues per year." In addition, billions of dollars would be spent on 3G phones and networks. The economic growth that would be prompted by an auction of spectrum for 3G services is exactly the right medicine for our slumping technology sector and the U.S. economy as a whole. With so much at stake, to quote the great movie, *Apollo 13*: "Failure is not an option".

Does this mean that the challenges to make 3G a reality are not daunting? No. Does this mean that we do not need to carefully seek consensus amongst all of the affected parties to make it a reality? No. But as Chairman of this Subcommittee, I am committed to rolling-up my sleeves and figuring out a way to make this work. I also want to mention that, with the concurrence of the Chairman of the full Committee, Mr. Tauzin, I am working with our Subcommittee colleague, Mr. Pickering, and others, to craft legislation which will provide a "win-win" for our nation. I am hopeful that we can unveil that legislation early this Fall and begin the legislative process in earnest in this Subcommittee.

As we explore the how to relocate and compensate incumbent government users of spectrum to make way for 3G, we need to recognize that, if this involves the Department of Defense, there are critically important national security considerations which demand our fullest attention and respect. Proudly, the United States is the world's sole superpower, and we cannot diminish our military's sophisticated battlefield communications, nor its training communications needs. Indeed, it is our military's superior communications and intelligence capabilities which makes its power so awesome and enables our nation to achieve military superiority with a minimum exposure of our troops to harm's way.

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In this regard, I am reminded of General John Knowles Herr, chief of the cavalry, when he sat before a congressional committee in 1941, on the dawn of our nation's entry into World War Two, and said with great confidence that four mounted cavalrymen, spaced one hundred yards apart, could charge half a mile across an open field and destroy an enemy machine gun nest without injury to themselves. If the Congress had chosen to not even explore the replacement of horses with tanks, where would we have been? I do not suggest that the answers in the case of 3G are as simple, but I do believe that we need to continue looking to the future and planning accordingly. I am optimistic that we can find a "win-win" for all involved.

At the outset, I want to highlight my personal view that we need to seek a solution which ensures that our nation's 3G allocation is harmonized with the rest of our major trading partners—or we will lose the competitive benefits and the economies of scale which harmonization provides.

So today I look forward to the testimony of our witnesses who will help us answer the very difficult, yet hopefully, knowable questions of "when" and "where" we are to deploy 3G in our nation.

Mr. MARKEY. I thank the chairman very much and I thank you for having this very important hearing. There's no question that your military analogy is appropriate because clearly we're talking in many instances here about spectrum which is controlled the Defense Department. I don't see them as witnesses here today, oh, I see, Mr. Wells is here. Good. But without question that's an integral part of this entire discussion. I remember back now 10 years ago when the General in charge of Command Control and Communication of Three Star sat here and said that it was impossible to move over 200 megahertz of spectrum at two separate hearings and it would cause serious defense problems for our country. But nonetheless, we did it and it created the third, fourth, fifth, sixth and seventh cellular phone license in every market in the United States. Again, there are tradeoffs in everything that we do here

and at the end of the day we have to do it synchronizing with the government, with the Defense Department because clearly there are two very strong competing interests at play.

Since this is the first foray, Mr. Chairman, this year into this issue, and because the FCC and the Commerce Department are still in the relatively early stages of identifying possible frequencies for additional reallocation to the private sector, the initial set of questions presented to policymakers is fairly general. While it is axiomatic that almost everyone wants more spectrum or wants to retain use of that which they already utilize, the task before us to gauge how much spectrum distinct services actually need in order to flourish. For instance, how much spectrum is truly needed for 3G services? Do carriers need 20 megahertz, 40 megahertz, 80 megahertz or some other amount? We have to know that answer, Mr. Chairman.

In addition, we need to ascertain how much spectrum is required at this time and then estimate or guess how much may be needed at later dates to meet demand of ever higher rates.

There are other key questions that need to be addressed as well. How should the government roll out that spectrum and make it available? Should it all be reallocated immediately and sold as it becomes available, or rather should we proceed under the more cautious rollout so that we can assess both the demand over time as well as anticipating the inevitable breakthroughs in digital technology that may avail carriers of the opportunity of doing more with less.

Will all incumbents be eligible to bid? Will we preserve competition with retention of some type of spectrum cap which limits total spectrum a carrier can accumulate in individual markets? Or will we remove the cap completely and encourage consolidation in the wireless marketplace? Indeed, if we are able to reallocate more spectrum that the carriers each need for 3G services, can the government license new competitors?

Now I appreciate that the incumbents will not like that alternative, yet on the other hand we have seen in recent months the contraction of competition in the local loop from wireline competitors. Can we hope to license additional wireless competitors to challenge wireline services?

In my view, if we are looking at the last major reallocation of the public spectrum resources for a generation, we owe it to the public to maximize service and to maximize competition. The last thing we want to see in the wireless marketplace is the consolidation and rising prices that we witnessed in other areas of telecommunications.

Finally, I want to say a few words on what happens once all this difficult work is completed and the auctions are over. Many people in recent months have talked about a policy of win-win in this area. Government can find additional airwaves and license it to the wireless industry through auctions, and second, the government can use the proceeds from that auction to compensate incumbent users primarily the military perhaps and assist those entities in obtaining and purchasing new equipment to utilize at another frequency.

What I'd like to suggest is that we strive for a win-win-win for our subcommittee and the country when we act in this area. We can certainly reallocate additional spectrum to assist in private sector deployment of 3G services and we can create a fund for the military and other users to assist in their reallocation and retooling. Yet, we can also achieve another policy win by taking additional auction proceeds to foster use of educational technology, the deployment of public telecommunications infrastructure in needed areas and craft a self-sustaining fund for grants to address the digital divide. For example, we have a requirement that all television stations must convert to digital broadcasting, yet Congress has not been forthcoming with funding to assist public stations in that conversion.

Moreover, we have a need in this country to assist in teacher training and worker training for the digital economy. Grants to support pilot projects could be a use of spectrum proceeds as could be the deployment of broadband connections to public housing facilities, Headstart facilities, community centers and America's most rural areas.

Let's think creatively about how we can direct efficient use of the auction proceeds and I hope that we can work in a bipartisan manner to achieve our common high tech and educational technology goals for this country.

Again, Mr. Chairman, I want to commend you for holding this very important hearing and I'm looking forward to the process as it unfolds.

Mr. UPTON. Thank you. I recognize for an opening the vice chairman of the subcommittee, Mr. Stearns from Florida.

Mr. STEARNS. Good morning and thank you, Mr. Chairman, and I also want to commend you for this hearing to examine third generation wireless services. It's a very competitive market. In less than 20 years, the United States wireless industry has ballooned to more than 100 million subscribers and it continues to grow at the rate of 25 to 30 percent annually. I believe one of the more important roles of this committee is to ensure that our Nation's spectrum is managed properly, wisely and efficiently.

Unfortunately, for many years, spectrum policy has ridden on the back of budgetary needs. As such, one of the top priorities of Administrations and Congress needs to be a comprehensive plan on spectrum management. For starts, spectrum policy must be divorced from the needs of budgetary number crunchers. For too long, government has viewed this precious resource as nothing more than a means to fulfilling its budgetary needs and wants.

Additionally, sound management of the spectrum is not complete without ensuring this resource is available to those who need it. As a result, I urge my colleagues to join me in supporting legislation that I introduced to repeal the FCC's antiquated and obsolete cap on spectrum. Current FCC regulations prohibit a single entity's attributable interest in the licenses of broadband PCS cellular and specialized mobile radio services from cumulatively exceeding more than 45 megahertz of spectrum within the same geographic area.

Today, the cap limits competition by denying wireless providers access to open markets, also thereby denying consumers the bene-

fits that arise from additional competition such as lower prices and innovative services.

Furthermore, wireless providers have limited room for advanced services such as data on their networks as they plan for 3G services. The lack of spectrum threatens the ability to expand current systems and entice new customers. Additionally, continuation of the spectrum cap result in the continued lag of the United States companies behind Europe, Japan and deployment of wireless 3G technologies.

Legislation I introduced, H.R. 2535, the Spectrum Resource Assurance Act, repeals the FCC's spectrum caps.

Mr. Chairman, the next generation of wireless technology will bring broadband to hand held devices, allowing for new audio, video and other applications. As such, 3G services promises users the ability to use their wireless phones to work anywhere in the world, therefore, the development of robust third generation advanced mobile services is one of the most critical communications and e-commerce issues facing us in this country. Regrettably, the figurative spectrum train car identified by the International Telecommunications Union for 3G advanced mobile service may be derailed by U.S. incumbents unwilling to relinquish their spectrum.

Of particular concern is the Defense Department. They're unwilling to relinquish its spectrum by citing relocation as extremely costly, technical infeasible and a threat to national security. While the Defense Department use of the spectrum of such things as combat training, tactical weapons systems and tactical radio relay serve in the national interest, I am wary of sacrificing American technology and competitive might in the telecommunications area to European and Asian competitors simply because the Department of Defense is unwilling to even give up a part or to work out an arrangement that would occur in the near future. I have not given up hope. I commend FCC Chairman Powell and Commerce Secretary Evans for seeking relief from the deadlines requiring the government to identify spectrum by the end of this month and auction licenses by September 30, 2002. A time out will allow all the government entities responsible for U.S. spectrum management to have adequate time to develop a plan to make spectrum available for advanced wireless services in the future.

Quite simply, Mr. Chairman, 3G services like many of the issues this committee examines, will not become a reality unless all the players are involved, both government and private, cooperate and work together toward a common goal. After all, at the end of the day we need a rational policy on spectrum in order to balance the interests between government and industry. Thank you, Mr. Chairman.

Mr. UPTON. Mr. Sawyer from Ohio.

Mr. SAWYER. Thank you very much, Mr. Chairman. I was pleased to hear the way you opened the hearing today, drawing a contrast between what the title is and what it might have been in terms of when and where rather than whether. I was stunned when my staff told me that there are actually pessimists out there who believe that third generation is not desired, wanted, marketable in the United States. I was flabbergasted at that, but I gather that must be true, that there are people who are saying such

things. I, like you, am an optimist. I don't think it's a matter of whether, but when we get there. I think that 3G will lead the way for wireless Internet to provide the competition we've been seeking among the big telecom players, wireless guys have generally been pretty good guys, good self-regulators. They've dealt well with issues of privacy and beyond that, it may well be that 3G provides at least a partial answer to the digital divide.

One of the things that I hope we can talk about today a little bit is what comes after third generation, what might a fourth generation consist of, are we missing an opportunity if we don't make space for that now? It's clear that spectrum shortage won't go away simply because DOD's decision to make more space and it may well be that we're missing an opportunity to fix our spectrum problems by looking for a short term instead of a longer term solution.

The current spectrum map makes it very difficult to do any future planning in the present dysfunctional allotment system. We've outgrown the 1934 scheme. It seems to me, perhaps that it's a good time right now to slow down and take a look at the range of options, perhaps creating a single organization to manage industry and government spectrum and leading to, as previous speakers have said, a more coherent policy regarding spectrum, one that's more flexible.

Finally, let me just touch on something we don't talk about a great deal and that's the issue of spectrum efficiency. As it becomes more of a scarce resource we should find ways to reward those who use it more efficiently. We're learning hard lessons in that every week in the energy crunch and that is that when there's a shortage of resources we must use that resource more carefully and more efficiently. I think the same principle probably applies to spectrum today.

I look forward to our witnesses' remarks and thank you, Mr. Chairman, for calling the hearing.

Mr. UPTON. Thank you. Mr. Shimkus.

Mr. SHIMKUS. Thank you, Mr. Chairman. I appreciate this hearing today. I see not in the front panel, but in the back room, a couple of white suiters and a couple of blue suiters and I'd like to welcome my military colleagues here to the Commerce Committee and I want to go on the record, Mr. Chairman, I'm not a cavalryman, I'm an infantryman so hopefully those comments about the cavalrymen will not be held against me. In military parlance, especially in the infantry, to move, to shoot and to communicate is basic military doctrine and this spectrum debate is really about the ability to communicate with our military forces around the world. And we have to be very, very careful as we do diligence in this debate and ensure that if we were to eventually move defense issues to different levels that there is quick, rapid deployment in other areas so that the national defense, which is the preeminent responsibility of Federal Government is defending its citizens, make no mistake about it. We can do a lot of things and we provide greater services, but if we're not willing to protect our citizens, then I really question why we serve in this office. But there is also a dilemma in my own congressional district being a very large, rural district, 3G services offers the ability to connect my rural citizens with increased technology that is badly needed, especially when we want

to keep rural America alive and vibrant. It offers great hope to keep people at home and living in the communities they really want to live while providing really some high tech work in the high tech sector through 3G.

So we are in for a good hearing. We've got a great panel ahead of us. I look forward to hearing their opening statements and then responding to questions with them, Mr. Chairman. I yield back my time.

Mr. UPTON. Ms. Eshoo.

Ms. ESHOO. Thank you, Mr. Chairman, for convening this hearing and welcome to our guests here this morning that are going to testify.

Third generation wireless services' promise of a wealth of new and improved performance capabilities that can have, I believe, a really significant effect, not only on our economy, but the global economy, but what I think we're going to learn today from this hearing is how best to assure that there's a successful transition to 3G services and that we have to have a comprehensive and efficient spectrum assignment plan for the technologies.

The plan, obviously, has to be developed with a great deal of care and input from all the parties that are involved. And I think I can't help but think that we can learn something from what's transpired overseas. Maybe some of the witnesses can speak to that this morning.

As we've learned from the past years' dot com implosion unreasonable expectations, I think, can lead to tremendous losses of capital, so what we do we have to do well. We have to do carefully. We have to plan it well. There's some indication that the winners in the auctions held overseas are longing for a return of some of the enormous sums that they invested. Some of the companies took on enormous debt in order to purchase the spectrum, only to find that they may not have sufficient capital to build the networks required for the employment of the technology.

Other headlines, I think, at least give me some pause. Singapore has canceled its 3G auction because it's only had three bidders for four licenses. Carriers have announced delays in their service plans in Europe and Japan and Australia has raised just over $1 billion in its 3G auction. Is there anything for us to learn from this? Does this have anything to say about where we're headed? I'd like the people that are at the witness table this morning to spend a moment talking about that.

There's another point that I'd like to make and that is while 3G brings with it many promises, there are many intricacies that may delay its deployment. I'm concerned that its future promise may be diverting the attention of the industry from an issue that I've been plugging away at for a long, long time and that's from the implementation of life saving technologies such as enhanced 911. The resources devoted to 911, to E-911 pale in comparison to those invested in what's arguably a less precise technology in 3G. Now it may be somewhat unfair, I think, for the industry to hear of me comparing one to the other, but I still fail to understand why we can't get the one done as we move to the other. So I'm puzzled as to why the industry fails to move forward with E-911 deployment with the same vigor as 3G. We know that lives can be saved and

that we have an excellent panel here today and I hope that you will address the point that, the last point that I just made as well as the others and if not, fear not, I'll question you on it.

Thank you, Mr. Chairman.

Mr. UPTON. Mr. Terry.

Mr. TERRY. Waive.

Mr. UPTON. Mr. Pickering.

Mr. PICKERING. Mr. Chairman, I want to thank you for holding this hearing today and your leadership on this issue. This is an extremely important issue, both to our economy and to our security and we want to find that balanced path that provides the win-win as Mr. Markey was talking about. As Mr. Shimkus mentioned, the need to communicate on the battlefield or in training is critically important to our national security. We want to make sure that we can continue to have that capability and that it is compatibility with our commercial interest.

So I want to talk about the three Ps of this effort: the process, the proceeds and the goal of prosperity. Process, we need to find a way that the current decisionmaking process of how we allocate and manage our spectrum is reformed, it is done in a way that gives us a more efficient use of our spectrum. It is more inclusive for the decisionmakers to reflect the realities of the 21st century and the technological needs both of our commercial interests, our economic interests and our security interests. So the change is necessary of how we make our decision, who makes these decisions and then it gets to the second point, proceeds. As we make these decisions of allocations, as we go forward in a spectrum auction, the proceeds to those that are reallocated are possibly moved as a result of these decisions, the proceeds to them must be guaranteed. In 1993, the last time DOD sacrificed some of their spectrum they received no proceeds. It is critically important if we are going to displace and disrupt then we must guarantee with a mechanism, whether it is a trust fund or whatever the mechanism should be, to have the proceeds go to DOD or commercial interest or anyone involved that it is assured, it is guaranteed that those proceeds will provide for the relocation, for the transition and importantly, the compensation of the value they have given up.

And this gets to our third point, prosperity. Estimates show about $35 billion if the spectrum could be made available to our commercial sector, could be given back into economic growth and a prosperity back to those in our government which controls spectrum today, if those proceeds go back anywhere from $10 to $100 billion, I think are reasonable. A fair estimate is in the $35 to $40 billion estimate, could be guaranteed back to DOD or others for their modernization or for their other objectives that they face today in providing either security or services.

The planets and stars are aligning. The need is great for international competitiveness, to harmonize, for security. It is critically and vitally important that we as decisionmakers step up to the challenge, to the plate, and reform the process, guarantee the proceeds and then create a framework where this can be used to bring prosperity to our economy and security to our people. And with that, I yield back.

Mr. UPTON. Thank you. Ms. Harman.

Ms. HARMAN. Thank you, Mr. Chairman, I want to commend your choice of hearing topics one more time and to say what a pleasure it is to work with you on this subcommittee. I heard you say earlier that you may be offering legislation on this issue and I would like to offer my support for that and would love to work with you on that when you get to that.

I believe that we have before us a legislator's dream, a rare opportunity to benefit several good purposes and to generate revenue at the same time. Can that possibly be true? Will we take advantage of it? Or will we squander it? I think that is the most important question. I want to associate myself with many of the questions raised by earlier speakers, particularly Mr. Markey. I love listening to him because he is the institutional history of this committee. He seems to have been here since before the dinosaurs and to remember everything that ever happened and it seems time and again that we return to the same subjects, hopefully with better answers, but not necessarily.

I think his questions are valid and so are others. I would just add a few others to the long list. First, what will new technologies do to our decisions about how to allocate this spectrum, new compression technologies, for example?

What about flexibility? It seems to me even if we make decisions today that are better than the decisions of yesterday, those decisions may have to change in the near term. How do we really give value to current funding priorities? We've heard numbers of them, rural areas, the digital divide, military technologies. I'm a big proponent of investment in military technologies and I suggest that the Defense Department has priorities in addition to the communication function that need urgent funding, but how do we give priority to these current and competing funding needs? Those are some of the questions.

Let me also suggest several axioms. First, change will come whether we welcome it or not. Second, Congress can easily get it wrong or at a minimum make change harder to accept. An example is perhaps our rules on digital television which may still work out but which in a variety of ways have caused consternation out and about and haven't yielded the results we anticipated. Third, as you said, I think, Mr. Chairman, and several others have said, it's better to be an optimist because otherwise this just becomes totally gloomy. Again, I offer my services. I hope we get this right. At least I hope we get it better.

Thank you very much.

Mr. UPTON. Thank you. Mr. Davis.

Mr. DAVIS. Thank you, Mr. Chairman. We have before us today an issue that's as complex as it is controversial. Although the spectrum debate has identified the 698 to 960 megahertz and the 2500 to 2690 megahertz bands as potential locations for 3G services, the battle lines appear to center most intensely on the 1710 to 1850 megahertz band. A major question that I have is are we essentially pitting the continued strength of our intelligence and war-fighting capabilities against the future prosperity and health of our national economy. Is this really a choice between incapacitating our military's ability to defend our national interest on a domestic or an

international scale or weakening our ability to globally compete in the next generation of high speed wireless communications?

At the outset, I'm not convinced that we have a true dilemma before us. There is merit to each of the many concerns raised by players on all sides of the 3G debate. Our defense community needs to be able to maintain the same level of operations, security and training throughout any spectrum transition. At the same time, we have a bustling global economy that has soared as a result of the Internet and the next step in this communications evolution is dependent upon the availability of spectrum for use by 3G technologies. This is a problem in search of a workable solution and I hope that our discussion today will focus as equally on that solution as it may on the problem. There are funding concerns, timing concerns, utilization concerns. Some may be legitimate, others may not be as troublesome. I do think that Congress can play a constructive role in this debate and I commend you, Mr. Chairman, for taking the lead, along with our committee chairman in focusing our energies on this subject matter this morning. I look forward to hearing from each of our witnesses, and thank you all for being here.

Mr. UPTON. Thank you. Mr. Luther.

Mr. LUTHER. Thank you, Mr. Chairman, and thank you for holding this hearing. I understand the many arguments for allocating spectrum, but I do agree with those who have already stated that I believe that we should proceed cautiously. I believe that giving up too much spectrum now could reduce our flexibility for the future and for unanticipated needs. And so I think it is important that we look at all the alternatives. I believe that's what this hearing is about, that we consider them carefully and I look forward to reviewing the record.

Thank you, Mr. Chairman.

Mr. UPTON. Mr. Largent?

Mr. LARGENT. Mr. Chairman, in the interest of time, I'd like to submit my entire opening statement for the record and just say that I look forward to hearing from our witnesses.

Mr. UPTON. Thank you. So ordered. Mr. Green?

Mr. GREEN. Thank you, Mr. Chairman, and I'm sorry Eddie Markey left because I've never heard that Eddie was here before the dinosaurs, because sometimes in Congress those of us who serve a long time are called dinosaurs, but never pre-dinosaur. I'm going to put my full statement in the record, Mr. Chairman, but listening to my colleagues in their opening statement, I think that's what oftentimes I get frustrated when we have our witness panel sitting there and they're listening to us instead of us listening to you. But on something that's as important as 3G for the future, I think what's happened this morning is that I have listened to my colleagues on where we all come from and that helps us build the legislation so oftentimes we don't focus on these issues until we're at this hearing and so our opening statements actually I feel like are much more beneficial than I've had for many years before. But it is important what we're doing and I'd like to hear today, like my colleagues on how can we work with DOD to make sure that's available, how we do not recreate or the problems we've had like with high definition television that we do something different so we

don't have that problem, but also that we make sure we are competitive in the world, that we also can compensate or work with DOD to make sure that our defense of our country is protected.

Mr. Chairman, I'll submit my total opening statement and appreciate the time.

[Additional statements submitted for the record follow:]

PREPARED STATEMENT OF HON. STEVE LARGENT, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF OKLAHOMA

Mr. Chairman, in the interest of time I'll make my opening statement brief. As evidenced by the number of cellular phones, palm pilots, pagers, blackberrries, and other miscellaneous wireless devices in this hearing room, the use of wireless telecommunications services has grown dramatically over the past decade.

Wireless communication has evolved from analog to digital to the next iteration which we know as third generation or 3G.

It is expected that the development of third generation wireless will have a significant impact on the creation of new technologies as well as economic development. Last October, the Council of Economic Advisors projected that "an additional 150 megahurtz of spectrum could bring an additional $35.7 billion of service revenues per year."

However, before industry can move forward with its plans to move from second generation wireless technology to the much anticipated 3G, we need to examine our current spectrum policy to determine how to harmonize the private sector's desire for this valuable resource without compromising our national security.

Mr. Chairman, I suspect this issue will require more than one hearing, but I thank you for getting the ball rolling on this very important topic. I look forward to hearing from our distinguished panel of witnesses.

PREPARED STATEMENT OF HON. W.J. "BILLY" TAUZIN, CHAIRMAN, COMMITTEE ON ENERGY AND COMMERCE

Mr. Chairman, thank you for holding this hearing today, in which we will examine what promises to be one of the next big steps in the digital revolution we've experienced in recent years.

We have all witnessed the explosive growth of both the Internet and mobile communications. The deployment of third-generation mobile wireless services promises to bring the two together—so that consumers can have, in the palms of their hands, an exciting new array of digital products, including high-speed Internet access, video and other informational services, all broadcast over the airwaves.

Equally important, third-generation wirless promises to provide many high-tech and information-service companies with a new avenue for innovation and growth.

But the deployment of third-generation wireless services will not happen in the united states until we get our act together.

It's not that the technology does not exist for 3G services. (Although in its infancy, it is developing rapidly.) The problem is the federal government lacks a comprehensive, coherent spectrum policy that will bring about the swift deployment of 3G services.

At present, all of the spectrum bands identified by the world radio conference last year for global 3G deployment are heavily encumbered in the United States. Some segments of these bands are slated to be auctioned by the FCC, but such an action would be extremely premature.

For example, we could auction off part of the 700 mhz band right now for 3G services. But this band will not be available until at least 2006. And, currently, no other country has allocated this for 3G services. It makes no sense to commit resources this way at this time.

We could auction off part of the 1710-1755 mhz segment and couple it with the 2210-2150 mhz segment. But doing so could foreclose use of the potentially valuable 1755-1850 mhz band for 3G services.

Simply put: We should not auction some portions of these bands until we have a comprehensive policy concerning what we are going to do with all of the bands.

I hope that our administration witnesses today can shed some light on when we can expect to have a comprehensive strategy for 3G.

I was pleased that FCC Chairman Powell delayed the 700 mhz auction. And I was also pleased with correspondence between Chairman Powell and Commerce Sec-

retary Evans concerning their efforts to work together and to avoid a policy of auctioning spectrum in a piecemeal fashion.

But that leaves us with the question of the Pentagon's role in this matter. To date, the Pentagon has not been very cooperative. Instead of helping us figure out whether there are viable options for moving its operations from the 1755-1850 mhz band, the Pentagon has essentially just told us "no."

I hope that changes today. I hope that Dr. Wells will help us determine whether there are spectrum bands to which the Pentagon's operations can be reallocated. We certainly want the pentagon to have comparable spectrum. And we want it to be fully reimbursed for the cost of moving to other bands and to be able to purchase state-of-the-art communications gear.

It may even make sense to enable the Pentagon to use the funds produced by an auction of its spectrum licenses for other modernization purposes as well. (Based on our current budget situation, I am not sure where else comparable funds will be found.)

The bottom line is that we need a new spectrum policy. And we need one that reflects how we are going to prepare American consumers for the benefits of 21st century advanced wireless technology. We need a thorough review of all of our options and honest dialogue with incumbent licensees to determine where we should deploy 3G services and when we can do so.

Mr. Chairman, I applaud you for holding this hearing and for your leadership on this issue. And I look forward to our witnesses testimony.

PREPARED STATEMENT OF HON. ELIOT ENGEL, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW YORK

Mr. Chairman: Thank you for putting this hearing together. I also want to thank and commend your staff for the briefings they put together for the committee staff. This is a difficult issue in many ways to get your arms around. There are numerous competing interests for a very valuable and scarce resource—spectrum.

Essentially, the Defense Department is now occupying prime spectrum real estate that has been identified by international agreements for development of third generation wireless services. This presents great potential for commercial development but also enormous challenges.

To the Defense Department, I will simply say, that in my mind because the rest of the world seems to be moving to using this portion of the spectrum and thus in the future it could and most likely interfere with DOD activities around the world, it just makes sense to find appropriate alternative spectrum for DOD to move to.

To the wireless industry, I will simply say—and think I speak for every Member of Congress—we will do nothing that endangers the national security of the United States. We take very seriously the concerns and problems presented by the Department of Defense. Just the logistics of migrating all these systems to new frequencies is a daunting challenge that must be VERY carefully managed.

That being said, I believe working together we will find a solution—a transitional phase-out that is acceptable to all parties. We will need to identify specific parts of the spectrum and specific DOD systems operating at those spectrums to see if we can move this system or that equipment in 3 years, 5 years, or longer.

I think it is obvious if we all work together—are honest and open up front about the challenges we face in this process we will be better off. I think it telling that DOD reports that all the Delta rockets used to launch satellites are booked through 2004. This isn't just small problem, it is a big one. On the other hand, I think US leadership on 3G service is key to continuing the United States' technological dominance and economic strength.

We have a lot of smart people working on this issue. I think from the outset, we all have to come to the table with a set of reasonable expectations and reasonable compromises. We won't succeed tomorrow, but I am confident that success is in the near future.

Mr. UPTON. Thank you. With that, we're ready to hear from our panel and we are joined today by Mr. William Hatch, Acting Assistant Secretary of Commerce, Office of Communications and Information at the Department of Commerce; Dr. Linton Wells, Assistant Secretary of Defense for Command, Department of Defense; Mr. Julius Knapp, Deputy Chief of the Office of Engineering and Technology of the FCC; Mr. Thomas Wheeler, President and CEO of the Cellular Telecommunications and Internet Association; Mr. Denny

Strigl, Chief Executive Officer of Verizon Wireless; Monsignor Michael Dempsey, President of the Catholic Television Network.

Gentlemen, thank you first of all for submitting your testimony in advance. Your statements are made as part of the record in their entirety and if you could limit your opening statements to about 5 minutes that would be terrific.

Mr. Hatch, we'll start with you. Thank you.

STATEMENTS OF WILLIAM T. HATCH, ACTING ASSISTANT SECRETARY OF COMMERCE, OFFICE OF COMMUNICATIONS AND INFORMATION, DEPARTMENT OF COMMERCE; LINTON WELLS, ASSISTANT SECRETARY OF DEFENSE FOR COMMAND, DEPARTMENT OF DEFENSE; JULIUS P. KNAPP, DEPUTY CHIEF, OFFICE OF ENGINEERING AND TECHNOLOGY, FEDERAL COMMUNICATIONS COMMISSION; THOMAS E. WHEELER, PRESIDENT AND CEO, CELLULAR TELECOMMUNICATIONS AND INTERNET ASSOCIATION; DENNIS F. STRIGL, CHIEF EXECUTIVE OFFICER, VERIZON WIRELESS; AND MICHAEL J. DEMPSEY, PRESIDENT, THE CATHOLIC TELEVISION NETWORK

Mr. HATCH. Thank you, Mr. Chairman.

Mr. UPTON. If you could just pull the mike a little bit closer, that would be great. Thank you.

Mr. HATCH. Mr. Chairman and ranking members and other members of this subcommittee, I want to thank you for inviting me to testify today on spectrum matters relating to what we call accommodation of third generation wireless systems in the United States. As you stated, I am Bill Hatch, Acting Assistant Secretary for Communications and Information and Acting Administrator of the National Telecommunications and Information Administration within the Department of Commerce. I am also the Associate Administrator in NTIA's Office of Spectrum Management.

If I may, for the record, Mr. Chairman, I found that there are two typos in my testimony. One in the Executive Summary and one in the body of my testimony where I refer to the frequency band 1710 to 1855 megahertz. It should actually be 1710 to 1850 megahertz, so if you could make that correction I would appreciate it.

As members of the committee know, NTIA serves as the spectrum manager for the Federal agencies and as the principal advisor to the President on communications and information policy. Because of NTIA's unique role, the Agency must balance the spectrum interests of the government agencies while also advancing policies that promote the benefits of technological developments in the United States for all users of the telecommunications services.

Over the past decade there has been tremendous growth, worldwide in the use of cellular-based wireless telecommunications systems. The Department of Commerce and NTIA believes that this global growth will continue. The third generation wireless (3G) systems under discussion will provide mobile and satellite based broadband capabilities. While current cellular and PCS wireless systems are expected to evolve to 3G technology over time, there is a strong desire from the wireless industry for additional spectrum to establish these 3G networks.

The International Telecommunication Union has been fostering the development of the advanced wireless system or what's commonly referred to as the international mobile telecommunications-2000 or IMT2000, or also referred to here today as 3G for a number of years. The ITU World Radio Conference (WRC) in 2000 held in Istanbul, Turkey adopted a resolution which states that approximately 160 megahertz of spectrum will be needed for the projected requirements for 3G in high density areas and this would be needed by the year 2010. At the World Radio Conference there were a number of frequency bands that were identified for possible use by IMT200 or 3G and it was provided that each country may determine which of the bands to implement domestically after taking into account the impact on incumbent services.

The WRC decision also provided that 3G services may be introduced through evolution of technology and frequency bands that are presently used by the mobile services.

As you know, in the United States we are now in the process of deciding which of the various frequency bands is most appropriate for the implementation of 3G services and noting that our particular domestic requirements may be different from other country's national requirements.

As a result of the cooperation between the Department of Commerce, the Department of Defense, the Federal Communications Commission and other Federal agencies, the Department of Commerce, under guidelines set forth last year, developed an ambitious action plan to identify spectrum for 3G services. To date, both NTIA and the FCC have completed interim and final reports examining the respective bands of 1710 to 1850 and 2500 to 2690 megahertz. We've conducted industry outreach meetings and we've participated in discussions with foreign bodies and international bodies. In addition, the FCC has issued a notice of proposed rulemaking addressing 3G allocation issues and has received comments from the public on the issues raised in that NPRM.

Because of the complex issues surrounding the allocation of spectrum for 3G, there's a general agreement among the Department of Commerce, the FCC, and the affected Federal agencies to continue the efforts that we have been doing, so that we may carefully study the various options that have been put forward in all of the comments and in the various reports that have been done to arrive at the best possible solution.

In recognition of the work that remains to be done, Chairman Powell recently sent a letter to Secretary Evans suggesting that additional time to study the auction would be desirable, and requesting that the Department work with the FCC to come up with a revised allocation plan and auction time table. Secretary Evans responded last week by agreeing with the Chairman, that continuing these efforts would ensure that the final 3G allocation would be the best possible one that we could make. He has directed me to work with the FCC and the Federal agencies to develop a new plan for the selection of 3G spectrum and to consider ways to achieve flexibility on the statutory auction date, if such flexibility is needed to implement the plan.

I'm happy to report, Mr. Chairman, that in accordance with Secretary Evans' memo, preliminary discussions have been held with

Federal agencies, including the FCC to discuss the establishment of a new plan and timetable for the selection of spectrum to accommodate 3G.

I want to thank you for this opportunity to share these views with you and would be pleased to answer any questions that you may have.

[The prepared statement of William T. Hatch follows:]

PREPARED STATEMENT OF WILLIAM T. HATCH, ACTING ASSISTANT SECRETARY FOR COMMUNICATIONS AND INFORMATION, U.S. DEPARTMENT OF COMMERCE

Mr. Chairman, Ranking Member and other members of this subcommittee, I want to thank you for inviting me to testify today on spectrum matters relating to the accommodation of third generation (3G) wireless systems in the United States. I am William T. Hatch, Acting Assistant Secretary for Communications and Information, and Acting Administrator of the National Telecommunications and Information Administration (NTIA) within the Department of Commerce. I am also the Associate Administrator in NTIA's Office of Spectrum Management.

NTIA serves as the spectrum manager for the Federal agencies and is the principal adviser to the President on communications and information policy. Because of NTIA's unique role, the agency must balance the spectrum interests of the Federal agencies while also advancing policies that promote the benefits of technological developments in the United States for all users of telecommunications services.

I am pleased that the Subcommittee is looking into the matter of 3G wireless services, and would like to begin my remarks today by giving a brief background on the efforts to assure adequate and timely deployment of 3G services in the United States, our accomplishments to date, and our plans for the future.

BACKGROUND

Although in the United States our wireless services are not generally distinguished by a "generation" label, we might classify the early cellular telephones as the "first generation" of wireless services that brought nationwide mobile telephone services to hundreds of thousands of Americans. Building on the success of cellular service, the current personal communications services ("PCS") could constitute the "second generation" of wireless services. These services bring digital voice and messaging services to the nation. In recent years, there has been robust competition in the field of wireless services. This competition has promoted lower rates, greater customer choice, and higher quality of service.

Over the past decade there has been a tremendous growth worldwide in the use of cellular-based wireless telecommunications systems. The Department of Commerce and NTIA believe that this global growth will continue. The "third generation" (or "3G") systems advanced by industry propose to provide mobile and satellite-based broadband capabilities. While current cellular and PCS wireless systems are expected to evolve to 3G technology over time, there is a strong desire from the wireless industry for additional spectrum now to establish 3G networks.

In recognition of this growth and the trend toward global markets for wireless services, the International Telecommunication Union (ITU) has considered the spectrum requirements for evolving 3G systems, which is internationally termed International Mobile Telecommunications-2000, or IMT-2000. At the May 2000 World Radiocommunication Conference (WRC-2000) in Istanbul, Turkey, an ITU-established agenda item called for the review of spectrum and regulatory issues for advanced mobile applications in the context of IMT-2000. The ITU acknowledged the urgent need to provide additional spectrum, particularly for the terrestrial component of IMT-2000 applications. The ITU forecast that 160 MHz of additional spectrum would be required for 3G systems. This amount is over and above that spectrum already allocated internationally for 1- and 2G systems. The ITU identified several frequency bands that could be used for IMT-2000 systems. However, member administrations of the ITU retained the right to implement any of the bands in any time frame, for any service or technology, and could use any portion of the identified bands that they deemed appropriate to satisfy national requirements.

CURRENT STATUS

In October 2000, then President Clinton signed an Executive Memorandum which stated the need and urgency for the United States to select radio frequency spectrum for 3G. The Memorandum articulated principles to serve as guideposts for future actions that would be taken related to the development of 3G, and directed

Federal agencies to undertake certain activities. President Clinton directed the Secretary of Commerce to work cooperatively with the FCC to take certain actions that would enable the FCC to identify, in coordination with NTIA, 3G spectrum and to auction licenses to competing applicants by September 30, 2002. In addition, the Secretary of Commerce was directed to work with government and industry representatives through a series of public meetings to develop recommendations and plans for identifying spectrum for 3G wireless systems. The Secretaries of Defense, Treasury, Transportation, State and other agency heads were directed to participate and cooperate with this government-industry group. The Secretary of State was directed to coordinate and present the views of the United States to foreign governments and international bodies. The FCC was encouraged to participate in this government-industry outreach program and to initiate a rulemaking to identify spectrum for 3G, in coordination with NTIA, with the goal of allocating 3G spectrum so that licenses could be made available via auction by September 30, 2002.

As a result of cooperation between the Department of Commerce, the Department of Defense, the Federal Communications Commission (FCC), and other Federal agencies, the Department of Commerce, under guidelines set forth by the Executive Memorandum, developed an ambitious action plan to identify spectrum for 3G services. To date, NTIA and the FCC have released interim and final reports on the 1710-1855 MHz band and 2500-2690 MHz band, respectively; conducted a government-industry outreach program; and participated in the State Department's outreach program to foreign governments and international bodies. In addition, the FCC issued a notice of proposed rulemaking.

We are now in the process of deciding which of the various frequency bands is most appropriate for the implementation of 3G services in the United States. The possible bands for allocation for the terrestrial component of IMT-2000 in the United States include the 698-960 MHz, 1710-2025 MHz, 2110-2200 MHz, and 2500-2690 MHz bands. All of these bands are being considered in the FCC's rulemaking process. Two bands, however, the 1755-1850 MHz band (exclusive government spectrum) and the 2500-2690 MHz band (exclusive non-government spectrum) require a more extensive analysis to determine their potential to accommodate 3G services. NTIA has studied the 1755-1850 MHz band and the FCC has studied the 2500-2690 MHz band and the study reports have been entered in the record of the FCC's 3G rulemaking for public comment.

NTIA SPECTRUM REPORT

The NTIA report noted that the 1755-1850 MHz band supports various Federal functions: space telemetry, tracking and control (TT&C); medium-capacity fixed microwave; precision guided munitions; tactical radio relay training; and aeronautical mobile applications such as telemetry, video and target scoring systems. This band is currently allocated on an exclusive basis to the Federal Government for fixed and mobile; and in the 1761-1842 MHz portion, space operation (Earth-to-space) and space research (Earth-to-space) services. This allocation supports Federal space tracking, telemetry and command. Fixed links are operated by Federal agencies for voice, data, and/or video communications where commercial service is unavailable, excessively expensive, or unable to meet required reliability. Applications include law enforcement, emergency preparedness, support for the national air space system, military command and control networks, and control links for various power, land, water, and electric-power management systems. Other fixed links include video relay, data relay, and timing distribution signals. Probably the most critical system in the band is the USAF Space Ground Link Subsystem (SGLS). This system, via Earth-to-space uplinks in the 1761-1842 MHz band, controls the U.S. military satellites, including telecommunications satellites, intelligence gathering satellites, the Global Positioning System (GPS) satellite constellation and U.S. allies.

The NTIA report studied three options for sharing or segmenting the 1710-1850 MHz band and provided estimated cost information for relocating Government systems to other bands based on the agencies' analyses of their respective systems. In its report, NTIA concluded that without some form of real-time coordination among IMT-2000 operators and the Federal users, sharing between the IMT-2000 systems and Federal ground and airborne systems would be problematic. For example, a Department of Defense analysis (contained as an appendix to the NTIA report) indicated that IMT-2000 base stations would interfere with the control of Federal Government satellites. The Defense Department asserted that it would cost $3.9 billion to relocate its systems from the 1755-1850 MHz band assuming no relocation of satellite systems until the end of their projected useful life and that such relocation could not be completed before the year 2017. The relocation scenarios were contin-

gent on whether spectrum could be identified to which the agencies' operations could be moved.

In its report, NTIA discussed the possible ways in which the 1710-1755 MHz band could be used for 3G services. NTIA previously identified the 1710-1755 MHz band for reallocation to the private sector on a mixed-use basis under the requirements of the Omnibus Reconciliation Act of 1993 (OBRA-93). However, under OBRA 93 the Federal Power Administration and fixed links supporting safety-of-life services were exempted from the requirement. In addition, NTIA protected operations within 16 military areas used for large-scale training exercises. In its final report, NTIA noted that one possible option to accommodate 3G services within the band would be to relocate Federal systems from this band completely if comparable spectrum for these military operations could be found and the Federal Power Administration services were willing to relocate on a voluntary basis. Identifying comparable spectrum is important to the 3G spectrum allocation process because the provisions of the National Defense Authorization Act for Fiscal Year 2000 protect Department of Defense uses of the spectrum unless alternative spectrum can be identified that preserves essential military capability.

OUTREACH PROGRAMS

To obtain much-needed technical information and to develop a better understanding of industry's needs, NTIA held a number of industry outreach sessions in which Federal agencies and industry exchanged information on various 3G issues. In addition, the wireless industry hosted several smaller, more focused working group meetings that addressed the operational and sharing possibilities of Federal systems in the 1755-1850 MHz band, and sharing possibilities in the 2500-2690 MHz band. These outreach meetings included NTIA and Department of Defense staff as well as numerous industry stakeholders, including radio manufacturers and wireless service providers. These meetings were invaluable information exchanges—the Federal Government could provide information on radio systems used in the band, and industry could provide their views on the feasibility of IMT-2000 systems sharing with existing Federal systems.

GOING FORWARD

Because of the complex issues surrounding the allocation of spectrum for 3G services, there is a general agreement among Department of Commerce, the FCC and the affected Federal agencies to continue these efforts beyond the original July 2001 target date so that we may study carefully the various spectrum options available to arrive at the best possible decision. In recognition of the work that remains to be done, Chairman Powell recently sent Secretary Evans a letter suggesting that additional time to study options would be desirable and requesting that the Department work with the FCC to come up with a revised allocation plan and auction timetable. Secretary Evans responded last week by agreeing with the Chairman that continuing these efforts would ensure that the final 3G allocation decision would be the best possible one. He directed me to work with the FCC and other Federal agencies to develop a new plan for the selection of 3G spectrum and to consider ways to achieve flexibility on the statutory auction date if such flexibility is needed to implement the new plan.

I thank you for this opportunity to share with you the views of the NTIA on this critical issue, and I would be pleased to answer any questions you may have.

Mr. UPTON. Thank you.

Dr. Wells.

STATEMENT OF LINTON WELLS

Mr. WELLS. Mr. Chairman, thank you very much.

Mr. UPTON. Just move that microphone over as well, thanks.

Mr. WELLS. Mr. Chairman, thank you very much. DOD is eager to participate with our executive branch colleagues, the FCC, the Congress and the private sector in the process that will determine the best allocation of third generation spectrum for the Nation. The band that is of most interest to us, as I'm sure you know, is 1755 to 1850 megahertz. To explain why this is important imagine that you're the pilot in a cockpit of an airplane. The communications support, the intelligence support, most of the navigation and the

weather that you receive in your cockpit comes from the 120 plus military and civilian intelligence satellites that are controlled within this band. In addition, the training you have received on air tactical maneuvering ranges is based largely on this band as one of the reasons why our pilots are the best trained in the world. Under your wing may well be a precision guided munition, the kind of weapon whose accuracy allows not only increased military capability, but also dramatically reduced civilian casualties. That weapon depends on control band frequencies and this band.

Beneath your wing are Army and Marine Corps troops. Their tactical Internet, the battlefield radio relay is, in fact, controlled in this band and links them not only for the situational awareness, but also to ships that may be offshore. So intensely as we are using this band today, it's even going to grow. In the case of Kosovo, we had one tenth of the number of troops deployed that we did in Desert Storm and yet we used 250 percent of the bandwidth in that small scale contingency.

Equally dramatic in Kosovo, once the fighting started, the amount of bandwidth we needed increased 21 times over what it had been before the fighting started and we project a 500 percent increase in our use of military satellite communications in the years ahead.

Moreover, this sort of transformation that the Department is going through that Secretary Rumsfeld is encouraging is moving us toward network centric operations which use even more—rely even more on spectrum and bandwidth.

Thus, these are functions that have to be performed. If they are not performed for whatever reason, there will be a severe and immediate impact on the national security of this country. The result will be increased casualties, mission failures, reduced intelligence to the President and senior leadership, not to mention interruptive navigation services to the private sector. So if relocation of DOD out of the Federal band is necessary, we will need to have comparable spectrum to move into. There will need to be some sort of time line to allow the adjustment to take place and compensation will need to be provided.

One of the things that interests me is why this band is so attractive. It is, after all, only 95 megahertz out of the 2,000 megahertz that are already available between 700 and 2700 megahertz in the United States. Various arguments have been put forward. Harmonization, for example, including the goal of having a single band that you could operate on worldwide is very attractive. My concern is that we're not going to get there. China recently has announced they're going to operate in 2.3 to 2.4 gigahertz. That's not even a band that's under serious consideration in the United States.

The question about whether we will encounter increased interference overseas certainly is a matter of concern. Thus far we have dealt with this with a series of international agreements with almost all of our operating partners that have allowed us to work through these problems. If we change the frequencies, we're going to have to go through and renegotiate and entirely new set of agreements.

Finally, some have said that the U.S. should match the amount of spectrum provided to that available in other countries. There is,

in fact, a lot of spectrum available today in the United States. I have included Table 3 in our written presentation 130 megahertz that might be made available today, rising to perhaps 210 megahertz, 240 megahertz by 2010. Obviously, there are considerations, but there is spectrum that is available without ever touching the 1755 to 1850 megahertz.

Mr. Sawyer raised the issue of being a good steward of the spectrum. DOD, in fact, has to revalidate periodically the continued use of the spectrum we have and if we don't have it, we have to give it back up. In addition, we are aggressively pursuing new technologies such as demand access which has increased by four times the number of satellite circuits we can get in a single channel and we are spending tens of millions of dollars on advanced technologies such as software programmable radios that should allow more efficient use of the spectrum in the future. We are good stewards of the spectrum we have.

Together with NTIA we have analyzed the spectrum and the implications of either sharing or vacating the 1755 to 1850 megahertz band. What we found was that because of mutual interference, full sharing of the band would not be feasible. We looking at moving and there are several issues. One again is comparable spectrum. One of the problems of comparable spectrum is that almost all of the attractive spectrum is occupied by someone today. We could say 2500 would be a great band to move into, but I think Monsignor Dempsey would have a concern with us on that point. The same is true of many other attractive spectrum, possibly attractive spectrum.

With regard to timelines, the satellite control I mentioned earlier, the satellites on orbit today, we can't just send a space shuttle up to fix them and return the receivers like it was done with the Hubble Telescope. It may be as long as 2017 before the satellites that use this band fly themselves out. Similarly, by the time we budget for research and development, build and deploy the terrestrial systems, that could be as long as 2010 even before the terrestrial systems can be fully vacated from the band. So there are solutions. There is a time line associated with them. There is some near term spectrum outside of the DOD band that might be suitable and we look for an integrated solution, going forward.

The other point I would make in moving spectrum is that there's an integrated operational fabric that has been put together and balanced over many decades. On the AWACS, the airborne warning and control system aircraft alone there are 80 different antennas. If you were to retune one of those antennas you have to make adjustments on many of the others on the airplane. To return to the pilot in the cockpit, if you were to move his precision-guided munition datalink to a higher frequency, that would mean he would have to come closer to the target in order to control the weapon which, in turn, could put his aircraft at risk. Similarly, it increased the power on the datalink. That might make his aircraft more detectable. There are other tactical sort of situations that one could mention.

To close then, DOD does look forward actively participating with the other members in this debate. We have benefited enormously from the private sector's genius and we expect to do so again. How-

ever, I ask that we not act precipitously. Reasonable people can differ over the urgency of transferring the spectrum and if a decision is made to move DOD, I ask that the risk to national security be balanced against the need for a thorough debate over choosing the right option and also the enormous benefits that this country, the world and indeed the world economy in which this technology so benefits have gained from the international peacekeeping, national security efforts that our people are conducting, efforts that increasingly depend on having adequate spectrum. Thank you very much, Mr. Chairman.

[The prepared statement of Linton Wells follows:]

PREPARED STATEMENT OF LINTON WELLS, ACTING ASSISTANT SECRETARY OF DEFENSE FOR COMMAND, CONTROL, COMMUNICATIONS AND INTELLIGENCE, DEPARTMENT OF DEFENSE

1. INTRODUCTION

Thank you, Mr. Chairman, and members of the subcommittee, for inviting me to speak on this issue of the utmost importance to our military forces, allocating radio frequency (RF) spectrum. As the Acting Assistant Secretary of Defense for Command, Control, Communications and Intelligence, I am responsible for spectrum policy and management within DoD.

The issue of finding spectrum in the United States for Third Generation Wireless ("3G") services illustrates the growing demand for spectrum in both the commercial and government sectors. The Department of Defense's needs for spectrum are growing along with those of other organizations. For example, the satellite bandwidth used in Operation Allied Force in Kosovo was two and one half times the bandwidth used in Desert Storm nine years earlier, while the Kosovo force was one tenth the size. Work done at the Department of Defense has projected significant growth in military spectrum requirements in all functional areas over the next few years (see Figure 1).

Access to adequate RF spectrum was critical to US Forces' success in Desert Storm and Kosovo and will continue to be crucial to the Department's ability to transform itself into a leaner, more agile, and more effective force that can meet the security challenges of the future at reasonable cost to the taxpayers. Fundamental to this transformation is the network-centric concept of operations which is already being implemented. RF spectrum is virtually the *only* way to connect mobile ground forces, ships, aircraft, and satellites.

2. DOD USE OF THE FEDERAL GOVERNMENT 1755-1850 MHZ BAND

As you know, the Federal government band from 1755-1850 MHz is one of the bands under consideration for 3G. DoD uses this band for satellite control, battlefield radio relay, aircrew combat training, precision weapons guidance, and many other important functions. The band was picked for these functions because the signals at these frequencies propagate in ways that make the spectrum ideal for mobile communications. Altogether more than 100 DoD systems, and a more than equal number of systems from other Federal agencies, utilize this band. Figure 2 depicts many of the uses. I will briefly describe each of the major functions resident in the 1755 MHz band.

The control uplinks for all DoD and Intelligence Community satellites (more than 120 satellites representing a cumulative investment of about $100B) use the 1755 MHz band. These satellites perform communications, positioning and timing, surveillance and reconnaissance, weather observation, and other functions crucial to war-fighting and to decision-making by National Command authorities, including the President, the Secretary of Defense, and the Chairman of the Joint Chiefs of Staff, as well as other senior military decisionmakers.

DoD's Global Positioning System satellites have become crucial parts of the national civilian/military infrastructure supporting global navigation and positioning requirements for air, land and sea vessels. GPS serves functions that are as important as the functions provided by railroads and telecommunications systems.

The battlefield radio relay systems in this band form the long-haul backbone of the Army and Marine tactical internets. They let our ground forces to share situational awareness and coordinate their operations in real time across the extended battlefield, as well as to ships off-shore.

The Air Force and Navy aircrew combat training system, which provides realistic training with engagement assessment and feedback, is one of the main reasons American pilots are the best-trained combat pilots in the world.

The most accurate air-launched precision weapons in the Services' inventories are guided by data links using the Federal band. These weapons are often used by commanders to ensure the highest probability of mission accomplishment with the fewest possible civilian casualties.

Virtually all of the these systems played a key role in the Allied victory in Kosovo. The success of this operation would have been unlikely without satellite-based communications, navigation, and reconnaissance, without well-trained combat aircrews, without precision-guided weapons, and without tactical radio relay systems.

Other important DoD systems that use the Federal band, include Combat Identification, soldier radios, and weapon scoring.

In an era of reduced force structure, increased mission responsibilities and fewer soldiers, sailors and airmen, these systems serve to enhance significantly our operational capabilities. Enhanced knowledge of the battlefield, coupled with precise engagement capabilities obtained from these spectrum dependent, force multipler systems, protect our forces, throughout the full range of U.S. involvement from combat to peacekeeping and humanitarian operations.I want to say in the most unequivocal way possible that *the loss or degradation of our ability to perform these crucial functions would have very severe consequences for National Security. It would result in mission failures and increased casualties in future operations, and loss of vital intelligence information to the President and senior leaders.* If the Federal band is to be reallocated, then other suitable spectrum must be found to enable the displaced functions to be performed without degradation, and we need enough time to relocate to the new spectrum.

3. DOD STUDY FINDINGS

The White House-directed study conducted by DoD on accommodating 3G services in the Federal band examined the options of sharing the band, vacating all of the band, or vacating part of it. The study found that sharing the band between 3G services and incumbent DoD systems would not be feasible because there would be too much mutual interference. Vacating or segmenting the band is feasible in theory, provided that comparable spectrum could be allocated to DoD and adequate, timely financial compensation provided, but DoD satellite control systems could not vacate the band before 2017 and non-space systems before 2010. These timelines are driven by fact-of-life considerations including the expected satellite lifetimes, the inability to change the frequencies of on-orbit satellites and time required to design and field new systems in a different frequency band. NTIA's report incorporates the DoD findings.

4. COMPARABLE SPECTRUM.

Let me emphasize again, as a matter of national defense and security, DoD's ability to carry out its operational mission will be jeopardized if the Department is not provided with access to spectrum with appropriate technical characteristics and regulatory protections. The National Defense Authorization Act of 2000 requires that DoD be provided "comparable spectrum" for functions displaced by reallocation of Federal spectrum to meet commercial needs. The Secretary of Defense, the Chairman of the Joint Chiefs of Staff, and the Secretary of Commerce must jointly certify that any replacement spectrum is comparable. We consider this to mean that the replacement spectrum for different DoD systems has suitable technical characteristics and similar regulatory status so that the displaced function can be performed with no degradation in capability. At this point, DoD believes that it is unlikely that comparable government spectrum can be found for most of the functions presently residing in the 1755 MHz band and, to date, the NTIA and the FCC have not identified such spectrum. Forced relocation of DoD without provision of comparable spectrum will result in the very servere consequences to National Security that I addressed earlier.

We are willing to engage with all parties to find a way ahead on spectrum. Nonetheless, we believe that the issue of equivalent spectrum must be resolved before any decisions are made on spectrum for 3G, including any "decision in principle" or "policy decision" on band reallocation.

5. CTIA PROPOSALS

In their 3G "briefing book," CTIA has proposed work-arounds for satellite control, tactical radio relay, and air combat training systems to enable accommodation of 3G services in the Federal band earlier than the DoD timelines Our initial assessment

is that none of these proposals could be implemented without serious degradation to DoD capabilities. CTIA has not proposed work-arounds for precision guided weapons or many other important DoD systems.

CTIA has proposed a "win-win" solution in which DoD would be provided modernization funds, beyond the marginal cost to relocate, as an inducement to accept relocation. We would be interested in seeing what could be included in such a package but have not yet seen such a proposal. Moreover, we emphasize that any such solution could only be viable if DoD is provided access to spectrum with equivalent technical characteristics and regulatory status. While the offer is no doubt made in good faith, a mechanism has not been presented by which it could be implemented in such a way as to produce a genuine win-win situation.

6. NEED FOR ADDITIONAL SPECTRUM FOR 3G IN THE UNITED STATES

We were asked in Chairman Upton's letter of invitation to comment on this issue. In our view, the case must be updated, refined and timelines for such spectrum spelled out. The U.S. has a much lower population density than Europe or Asia, so that requirements for 3G personal communications devices may be smaller than either of these regions. Further, we can expect that technological advances will enable the wireless industry to wring more use out of their spectrum (just as the DoD is counting on spectrum-efficient technologies to enable us to meet our growing needs without demanding more spectrum from the regulators). Finally, the amount of spectrum needed for 3G is undetermined because the demand for 3G services is unknown at this point. Many industry observers believe that second generation wireless services (personal communications services" or PCS in the United States), with enhancements (high speed voice and data connection, but not streaming video) will be sufficient for most truly mobile users.

7. CANDIDATE BANDS FOR 3G

The Federal 1755 MHz band is heavily encumbered and would require nearly two decades to become available, there are other bands readily available to FCC for meeting the needs of the 3G vendors. Figure 3 lists some of the other bands available. Much of this spectrum was reallocated from DoD/Federal use to commercial use by earlier legislation and NTIA action but it has not yet been made available through auction by the FCC. Altogether there is at least 130 MHz of suitable commercial spectrum that FCC could make available this year with limited displacement to established users, and more than 240 MHz could be available within ten years.

Another means of meeting the 3G spectrum requirement in full or in part is to provide 3G services on spectrum currently used for PCS or other wireless services, as FCC regulatory flexibility allows and as some 3G vendors are planning.

8. HARMONIZATION

CTIA argues that the Federal band is desired for 3G because it would harmonize U.S. spectrum allocation with 3G allocations around the world. This is not the complete picture. There are at least six bands that WRC-92 and WRC-00 suggested nations consider for 3G. *Worldwide harmonization of 3G bands is not happening.* Most nations have not yet decided on which band will be used for 3G, and I am not aware of any nation that has auctioned the 1755 MHz band for 3G. In fact, Europe uses the 1755-1850 MHz band for 2G. Europe would need to make regulatory changes before using this spectrum for 3G and probably will not migrate it to 3G for more than a decade. Many nations are waiting to see which band the U.S. picks.

CTIA is now modifying its position to state that the 1755 MHz band is needed to enable harmonization of advanced commercial wireless services "in general." Harmonization is primarily helpful when it can be achieved with respect to a particular band (such as 2G or 3G) or waveform (such as CDMA, one of the current U.S. standards for first generation phones, or GSM, the current first generation standard in Europe and most of Asia). We have no national commitment to harmonization with respect to 3G implementation. Finally, multi-mode and multi-band phones are available today and appear to be economically viable.

9. THE FEDERAL GOVERNMENT, INCLUDING DOD, IS MANAGING SPECTRUM JUDICIOUSLY.

DoD is not "hoarding" spectrum and using it inefficiently. DoD is granted access to spectrum by NTIA and, in a few cases, by FCC for specific purposes. The need for government spectrum for particular user and uses is reevaluated on an ongoing basis. DoD systems must be designed to a very high level of spectrum efficiency since the lives of servicemen and women are at risk and many military systems

must operate in close proximity at the same time, during military operations. We are constantly pursuing new spectrum-efficient technologies. For example, we are fielding multiplexers for our UHF satellite receivers that multiply the number of channels per satellite by a factor of four.

I would like to put the relative allocation of bandwidth between industry and the Federal government in proper context. Out of the total amount of spectrum that is appropriate for 3G deployment, generally 700MHz-2700MHz, the Federal government is the exclusive occupant of about 15%. Three times that amount is reserved exclusively for commercial use, and the rest is shared.

10. CONCLUSION

This issue requires a balancing of economic and national security needs. We should remember that there can be no economic prosperity without national security. Furthermore, the value of national security cannot be measured in dollars. The benefits the nation derives from making spectrum available for Defense are expressed in terms of wars that we won't have to fight, and victories achieved and casualties avoided in the wars we do fight.

To summarize the DoD position on this issue, we must have comparable spectrum if we are to relocate, and this must be identified and certified prior to any decision to reallocate the Federal band. If comparable spectrum cannot be identified within the next few months, then the Federal band should be taken "off the table."

Forced relocation of DoD without comparable spectrum, or without respect for the transition timelines, as proposed in legislation drafted by CTIA, would cause grave damage to National Security. *In effect, without comparable spectrum, we would be risking the lives of our Soldiers, Sailors, Airmen and Marines.*

Furthermore, even given comparable spectrum, timely and adequate financial reimbursement, and respect for our transition timelines, it is still not clear that the Federal band should be reallocated. As I have explained, industry's case for needing the Federal band is very weak, there are commercial bands that appear to be more readily available, and a Federal band should be the *last* resort, not the first resort, for a new commercial need such as 3G. Given that there are risks for DoD in moving to other bands, we would like to see compelling evidence that this is truly in the national interest before agreeing to relocate.

The way ahead is for all of us to work together to further assess what band options are feasible and, of the feasible set, which is the best choice for 3G based on mutually-agreed criteria. I believe this process should include an attempt to identify and certify comparable spectrum for DoD if FCC still wishes to consider the Federal band.

The United States has global security responsibilities and thus has needs for spectrum for military systems that are far greater than any other nation's requirements. This is part of the benefits and burdens that accrue to our Nation, given our worldwide leadership role in the 21st Century. We will continue to work in a spirit of cooperation and openness with the Congress, other Executive Branch agencies, the FCC and other interested parties to reach the best decision for the nation on this important question.

Mr. UPTON. Thank you.
Mr. Knapp.

STATEMENT OF JULIUS P. KNAPP

Mr. KNAPP. Mr. Chairman, ranking member and members of the subcommittee, good morning. I am Julius Knapp, the Deputy Chief of the Office of Engineering and Technology at the FCC and I welcome this opportunity to discuss the spectrum allocations for advanced wireless services or the so-called third generation or 3G mobile radio services. Unfortunately, Chairman Michael Powell could not be here today, but he shares your interest in the future of 3G. The Commission is committed to facilitating the rapid deployment of new and innovative technologies as well as promoting spectrum efficiency.

It's crucial that we provide the essential ingredients for success in the marketplace for advanced wireless services. And those are adequate spectrum and an open, competitive, deregulatory market. In order to accomplish these goals we must work together as a Nation to ensure a cooperative atmosphere and a unified voice.

The Commission is dedicated to working with industry, other agencies and Congress to find and deploy the most suitable spectrum. Today's hearing is an important step toward encouraging the development of shared goals and perspectives and we welcome the opportunity to testify here today.

Let me briefly outline the past and current situation. As Mr. Hatch mentioned, the International Telecommunications Union has been fostering the development of advanced wireless systems for about 10 years. The 2000 World Radio Conference adopted Resolution 223 which states that approximately 160 megahertz of additional spectrum will be needed to meet the projected requirements of IMT-2000 or 3G in those areas where the traffic densities are highest by the year 2010.

WRC-2000 identified a number of frequency bands for possible IMT-2000 use and provided that each country may determine which of the bands to implement domestically after taking into account the impact on their incumbent services. WRC-2000 decisions also provided that 3G services may be introduced through evolution of technology and frequency bands that are used by existing mobile services. The 3G frequency bands that were identified internationally are allocated in the United States for both Federal Government and nonfederal government use and therefore the executive branch and the FCC each have jurisdiction for parts of the spectrum that were identified internationally.

A Presidential Memo was issued in October of 2000 instructing the Secretary of Commerce to work cooperatively with the FCC to develop a study plan to select spectrum for 3G systems. The Department of Commerce released a plan on October 20, 2000 to identify spectrum for 3G and the plan established target dates for completion of spectrum studies by NTIA and the FCC. The plan also called for the FCC to allocate spectrum by July 2001 and to establish rules so that spectrum could be assigned by competitive bidding by September 2002.

Late last year, the FCC initiated a rulemaking to consider spectrum allocations to facilitate the introduction of advanced wireless services. The Commissions Notice of Proposed Rulemaking invited comments on the types of advanced wireless services that will be provided and their technical characteristics, the amount of spectrum that may be required, spectrum pairing options and a number of other issues.

I'd like to take a moment just to focus on the frequency bands. The Commission invited comment first of all on the extent to which the currently allocated spectrum might be used for advanced wireless services including the bands used by cellular, PCS, specialized mobile radio services and the spectrum that was recently reallocated for commercial use from TV channel 60 to 69 as a result of the transition to digital television.

The Commission also invited comment on five new frequency bands that are shown on the chart we've placed on the easel. We

propose to allocate for mobile and fixed services the 1710 to 1755 megahertz band that was designated for reallocation from Federal Government to nonfederal government use under two statutory budget directives. And that's shown in yellow on the chart.

We sought comment on providing mobile and fixed service allocations for the 1755 to 1850 megahertz band if that spectrum is made available for nonfederal government use. We also proposed to designated for advanced mobile and fixed services parts of the 2110 to 2150 megahertz and 2160 to 2165 megahertz bands that are currently used for a variety of fixed and mobile services and were identified in the Commission's emerging technologies proceeding in 1992.

We also asked for comment on various approaches for the 2500 to the 2690 megahertz band which is currently used for the multichannel, multi-point distribution and instructional television fix services that we refer to in shorthand as MDS and ITFS.

So what's next? The Commission staff is evaluating the record in its rulemaking to determine how to proceed. Comments filed by the wireless industry suggest that the 1710 to 1850 megahertz band would be the preferred choice for 3G spectrum. This spectrum would harmonize U.S. spectrum allocations with those in use or planned internationally, permit economies of scale and reduce costs in manufacturing equipment as well as facilitating international roaming.

We've been working in close consultation with the Department of Commerce and the Department of Defense and they are continuing to evaluate whether in addition to the 1710 to 1755 megahertz band that has already been identified for transfer, spectrum can be made available in the 1755 to 1850 megahertz band.

In addition, the Commission staff is working to identify other possible nongovernment spectrum bands that might be reallocated for 3G or serve as relocation spectrum. Industry is also looking at additional spectrum options. CTIA recently filed a petition with the FCC seeking to reallocate spectrum that was allocated to the mobile satellite service.

As Mr. Hatch mentioned, the Chairman sent a letter to the Secretary of Commerce Donald Evans noting that the entire Federal Government faces a challenge in addressing the issues for 3G and making sufficient spectrum available.

Secretary Evans recently responded to Chairman Powell's letter and directed the Acting Administrator of the NTIA to work with the FCC to develop a new plan for the selection of 3G spectrum as quickly as possible.

In conclusion, the Commission is committed to making spectrum available for new advanced wireless services. We will continue to work closely with the Congress, the Federal Government, the Department of Defense, the wireless industry and other spectrum users toward that end. We must approach these issues by balancing the needs of all users through a well-managed national plan.

I'd like to thank you, Mr. Chairman, for the opportunity to appear before you today and this concludes my testimony and I'd be happy to answer questions afterwards.

[The prepared statement of Julius P. Knapp follows:]

PREPARED STATEMENT OF JULIUS P. KNAPP, DEPUTY CHIEF, OFFICE OF ENGINEERING AND TECHNOLOGY, FEDERAL COMMUNICATIONS COMMISSION

Mr. Chairman, Ranking Member, and Members of the Subcommittee: Good morning. I am Julius Knapp, Deputy Chief of the Office of Engineering and Technology at the Federal Communications Commission (FCC). I welcome this opportunity to discuss spectrum allocations for advanced wireless service, or so-called third generation (3G) mobile radio services.

Unfortunately, Chairman Michael Powell could not be here today, but he shares your interest in the future of advanced wireless communications services, including 3G. The Commission, in general, is committed to facilitating the rapid deployment of new and innovative technologies as well as promoting spectrum efficiency.

More specifically, it is crucial that we provide the essential ingredients for success in the marketplace for advanced wireless services - adequate spectrum capacity, and an open, competitive de-regulatory environment. In order to accomplish these goals, we must work together as a nation to ensure a cooperative atmosphere and unified voice. The Commission is dedicated to working with the industry, other agencies, as well as Congress to find and deploy the most suitable spectrum. Today's hearing is an important step toward encouraging the development of shared goals and perspectives, and we welcome the opportunity to testify here today.

INTRODUCTION

Commercial mobile radio services have experienced unprecedented strong growth, particularly in the past several years. In the twelve months ending December 2000, the mobile telephony sector generated over $52.5 billion in revenues and subscribership increased from approximately 86 million to 110 million users.

The first wireless phones, introduced in the 1980s, used analog technology and offered only voice service. The second generation of wireless phones, introduced in the mid-1990s, use digital transmission technology but still primarily offer voice services. Data services are being introduced that allow consumers to use wireless phones and other devices to provide access to the Internet, but transmission speeds are relatively slow by today's standards.

Industry has developed technology for advanced wireless services, referred to as third generation or 3G wireless, that will offer high-speed data rates that make it possible to offer a variety of new voice and advanced services. The United States has been very involved internationally in developing technical standards and identifying spectrum for 3G services.

Late last year, the FCC initiated a rulemaking to consider spectrum allocations to facilitate the introduction of advanced wireless services, such as 3G. Some of the spectrum identified internationally for 3G currently is used in the United States for Federal government communications systems. The Commission's staff has worked closely with the Department of Commerce in addressing possible spectrum allocations for 3G.

The FCC is continuing its efforts to address the spectrum requirements for 3G systems. I am pleased to report on our progress thus far.

INTERNATIONAL SPECTRUM ALLOCATIONS FOR 3G

The International Telecommunications Union (ITU) has been fostering the development of advanced wireless systems, commonly referred to as International Mobile Telecommunications-2000 (IMT-2000) or 3G systems, for a number of years. The 2000 World Radio Conference (WRC-2000) adopted Resolution 223, which states that approximately 160 MHz of additional spectrum will be needed to meet the projected requirements of IMT-2000 in those areas where traffic is highest by 2010. WRC-2000 identified a number of frequency bands for possible IMT-2000 use and provided that each country may determine which of the bands to implement domestically after taking into account the impact on incumbent services. The WRC-2000 decisions also provided that 3G services may be introduced through evolution of technology in frequency bands used by existing mobile services.

COORDINATION WITH DEPARTMENT OF COMMERCE

The frequency bands identified internationally for possible use for advanced wireless services are allocated in the United States for both Federal Government and Non-Government use and therefore fall under the spectrum management responsibilities of both the Executive Branch and the Commission. Setting the direction for the Executive Branch, a Presidential Memorandum was issued in October 2000 instructing the Secretary of Commerce to work cooperatively with the Federal Communications Commission to develop a Study Plan to select spectrum for 3G systems.

The Department of Commerce released a "Plan to Select Spectrum for Third Generation (3G) Wireless Systems in the United States" on October 20, 2000. The plan established target dates for completion of spectrum studies by the National Telecommunications and Information Administration (NTIA) and the Federal Communications Commission. The plan also called for the FCC to allocate spectrum by July 2001 and to subsequently establish rules so that spectrum can be assigned by competitive bidding by September 2002.

FCC RULEMAKING

The Commission issued a Notice of Proposed Rule Making ("Notice") in ET Docket No. 00-258 in December 2000 to identify spectrum for advanced wireless services, including third generation and future generations of wireless systems.

Service Requirements

In the Notice, the Commission sought comment on the types of advanced wireless services that will likely be provided and the technical characteristics of such systems. The Commission noted that wireless carriers in the United States employ a variety of technical standards and sought comment on how networks will migrate to new technologies and whether networks have the capacity now to provide data services. We also requested information on the projected demand and growth rates for mobile data services, the number of licensees needed to meet this demand, how to accommodate global roaming, and other issues.

Amount of Spectrum Needed

The Commission's rulemaking invited comment on the amount of spectrum required for advanced wireless services, for example, whether the 160 MHz of spectrum recommended by WRC-2000 Resolution 223 is required or whether some alternative amount is needed. The Notice states that the Commission intends to identify a flexible allocation for advanced wireless services, noting that it is not Commission policy to set aside spectrum restricted to a given technology.

Frequency Bands

The Commission asked for comment on the extent to which currently allocated spectrum might be used for advanced wireless services. This spectrum includes the frequency bands used by cellular, PCS, and specialized mobile radio services, as well as spectrum recently reallocated for commercial use from TV channels 60-69 as a result of the transition to digital television.

The Notice also invited comments on using additional candidate bands for advanced wireless systems. Three of these bands are ones that the Commission previously identified for reallocation and that the ITU identified for possible 3G use: 1710-1755 MHz, 2110-2150 MHz, and 2160-2165 MHz.

The 1710-1755 MHz band is now used by Federal Government operations and is scheduled for transfer to the private sector on a mixed-use basis by 2004.

The 2110-2150 MHz and 2160-2165 MHz bands are currently used by the private sector for fixed microwave services. The Commission identified these bands several years ago for reallocation to emerging technologies.

The Notice sought comment on whether portions of the 1755-1850 MHz band, which is now used by Federal Government operations, can be made available for advanced wireless services. Recent legislation sets certain conditions before the Department of Defense (DOD) surrenders use of a band, such as this one, in which it is a primary user. Further, Federal Government users in this spectrum would be entitled to compensation for relocation to other bands.

The Commission's rule making asked for comment on whether the 2500-2690 MHz band, which is now used for Instructional Television Fixed Service (ITFS) and Multipoint Distribution Service (MDS), can be used for advanced mobile, as well as fixed services. The proposal also asked whether we should simply add a mobile service allocation to this band or if ITFS/MDS incumbents should be relocated.

Finally, the Notice requested comment on how newly available spectrum for advanced wireless services might be paired and the importance of global harmonization.

The Commission's staff currently is reviewing the comments received in response to this Notice as we evaluate next steps, which I will discuss in a moment.

FCC TECHNICAL REPORT

The staffs of NTIA and the FCC issued Final Reports in March reporting the results of studies for two of the frequency bands under consideration for advanced wireless systems.

The FCC staff report examines the 2500-2690 MHz band. The report explains that this spectrum is heavily occupied by existing ITFS and MDS systems. These services are experiencing and are expected to see significant future growth, particularly in the provision of new broadband fixed access to the Internet. Given the ubiquitous nature of ITFS/MDS, the report found sharing of this spectrum for 3G does not appear feasible. Further, the report found that reallocating a portion of the 2500-2690 MHz band from incumbent services for new third generation mobile wireless services would raise significant technical and economic difficulties.

REIMBURSEMENT FOR FEDERAL RELOCATION

The Strom Thurmond National Defense Authorization Act of 1999 (NDAA 99) mandates that new commercial licensees (assigned via competitive bidding) reimburse Federal government incumbents forced to relocate spectrum. The reimbursement requirement applies to the 1710-1755 MHz band that has already been identified for transfer from Federal to non-government use. It would similarly apply to the 1755-1850 MHz band if the Federal government were to make this spectrum available for use by the private sector.

The first application of the mandatory reimbursement provisions is under consideration in a separate Commission (ET Docket 00-221) and NTIA rulemaking proceedings. The Commission's Advanced Services Notice invited comment on relocation rules and reimbursement procedures. The Commission and NTIA invited comment as to how these reimbursement rules and procedures would affect the commercial viability of Federal reallocated spectrum that may be made available for 3G. Concerns raised in the comments focused primarily on the availability of adequate information and reduced uncertainty in the process for potential licensees to develop viable bidding strategies. We are continuing to work closely with NTIA to develop reimbursement policies and procedures that are viable for Federal incumbents as well as prospective new users.

NEXT STEPS

As I mentioned, the Commission is evaluating the record in the Advanced Services Rule making to determine how to proceed. The comments filed by the wireless industry suggest that the 1710-1850 MHz band would be the preferred choice for 3G spectrum. This would partially harmonize U.S. spectrum allocations with those in use or planned internationally. Harmonization would permit economies of scale and reduce costs in manufacturing equipment, as well as facilitate international roaming.

Parts of the 1710-1850 MHz band could be used to harmonize with 2G GSM systems, which are currently used extensively throughout the world and are expected to transition eventually to 3G systems. Other parts of the 1710-1850 MHz band could be paired with the 2110-2150 MHz band to achieve partial harmonization with spectrum recently auctioned in Europe and elsewhere for 3G systems.

The Department of Commerce and the Department of Defense are continuing to evaluate whether, in addition to the 1710-1755 MHz band that has already been identified for transfer, spectrum can be made available in the 1755-1850 MHz band. They have been working closely with industry in consultation with the Commission.

The Commission staff has also been working to identify other possible non-government spectrum bands that might be reallocated for 3G or serve as relocation spectrum. These additional bands could be identified in a Further Notice of Proposed Rulemaking in the near future.

Industry, as well, has been looking at additional spectrum options. For example, the Cellular Telecommunications and Internet Association recently filed a petition with the FCC seeking to reallocate spectrum currently allocated to the mobile satellite service.

Given these developments, on June 26, 2001, FCC Chairman Powell sent a letter to Secretary of Commerce Donald Evans noting that the entire federal government faces a challenging set of issues in addressing how best to make available sufficient spectrum for advanced wireless services. Chairman Powell stated that the public interest would be best served by additional time for informed consideration, even if this results in some delay in reaching a decision. The Chairman also acknowledged that some of the bands identified for 3G are subject to September 30, 2002 statutory auction deadlines. The Chairman offered that, together with the Executive Branch and the Congress, we can come up with a revised allocation plan and auction timetable that would enable the important work in this area to be finalized in the most effective manner.

Secretary Evans recently responded to Chairman Powell's letter and directed the Acting Administrator of the NTIA to work with the FCC to develop a new plan for

the selection of 3G spectrum as quickly as possible. This effort will be carried out in close coordination with the appropriate Executive Branch entities, including the National Security Council, the National Economic Council, the Office of Management and Budget, and the Department of Defense. Secretary Evans encouraged the participants to consider ways to achieve flexibility with respect to the statutory auction dates if flexibility is needed to implement the new plan.

CONCLUSION

The Commission is committed to making spectrum available for new advanced wireless services. We will continue to work closely with the Congress, the Federal Government, the Department of Defense, the wireless industry, and other spectrum users towards that end. We must approach these issues by balancing the needs of all users through a well-managed national plan.

I would like to thank you, Mr. Chairman, for the opportunity to appear before you today. This concludes my testimony and I would be pleased to answer any questions you or the other members may have.

Mr. UPTON. Thank you.

Mr. Wheeler.

STATEMENT OF THOMAS E. WHEELER

Mr. WHEELER. Thank you, Mr. Chairman, and members of the committee. I want to begin by associating myself with many of the remarks that Dr. Wells made. Particularly, there was a great word that you had there, eager, and we particularly want to work with you in your eagerness to address this issue because I think we can really stipulate three things here. One is that today we have the best military in the world and we want to keep it that way for those men and women who are called into harm's way. The second is that the 21st century military is going to be an information battlefield as you have often pointed out. And wireless is going to be a key component on that battlefield. And the third is that there is another component of our national security in the 21st century and that's our economic security. We are the world leaders in information technology today because we had the home field advantage. The reason that Yahoo started here and not in France is because they had a backbone network they could go to scale quickly. There are other countries in the world now who are trying to jump and use that home field advantage with spectrum to give them the leg up in the next generation.

The challenge is how do we have both a military win and an economic win and there's been a lot of talk in the statements earlier about win-win situations, but I truly think that that is possible and I think that this Administration, the work that's being done at the National Economic Council, the National Security Council, along with the efforts of the preceding witnesses clearly are moving toward that kind of a situation.

What I hope to do today is to illustrate the potential for that win-win by using the information the Defense Department has prepared to help guide us toward that win-win. What you see up here on the chart right now is page C-6 from the Defense Department spectrum report in which they talk about tactical radio problems that occur when the military deploys in Europe because of the fact that those frequencies are being used by Europeans for wireless phones. We had an experience in Asia in the Team Spirit exercise in Korea where in order to use our radios we had to shut down part of the Korean cellular network. And this situation can only get worse and the number of wireless subscribers grow. Here's the pro-

jection in terms of what that growth is going to look like and what that means is that the spectrum that we are presently using domestically becomes unusable or encumbered when we deploy for either action or training abroad. Our international effectiveness starts with spectrum policy at home as a result. Now let's look for that win-win situation. Let's take a look at the Defense Department's report on the findings in their study and this is, as you might recognize, with your copyright permission, sir, we've reprinted your charts.

And go immediately to the second bullet there about vacating the spectrum and let's just kind of tick through those. First of all, the Defense Department says they must have comparable spectrum. We agree. The DOD report laid out a migration plan from the present spectrum to new spectrum, but they're going to need help from the Congress and the Administration and the FCC to get there and they should get that help.

The second bullet says that they need timely cost reimbursement. We agree. The estimate in the DOD report is $4.3 billion. We're talking about roughly 95 megahertz of spectrum here, covering all the U.S. We recently had an auction, the FCC had an auction in which they auctioned off 30, sometimes slightly less megahertz covering about 60 percent of the U.S. and generated $17 billion. There is availability of funds for covering the cost reimbursement.

And last, the scheduled time to vacate bullet. We agree. There needs to be a plan. We're not talking about tomorrow, all this gets done in one clean cut. But there needs to be a scheduled roll out of spectrum that recognizes the needs of the Defense Department as well as the economic needs. Now we do disagree with one thing on this chart and that's that line right there that says that it is not until 2010 that the non-space system's spectrum can move. Let me show you another DOD chart and suggest that perhaps this might be a way of helping to address that problem and priming the pump over all. This has to do with fixed systems, microwave networks. And I call your attention to the bottom bullet down there that says that half of the DOD's fixed spectrum is used by the Corps of Engineers for monitoring purposes, to monitor waterflows, dams and things like this. That's burst-y kinds of intermittent information. Page 9 of the Defense Department report says that there already exists a migration path for that that spectrum has already set aside if they were to migrate. I might also indicate that those are the kind of services that wireless carriers are providing daily. Albertson's grocery store in California, for instance, is using wireless to monitor their energy consumption during the California energy crisis and to control what they do in their stores. The same kind of thing can be done with dams and other things.

But why don't we take this spectrum, which the Defense Department says is half of all of their fixed spectrum that is not a national security issue and why don't we use it to prime the pump?

Ms. WILSON. Mr. Chairman, point of information.

Mr. UPTON. Ms. Wilson?

Ms. WILSON. Mr. Chairman, we're seeing some excerpts from a study here and I wonder if that entire study is available to the committee?

Mr. WHEELER. I'd be happy to submit it for the record, Ms. Wilson.

Ms. WILSON. Do we have a copy here?

Mr. WHEELER. It's a DOD study.

Ms. WILSON. I'm concerned I'm seeing excerpts from a study that you're presenting me and I just wondered if you have a full copy of the report that I could have.

Mr. UPTON. Mr. Hatch?

Mr. HATCH. Thank you, Mr. Chairman. We have provided copies to Members of Congress. If there are members of your committee that do not have copies——

Mr. UPTON. We'll make sure we get one.

Mr. HATCH. We'll be happy to provide copies of both NTIA and the DOD report.

Mr. UPTON. Thank you.

Ms. WILSON. Does anybody have a copy?

Mr. WHEELER. We'll get you a copy right away.

Ms. WILSON. Thank you.

Mr. WHEELER. Thank you, Mr. Chairman. What I'm trying to say here is that I think there is a way to prime the pump using this spectrum that is for fixed services and that that can create, that can go into a trust fund that can then pay for additional upgrades, pay for clearing of spectrum and start a process, so there is a win-win in this whole situation for America. We can build a strong military, paid for with nontax dollars and then we can build an internationally competitive economy that generates that kind of non-tax opportunity and that the good work of the Defense Department has shown the way and we look forward to working with Dr. Wells and his eagerness to together find that kind of a win-win solution.

[The prepared statement of Thomas E. Wheeler follows:]

PREPARED STATEMENT OF THOMAS E. WHEELER, PRESIDENT AND CEO, CELLULAR TELECOMMUNICATIONS & INTERNET ASSOCIATION

Mr. Chairman and Members of the Subcommittee: Thank you for the opportunity to appear before you today. I am Thomas E. Wheeler, President and CEO of the Cellular Telecommunications & Internet Association (CTIA) representing all categories of commercial wireless telecommunications carriers, including cellular and personal communications services (PCS).[1]

As we look to the challenges of American national security at the dawn of the 21st Century it is increasingly apparent that our security is dependent upon not only traditional military capabilities, but also the strength of our economic competitiveness at home and abroad. We presently find ourselves challenged to upgrade military systems and to supply each and every one of our fighting men and women every technological advantage possible. We also find ourselves challenged to maintain our position as world leaders in technology, especially as the world prepares to debut the next generation of the wireless Internet. At few times in this nation's history have the solutions to both these challenges been more closely intertwined.

Economically, the reason the United States leads the world in Internet technology and services is because we had a "home-field advantage" at the Net's inception. A well-developed Internet backbone enabled companies like Yahoo to test an idea and then go quickly to scale. Our international economic competitors, however, have learned from that experience and are seeking to build their own "home field advantage" for the next generation of the Internet—the wireless Internet. In countries like

[1] CTIA is the international organization which represents all elements of the Commercial Mobile Radio Service (CMRS) industry, including cellular, personal communications services, wireless data. CTIA has over 750 total members including domestic and international carriers, resellers, and manufacturers of wireless telecommunications equipment. CTIA's members provide services in all 734 cellular markets in the United States and personal communications services in all 50 major trading areas, which together cover 95% of the U.S. population.

Japan, Germany, Great Britain and France the governments have made available blocks of spectrum for next generation wireless services that approximately double the amount of spectrum the U.S. government has made available to its wireless industry. Our competitors' plan is transparent: control the next generation of Internet products and services by giving non-U.S. companies access to the pathway necessary to deliver those products and services.

Militarily, there is almost uniform agreement that the new battlefield will increasingly be an information battlefield. Satellite infrared imaging, for instance, will enable soldiers to see behind the next hill. Real time intelligence updates and maps will show the enemy's latest positions. Leaders on the ground will have voice and data communications with superiors as well as with their own troops. Information superiority becomes a force multiplier for whoever is able to communicate best. Unless our soldiers are going to be dragging wires behind them as they deploy, these capabilities are all going to require the airwaves for their delivery.

The problem is that the airwaves that the rest of the world is allocating or otherwise plans to use for expanded wireless services are the very same spectrum that the American military utilizes for its communications. In the next five years the ability of the American military to deploy or train abroad will be compromised by hundreds of millions of consumers using wireless devices in the spectrum to which U.S. military radios are tuned. Already the growth of wireless technology abroad has begun to impact U.S. military capabilities. A recent Department of Defense analysis reported on the "nonavailability of alternate [spectrum] bands to provide the high-end frequency component" of command and control systems. The reason these airwaves were not available, according to the report, was the growth of mobile phones. Decisions already made by other countries have, are, and will affect our national security capabilities for years to come.

The seriousness of this situation was exemplified in the joint U.S.-Korean training exercise "Team Spirit" held in late 1999. In order for the U.S. radios to work, several channels of the Korean cellular network had to be shut down. According to a May 22, 2000 article in *Aviation Week & Space Technology,* "There are some U.S. weapons that currently aren't allowed to operate in South Korea out of fear they would interfere with civilian systems." No wonder Major General J. D. Bryan, Vice Director of the Defense Information Systems Agency, recently warned, "If we're not real careful, we face chaos in the wireless environment."

The U.S. military is a forward-deployed force whose international assignments will increasingly be hindered by the conflict between airwave assignments made at home and those made abroad. In a "double whammy" affecting both U.S. military and economic security, the governments of the world simply changed the rules. For the purpose of spurring Internet-related growth, they reallocated to wireless phone use vast amounts of the very same piece of the airwaves the U.S. military relies upon for its communications because that is what has been assigned to it here at home.

Fortunately, there appear to be solutions. Some solutions may be more costly than others—but not as costly to our national defense as losing the opportunity to modernize and upgrade older military equipment. Deploying new spectrum-hopping, frequency agile radios for both ground and air tactical communications could help solve some problems. By tuning across a wider band and then having the flexibility to jump from one frequency to another as conditions warrant, these new radios may solve the problem for our tactical ground troops and aircraft. An area requiring more patience is in satellite communications. With a fifteen-year average life, the lead-time for frequency changes in satellites is longer, but no less manageable.

At a time of concern over budget-busting defense spending, the world's reallocation into domestic U.S. military frequencies paradoxically provides a solution. Because the rest of the world is rapidly increasing the number of wireless users in these same frequencies, the U.S. wireless industry would like to use them as well. Should the Federal government decide to reassign the military to other spectrum and auction these airwaves, the resulting billions of dollars could pay for both the move to new frequency and the necessary upgrades to strategic and tactical equipment. There are 95 megahertz (MHz) of DoD spectrum in the 1755-1850 MHz band allocated to mobile use by the rest of the world. A recent U.S. auction of spectrum blocks ranging from 25 to 30 MHz and covering only about 60% of the population, generated over $17 billion from wireless carriers. The Department of Defense is sitting on a valuable domestic asset whose value can be utilized to help solve the military's international spectrum problem.

This debate over spectrum for advanced mobile services puts a spotlight on the urgent need for some fundamental rethinking of our nation's spectrum management process. We need to create more positive, market-oriented incentives for incumbent users to free up spectrum. And we need to create a more efficient spectrum manage-

ment process that focuses more on policy goals than on constituent interests. That does not mean that we should ignore the important interests of incumbents, especially when they involve crucial national security requirements. It means we need to find creative, effective and timely ways of making tough spectrum management decisions that leave all affected parties leaving the table satisfied that their interests have been addressed.

One immediate step Congress could take to advance these goals would be to pass legislation to ensure that the proceeds of an auction could be used by the incumbent to move sooner allowing the auction winner to immediately utilize the spectrum acquired. Normally this would entail using those proceeds to pay the relocation expenses of the incumbent, but in some circumstances the funds could be used to enable the incumbent to modify its equipment to share with the new licensed uses. Congress might also consider earmarking an additional percentage of the auctions' proceeds for the incumbent user, to help give incumbents a positive incentive to turn in spectrum for auction. If incumbents were guaranteed that their needs would be accommodated and paid for, and that they could obtain some additional revenue as well, they would have a greatly increased incentive to turn back spectrum that could be auctioned. The result in the long run could be not only more efficient spectrum management, but higher revenues for the U.S. Treasury. In this particular instance, I believe it absolutely imperative the Congress guarantee DoD reimbursement funding and additional monetary incentives to move, with funds, to modernize and upgrade DoD capabilities. The test should be to maintain and enhance capabilities—not fall on your sword for a piece of spectrum that will be compromised by the decisions of other nations.

This kind of "win-win" requires the implementation of a rational spectrum policy. Unfortunately, the United States does not have the kind of spectrum policy that would facilitate either this evolution, or taking advantage of the potential funding mechanism. In fact, the U.S. has no spectrum policy that can effectively deal with such a muliti-faceted problem. What has passed for spectrum policy has been budget policy decisions about when to sell pieces of the airwaves in order to generate finds for the Treasury. As the Defense Department's Defense Science Board has observed, the system is broken. That unfortunate situation hurts both military capability and economic competition.

The seriousness of the spectrum issue to American combativeness and competitiveness calls for dedicated solution-oriented efforts by both the defense community and the wireless industry. Denying the economic viability of next generation wireless services in hopes of forestalling the inevitable need to deal with the spectrum crisis is not a solution. New technologies never come forth without hiccups. The military saw this with the Patriot Missile, Tomahawk Cruise Missile, Abrams Tank and Osprey aircraft, and the same will be true of the new technology of the wireless Internet. History's message is clear: those who place their bets against technological advancement are "betting on a nag."

The wireless industry is most fortunate that this Administration has taken several bold steps to correct a decade-long refusal to make tough decisions. Secretary Evans just last week directed the National Telecommunications and Information Administration to work with the FCC to develop a new plan for (3-G) advanced mobile services. Secretary Evans even suggested flexibility in the statutory auction dates for 1710 to 1755 MHz and 2110 to 2150 MHz may be necessary to implement the new spectrum plan. Additionally, over the past 3 months, various Executive Branch agencies have been brought together under the able direction of the White House NEC and NSC to address the spectrum problem. The White House attention to finding a solution to this decade-old problem has been most helpful. The industry is encouraged that some of the best and brightest minds in the Administration are committed to finding a solution that is good for the economy and our national security.

An opportunity appears to exist to demonstrate the good faith possibilities of cooperation in the evolution to new military technology and continued wireless competitiveness. In recent Capitol Hill briefings the Defense Department indicated that approximately half of all the Department's spectrum usage for fixed wireless applications is by the Army Corps of Engineers to do remote monitoring of water levels, alarms and dams. Tying up that spectrum for intermittent services that take a quick reading and then report a data burst is not only spectrally inefficient; it is probably also overly expensive. Throughout America, the wireless industry is providing the exact same services on a commercial basis. If the grocery chain Albertson's can use commercial wireless networks to monitor and control electricity in their stores during the California power emergency, the same should be true for the Corps of Engineers to monitor water levels. What's more, buying a shared service will no doubt be much lower cost than building a stand-alone system with its

own allocated airwaves. That spectrum then can be sold and the proceeds put into a Defense Department-only trust fund for the purpose of paying for the next spectrum move (which, in turn, will generate more auction revenue), and for the new technology to assure information dominance on the ground, in the air and at sea.

Right now we are at a unique point in time. Most countries are reducing their monetary commitments to their military. No other country in the world has the available resources, technological know-how and the opportunity to up-grade military communications capabilities to 21st century systems. The U.S military has it within its grasp and ability to do what no other country in the world can do in the current environment—deploy digital end-to-end encrypted state-of -the art communications capabilities. Now is the time to seek a better defense—and a better economy . Unless we act now things will only become more confusing and more intractable. We must not fail to seize upon the win-win opportunity before us—a second rate communication system is no real option for a world leader.

Mr. UPTON. Thank you.

Mr. Strigl.

STATEMENT OF DENNIS F. STRIGL

Mr. STRIGL. Mr. Chairman and members of the committee, thank you very much for inviting me to appear before you today. The allocation of adequate spectrum to support the development of 3G services is the most important and timely issue facing my company and the wireless industry. We're grateful for this committee for its interest and support, but time is running out.

While we have made some progress since I appeared before you last year, no new spectrum has been allocated and no such action appears imminent. Consequently, I come before you today to deliver the same message that I had a year ago and that is that the wireless communications industry must have additional radio spectrum in order to provide innovative services which will meet the needs of our customers while bringing critical benefits to the American economy.

The following actions are urgently needed for 3G services to reach their potential. First, the Commerce Department and the FCC need to identify 200 megahertz of globally harmonized spectrum for reallocation to commercial mobile services, the 1710 to 1850 megahertz band provides a good start. The band was identified by WRC-2000 as a primary candidate band for 3G services and in fact, is globally harmonized.

Second, the government and private industry need to develop an implementation plan for how this spectrum will be cleared and auctioned and the process must be established for reimbursing Federal Government users for relocation. In this regard, I applaud the efforts of Congressman Pickering, of Chairman Tauzin, of Congressman Wynn and of you, Mr. Chairman, for your leadership in exploring legislative solutions which balance the needs of DOD with the spectrum requirements of the wireless industry. And I do believe that this is a win-win approach. It's an important step forward in the process of making 3G spectrum available.

Third, Congress should pass Congressman Stearns' bill to repeal the spectrum cap. The rule was adopted when there were just two carriers in wireless market. The FCC's own studies show that the wireless market is robustly competitive. The Commission's 2001 Competition Report finds that 91 percent of the population has access to three or more competitors, while 75 percent of the population lives in areas with five or more mobile telephone providers.

The report also finds that wireless prices continue to fall substantially, including 12 percent drop in the year 2000, but with the explosion of demand in wireless services, the primary challenge for continued competitiveness is obtaining additional spectrum resources. The spectrum cap impairs the very competition that we intend to promote and in part by capping a carrier's potential for success at the amount of demand supportable by 45 megahertz.

In conclusion, Mr. Chairman, I cannot overstate the importance to the wireless industry of the spectrum need for third generation services. My company bid nearly $9 billion this year for spectrum in an auction that raised $17 billion for the U.S. Treasury and I know that this hearing is focused on 3G, but how could I come to Washington without at least mentioning my $9 billion problem. Congress should do all it can to encourage all the parties to settle. This is the best way to ensure that valuable mobile licenses purchased at auction are put into the hands of carriers to deploy immediately to serve our customers.

Additionally, Verizon Wireless has also announced our intention to purchase $5 billion of third generation network equipment and I can think of no greater examples to demonstrate the need that we have for spectrum than this commitment that Verizon Wireless has made and the industry is making to provide third generation services to our customers.

In conclusion, I urge the committee to take every action you can to make spectrum available to the wireless industry so that carriers can move on and deploy third generation services. Thank you again for your continued interest and leadership on wireless policy issues.

[The prepared statement of Dennis F. Strigl follows:]

PREPARED STATEMENT OF DENNIS F. STRIGL, PRESIDENT AND CEO, VERIZON WIRELESS

SUMMARY

Mr. Chairman and Members of the Committee, thank you for inviting me to appear before you today. The allocation of adequate and appropriate spectrum is one of the most important and timely issues facing my company and my industry. We are grateful to this committee for its interest and support, and together we must find a way to quickly address the critical spectrum needs of this industry. Foremost among these needs is adequate spectrum to provide Third Generation ("3G") wireless services. These services and the technologies that support them will enable U.S. industry to maintain its global competitive and technological leadership in both wireless and Internet markets. If spectrum is not available on a timely basis, we risk squandering our global position and with it a panoply of associated economic and societal benefits.

Efforts by many government and private sector interests have led to some progress in achieving the necessary spectrum reallocation, but today, just as was the case last July when I last appeared before this committee to discuss spectrum needs, new spectrum has not been reallocated to meet our needs nor is such action imminent. For that reason, I come before you today with the same basic message as I had a year ago: *the wireless communications industry must have additional radio spectrum to provide innovative new services and other critical benefits to the American public and to foster continued economic growth.* In addition, this year I must add that: Time is running out. We are facing the prospect of our industry's equivalent of a "fuel crisis"—with access to the spectrum "fuel" restricted by government policy.

The following actions are urgently needed:

1. *Reallocation of adequate globally harmonized spectrum for mobile services.* As reflected in decisions made at the 2000 World Radiocommunication Conference ("WRC-2000"), with U.S. Government support, the U.S. wireless industry needs

at least 200 MHz of additional spectrum, aligned with spectrum to be used in other regions of the world, to meet its long-term growth requirements.

2. *Implementation plan for how this spectrum will be auctioned and cleared.* Equally important to the actual reallocation of needed spectrum is the implementation plan setting out the timeframes when that spectrum will be auctioned and when it will be available for use by the industry. The entire band will not be able to be auctioned at once, nor will it all be available at the same time given the variety of incumbent uses. Operators need some certainty and predictability about what spectrum will be available and when. Moreover, Congress must establish a *workable* process for enforcing the clearing of the spectrum and for reimbursing relocated Federal Government users.
3. *Repeal of the "spectrum cap".* This outdated rule limits the amount of spectrum a single company can own. In the intensely competitive wireless industry, this rule only impedes companies from competing for the spectrum needed to meet the future demand for wireless voice, data and other new services.

The continued growth of the wireless industry will provide critical benefits to the American public and the U.S. economy.

3G services will be the next important chapter in a compelling success story as wireless industry growth continues unabated. Today, more than 110 million people in the United States subscribe to mobile services and that number continues to grow at an annual rate of more than 20 percent. Two years ago, analysts predicted a healthy 60 percent of the public would subscribe to mobile services by 2008. But having reached 40 percent penetration this year, the analysts now expect a higher 70 percent penetration level to be reached 4 years sooner, that is by 2004.

As impressive as our subscriber growth is, it tells only part of the story. In addition, we have seen a tremendous surge in individual subscriber usage, including a 20-fold increase in total wireless minutes of use between 1992 and 2000. The 2000 total of 280 billion minutes reflects a compound annual growth rate of 50 percent. In the three years between 1997 and 2000 alone monthly usage per subscriber doubled, and it is projected to double again between 2000 and 2004.

Digital technology has been a primary driver of this amazing growth. Since introducing the digital technologies into our network in 1997, we have substantially increased the capacity and efficiency of our network and provided consumers with enhanced services and choices, including many new pricing plans. Digital handsets feature longer battery time and reduced equipment size and cost. Wireless services are more accessible and affordable, they have become a part of many customers' daily routine, and increasingly they are an alternative to using a wireline telephone.

Despite the efficiency gains of digital technologies, the overall growth in customers and usage is placing increasing strain on network capacity. The next phase of technology deployment will relieve some of these capacity constraints, but technology alone cannot meet our capacity and new service needs. The industry's urgent need for new spectrum to meet growing demand for existing voice services, for example, is evidenced in the $17 billion bid for C and F block licenses when they were reauctioned. As we proceed to offer customers new, higher-speed mobile services, a continued lack of access to additional spectrum will only exacerbate capacity constraints.

In developing 3G and other innovative wireless technologies, the industry is addressing customers' desire for a wide range of high-speed data and multimedia applications, including wireless Internet access. Verizon Wireless will begin this year to address demand for these high-speed, high-bandwidth data services by deploying 3G technology in our existing licensed spectrum. This technology—cdma2000 1XRTT—will not only increase the efficiency of our existing network, but it will allow us to provide customers with mobile data services at rates up to 144 kilobits per second—ten times what is currently available.

Mobile data services currently represent less than two percent of total network usage. However, analysts predict that data applications will account for more than 50 percent of network usage by 2004 and ultimately those applications will dominate the use of the network. As I just indicated, we can initiate some new, high bandwidth services, and Verizon Wireless will be among the first companies to do so, but we will be bandwidth limited in the nature and scope of these services. The industry needs additional spectrum before the services can reach their potential anticipated by analysts.

The importance of these advanced wireless data technologies cannot be overstated. As I stated earlier, these technologies converge two powerful, largely U.S.-led, innovations—wireless communications and the Internet—and in so doing, they will deliver significant benefits to consumers and complementary benefits to the U.S. economy. To this point, the President's Council of Economic Advisers ("CEA")

documented the likely benefits of 3G services in a report it released last year. The report estimated that the likely consumer benefits from 3G services would approach $100 billion annually. That report also determined that an adequate supply of additional commercial spectrum was needed for these services and urged government action making adequate spectrum available for 3G applications.

This Committee is in a key position to ensure that the needed spectrum is made available.

Congress has an important role in ensuring that the spectrum resources is managed for the benefit of the American public—it is the public, after all, not carriers, that uses this scarce resource to meet its communications needs. Given the significant benefits that 3G and other advanced wireless services will provide to American consumers, businesses, and the economy, Congress has every reason to ensure that adequate spectrum is available to support the full potential of such services. Other nations have already allocated and licensed sufficient amounts of spectrum to meet the needs of their wireless industries. The United States must do the same.

There are three concrete steps that Congress should take now:

1. Allocate the additional spectrum needed for mobile services.

WRC-2000 identified two spectrum bands to accommodate 3G development around the world. This action to identify spectrum on a global basis will provide the global "harmonization" that is so important to future services. By implementing the WRC-2000 actions and allocating harmonized spectrum, U.S. carriers will be able to compete globally in offering international roaming while achieving the economies of scale that reduce network and customer equipment and service costs.

The 1710-1850 MHz band, as identified at WRC-2000, provides the best, initial opportunity to harmonize U.S. spectrum allocations with those being made around the world and thereby to meet the 3G growth needs of the industry. The band is already used for second generation mobile services in Europe and parts of Asia, where it is expected to evolve to 3G. In Canada, Mexico, Brazil, and other parts of North and South America, this band is the first choice for initial 3G deployment. Even though the United States, at WRC-2000, supported the use of this band for global 3G services, most of the band is currently occupied by the U.S. Department of Defense ("DOD") and other Federal agencies.

In cooperation with the wireless industry, the U.S. Government has worked diligently to assess the potential for making this band available for commercial use. My company and others from the wireless industry have been working closely with the FCC, the Department of Commerce, DOD, and various other Federal agencies to develop a workable reallocation plan. We have made progress, as I stated earlier, but a final decision on this band has not been made; nor is one imminent. Beginning with this hearing, this Committee can provide the impetus for the quick allocation action we need.

Obviously since reallocating the 1755-1850 MHz band will not satisfy the 200 MHz requirement, additional spectrum must be identified. To that end, the 2110-2165 MHz band, for example, is an appropriate and workable supplement. This band, most of which has already been proposed for reallocation, is encumbered with commercial fixed operators, and we are working with the FCC on relocation options.

Recent events suggest that the 1990-2025 MHz and 2165-2200 MHz bands, currently allocated as additional spectrum for Mobile Satellite Service ("MSS"), may better serve the public interest by being reallocated at least in part to more viable purposes. Reported business difficulties among the applicants for MSS licenses raise questions as to the viability of MSS. For these reasons, we and other carriers requested the Commission to evaluate how this band could be used to facilitate the development of advanced mobile services, e.g., by accommodating the relocation of commercial and/or government systems from bands used for 3G.

2. Establish an implementation plan for auctioning and clearing spectrum.

Equally important to the reallocation of needed spectrum is the implementation plan setting out the timeframes when portions of that spectrum will be auctioned and when it will be available for use by the industry. The entire band will not be able to be auctioned at once, nor will it all be available at the same time, given the variety of incumbent uses. The industry can and will work with these logistical realities, but operators need certainty and predictability about what spectrum will be available and when so that we can develop our plans. Moreover, a workable process must be established to enforce the timing of spectrum clearing as set out in the implementation plan. Last but no less important, a process must be adopted which identifies the relocation costs of government users in advance of a reallocation auc-

tion, provides for recovery of these costs through the auction process and reassures government users that these relocation costs will be reimbursed.

This implementation plan must reflect the need for allocation decisions that promote harmonization. For example, the Commission is considering whether to pair the 1710-1755 MHz band (for mobile transmit) with the 2110-2150 MHz band (for base transmit). This pairing would be inconsistent with existing and anticipated future uses of this spectrum around the world. As a result, mobile base stations and portable devices developed for U.S. markets would be incompatible with and more expensive than equipment developed for markets where spectrum is harmonized. The availability of additional spectrum in the 1755-1850 MHz band would permit the Commission to establish pairing arrangements that are harmonized worldwide. I urge you to quickly resolve the broader 3G spectrum allocation decisions so that the Commission can consider all viable candidate bands before taking action on a few. In doing so, the Commission can establish a spectrum allocation and auction plan that promotes harmonized use of spectrum, reduces the costs of 3G equipment and services, and increases the overall value of spectrum.

In establishing a *workable* process for clearing the 1710-1850 MHz Federal Government band, the method for reimbursing displaced Federal users can be improved and in so doing it may actually facilitate the clearing process. Current law requires that wireless operators negotiate with Federal agencies to relocate after they have acquired their licenses at auction. Based on past experience, this "after-the-auction" approach means that operators have considerable uncertainty regarding the costs of relocation and the availability of spectrum, affecting their bidding strategy and the value they attribute to the license. It also imposes unnecessary transaction costs on operators when they proceed to the negotiation, and it may result in DOD and other Federal agencies being expected to disclose information about their systems that they contend is classified or proprietary.

The law can be improved by providing for the identification of relocation costs and timing in advance of the auctions and collection of relocation costs directly from the auction proceeds. In this way, operators would know the timeframe for spectrum clearing and the costs attributable to that clearing. For its part, the government users would know that their relocation costs would be fully compensated without the need for any negotiations with industry. Legislation should be adopted that would make these changes to the relocation and reimbursement process.

Concerning these proposed action steps, I want to thank Rep. Pickering, Chairman of the Wireless Caucus for his leadership, and similarly I want to thank Chairman Upton and Chairman Tauzin, and Rep. Wynn for their commitment to this critical matter.

3. Repeal the "spectrum cap".

As this committee well knows, the spectrum aggregation limit or "spectrum cap" rule has outlived the FCC's purpose and now is working to the detriment of maintaining the very competitive and robust market it sought to foster. The rule was adopted when there were two carriers in the wireless market to encourage new entrants in that market. Today, the Commission's own studies show that 75 percent of the population lives in areas with five or more mobile telephone providers. Nearly 50 percent of the population has at least six carriers from which to choose. In Washington, D.C., for example, Verizon Wireless competes against Cingular, AT&T, Sprint, VoiceStream and Nextel. New entrants continue to gain considerable ground. Price competition is steep, but perhaps even more important, carriers are competing on the basis of new and enhanced product features. The consumer is winning.

Now, the primary challenge to continued competitiveness in domestic markets is access to additional spectrum to meet demand, and the spectrum cap is impeding that access.

The spectrum cap rule prohibits any company from holding more than 45 MHz of cellular, PCS and specialized mobile radio ("SMR") spectrum in the same geographic area, with a higher limit of 55 MHz in rural areas. The adverse impact of these arbitrary limits is exacerbated by the non-uniform nature of the size of license areas and licensed bands, and this lack of uniformity prevents carriers from approaching even these caps in their full footprint.

Congress did not impose this economic regulation. To the contrary, the 1993 Omnibus Budget Reconciliation Act replaced traditional wireless regulation, such as entry and price controls, with a competitive, market-driven model—a deregulatory change that has contributed to the growth of our business.

The cap is an artificial and uneconomic constraint on our ability to determine how best to meet demand and offer new services. It threatens to impair the very competition that it was intended to promote, in part by capping a carrier's potential for

success at the amount of demand supportable by 45 MHz. My company and many others are restricted from acquiring new spectrum even though we are facing strong competition and will use the additional spectrum productively to serve the public.

I want to thank Congressman Stearns for introducing legislation to remove the cap, and I urge the Committee to proceed with this important legislation. Lifting the cap will allow an open and fair market for available spectrum, and it will favor innovation and competition in the wireless industry. It will facilitate the deployment of advanced mobile services and promote the global competitiveness of US industry. Today, U.S. competitors are at a significant disadvantage relative to our non-U.S. counterparts, as other governments either do not have caps or have much higher limits on existing spectrum, while they are working aggressively to provide 3G spectrum to their wireless operators.

In short, the spectrum cap rule is unnecessary and counterproductive. Competitive industries require market-driven policies, not outmoded regulation that picks winners and losers, penalize success and denying access to critical resources.

CONCLUSION

Congress must act now to ensure the timely allocation of necessary additional spectrum, the creation of a mechanism for reimbursement and relocation of incumbents and the adoption of market-driven spectrum policies that promote the development of advanced wireless technologies and services. The steps include: (1) allocating a minimum of 200 MHz of additional, harmonized spectrum for mobile services, (2) establishing a plan for the timing of license auctions and spectrum clearing, (3) ensuring that all candidate spectrum bands are dealt with as part of a comprehensive allocation plan that is harmonized with worldwide allocations, (4) revising the reimbursement process so costs are identified in advance of auctions and displaced Federal users are reimbursed from auction proceeds, and (5) repealing of the spectrum cap.

Mr. UPTON. Thank you.

Monsignor Dempsey, welcome.

STATEMENT OF MICHAEL J. DEMPSEY

Mr. DEMPSEY. Good morning, Mr. Chairman and members of the subcommittee. I am Monsignor Michael J. Dempsey, the Director of Patrick Communications for the Diocese of Brooklyn, New York and I've been doing this work for 35 years. I also serve as President of the Catholic Television Network. That's an association of Roman Catholic Diocese that operate many of the largest school systems in the United States. We also operate large ITFS systems that serve more than 600,000 students. These systems transmit a broad range of onsite and distance learning programs, teacher and medical training courses, inspirational programs and live interactive services to schools, community centers and hospitals.

I'm here today to urge Congress to assure that the broadband networks being deployed on our ITFS channels not be held hostage to the efforts, legitimate efforts defined spectrum for 3G. We have traveled to Washington many times to make our peace and after extensive study, the FCC staff has found that our spectrum is serving a valuable educational purpose and is not a viable choice for 3G, so I ask you today, please urge the FCC to take our spectrum off the table and let us go back to serving our students and communities before the start of another school year.

There are three reasons why the FCC should act now. The first is the extensive record developed by the FCC staff fully supports this action. The second is removing the cloud of uncertainty will enable us and our commercial partners to build out our new broadcast systems, broadband systems and allow educators to focus on educating students. And third, the 3G community itself has ex-

pressed an overwhelming preference for bands other than ours. So I'm asking for your support to end this uncertainty.

I make this request not only in behalf of CTN, but on behalf of an unprecedented number of public and private elementary, secondary and higher educational institutions in all 50 States. There are far too many of them to name them all, but they include groups like the American Association of School Administrators, the Association of American Universities, the National Educational Association and thousands of individual institutions.

Let me give you an example of why this spectrum is so important to education. The per pupil cost of education is increasing faster than the income needed to support it, either from tuition in our case or taxes in the case of the public schools. And as a result in my diocese alone, we have closed 75 schools in 25 years. In the case of the public schools, when you can't close schools, the entire system declines. In New York City, 45 percent of the youngsters who enter first year public high school do not even get to senior year of high school. The only way to change this situation is to redesign our schools and the only way we can do that is with this technology. We need this technology to do that.

Now ITFS is the only spectrum set aside for education. ITFS systems that are licensed to and controlled by schools empower us to use technologies in ways we need to help students. We now stand at the threshold of a new digital broadband era for our schools that will make available high speed Internet access, video on demand, wider area networking and other similar services. But the 3G proceeding has caused significant regulatory delay and uncertainty that has hurt our students and the educational community. Nothing in the FCC record credibly supports delaying action to remove the ITFS and the MDS bands from further consideration.

The final FCC staff report regarding our band demonstrates that no portion of it should be reallocated.

Mr. Chairman, ITFS is the most valuable technology tools available to education. So please support our request that the FCC act now to remove our band from further consideration. If this vital resource is taken away or is compromised by prolonged uncertainty, the real losers will be our Nation's children. A single school year is a very long time in the life of a student. Thank you again for the honor of appearing before the subcommittee.

[The prepared statement of Michael J. Dempsey follows:]

PREPARED STATEMENT OF MONSIGNOR MICHAEL J. DEMPSEY ON BEHALF OF THE CATHOLIC TELEVISION NETWORK

Mr. Chairman and members of the Subcommittee, my name is Monsignor Michael J. Dempsey. I am the Director of Pastoral Communications for the Diocese of Brooklyn, and I have the responsibility of supporting, through television and information technology, the educational, medical, and religious needs of approximately four million people in Brooklyn and Queens, New York. I have been doing this for the past 35 years.

I also serve as the President of the Catholic Television Network ("CTN"). CTN is an association of Roman Catholic archdioceses and dioceses that operate many of the largest parochial school systems in the United States including those located in New York, Detroit, Los Angeles, Dallas, and the San Francisco Bay area. CTN's members use frequencies in the 2500-2690 MHz band to distribute educational, instructional, inspirational, and other services to schools, colleges, parishes, community centers, hospitals, nursing homes, residences, and other locations. Collectively,

CTN's members serve over 600,000 students and millions of households throughout America.

I am here today to urge Congress to assure that the broadband networks being deployed across the country in the 2500-2690 MHz band not be held hostage to efforts to find spectrum for commercial 3G services. While I understand the need to review all possible spectrum options, the review must have a reasonable end. The time has come to remove our band from further consideration as a possible home for 3G services.

I am speaking not only on behalf of the Diocese of Brooklyn and CTN, but on behalf of an unprecedented number of public and private elementary, secondary, and higher educational institutions and commercial entities from all 50 states that have joined forces to protect this valuable spectrum resource. In over 40 years as an educator, I have never seen an issue generate such a high level of concern from so many sectors of the educational and business communities.

THE HISTORY OF ITFS

The Instructional Television Fixed Service ("ITFS") was established in 1963 when the Federal Communications Commission ("FCC") allocated spectrum in the 2500-2690 MHz band for use by accredited educational institutions and other non-profit entities to further their educational missions. This is the only spectrum specifically set-aside for formal educational instruction.

Historically, the band was used for one-way video program delivery. However, as a result of new regulatory and technological developments, the band is evolving rapidly into high-speed, two-way interactive services. As a result, the band is becoming an even more valuable tool for teachers and students in our nation's schools and communities. There are four key points with respect to this evolution that I would like to emphasize this morning.

Educational/Commercial Partnerships. First, one of the most important things to understand about ITFS is that the effective use of this spectrum by educators is highly dependent on partnerships we have forged with commercial operators who hold Multipoint Distribution Service ("MDS") licenses at 2150-2162 MHz and on certain channels within the 2500-2690 MHz band. In 1983, the FCC adopted a regulatory paradigm that encouraged educators to lease part of their spectrum to commercial operators. The FCC's goal was to stimulate the creation of shared networks that would not only promote efficient spectrum use, but also advance the interests of both education and commerce. This is exactly what happened.

Shortly after the 1983 rules were implemented, ITFS licensees began leasing some of their transmission capacity to commercial partners in return for equipment, services, and funding that has been used to further their educational mission. These partnerships are absolutely essential to the success of ITFS/MDS licensees. They have enabled CTN and hundreds of other educators to deliver high-quality educational services at a reasonable cost. At the same time, they have enabled our commercial partners to amass enough spectrum to deploy commercially viable broadband networks that they share with educators.

New Two-Way Rules. Second, it is important to understand that we are at the threshold of a new and exciting digital, two-way broadband era that will revolutionize education in America. In 1998, after a lengthy and complex rulemaking proceeding, the FCC issued new rules that permit ITFS/MDS licensees to use their channels for a whole new array of two-way video, voice, and data services. These new rules were intended to spur competition in the market for high-speed, two-way data communications and Internet access services. They were also intended to help ITFS licensees whose needs have changed dramatically since the 1960's. To effectively improve education, students today require more than one-way video programming. They need interactive two-way video; document and data exchanges; high-speed Internet access in the classroom, home and workplace; videoconferencing; wide area networking; and a host of other technology tools. The FCC's new rules are the stimulus to provide these services.

Significant Investments. Third, the FCC's 1998 decision is important because it encouraged the entry of major new players into the ITFS/MDS arena. In 1999, shortly after adoption of the FCC's rules, Sprint and WorldCom alone spent more than $2.0 billion acquiring rights to ITFS/MDS spectrum in an effort to get a foothold in the wireless broadband field. Since then, both MDS and ITFS licensees have made substantial additional investments in the form of renegotiating existing lease agreements, preparing and filing complex two-way applications with the FCC, developing new equipment, and planning and building the infrastructure needed to offer high-speed broadband service to the public.

Educators now have the right partners to deploy the technology and services that students need in the 21st century. Sprint has spectrum in 90 markets encompassing 30% of the nation's homes, and is operating first generation broadband systems in 14 markets. WorldCom has spectrum in over 100 markets encompassing another 30% of the nation's homes, and is offering wireless broadband service in five markets with plans to serve up to eight additional markets by the end of this year. Nucentrix Broadband Networks has spectrum in over 90 mostly rural markets covering 9 million households across Texas, Oklahoma, and the Midwest. Nucentrix is currently providing broadband wireless Internet access in two Texas markets (Austin and Sherman-Denison), and is testing second-generation technology in Amarillo, Texas.

Heavily Encumbered Spectrum. The final historical point I want to make is that the 2500-2690 MHz band is one of the most heavily encumbered bands in the United States, and the licensing regime is extremely complicated. There are over 2,000 existing ITFS stations held by over 1,200 licensees serving millions of public and private school students throughout the United States. The National ITFS Association estimates that there are more than 70,000 sites (schools, libraries, hospitals, government centers, etc.) in the United States currently receiving educational programming over ITFS channels. This explains why virtually every national educational association in the country has joined forces, with each other and with commercial service providers, to protect the ITFS/MDS bands.

THE RECORD AT THE FCC

Because the ITFS/MDS bands have been identified as possible candidates for 3G mobile services, our spectrum has been under a microscope for nearly a year. The FCC issued an Interim Report regarding our spectrum in November 2000, a Notice of Proposed Rulemaking in January 2001, and a Final Report on March 31, 2001. The FCC requested public comment on each of these items, and voluminous comments, reply comments, and ex parte submissions were put into the FCC record.

The Final Report released by the FCC staff on March 31, 2001 demonstrates conclusively that no portion of the ITFS/MDS spectrum should be reallocated for 3G. Let me be clear: There is nothing in the FCC record that supports reallocating our spectrum. Here are a few of the key findings made by the FCC staff, which support the conclusion that our spectrum should be removed from further consideration:

- *"ITFS licensees make extensive use of their spectrum to provide formal classroom instruction, distance learning, and video conference capability* to a wide variety of educational users throughout the nation." *Final Report at 13.*
- "ITFS has approximately 1,275 entities holding over 2,175 licenses in urban and rural locations throughout the United States. *Over 70,000 locations serve as registered ITFS receive sites, although the number of actual locations at which ITFS programming is viewed is likely much higher* since receive sites are typically located within a 56.3-kilometer (35-mile) protected service area around an ITFS base station." *Final Report at 14.*
- *"The MDS industry has invested several billion dollars to develop the band for fixed wireless data systems. Final Report at 13.*
- These systems will provide a significant opportunity for further competition with cable and digital subscriber line (DSL) services and deliver broadband services to rural America." *Final Report at 13.*
- "Sharing between 3G systems and ITFS/MDS operations is extremely problematic." Final Report at 36.
- "Segmentation would require considerable time and costs on both private entities and the public . . . Furthermore, *delivery of fixed broadband wireless services to the public and educational users would be delayed, and in rural areas or smaller markets, may never be realized.* Relocation would also require considerable time and costs to re-engineer and deploy systems in alternate frequency bands. Again, delivery of service would be delayed or never realized. *The relocation option also would require other services to be relocated, and the time and costs to move those additional services would be significant." Final Report at 92-93.*
- The relocation costs for traditional ITFS facilities would be approximately *$19 billion; and secondary relocation costs would fall between $10.6 and $30.4 billion. Final Report at 90-92.*
- *"There is no readily identifiable alternative frequency band that could accommodate a substantial relocation of the incumbent operations in the 2500-2690 band* . . . Relocation to higher bands could affect significantly the economics of current and planned ITFS and MDS systems and lessen their ability to provide service in rural areas or smaller markets." *Final Report at iii.*

In addition to these very compelling findings, the record established at the FCC shows that the ITFS/MDS bands are not the preferred bands for 3G services. The 3G community has expressed an overwhelming preference for reallocation of the 1.7 GHz band used by the government; and there is ample spectrum in a variety of other bands that can be used to provide 3G services including the 700 MHz, 2110-2150 MHz, and 1990-2025/2165-2200 MHz bands.

THE NEED FOR IMMEDIATE ACTION

I respectfully submit that the time has come to remove our spectrum as a possible candidate for 3G services. The FCC's 3G proceeding already has caused significant regulatory delay and uncertainty that has hurt both the business and educational communities. For new businesses, especially those focusing on rural markets, this uncertainty has prevented access to the capital necessary to complete their network build-outs. In addition, some vendors are finding it difficult to get new funding for ITFS/MDS projects, and are diverting their research and development efforts to other areas.

And, while businesses have been struggling to survive, America's children have been denied access to new technologies and broadband networks as envisioned by the FCC's ITFS/MDS policies. Equally disturbing, the educational community has been forced to divert scarce financial resources to fight a regulatory battle in Washington to save spectrum that is not a viable choice for 3G services.

Given that nothing in the FCC record credibly supports reallocation of our bands, and given that 3G proponents prefer other spectrum options, it is fundamentally unfair to hold our spectrum hostage and further delay a decision while the FCC explores other more desirable options. I would like to articulate the many compelling public policy reasons to eliminate the uncertainty and let us get on with our business.

Improved Educational Opportunities. First, rapid deployment of broadband services in the ITFS/MDS bands will help ensure the success of the important educational initiatives that are currently underway to create classrooms for the 21st century. Mr. Chairman, in a recent letter to President Bush you emphasized that deployment of broadband services into our homes and schools can "vastly improve educational opportunities" for our children. Under the current regime for ITFS/MDS, educators have the necessary technical capability and spectrum to make your vision a reality. But, we cannot proceed until our spectrum is taken "off the table" as a possible candidate band for 3G.

Renewed Certainty in the Marketplace. Second, removing our spectrum from further consideration will bring credibility to the FCC's spectrum management policies in the capital markets. The FCC has gone to great lengths to encourage ITFS licensees to lease spectrum and deploy fixed broadband services. In reliance on these FCC's policies, commercial service providers have invested *billions* of dollars in this spectrum, and educators have devoted significant resources to ensure that the spectrum will serve the needs of their students. It would be a travesty for the FCC to change course now. Certainty and stability must be maintained in formulating and implementing spectrum management policies.

New Options for Consumers. Third, rapid deployment of broadband services in the ITFS/MDS bands will result in immediate and concrete benefits to the American public. There is a huge demand for fixed broadband access. The MDS/ITFS spectrum is uniquely suited to serve the residential market and broad geographic areas. It reaches places that local telephone companies and cable companies cannot or will not serve. High-speed service has already been deployed in some markets, and many more will follow. As the roll out continues, homes, businesses, and educational institutions will benefit from the availability of these new broadband service options.

New Competitive Alternatives and Rural Deployment. Fourth, rapid deployment in the ITFS/MDS bands will provide a meaningful competitive alternative to incumbent local exchange carrier offerings consistent with the goals of the Telecommunications Act of 1996. Currently, broadband competition is limited primarily to DSL, cable modem, and satellite service, each of which suffers from limitations which restrict their ability to provide full broadband competition. Nationwide deployment of fixed wireless broadband systems in the ITFS/MDS bands will provide Americans with another competitive alternative. Indeed, in rural areas, the ITFS/MDS bands may provide the *only* option for broadband access.

Increased Educational Opportunities. Fifth, rapid deployment in these bands will help close the information technology gap. Through the continued deployment of fixed broadband wireless services, students and adult learners in rural and traditionally underserved areas will have access to the same educational opportunities as those in better served metropolitan areas. In urban areas, the continued roll out

of fixed broadband wireless services will provide students in all school districts with access to the latest instructional materials at all levels, helping to even the playing field and promote learning opportunities.

Managing Educational Costs. Finally, rapid deployment in our bands will help reduce the spiraling cost of education. The United States *must* find better ways to manage the cost of education. When the cost of operating a Catholic school exceeds the income needed to operate that school, it is closed. In the last 25 years, we have closed nearly 75 Catholic schools in my Diocese alone and thousands more across the country. Our tuition income was simply insufficient to support these schools. Public schools, however, cannot be closed just because tax revenues are insufficient. Instead, the quality of education for the entire system is reduced. As a result, today in New York City, nearly 45% of those entering the first year of public high school drop-out before reaching the fourth year. Educators need ITFS/MDS frequencies to help them rethink the way schools are designed and to reduce the cost of education. Without these frequencies, the challenge of reducing educational costs is much greater and perhaps insurmountable.

THE NEED FOR YOUR SUPPORT

President Bush has made education one of his top national priorities. Shortly after taking office, the President said that if "our country fails in its responsibility to educate every child, we're likely to fail in many other areas. But, if we succeed in educating our youth, many other successes will follow throughout our country and in the lives of our citizens." The President also has encouraged schools to "use technology as a tool to improve academic achievement."

The ITFS/MDS bands are one of the most valuable technology tools available to education. We have been using this educational tool for 35 years to improve academic achievement. We don't want to lose it now. If this vital resource is taken away or compromised, the real losers will be the millions of students, teachers, and schools that rely on services provided by ITFS/MDS licensees.

Mr. Chairman and members of the Subcommittee, there is wide bipartisan support for improvement of education and for the effective use of technology toward that end. Please seize this opportunity and support our efforts to have the FCC remove the ITFS/MDS bands from further consideration as a possible candidate for 3G services now.

Thank you. I am honored to have had the opportunity to appear before you today.

Mr. UPTON. Thank you all for your testimony, again, thank you for getting it in so we could take it home last night as well to review. At this point we'll begin with members' questions, alternating between sides for 5 minutes and I suspect that we'll go to a second round when this is done.

Dr. Wells, I too, appreciated your comment and your eagerness and wrote that in my notes as well and I have to tell you from the very outset that as we begin to look at this situation and try to build bipartisan solution to what is clearly a problem out there that we're looking at two main items that have to be included in that legislation which has yet to be unveiled. One is that we do need comparable spectrum for the Defense Department. That's absolutely essential. And second, yes, we do need to compensate DOD if, in fact, spectrum is taken away and as I understand it and I know my pre-dinosaur age colleague, Mr. Markey has stepped away for a moment, but as I understand it that did not happen in the pre-dinosaur age and we've got to make sure that things turn around as we begin to look at bipartisan legislation.

I have a number of questions for you. First of all, Dr. Wells, how much spectrum is the Pentagon's fixed point to point wireless operations actually occupy?

Mr. WELLS. Let me take that, for the record, Mr. Chairman. I do not believe it's fully half the band, but I'll take that to the record.

Mr. UPTON. Okay, if you provide that to us, that would be appreciated.

Do you know how many channels within the 1755 to 1850 megahertz band these operations actually use and do they share channels with any other Pentagon operations? Related to that, I think, is the comment that Mr. Wheeler made in his testimony with regard to the Army Corps of Engineers, water level monitoring activities.

Mr. WELLS. The channels of this fixed system, how many channels the fixed system uses, I'll take that for the record also.

Mr. UPTON. Okay, is the Pentagon aware of any other bands other than the 1755 megahertz band and we can get these back to you in writing, 1755 to 1850 megahertz, that provide the propagation characteristics necessary to the Pentagon satellite uplink operations that provide enough spectrum to accommodate those operations?

Mr. WELLS. One of the problems is the devil in the details. For example, people have talked about a band called unified S-band that other satellites use. That's becoming a crowded band and so for us to move our applications in there, again, there's a time line consideration. It's going to have to deal with the usage of other people and the band. This has been the case with a number of alternatives that have been suggested for comparable spectrum. It looks great when you first take a look at it, then the more you get into it, you find that there are complications.

So the best band that we've seen for the satellite has been this unified S-band. There's clearly a timing issue involved and we look forward to working through that question.

Mr. UPTON. In your testimony as you refer to S-band, I know on page 2 of your testimony you indicated you thought that the costs of 120 satellites was $100 billion.

Mr. WELLS. The investment costs of the constellation.

Mr. UPTON. Right. How many of those 120 satellites actually use S-band because I mean that is the best, right?

Mr. WELLS. The satellites we're talking about here use for their uplinks today the 1755 to 1850 so those are satellites that are controlled now within the military band, so they would have to—of those 120 we're talking about are all within the 1755 to 1850 band.

Mr. UPTON. And they all use the S-band then?

Mr. WELLS. Those are some frequencies that could possibly move to 2100 megahertz for uplink, but again, other satellites use that today and for us to move in there could well cause crowding and interference with the existing systems. This would have to be worked out.

Mr. UPTON. As I understand the report, the DOD report that says that the S-band offers physical advantages for tracking telemetry and control operations, particularly in areas of launch, early orbit and anomaly resolution. It went on to say that S-band is uniquely suited for conducting critical and nonroutine satellite operations functions. So I guess the question is, is the Pentagon doing everything that it can to ensure that as many satellite operations are moved to the S-band as quickly as possible.

Mr. WELLS. We are actively looking at it. Let me see if saying "as quickly as possible" but there is the problem we have these satellites on orbit now, Mr. Chairman, some of which will not fly out to 2017. It will not complete their orbits and so we will have to con-

tinue controlling those and the existing bands until that constellation dies or if someone wanted to put lots of money in to accelerate replacement of the constellation, that might be an option.

Mr. UPTON. Lots of money is how much?

Mr. WELLS. I would think in the multiple tens, billions of dollars.

Mr. UPTON. I suspected that that was the answer.

Mr. WELLS. And frankly, sir, I would not suggest that would be a useful use of taxpayers' dollars.

Mr. UPTON. Okay. Ms. Eshoo.

Ms. ESHOO. We don't want to knock over coffee and water here.

Let me start with Mr. Knapp from the FCC. In your testimony, you state that the FCC's report concluded that the sharing of the spectrum in the 2500 to 2690 megahertz band doesn't appear feasible because it would raise significant technical and economic difficulties.

What are the next steps that the FCC is going to take with regard to that spectrum and will it formally be removed from consideration so that regulatory uncertainty is eliminated?

It's an important area. I've written to the FCC about this. It has an impact on education, the schools. Monsignor, I think, has given excellent testimony in that and the uncertainty that exists is yet another overlay in this. So it is having an effect. It may not be the biggest issue that's at the table today because the struggle is what we're going to do with defense, how that opens up parts of the spectrum for 3G, but this is, I think, on the front lines in terms of education. So can you comment on that?

Mr. KNAPP. Yes, thank you. That's an excellent question.

Ms. ESHOO. Thank you.

Mr. KNAPP. This band, of course, was examined because it was one of the bands that was identified internationally and that's why we took it up and conducted the study and so forth.

In our report, we looked at sharing and basically because these systems are distributed throughout the country, you have a problem of spacing any new systems in. They couldn't share the same channels. Relocation because of——

Ms. ESHOO. I think I know what the problem is, but I'm asking you what you're prepared to do. How is this going to be resolved?

Mr. KNAPP. We have the request in front of us for taking that off the table. I think that's going to be looked at very shortly. We also have a pleading that was filed by one of the carriers asking us to continue to look at that until we resolve the ultimate selection of the spectrum.

I expect we're going to take the issue up very soon.

Ms. ESHOO. Well, I think the sooner, the better, because the longer the uncertainty exists, the tougher it makes the situation and there are an awful lot of schools that are really looking for an answer on this. So it's not small potatoes. It just isn't. So I'm encouraged when you say that the FCC is going to take action soon on this. When you say "soon" is that within the next 3 months, 30 days, 60 days, 90 days? Can you give us just a little——

Mr. KNAPP. I would hope months. I would hope it would be within a matter of months.

Ms. ESHOO. Matter of months. Before the end of the year?

Mr. KNAPP. Certainly.

Ms. ESHOO. Great. All right. We don't come to these answers easily, do we?

Now, to one of my favorite subjects, E-911. I want to go to Mr. Wheeler. As I said in my statement, I'm concerned that the wireless industry is focusing on—well, I shouldn't say that I'm concerned. I think that it's important to focus on the benefits of 3G. I don't want to cloud that issue by saying that somehow it isn't important and that we should hesitate and that we shouldn't, as a Nation, really be prepared to embrace not only the technology, but how to make it work so that it can be in—that the American people would be able to benefit fully from it.

What I'd like to ask you is how many tests and pilots has the industry conducted on 3G technologies this year?

And by contrast, how many tests and pilots have been conducted on Phase II for E-911?

Mr. WHEELER. I'd like to also observe that's a good question and I don't have the answer to it, either part.

Let me see if I can pick up on one thing though insofar as the question you asked Mr. Knapp earlier, because I think what you did was you focused right in on what one of the key issues insofar as spectrum planning is concerned and that is that heretofore, we have always gone at it piecemeal. We look at this piece and we look at it separate from this piece and what we need to have is an overall plan that says here's where we want to be in 10 years. Here's where we want to be in 5 years. Here's where we want to be in 2 years. And that would make the kind of things you were talking about moot because everybody would know where things are going. And so when and if there is a legislative vehicle, we would hope that the committee will have a vehicle that comes up for the first time with a spectrum plan to address those kinds of issues, to address Monsignor Dempsey's kinds of issues, to address the Defense Department's issues, because that's really what's at the crux of this whole thing.

Ms. ESHOO. I appreciate your lengthy comment on that without addressing E-911.

Mr. WHEELER. I will get the answer for you for the record. I'm sorry I don't know what—may I say one thing?

Ms. ESHOO. I wanted just to—the red light is on. I think that if the industry would spend less time and energy in formulating the request for waivers in just getting this done, that we would really be far better off in our country. There are far too many people today that buy into wireless, believing that they're covered so I still remain concerned that there's a stalling. I think the more the players put in for their waivers that others say well, if they are, then we're going to as well. Let's get this done. I will find you far more believable players if you get this behind us and get this implemented, rather than spending time on waivers.

So I want to work with you on 3G. I think it's an important technology. We should be the leaders in the world. We should be able to blend all of this, but what kind of a country are we when people believe that they're going to be able to dial into this and they're not. It's a lifesaving issue and I think you should be able to advertise and say come with us because we indeed cover this.

So thank you, Mr. Chairman, and I look forward to your answer.

Mr. WHEELER. I just want to say I personally, in our organization, am very proud about the fact that the rulemaking at the FCC for this requirement is one that we initiated. We asked the FCC to come up with location based rules. We worked out with the public service community exactly how to make that work and together we went in and said will you please enact these because we both agreed this is the way to do it. The problem is in the intervening 4 years that has been nipped away at and new technological issues have been introduced which has slowed the whole process down. But I want to say to you without doubt that yes, the wireless phone is the greatest safety tool since the development of 911 and we are the ones that petitioned the FCC to have location capability as a part of caller 911.

Ms. ESHOO. Can I have 30 more seconds, Mr. Chairman, unanimous consent for 30 seconds?

Mr. UPTON. Without objection, 30.

Ms. ESHOO. Thank you, Mr. Chairman. I would only respond, I appreciate what you've just said in terms of the history and I think that it's important, but how are we to have confidence that you're going to work out what you're here for today on 3G if, in fact, in the last chapter of 911 it seems to be falling apart in my view by these requests for waivers? Let's get this thing done. Let's get it done. It's a great technology, but it's not going to touch people if, in fact, it can't be implemented. Thank you.

Mr. WHEELER. There's a desire to get it done. You're right. There's a desire to get it done.

Ms. ESHOO. Thank you, Mr. Chairman.

Mr. UPTON. Mr. Stearns.

Mr. STEARNS. Thank you, Mr. Chairman. Mr. Knapp, what consideration has the FCC given to repealing the current 45 megahertz spectrum cap?

Mr. KNAPP. We have an outstanding notice of proposed rulemaking that we conducted under a biennial review. The comments have been filed and we expect to address that before the end of the year.

Mr. STEARNS. So by the end of the year we'll have an answer definitized?

Mr. KNAPP. Yes, I believe so.

Mr. STEARNS. Anything more in terms of—it will be sort of a yes or no? I mean it will be a full dimension answer that these companies will be able to move on it?

Mr. KNAPP. At this point, the Commission staff is still evaluating the record and trying to determine what action to take on it.

Mr. STEARNS. And it's your intention that with this decision American companies will realize that 3G advanced mobile services with the current spectrum cap in place or not?

Mr. KNAPP. No, I think, of course, as you know the spectrum cap only applies to the cellular PCS and specialized mobilized radio services bands. It would—it would not necessarily apply to any additional spectrum allocations. That would be reviewed separately.

Mr. STEARNS. Mr. Strigl, this is sort of an easy question which you covered in your opening statement, but I thought I'd give you another chance on this. You mentioned my bill.

How does the current 45 megahertz cap affect your company's business decisions to expand and offer additional services, particularly 3G services and then Mr. Wheeler, if you'd just comment how it affects your member companies? I'd appreciate it.

Mr. STRIGL. Thank you, Congressman. It affects us in one simple way. Today, we operate in most of our properties with 25 megahertz to 30 megahertz of spectrum. Some places we have gone up to 40. With our commitment in auction 35 in New York, we operate on 25 megahertz. We have committed for 20 additional megahertz. Takes us to the 45 megahertz cap. We don't have that spectrum. We can't look for additional spectrum in the interim until this current auction 35 issue is resolved.

Furthermore, we need a minimum of 65 megahertz of spectrum in our major cities. That requirement will exist within the next 5 to 6 years.

Mr. STEARNS. Mr. Wheeler?

Mr. WHEELER. Mr. Strigl just did a great job of explaining the impact on companies. Let me just see if I can relate it to the rest of the world. We're the only country, major country that has this kind of an artificial cap. In the rest of the world, spectrum finds its own level, if you will, in terms of how much spectrum a carrier needs to be efficient and be competitive.

Mr. STEARNS. He or she—he could go out and buy it if he wanted it?

Mr. WHEELER. Correct. For instance, in the UK, four of the five carriers in the UK have more than 77 megahertz. We're capped at 45. In Germany, 4 of the 6 have more than 60 megahertz. We're capped at 45. In Japan, 2 out of the 3 have more than 92 megahertz. We're capped at 45. And so the rest of the world is saying okay, what are the levels that water will seek of its own accord.

The other thing that's really interesting is that this has an impact on Monsignor Dempsey and this has an impact on Dr. Wells. Let's just do the math here for a second. Let's say take Mr. Strigl's 65 megahertz is the minimum that he needs. Eight licensees which is not an untypical situation, that's 520 megahertz. Where are we going to find that? That puts pressure on Dr. Wells. That puts pressure on Mr. Dempsey and why are we having to put that pressure on? We're putting the pressure on because of the fact that the spectrum that has already been allocated is not out there and necessarily being fully utilized. It could be if it could be transferred and get above that spectrum cap.

Mr. STEARNS. Mr. Strigl, how—I'm talking about timeframe, how soon should additional spectrum be made available, do you think? I mean what is the drop dead, is it another year, 2 years or you're at an instant you need it right away?

Mr. STRIGL. Congressman Stearns, in places like Los Angeles, New York, Washington, DC, Chicago, the need is within 1 year to 18 months. The issue is that unless we are provided with additional spectrum, in order to—this will work precisely against what we have worked so hard to create which is a competitive industry, low prices, high bundles of minutes, lots of usage. We find ourselves constrained. The supply is limited at this point. There will become a point in time when I fear that this commodity will carry

with it higher prices in order to guarantee a high quality of service for those customers who will remain on the service.

I don't want to sound like an alarmist. I don't mean that at all, but there comes a point in time when you've used everything you can use and to continue with a high quality of service, something has to give.

Mr. STEARNS. Thank you, Mr. Chairman, my time has expired.

Mr. UPTON. Ms. Harman.

Ms. HARMAN. Thank you, Mr. Chairman. I have a few questions for Mr. Wells.

Mr. Wells, I describe myself as a pro-defense, pro-business, pro-choice Democrat, so I make apologies to no one about my advocacy for a strong defense. And even if I might forget, my constituents wouldn't let me forget, since most of the major defense firms are located in my District. That by way of prologue.

I am very well aware, as you are, of many priorities that the Pentagon has in this year's budget and next year's that we may not be able to fund. Just to start off the list, more C-17 airlift, more B-2s. Missile defense, just to name several. And I'm sympathetic to those priorities. My question to you is if you have the opportunity to consider some changes in your use of spectrum that would generate revenue that could potentially fund some DOD priorities, if you have that opportunity or let me put it another way, do you have the opportunity to consider changes that could generate funds that could help other DOD priorities?

Mr. WELLS. I believe that a wide range of options is on the table. I have some concerns. What is often teed-up as a win-win as I mentioned to the Chairman earlier, runs into devil in the details. For example, the comparable spectrum needs to be made available clearly and in enough time, with enough compensation early enough to make the change.

Second, when people talk about trust funds and funding mechanisms for DOD, one of the reasons it becomes complicated in law of how those monies migrate from the general revenues to a particular department and I honestly have not seen an air tight, if you will, mechanism to ensure that promises made in discussions actually get translated into the transfer of funds.

So in theory, it sounds excellent. I remain skeptical that it will work.

Ms. HARMAN. Well, I certainly would agree that the devil is in the details, but I would not agree that because it is the right answer is to resist change. I think that your communications needs are a very high priority. I support your communications needs, but I also suggest that resources are not infinite and the Defense Department budget is large and money is going to have to be freed up to fund other programs and so with all the talent you have down there, I would suggest that more focus be given to how to make that transition effective so that we have not just Jane Harman or not just this committee, but the country has the benefit of funds for other defense priorities. I just listened to your testimony very carefully and didn't hear anything said about that. So as one voice up here, I would like to suggest that it's not just the slogan win-win, it is two other words called national security that will be

short changed if we don't have a more creative view of the opportunities here for spending on additional defense priorities.

Mr. WELLS. The Secretary has spoken in terms of transforming the Department. We fully subscribe to that and I seek as many innovative solutions as possibly can. The flip side is I do have a responsibility to make sure that we wind up actually getting the benefits that are offered and we will aggressively, eagerly seek an opportunity to engage on this issue.

Ms. HARMAN. I like those words, aggressive and eager. It takes that to overcome the inertia, not just in your building, but in this building to change. And so I would urge Mr. Chairman, that we be aggressive and eager in considering these issues and that we certainly view national security as a high priority when we're allocating and reallocating the spectrum, but we define it to include more than just the communications function. We define it to include a lot of priority programs that we may not be able to fund if we don't free up some money.

Thank you, Mr. Chairman.

Mr. UPTON. Thank you. Mr. Shimkus.

Mr. SHIMKUS. Thank you, Mr. Chairman. Kind of following up on some of my comments of my colleague. I think the military and national security concern is that the transition in that there's no gap. It would have to be a seamless transition which means capital would have to be upfront, satellites would have to be in place, and so that when the handover of the current spectrum was given that it would initially transfer over.

The risk of someone deployed anywhere in this world and the ability not to communicate is life or death. It is market share and capital for folks in the industry and in a competitive world time is money, but in the military environment it's life or death and meeting national security goals, and Mr. Wells, you mentioned the timeframe. We're talking years out and then—so that's the challenge and that's why we're hear.

I want to ask Mr. Hatch first, were you the representative at the World Radio Conference? Who represented our government at the World Radio Conference in 2000?

Mr. HATCH. The delegation was headed by Ambassador Schoettler and there were representatives from the government agencies. Both NTIA and the FCC were vice chairmen of the delegation, and we had four representations from those two agencies, as well as from other government agencies and the private sector.

I was only there for the last 2 weeks of this particular conference, but have been to many of the previous conferences and our delegation, I believe, was well over 100 delegates. So we had full representation.

Mr. SHIMKUS. Did we have anyone from the Department of Defense there?

Mr. HATCH. Yes sir, we did.

Mr. SHIMKUS. It was construed as a success by our government in identifying the three different bands instead of one large band. Can you explain why that's a success?

Mr. HATCH. Various foreign governments wanted to identify just a single frequency band. The Europeans wanted to identify just the 2500 to 2690 MHz band. There were other administrations includ-

ing some in Region 2 that wanted to identify just the 1710 to 1850 MHz band—I think those were the two principal bands that were trying to be identified. We knew that we had some difficulties with these frequency bands and that we would need maximum flexibility in order to try to come back and then determine how much spectrum would be available and where we could find that spectrum.

So the U.S. made a proposal to not only identify those two bands as potential for use by 3G, but also the 806 to 960 megahertz band that would give us three potential options for identifying additional spectrum for 3G.

We made the commitment prior to going to the conference that if our proposal is accepted, we would then come back and do the detailed studies, especially on the two frequency bands, 1710 MHz and 2500 MHz. This is what we have, in fact, accomplished to make that information available to guide us in making a decision on spectrum for 3G.

Mr. SHIMKUS. Has it been successful in speeding up the process? I mean I think that's what it was construed to do if we had a victory over at the World Radio Conference and then split it up into three bands that that would help us more rapidly change.

Mr. HATCH. Well, it would give us the opportunity, Congressman, to look at the various options and the various frequency bands to see if any of the frequency bands, either all of them or in part could be made available and what the conditions are that they would be made available for 3G. So I think it did help in providing us with options and as I said right now we're in the process of evaluating those options and determining what spectrum can be made available for 3G. I do believe that having the option of looking at three different frequency bands would be better than having a single frequency band and if that frequency band turned out to be one that we couldn't support, then we would not have the flexibility.

Mr. SHIMKUS. Thank you. Mr. Wheeler, I appreciate you being here and we've had a good relationship and I appreciate the industry and the 911 efforts that have been made so far and look forward to the next generation.

This is being pitted industry versus the DOD spectrum. I guess a question would be why should an industry be challenged to consider other bands?

Mr. WHEELER. Industry has been, Congressman. There is—I'm sure that you are as tired as I am of the stories in Time Magazine and the newspaper headlining why the United States is in second place in the world in wireless. The difficulty that we have had heretofore has been that there hasn't been a unified piece of spectrum, therefore requiring different radios if you're to have one device and eliminating economies of scale. What has happened in the rest of the world is that—can we put that world chart up, pleas, Craig? What has happened in the rest of the world is that they have made decisions and those decisions have consequences for us in terms of scope and scale economies. This chart right here, the green areas are the countries of the world who have either currently allocated, plan to or have indicated a preference toward using this particular spectrum. The yellow countries are those who haven't yet and the red is us who have yet to make that—we're sticking out there like a sore thumb.

And the problem is when our troops deploy into those green areas, they're going to be impacted. When our consumers buy products, they're going to be impacted. Both of those impacts can be resolved if we have a harmonized set of spectrum.

Mr. UPTON. Dr. Wells?

Mr. WELLS. Mr. Chairman, thank you. The concern I have with this slide is that it suggests that the only thing standing between global harmonization and future peace and prosperity is the United States because of the 1755 to 1850 megahertz band. Harmonization, as I believe is indicated by the fact that Europe was looking to use 2500, 2690; China has picked 2300 to 2400 megahertz for their bands; others are looking at other things, is not going to happen around a single band.

In addition, it's not even necessary for effective global roaming. I'm pleased to have a world phone here that already operates on multiple frequency bands and multiple different modulation schemes that is effective today at reasonable prices for the consumer.

So while it would certainly be desirable, if you could get a single band, I don't believe you're ever going to harmonize around a single band and to hold DOD up as the sole set of obstacle to achieving global harmonization, I'm sorry, I have to disagree.

Mr. SHIMKUS. Mr. Chairman, if I could just follow up because and I ought to ask the question is then why, Dr. Wells, why isn't industry considering using other bands and that's a question I asked of Mr. Wheeler.

Mr. WELLS. I will have to defer to industry, sir, but I would just point——

Mr. SHIMKUS. I mean easy pickings or I mean is that spectrum easy pickings versus competitive alternative of moving other corporate entities off their bands?

Mr. WELLS. Well, certainly it is a government band. It is not now allocated for commercial and if it were reallocated it would increase the total amount of commercial spectrum.

My only point is that in Figure 3 in our, in my written statement, addresses 130 megahertz of commercial spectrum that's available today without touching either the 2600, 2500 band or the 1755 band that could be made available now and there are difficult choices. These are not easy allocations.

Mr. WHEELER. But Dr. Wells, you will agree, I trust, that that spectrum which you have identified as not in your area, is also not in anybody else's area and that what it creates is a continuation of what has burdened this economy in terms of the ability to compete.

The phone that you pulled out, for a second, a couple of things that are necessary that the committee understands about that. No. 1, that phone was probably about 4 years, maybe 5, late getting to this country. The people in the rest of the world were able to do that before American consumers were able to do that because, precisely because of the problem of incompatibility.

Second, let me just tell you a story. It happened last weekend, I was in Finland. My wife became infatuated with a phone that is available in the rest of the world that opens up and is kind of a combination computer, palm pilot, everything all at once. She asks

the question when can I get that? Why can't I get this in the United States? And the answer is they only make it for the rest of the world because of the fact that only the rest of the world can provide the scale economies for the radio, that to do it so that it works in the United States market drives the scale economies into the ground, drives them this way, and drive the price like this.

So there are consequences. This chart that you have here really doesn't answer the question because it's not a question of just more spectrum. It's a question of spectrum that is going to work with our neighbors in the rest of the world and is going to work for you as well as for us and that's why we need to be eager to get at the issue.

Mr. WELLS. Mr. Chairman, may I? I would love to have a global harmonized band in which the military could go and operate and not have interference from other users. I just fear the reality is that we're always going to have to negotiate agreements. The demand for spectrum everywhere is going to be increasing and that just to say that if DOD would only move out of this we'd be able to gain global harmonization is an oversimplification of an argument that's still going to be a very difficult problem to come to closure on.

But just what concerns me, this is a hard problem. I'm not saying that these bands are easy. If they were easy somebody would have taken them. Just like if our band were easy, someone would have taken it. This is a decision that has to be reached deliberately from a national approach and not just have a fiat that says ah, we solved the problem by striking away the DOD access.

Mr. WHEELER. But if we go to your conclusions that says let's have someplace to move, yes, let's do that together. Let's work on that and let's get these people involved on it. Let's have compensation and let's get even more beyond that for that and let's have a timeframe. We can do it.

Mr. WELLS. But let's find comparable spectrum into which we can move. That is the key that we have not——

Mr. UPTON. The gentleman's time has expired.

Mr. SHIMKUS. I yield back the balance of my time, Mr. Chairman.

Mr. UPTON. It doesn't work. Mr. Green.

Mr. GREEN. Thank you, Mr. Chairman, and frankly, I enjoyed that interchange and in reading the testimony, particularly from Dr. Wells, on page 6 where you say that CTI has proposed a win-win solution to DOD, you'd be interested in seeing such a package, but you haven't seen the proposal. It sounds like other than having us as witnesses, you all may want to leave this hearing and sit down and see if you all can trade those proposals because nobody on this committee, I know myself, doesn't want any degradation of our ability for our service personnel. And one of the questions, Dr. Wells, in looking at that chart over there where it looks like most of Europe, except that one yellow part and even with my trifocals I can't see if that's Bosnia or Kosovo there that it's there just to the east of Italy, there's some questions that the Department of Defense is already facing serious degradation around the world and increased use of wireless devices in the 1755 to 1850 megahertz. Did DOD see that during Bosnia and Kosovo and again, without

binoculars I don't know if I can tell but was there any degradation in Bosnia and Kosovo by using those megahertz because of the overflow or what's happening in Europe?

Mr. WELLS. There were a variety of degradations and a variety of bands. It was not just in this band and it just indicates that almost everywhere the band is crowded and we have been able to solve some of this by negotiating host nation agreements wherein we get some priorities and in other cases we have to adjust our operations to the realities of the situation. So we don't want to complicate, as I say, we've been able to negotiate agreements in many of these cases to allow us to operate satisfactorily. We are concerned that since there will not be a single harmonized military band that any movements we do now are just going to generate the need for additional negotiations and it's a cause for concern. As I've tried to maintain all along. If there was an easy answer, if, in fact, there was a hard answer that would let us get global harmonization, that would let us get money for the Defense Department, that would let us get comparable spectrum and continue our operations without risk to the lives of our servicemen and women, we ought to leap at that chance. The problem is reality is more complicated and to take a quote from President Reagan, "trust, but verify." We would love to have these solutions. We need to make sure that the i's are dotted and the t's crossed.

Mr. GREEN. Well, the concern I have again, even though this is Energy and Commerce Committee is that in the parts of the world that we may need that, you may have to spend time negotiating with those host countries and not with ourselves in the United States, but again, I would suggest maybe CTIA and Department of Defense sit down and share that proposal because otherwise it's much better if you all work it out than if Congress gets involved and even though I'm a student of government and have been involved in it for 30 years, it's much better with the folks involved instead of us having to do it.

Mr. Strigl, let me talk a little about in your testimony or in your answers to questions, you said in certain areas in our country you're going to see the need for increased spectrum in 18 months?

Mr. STRIGL. Yes sir. We have begun to see that in places like New York and Los Angeles today, the need for spectrum is here.

Mr. GREEN. And again, in Dr. Wells' testimony, I mean there's obviously a great many years between 18 months and 10, 15, 20 years. What can we expect? Is it the increase in the need for that spectrum? Is it typically in cell phones or is there some other killer application that we know we may use and need that spectrum for other than just cell phones?

Mr. STRIGL. The immediate need is one driven by low prices and high packages of minutes that our customers buy. The main need in places like New York City and Los Angeles today is driven by voice applications. As we begin to unfold our data and Internet access applications on top of that, it is just one further need for the spectrum.

Mr. GREEN. Okay, so it's mostly in voice right now?

Mr. STRIGL. Yes sir. Today it is mostly voice application, correct.

Mr. GREEN. Thank you, Mr. Chairman.

Mr. UPTON. Mr. Pickering.

Mr. PICKERING. Thank you, Mr. Chairman. Let me quickly just say I represent a district that is the home of Sonny Montgomery, Mr. Veteran, Mr. National Guard, Mr. Defense and John Stennis, father of the modern Navy. I have two military bases. I have multiple defense contractors. The story I would like to be able to tell if we could successfully work out—the devil's in the detail—is to say that through these policy decisions that we're making in this effort, we are able to buy the planes, the carriers, the destroyers, the transports. We have made our military modern, agile, mobile, quicker, faster, more ready, effective in fighting the threats that we face in the 21st century.

As I understand it, the modernization needs of the military over the next 10 years are approximately $100 billion. With budget realities of today I don't know where that money is going to come from to achieve your modernization objectives which I would desperately want to see achieved, representing the district that I do and the examples and the legacies of the men who have gone before me. That this offers a possible solution that if we could work out as what you call an airtight mechanism that would guarantee you the proceeds of such an auction, estimates, conservative estimates, $40 billion, almost halfway there as to what you need for your modernization objectives over the next 10 years. And so if we can work it out, I do think it would be a great story to tell not only in the military side as far as what we can do for our men and women in the military, but then in a rural district like mine, the 3G applications and the wireless potential to bring to our hospitals, our schools, our businesses and those areas, the applications of 3G, I think it would be a tremendous story that we would be able to tell and a good result.

And so this is my question, Dr. Wells, could we, working with your attorneys and the FCC and this committee, work out a mechanism, an air tight mechanism that would guarantee you that if we went down this path, if we did try to take the 1755 to 1850 or the 1710 to 1855 and we worked out a migration plan, would you be willing to sit down with us, with your attorneys and to try to develop that trust fund or airtight mechanism concept so that we could answer the devil's in the detail legislatively and from a budgetary point? Is that something that the Department of Defense would be willing to do and ready to do?

Mr. WELLS. We met yesterday with the FCC and the NTIA to look at a way ahead on a national approach toward choosing the best set of options for way ahead on allegation of third generation and certainly these sorts of things are on the table.

My caution, Mr. Pickering, is a couple-fold. First of all, these numbers are so large as to be very seductive. If only you could get this, then you would get half of the modernization requirements you would need and yet this is not strictly just a regulatory or even a commercial issue. If a few calls are dropped on the battlefield is not a question of redialing. It's a question of people's lives. So we really do have to make sure that this is done. If that could be done, absolutely. I would love to be able to see that happen, but the other consideration is the United States as the sole superpower with its global responsibilities does have somewhat different sort of criteria, perhaps, for judging the allocation of spectrum than most other na-

tions in the world and we have to take into account the fact that we do have these global security responsibilities as well.

I am more than willing to engage in a process to find this answer. I would love to be able to solve the Department's problems this way. I just need to make sure that we're not putting our people or the security of the country at risk in the process.

Mr. PICKERING. Dr. Wells, to follow up to my question, would you be willing to sit down with this committee and with the other Federal agencies' counsels and then—there are two questions, the proceeds, if we can have a mechanism to guarantee the proceeds back to DOD, then the second and more fundamental question which you talk about, can you maintain secure, strategic communication capability and that is the process, the migration, the relocation, those issues? I think that if we can answer the first one and set up a process that doesn't prejudge, but set in motion the decisions that have to be made to allocate the spectrum, to relocate the spectrum, to maintain your capability, I think they both fit and work together. Would you be willing to work on a mechanism with us to guarantee the proceeds and then to work with us on a process?

Mr. WELLS. I'm certainly willing to work. I think we need to work together.

Mr. PICKERING. That's what I'm suggesting.

Mr. WELLS. The Department of Defense deals unilaterally with the Commission, committee. We need to work together. But I think there's also another question that needs to be answered and that has to do with fully justifying the business case that additional spectrum is needed at this time. There have been statements that additional spectrum is needed. There are other members of the cellular community who have said right now we don't need additional spectrum. We can deploy 3G services within additional spectrum. I was in Europe a few weeks ago and the headline of the international Newsweek talked about other tech meltdown, $300 billion folly, the race for third generation phones. We're willing to do this. I just want to make sure the business case has looked at other spectrum before someone just defaults the fact that it's going to be 1755 to 1850.

Mr. PICKERING. Dr. Wells, I would agree that we need to put everything on the table. We need to have a fair process, but going back to my original question, would you be willing to work with us on a mechanism to guarantee the proceeds so then you could have the confidence that the second and the third questions that you're raising would be beneficial to DOD.

Mr. WELLS. Absolutely, we're willing to work on the process. We're willing to work on the process. We're willing to work toward a solution and you understand what I need to see to get that process culminated.

Mr. PICKERING. Yes. Thank you, Mr. Chairman.

Mr. STRIGL. Mr. Chairman, may I just respond to one point, please?

Mr. UPTON. Go ahead.

Mr. STRIGL. Dr. Wells has stated that business case needs to be done. I can only say that we did a business case and it justified us spending $9 billion in the last auction. I think that dem-

onstrates the value of the spectrum and how much money can be raised.

Mr. UPTON. Thank you. Mr. Rush.

Mr. RUSH. Thank you very much, Mr. Chairman. I want to ask Mr. Knapp, first of all I want to make a statement. I want to emphasize and re-emphasize, underline and in the most strongest words that I could possibly express, my association with the comments of my colleague from California, Ms. Eshoo, regarding E-911 and the absolute necessity that it's present for the rapid deployment, I mean 911.

I want to also say that I would ask that the FCC be very, very mindful that any delay through the waiver process be discouraged. This is very, very important. Last winter, a public school teacher in my District, one of my constituents, was kidnapped as she returned home with groceries in her car. They kidnapped her and kept her for almost 2 days. They locked her up in the trunk of her car. She had a cell phone. She made two phone calls to try to get help, but nobody could help her because they could not identify and she could not describe and give them the location where she was at. When they found her, she was dead. And it just further illustrated to me how important it is to make sure that we have these location devices so that we will be able to locate people who utilize their cell phones for emergency calls. So I wanted you to know that I am absolutely convinced that we need to have the rapid deployment of E-911 available to all of our consumers and I again want to associate myself in a most emphatic way with the comments of my colleague from California.

I want to ask Dr. Wells, has the degradation in the 1710 to 1850 band ever reached a level where national security was somewhat compromised? And if so, to what extent? It seems to me like if there's millions of consumers worldwide using 1710 to 1855, it's hard to imagine that DOD has experienced only slight degradation in this band and I would also like you to comment on whether or not you find the statement in Mr. Wheeler's testimony on page 3 regarding the situation in South Korea. Would you consider that slight degradation or was that a major incident, major occurrence there?

Mr. WELLS. Let me take, for the record, the characterization of the Korean incident, slight or major, I'll put that in context. But we in the service have lived ever since I was a junior officer in the Navy with spectrum interference. It used to be in the Mediterranean that you would always listen to the Italian taxicabs on your ship to ship radio frequencies because they just shared frequencies. We have been able through the years to work through this, either through operational procedures or through host nation agreements or in some cases changing our procedures. So again, I will get you a characterization of this incident. I have not—and obviously Kosovo is the recent example. We have not seen interference at the level that it caused the military operations to fail.

On the other hand, we have suffered fairly serious losses in the aeronautical telemetry area by virtue of the 1710 to—by virtue of the spectrum we've had to give up in the past when it was redirected away from DOD. So one of the reasons why I'm cautious in signing up the idea of international harmonization, even though I

recognize that the number of users of these cell phones is going to grow is that up to now we have been able to work through it. Second, there is no panacea that a single band is going to solve all these problems, and third, that there are other ways to address the problem, if, in fact, the interference becomes too severe. So let me take the question on Korea for the record and that's how I answer the other question.

Mr. UPTON. Ms. Wilson.

Ms. WILSON. Thank you, Mr. Chairman. I think and I'll have to go back and look at the list, but I think I am the only member of the Commerce Committee who is also a member of the House Armed Services Committee and so I see this from both sides and what concerns me about the interchange we saw here at the table and some of the other pieces of testimony is that I think we've seen evidence here and I've seen it in my one on one briefings with members of industry and with the military, a deep distrust of each other because your different objectives, in some ways those objectives being directly contrary to one another.

I don't know if it's possible to resolve this issue, but like Mr. Pickering, I would like to see it resolved. And I'd like to see a solution that works for everyone. But having read a fair amount about this and then briefed on it by multiple parties, I do see that there is a real issue and that the migration for spectrum is not as easy as some in industry would like it to be. It would be wonderful if with the help of industry we could modernize and bring next generation communications technology to our military systems and do that on a time line that works for industry. That would be great. Reality is, we're not going to replace those satellites that are working in this band and we can't go up there and just unplug the transponders and put in something new. This is more difficult than some of the rhetoric that I've seen, not necessarily here today, but some that I've heard in some of the briefings and at the same time I think the military is probably justifiably distrustful that they would ever see any of the money that came from the spectrum auction because let's face it, they've been messed over before. And they have reason to distrust.

I hear a factor of 10 difference in how much money the spectrum auction would really bring to the military, everything from $4 billion to $40 billion just here this morning. It's a big difference and the $4 billion end is 1 percent of 1 year of the Defense budget. Let's not kid ourselves about this funding, the transformation of the military. It may help in mitigating and allowing the military to migrate to a next generation technology. This isn't going to stop the shortage of ships. It's not going to provide us the training that we need over the next 10 years. It's a drop in the bucket of what the military needs to do its job.

I don't have specific questions for you all this morning because I've asked them mostly privately on my own. But I do wish that we'd see a change in approach by both Defense Department and those involved in industry. I know you want to succeed in the market place and that you believe that what you're doing is to the benefit of the American consumer and the American economy, but there's another side of this too. And likewise, if I can be of assistance to the military in easing some of that sense of distrust and

making sure that this migration doesn't hamper our ability to protect this country, I would be more than willing to work with Mr. Pickering and the Chairman and others to find out what that solution is. I yield the balance of my time.

Mr. UPTON. Thank you. Ms. McCarthy.

Ms. MCCARTHY. Thank you, Mr. Chairman. I have three questions for Mr. Wheeler. One is on the June 4th hearing on 911 and at that hearing I raised the question of Mr. Sugru of the Agency. What keeps the industry from cooperating on the technology since France has indicated it will be ready on time and everybody else is looking at waivers, because in the end, no matter where I am and whose systems I'm on, whether it's Sprint or whatever, it's all got to work together. And so in the end everybody is going to know about everybody else's technologies because it all has to go into that main system and come out and locate the person. So I was a little miffed today when you talked about you wanted a dedicated solution oriented efforts by both the Defense community and the wireless industry on this next generation 3G, but then when Ms. Eshoo asked you about E-911 you talked about well, we're nipping away at those problems. I'd like you to revisit that issue with me and I think the same dedicated effort ought to be on E-911 as I think most everyone in the room would agree.

The other concern I have is with regard to rural America and providing them with affordable broadband. Spring and WorldCom have developed some MMDS technology, are working on it and have invested $2 million for spectrum to get that technology out to rural America as an alternative to the wireless we now use and to try to help those people. But if the government takes that part of the band for 3G as you advocate, what would be the impact on rural deployment by MMDS providers and how would you and your industry compensate companies like Spring and WorldCom for their investment loss? And third, in light of the FCC's decision to move forward with the auction of C block spectrum owned by NextWave what impact will the recent Federal court decision have on your member companies?

Mr. WHEELER. Those are three excellent questions. Let me see if I can go through them. First of all, with regard to E-911, I don't think I was saying that we're chipping away at the problem. I was saying that the changing of the rules chipped away at the solution that was already worked out. We're now in a situation where there is a handset based solution which is what you referenced with Sprint and there is a network based solution and those are for units that are mobile, so I'm going to—I may have service here in Washington, DC, roam up to your District, expect the service and expect it from not only the wireless carrier, but also from the 911 service provider. Unfortunately, what we're finding is the technical issues on the carrier side and also technical issues on the 911 provider side so that even if the signal was provided, it is not necessarily capable of being decoded, if you will, to determine exactly what the address is for dispatch.

I think what we're looking at here, perhaps we're playing with—there's a word that's getting in the way here. We've used the word "waiver" a lot. There's not going to be a lifting of the rule and again I go back and say we asked for the rule. There's not going

to be a lifting of the rule. What is being worked out between carriers and the FCC however is a schedule for how they will implement it, based upon their own unique technologies and the realities that exist, so this is not it's going to go away. This is here's the plan to deliver it and what I hope we can also get to and the FCC has no jurisdiction over this latter issue, but what I hope we can also get to is the similar kind of an implementation plan on the side of the E-911 so that when Mr. Strigl or anybody else's company goes forward with the implementation of their plan, that their signal won't be a tree falling in the forest and it is those kinds of things that we have to move through. But I go back to the point that we asked for this rule. We started. We proposed a solution. Unfortunately, it's been changed over time. That has inhibited the ability to deliver on it. But there is going to be location capability tied to 911. Nobody's letting anybody off the hook.

Insofar as your rural question——

Ms. MCCARTHY. My point was is that a company has figured that already out and why can't everybody else do it?

Mr. WHEELER. Because they use one particular technology that is tied to GPS signals and not all other carriers do. And so there are both handset services, handset-based solutions and network based solutions and there's actually going to have to be a hybrid. What happens when you take that phone into an area that doesn't have that particular technology, so there's going to have to be a hybrid. See, the difficulty is that when the initial rule was proposed by us and the public safety community together, we had that worked out. Then it got changed over time and the complexity of meeting it increased. We're working our way through that. It's not that we're not going to, but we are working our way through that.

Ms. MCCARTHY. We'd like you to work your way through on the time table set so we can save lives. I think that was the point of several of us this morning.

Mr. WHEELER. And I hope, Ms. McCarthy, that there is no doubt that the wireless industry is committed to saving lives, 140,000 times a day and we are proud of that and yes, we want to do that also.

Ms. MCCARTHY. I don't doubt that. I just think you have priorities in your industry and you know, bottom line and how the stock is doing and all of those things. Sometimes they are a higher priority than sitting down in a room and not leaving until you get the solution, but please answer my other two questions.

Mr. WHEELER. You raise a really good point that we need to address. There are strong economic incentives for location technology. If you read any of the Wall Street analysts' reports and they talk about the future of M-commerce, mobile commerce, the kind of things we're talking about here, the Internet on your handset, a large component of that is going to be knowing where you are. You look at the Wall Street analysts and what they say is that here's the revenue that location information used for commercial purposes can mean to a wireless carrier.

Believe me, they want that revenue. And there is an economic incentive to get to your solution as great as this public safety incentive to get to that solution and so these are working in tandem. We

wouldn't be walking away from dollars coming in the door in this situation if there really weren't a serious challenge technically.

Quickly on rural and MMDS, one of the things that has always fascinated me is that wireless has been used around the world to deliver telecommunications services to areas that have never been able to afford them before, yet in this country we retard them. Wireless carriers, as a result of government policy, for the most part have a very difficult time going into rural areas and providing the kind of high speed service that have got to compete against companies that are subsidized, etcetera.

There is great opportunity for wireless carriers to do in the United States what they've done in South Africa and other countries around the world, if we can be allowed to get there. Now insofar as your specific question about Sprint's MMDS spectrum, I would submit to you that if we can, eagerly, work out with Dr. Wells, the kinds of things we've been talking about today, then there is much less pressure on either Sprint's MMDS spectrum or Monsignor Dempsey's MMDS spectrum and that's what we're trying to work our way through.

Your third question insofar as Nextwave, I can only echo what Mr. Strigl said and there is a—this spectrum—the fact that this spectrum is off the table, if you will, is only compounding the very problem that we're here talking about and anything that this committee or any of you could do to urge the parties to come to the table and settle this issue so that spectrum is out there and being used, it will then take the pressure off of all of us to some extent because there's 30 megahertz of spectrum that's sitting there fallow right now and only the lawyers are using it.

Ms. MCCARTHY. Mr. Chairman, thank you for indulging me in those lengthy answers and my questions. I appreciate it. I yield back.

Mr. UPTON. You are very welcome. I would note that we have had 21 members here during all or part of the hearing this morning. I know there are a couple of members, I know Mr. Pickering has got a couple of questions. I would just like to note for the record that we'll leave the record open for all members, some of which I know said they were not able to ask questions due to other commitments.

But let me say just Dr. Wells, it is my understanding that a new generation of radios is being developed called the high capacity line of sight. It's also my understanding that these new radios will operate between 1350 and 2690 megahertz. Are there other spectrum bands within the range other than the 1710 to 1855 megahertz to which the Pentagon's tactical radio relay operations could be moved?

Mr. WELLS. A number of the radios today can tune over a wide range of frequencies. Some of those are denied to us for training in the United States because those bands are not available. So as I mentioned earlier, there are tradeoffs in all of these between, if you increase the frequency then you're now in line of sight, you can't get longer ranges, you get higher data rate, you need more power. If you decrease the frequency you can get longer ranges with lower power, but you may not have the same kind of data rates. So there are those kind of tradeoffs. We're developing a num-

ber of different radio approaches and those will operate over wide bands.

Mr. UPTON. How quickly are you planning to have this installed, the line of sight system, completely operating?

Mr. WELLS. Let me take that for the record, Mr. Chairman.

Mr. UPTON. Do you have any cost estimates of expediting the change over?

Mr. WELLS. Expediting the change over to this new radio—let me take that also. I do have an answer, by the way, for your earlier question about fixed sites. DOD uses 1855 fixed sites in the 1755 to 1850 megahertz band and that's 49 percent of the total fixed sites in that band.

Mr. UPTON. Okay. Mr. Pickering?

Mr. WELLS. You asked me one thing. You asked me earlier about the unified S-band, moving the satellites. One of the concerns we have in that band is that we would need better regulatory status in the band than some of the other users. NASA, for example, is accorded priority right now after broadcast auxiliary services. If we're going to move military and intelligence satellites into that band, clearly they would need adequate regulatory protection.

Mr. WHEELER. Could I just ask a clarification? 1855, how much spectrum are we talking about? You said 1855 fixed sites, was that the number that you used?

Mr. WELLS. In various places within the 1755, I'll get that——

Mr. WHEELER. I'm just curious. Good.

Mr. UPTON. Mr. Pickering.

Mr. PICKERING. Mr. Chairman, my understanding is as we start the legislative process with this hearing today that it is with the intent and objective of soon introducing legislation. I would like to introduce legislation as soon as possible, but I would like to have as broad a consensus as possible and as broad of an input and buy in. We hope, I believe, this fall to try to move legislation through this committee and to a mark up and so my first question would be to the panelists from both industry and from the agencies and DOD, would you all be willing to work with the committee as we draft legislation over the next month? Would everybody be willing to come to the table in this process and let me start with Mr. Hatch?

Mr. HATCH. Thank you and——

Mr. PICKERING. You can be very brief, with just a yes or a no.

Mr. HATCH. The answer would be yes. Obviously, we'd be glad to work with industry, the FCC, government agencies, and the Congress to try to help resolve how to accommodate third generation and at the same time protect the interests of the incumbent users. Thank you.

Mr. PICKERING. Dr. Wells?

Mr. WELLS. Of course, Judy will work with the committee and we'll use—the only thing that I would ask is that there not be a precipitous decision to sort of treat 1755 to 1850 as being the solution and that everybody sort of march down the path.

Mr. PICKERING. And Dr. Wells, let me assure you that I do want to end this process, put everything on the table except maybe Monsignor Dempsey's spectrum.

Mr. Knapp?

Mr. KNAPP. Yes, thank you. Of course, we'd be pleased to provide whatever help we can and we'd be more than happy to work with you.

Mr. PICKERING. I think I know your answer, Mr. Wheeler.

Mr. WHEELER. In a heartbeat.

Mr. PICKERING. Dr. Wells, if you could, I believe Mr. Wheeler has outlined some possible migration plans. Is there a way in looking at and again, not prejudging the 1710 to 1855, but I believe that you've identified I believe in your testimony 130 megahertz. Is there a portion of that, is there half of that, is there a quarter of that that we make—be able to identify in the near term, looking at the long term issues and what we have to do in the long term, but in the short term, by 2004, is there some spectrum that you believe DOD could make available? Again, with all the caveats of compatibility and security, do you think that there's a way that we can find a way to do so?

Mr. WELLS. The 130 megahertz I mentioned was outside both the DOD and the 2500 band, so that's commercially available spectrum today that again, tough decisions will have to be made. I think the FCC and NTIA have laid out the beginnings of a thorough systematic deliberate process that will, in fact, allow all the options to be put on the table. And if some of those include genuine win-win options for DOD, I'm certainly willing to consider those. So the answer is there may, in fact, be a path. What I need to make sure of is that as part of this integrated operational framework we don't break one thing while we fix another. The fixed radio relays that were talked about, perhaps that will be an option. We are certainly willing to consider them. I only ask it be done deliberately and considering all factors.

Mr. PICKERING. Mr. Wheeler, would you like to comment on a path or just again summarize what you think is doable from a migration plan, finding the comparable spectrum that DOD would need?

Mr. WHEELER. I want to also, this looks like the closing of things, close it with the same point I made at the outset and that is make no mistake about it. We want a strong defense. We don't want to threaten one life of one individual in uniform. It does appear very plain, however, that in the Department of Defense's report, suggestions were made as to migratory paths that were available. There are challenges in many of those, but this committee, this Congress, the Administration, the leadership that has already been shown by your Department and the White House and the willingness of the industry, I think can address those issues. We are not looking for a solution that is a couple hundred megahertz falling from the sky tomorrow. There needs to be a plan, a step-wise logical progression. I think that you have outlined those in your report and that we have, we're sitting in front of the people who can actually make things happen in regard to some of the solutions that you need along the way to make that transition work.

Mr. PICKERING. Mr. Chairman, thank you for your patience.

Panelists, I thank you for your participation and look forward to working with you as we try to find a legislative solutions to these very important objectives. Thank you.

Mr. UPTON. Thank you, Mr. Pickering.

Mr. Hatch, I have just one quick other question. Are there other sharing or segmenting options that were not studied for the 1710 to 1850 megahertz band?

Mr. HATCH. Thank you, Mr. Chairman. There were proposed segmenting options provided in the FCC NPRM. We considered three options in our report. Industry has also put forward some options, so it's all of these options and the information that has been submitted for the record in the FCC's proceeding that we need to now take into consideration, do a very detailed and careful study and analysis to see what are the best options, what are the time lines associated with those options and try to prioritize those options as to which ones to consider and which ones to look at in detail. I need to keep stressing that this comparable spectrum issue is one that is going to be very difficult for us to address and will take some cooperation and time by all parties to look at this migration and try to find comparable spectrum. It is not an easy task.

Thank you, Mr. Chairman.

Mr. UPTON. Thank you. Again, I just want to say that other members may have some questions for the record that we may ask you to respond to. I want to thank all members and their staffs for participating today and last couple of weeks as we've prepared for this hearing and I would also say that as we look toward the next step, we look to continued bipartisan cooperation, working with the Administration. I'd like to think and I've talked to Mr. Markey and had some discussions with the Chairman Tauzin. I'd like to think that the next step will be the introduction of some legislation, probably led by Mr. Pickering and others, again on a bipartisan basis, particularly as we deal with other committees that may have jurisdiction as well, the Armed Services Committee, I don't know if they have direct—they probably would have some referral, but my goal would be to try to see legislation introduced some time after we return from the Labor Day break at which point we will schedule a legislative hearing later on, on that legislation with the idea that we would move forward beyond that, probably in October.

So with that again, we welcome your participation in this very important issue, Monsignor Dempsey, particularly your role here as well and I adjourn the hearing.

[Whereupon, at 12:15 p.m., the subcommittee was adjourned.]

[Additional material submitted for the record follows:]

DEPARTMENT OF DEFENSE
September 2001

Honorable FRED UPTON
Chairman, Subcommittee on Telecommunications and the Internet
Committee on Energy and Commerce
U.S. House of Representatives
Washington, D.C. 20515-6115

DEAR MR. CHAIRMAN: I want to thank you for the recent invitation to speak before your subcommittee regarding the "U.S Deployment of Third Generation Wireless Services: When Will It Happen and Where Will It Happen?". I also welcome this opportunity to provide additional information concerning Department issues related to the potential loss to the 1755-1850 MHz band. Enclosed are the Department's answers to the questions you sent me on August 2, 2001.

Finding suitable spectrum for Third Generation ("3G") Wireless services is a challenging telecommunications issue. Industry proposes a win-win solution—a goal that we endorse, provided it is truly a win for our National Security as well as for Industry. However, we must be cautious about proposals that promise uncertain future benefits to the Department of Defense, in exchange for a firm commitment to relin-

quish the Federal spectrum now. We shall continue to work with the Executive Office of the President, Commerce Secretary Evans, Federal Communications Commission Chairman Powell, the Congress, and other concerned parties to help us reach the best decision for the nation and the Defense Department.

If either my staff or I may be of further assistance to you or your subcommittee, we would be most pleased to do so.

Sincerely,

LINTON WELLS

Enclosure: As stated

cc: Honorable W.J. "Billy" Tauzin
Honorable John D. Dingell
Honorable Edward J. Markey

QUESTIONS FOR THE RECORD

Question 1a. How much spectrum does the Pentagon's fixed point-to-point wireless operations occupy? How many channels in the 1755-1850 MHz band do these operations use and do they share channels with any other Pentagon operations?

Response: There are fully 595 frequency assignments (e.g., channels) recorded for DoD fixed point-to-point wireless operations in the U.S. between 1755 and 1850 MHz. These point-to-point systems use "channels" throughout this band and use bandwidths ranging from about 1 MHz up to 40 MHz, with the vast majority using less than 4 MHz. The fixed nature of their use, frequency engineering, and geographic separation allow the same frequencies (channels) to be re-used for assignments elsewhere in CONUS. Full cognizance of fixed point-to-point receiver and transmitter equipment parameters ensures DoD frequency management personnel are able to develop compatible frequency plans for simultaneous operations of other systems with these fixed equipment systems.

It should be noted that these numbers address only those DoD systems that are physically fixed in place, as opposed to those systems that operate in the "Fixed Service" but are actually transportable, such as Tactical Radio Relay (TRR) systems.

Question 1b. What percentage of these fixed wireless operations are non-combat or battle-related such as the Army Corps of Engineers' water level monitoring activities?

Response: Of the assignments identified in the answer to question 1a, approximately 60% support non-combat related efforts, such as Army Corps of Engineer (ACE) backbone communications and base administration functions. The balance of assignments support DoD test and training efforts whose functions have a direct bearing on combat readiness.

Question 2. Your written testimony states that the 1755-1850 MHz band was chosen for the Pentagon's crucial operations "because the signals at these frequencies propagate in ways that make the spectrum ideal for mobile communications." What Pentagon and other agencies' fixed wireless operations have to be performed in this band? Why do the fixed wireless operations have to be performed below 3 GHz?

Response: As stated in the DoD report, most, if not all, DoD non-tactical fixed point-to-point systems could be accommodated in other frequency bands above 3 GHz that are already allocated for this particular type of service. Tactical radio-relay systems however, are transportable by design, have time-to-deploy requirements, and link establishment requirements that are best fulfilled in frequency spectrum below 3 GHz. Mobile aircrew training and precision guided munitions systems would face extreme technical hurdles if forced above 3 GHz because of aircraft dictated size and weight limitations that would constrain power availability and would result in reduced effective ranges for these systems. Antenna factors and mobility and increased power requirements would make it very difficult to successfully meet the performance requirements of our tactical and training systems.

Question 3a. Is the Pentagon aware of any other bands, other than 1755-1850 MHz, that provide the propagation characteristics necessary to the Pentagon's satellite uplink operations that either already have enough spectrum to accommodate those operations or could have enough spectrum if incumbent users were relocated?

Response: Yes, DoD is investigating the potential for moving these satellite control operations (SATOPS) to what is generally referred to as Unified S-Band (USB) at 2025-2110 MHz. There are, however, regulatory considerations regarding priorities to be accorded the Pentagon's satellite functions in the USB, compared to priorities of incumbent commercial and Federal government users that must be satisfactorily addressed in order for USB to be comparable. The risk associated with international coordination of satellites (in terms of priorities in the international coordination process through the International Telecommunication Union) for use in USB

is also of concern. Furthermore, as explained in the DoD report on IMT2000, satellite control could not be moved out of the band until approximately 2017 or later.

Question 3b. Please provide the answer to that question for the Pentagon's tactical radio relay operations.

Response: Tactical Radio Relay (TRR) systems have operational requirements, including transportability, propagation range, and foliage/building wall penetration, that are best accommodated at frequencies below 3GHz. Three potential alternate bands (2200-2290 MHz, 4400-4490 MHz, and 7/8 GHz) were assessed and found to be unsuitable. NTIA has stated that there are no government bands below 3 GHz to which TRR could migrate without displacing incumbent users or creating a crowding problem.

Question 3c. Please provide the answer to that question for the Pentagon's air combat training operations.

Response: Three potential alternate bands (2200-2290 MHz, 4400-4490 MHz, and 7/8 GHz) were assessed and found to be unsuitable. We are not aware of a government band that could accommodate air combat training operations.

Question 3d. Please provide the answer to that question for the Pentagon's precision guided missile operations.

Response: Three potential alternate bands (2200-2290 MHz, 4400-4490 MHz, and 7/8 GHz) were assessed and found to be unsuitable. We are not aware of any other available bands that provide the same very effective propagation characteristics to support the unique mission requirements of our precision guided munitions (PGM) systems.

Question 4a. Your written testimony indicates that "[v]acating or segmenting the band is feasible, provided that comparable spectrum could be allocated to DoD and adequate, timely, financial compensation provided, but DoD satellite control systems could not vacate the band before 2017 and non-space systems before 2010." What is the Pentagon's definition of "timely, financial compensation" that support the 2017 and 2010 time-lines?

Response: To meet these timelines, funding sufficient to begin development of the new systems would have to be provided in FY2002. Remaining funding would be needed within the next two to three years to enable efficient production and timely fielding of all units.

Question 4b. What if more money was provided for compensation than the Pentagon has envisioned? Could these operations be moved more quickly if more money was made available?

Response: No, more money would not enable significant acceleration of the transition timelines because they are based on constraints other than cost. In the case of satellites, the transition timeline is based on a "flyout strategy": existing satellites will be replaced when they reach end of life. It is doubtful that there is sufficient satellite manufacturing capacity and launch capability to allow the timeline for satellite control operations to be shortened significantly regardless of the availability of enhanced funding. Furthermore, it would waste billions of taxpayer dollars to prematurely retire functioning satellites.

With regard to other systems that would require redesign, the 2010 transition timeline is based on the time needed to complete the processes of developing and fully deploying a new system. For most systems, this timeline could not be accelerated without adding substantial risk to the program.

Question 5. In your written testimony, you indicate that "DoD believes that it is unlikely that comparable government spectrum can be found for most of the functions presently residing in the 1755-1850 MHz band." What functions are not in that "most" category? For what functions can comparable spectrum be found?

Response: Recalling that, at a minimum, "comparable spectrum" makes reference to equivalent technical characteristics, equivalent regulatory status, and sufficient spectrum to avoid degradation due to interference with incumbents, it is believed that the DoD fixed point-to-point systems could be relocated to alternate spectrum. Also, we are investigating the feasibility of migrating the satellite control to Unified S-Band (see the answers to Questions 3a and 9). However, questions remain regarding the regulatory status of DoD operations should they move to this band, compatibility with incumbent uses, and international coordination. The FCC has not yet proposed commercial or shared spectrum into which the DoD functions presently in the 1755-1850 MHz band could move.

Question 6. The Pentagon's report that serves as an annex to the NTIA 3G Report on the 1755-1850 MHz band states that "[m]ost installations of microwave systems that employ spectrum in this band are legacy in nature." What exactly does this mean? Do these systems not use spectrum as efficiently as they could?

Response: The term legacy means that the systems have already been fielded. It is possible that a redesign of some systems could enable more efficient use of spec-

trum, but we must also consider that the spectrum needs for some functions, such as battlefield communications, are growing. DoD's overall spectrum requirements for mobile communications are expected to grow by ninety percent by 2005.

Question 7. The Pentagon's report also states that "[a] significant amount of frequency spectrum is already allocated to the Government on an exclusive basis for Fixed Service operations in higher frequency ranges. The 4400 to 4990 MHz and 7125 to 7185 MHz bands are already employed by the DoD for fixed point-to-point microwave communications in CONUS." Why is it that the fixed wireless operations currently in the 1755-1850 MHz band cannot be relocated to these bands?

Response: The fixed wireless operations in the 1755-1850 MHz probably could be relocated to other government bands. It is also possible that some of these operations could be outsourced, thus enabling the use of commercial bands.

Question 8. Please explain the geographic sharing that may be possible for fixed microwave links? The DoD Report states that "[s]ince the microwave links tend to be in remote area, sharing does not present a problem. For those links near population centers or IMT-2000 systems, frequency sharing could be coordinated." What does this mean?

Response: Since signal strength fades with distance, two systems can use the same or adjacent frequencies provided they are far enough apart. The acceptable geographic separation is related to the closeness of the operating frequencies. In population centers where geographic separation is impractical, 3G and fixed microwave systems might still be able to share through coordinating time of use, as well as through coordinating frequency assignments.

Question 9. The DoD Report states that the "S-band offers physical advantages for TT&C [tracking, telemetry, and control] operations, particularly in the areas of launch, early orbit, and anomaly resolution." The report also states that "[g]iven the current implementation, S-band is uniquely suited for conducting critical, non-routine SATOPS functions." Given these conclusions, is the Pentagon doing everything it can to ensure that as many satellite operations are moved to the S-band as quickly as possible? What impediments stand in the way of moving all of these operations to the S-band?

Response: The area of the spectrum commonly referred to as "S-band" extends from 1550 to 3900 MHz. It encompasses both the current satellite control band of 1755-1850 MHz and the "Unified S-band" from 2025-2110 MHz. The unique and desirable performance features of "S-Band" described in the DoD Report apply to both of these bands.

Question 10a. DOD engineers argue that emissions from commercial use would extend so high in the sky over a city or area where its commercial use is deployed that [any] satellite uplink would have to be at least 250 kilometers away, or risk interference. Industry engineers argue that commercial wireless antennas direct their emissions towards the ground (where customers use the service) so, the interference would not extend so high into the sky. Please explain the reason for the disparity in the conclusions of the engineers?

Response: This question addresses two interference issues. The first is interference from DoD satellite ground terminals to 3G phones. DoD studies predicted that SATOPS emissions could cause interference to ground based 3G receivers up to 350 km away. Industry does not dispute this analysis. The other issue refers to the potential for interference from 3G base station emissions to the DoD SATOPS receivers on orbiting satellites. The differing conclusions regarding the interference to satellite receivers are based on differing assumptions about the antenna pattern.

Question 10b. What process will you follow to determine which set of engineers is right?

Response: DoD and industry engineers are in discussion to resolve the difference if possible. DoD analyses must be based on appropriately conservative assumptions to ensure adequate control is maintained of priceless space assets.

Question 10c. What is the time-frame for resolving this dispute? When will we have a definitive answer to technical question surrounding this issue?

Response: We look forward to expeditiously closing this point of misunderstanding of the risks to our SATOPS capabilities.

Question 11. It is my understanding that the Army has already begun to experience problems in Europe with the Army Mobile Subscriber Equipment (MSE) and the Tri-Services Tactical Communications (TRI-TAC). Can you please explain the nature of this problem and what is being done to overcome it?

Response: The problem experienced in Europe relates to the need for tuning flexibility to achieve both radio transmit/receive frequency separation and collocated system frequency separation. The Army employs the Mobile Subscriber Equipment (MSE) system regularly in Europe and is able to support both operations and training missions through proper frequency assignment coordination procedures, though

large networks of multiple systems are challenging to support with available frequency assignments. The Army is acquiring the High Capacity Line of Sight (HCLOS) radio system that has significantly increased tuning flexibility to address the increased complexity of frequency separation.

Question 12. It is my understanding that a new generation of radios is being developed called High Capacity Line of Sight (HCLOS). It is also my understanding that these new radios will operate between 1350-2690 MHz. Are there other spectrum bands within this range other than 1710-1850 MHz to which the Pentagon's tactical radio relay operations could be moved? In your answer, what assumptions are you making about the spectrum capacity needs of these operations?

Response: NTIA has stated that there are no other government bands to which TRR could be moved, regardless of tuning capability. Like MSE, HCLOS requires a separation of at least 60-70 MHz between transmit and receive frequencies with sufficient total capacity (at least current allocation) to meet rapidly growing information transfer requirements. The 1710-1850 MHz band provides the single largest block of contiguous spectrum available to the DoD for support of tactical radio operations. This large spectrum block is critical to being able to employ system tuning flexibility for required frequency separation of transmit/receive links and collocated system operations. It should be noted that one of the main reasons for acquiring the High Capacity Line of Sight (HCLOS) radio system is to significantly expand tactical network capacity. This will be accomplished by the HCLOS radio being able to support much higher data rates than the current MSE systems. We firmly believe that spectrum requirements to support the Army battlefield networks in the future will be significantly greater than the needs of today.

Question 13a. When is the HCLOS system slated to be installed and fully operating?

Response: About five percent of the systems have been fielded to date. Fielding will continue beyond FY 2009. The Navy and Marine Corps have not programmed for HCLOS or another system to meet their TRR requirements if access to the 1755-1850 MHz band is lost.

Question 13b. Is there any way to expedite the full installation and operation of the HCLOS system?

Response: For Army requirements, yes. The current contract for the HCLOS system has options and range quantities that would permit the accelerated procurement and fielding of radio systems. This would not address Navy and Marine Corps requirements, however.

Question 13c. Do you have any cost estimates of expediting the change over?

Response: For the Army, yes. Fielding could be accelerated by two years at a cost of an additional $243M over funding currently budgeted between FY 02 and FY 06.

Question 13d. What can be done in the interim? Is there a mutually agreeable temporary solution?

Response: There is no mutually agreed temporary solution to accommodating 3G in the 1755-1850 MHz band prior to relocation of TRR and other DoD systems. The DoD report found that sharing of the band would not be feasible.

Question 14. It is my understanding that Secretary's Rumsfeld "bottom-up review" will recommend that significant changes be made in DoD's spectrum management responsibilities. I understand that these changes will be radical in some respects. What are the recommended changes and when will they take effect?

Response: We are strengthening spectrum management at the OSD level and within the Defense Information Systems Agency. The Joint Staff is leading a study to address other changes to spectrum management responsibilities.

Question 15. How much spectrum (in megahertz) would be required for a new Joint Tactical Combat Telemetry [sic] System (JTCTS)? Are the spectrum requirements over land different from requirements over water?

Response: The JTCTS program is being restructured. However, based on the most recent design and assuming 20 MHz guard bands, land-locked sites would require about 60 MHz and littoral sites about 95 MHz.

Question 16. When will JTCTS be operational?

Response: Full operational capability of JTCTS and replacement of existing training systems that use the 1755-1850 MHz band is not envisioned until well after the 2010 timeframe. Acceleration to earlier than 2010 would be problematic.

Question 17. What reason(s) would the Department of Defense have for not migrating to the JTCTS?

Response: The DoD intends to migrate to JTCTS.

Question 18. What bands, other than the 1755-1850 MHz band, could the JTCTS operate in?

Response: The JTCTS could be designed to operate in any band from 138-2400 MHz predicated on allocation of sufficient bandwidth, regulatory action to give Gov-

ernment airborne mobile service appropriate regulatory status, and incumbent user relocation.

Question 19. Could the JTCTS operate in a guardband in the 1755-1850 MHz band if advanced commercial mobile radio services operated in the 1755-1850 MHz band?

Response: Not without providing unacceptable limitations on littoral range operations.

Question 20. Has the equipment for JTCTS already been designed specifically and exclusively for the 1755-1850 MHz band?

Response: The datalink developed under the E&MD effort was specifically designed for the 1755-1850 MHz band but this effort was halted.

Question 21. Are there other sharing or segmenting options for the 1710-1850 MHz band that were not studied by the Department of Commerce and the Department of Defense that would protect current Department of Defense operations in that band against interference while permitting 3G services to operate in that band as well?

Response: The DoD report examined the feasibility of full band sharing and partial band sharing or segmentation. It was determined full band sharing was not possible from a DoD standpoint or an industry standpoint, that interference to either DoD or IMT-2000 systems in the band would be unacceptable. Two partial sharing/segmentation options were also examined and determined to be not feasible. Our study shows any sharing option is not feasible. Alternate segmentation options may vary in terms of which and how many systems may be impacted. However, all options likely will require comparable spectrum as well as cost reimbursement and the adherence to timelines similar to those for full vacation of the band.

The NTIA report found that FCC's, 'Out-of-Band Pairing & Band Unrestricted Operation', proposal in the 3G NPRM, which pairs the 2110-2150 MHz and 2160-2165 MHz bands with spectrum in the 2500-2690 MHz band, would result in no impact to Federal users. NTIA also believes that the Commission's proposal to pair the 1710-1755 MHz with the 2110-2150 MHz and 2160-2165 MHz bands could be a viable option.