United States Department Of Commerce
National Telecommunications & Information Administration (NTIA)

Meeting Of The First Responder Network Authority (FirstNet)

Secretary's Conference Room
Herbert C. Hoover Building
U.S. Department of Commerce
14th and Constitution Ave., N.W.
Washington, D.C.

The First Responder Network Authority convened at 9:00 a.m. with Sam Ginn, presiding.

Members Present:

Sam Ginn, Chairman, *Telecommunications Executive*
Attorney General Eric Holder
Dana Hyde, *Associate Director for General Government Programs, Office of Management and Budget*
Wellington Webb, *Founder, Webb Group International; former Mayor Denver Colorado*
Susan Swenson, *Telecommunications/technology executive*
Ed Reynolds, *Telecommunications executive (retired)*
Kevin McGinnis, *Chief/CEO, North East Mobile Health Services*
William Keever, *Telecommunications executive (retired)*
F. Craig Farrill, *Wireless telecommunications executive*
Secretary Janet Napolitano, *Department of Homeland Security*
Tim Bryan, *CEO, National Rural Telecommunications Cooperative*
Charles "Chuck" Dowd, *Deputy Chief, New York City Police Department*
Paul Fitzgerald, *Sheriff, Story County, Iowa*
Acting Commerce Secretary Rebecca Blank
Laura Pettus, *NTIA staff*
Assistant Secretary of Commerce for Communications and Information Lawrence E. Strickling
Uzoma Onyeije, *NTIA staff*
Jeffrey Johnson , *Fire Chief (retired); former Chair, State Interoperability Council, State of Oregon; CEO, Western Fire Chiefs Association*
Teri Takai, *Government information technology expert; former CIO, states of Michigan and California*

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Ms. Blank: We seem to not be quite sure who's starting things off but I will start things off in that case, since I get to play hostess for the day, much to my pleasure. I simply want to welcome everyone here. I have looked at all of your bios. This is an extremely impressive group and I particularly appreciate Sam Ginn's willingness to come and share the group. For the effort that you're going to put into this, I appreciate Secretary Attorney General Holder's willingness to be here. And I know that Secretary Napolitano is on her way, so we're expecting her momentarily. And OMB Director Jeff Zients cannot join us today but his very able--PAD, I never know what that stands for, the--yeah. Dana Holder, who's really a great person to have here.

So I met a couple of you in Minneapolis at the APCO conference and I've had a chance to chat with Sam last week in my office. And, you know, I'm really looking forward to sort of seeing how this group moves forward. As you know, last year, President Obama called for a nationwide broadband network to empower all of America's first responders and public safety workers. A group that--many of you are amongst them, saves lives every day and really deserve a robust and an effective infrastructure that they can work with and communicate with.

With $7 billion from Spectrum Auctions through the Middle Class Tax Relief and Job Creation Act, we have a chance to make this happen. And, you know, it's not often that you can stand something like this up reasonably quickly with a substantial amount of money without having to go through a huge debate in Congress. So the opportunity to have some dollar [no audio]

Unidentified Male: Sorry, it cut off.

Ms. Blank: Guess I got cut off. That, you know, we have made, potentially ever, and certainly that we've made in decades. So, you know, this is an exciting enterprise. Doing the job is going to require skills. You all have a mix of experience from first-hand leadership in public safety to experience in telecommunications and in IT. You represent broad geographic regions and, you know, we have lots and lots and lots of applicants for these jobs.

And some people are still complaining 'cause they couldn't get on the board, as you probably know. But, you know, it--you are here because you really were the best among those that we had in front of us. So as I told Sam last week, he should call me if there's anything I can be helpful with. Congress plays a little bit of an oversight role in all of this and, we

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hope, get you the money and release to you as you put budgets together. I plan to ask Larry for monthly briefings and, you know, to talk with Sam whenever I can be helpful. I really do, you know, this is one incredibly important effort and I do want to stay in touch with what is happening.

As you know, many, many folks beyond me are going to be watching your progress. Some of them are going to praise what you do and some of them are going to be critical about every step. I mean, you know that, that's the way the job comes. But I know that you're committed to the project or you would not have agreed to serve on a board with no pay and not many other amenities. Otherwise--

Mr. Strickling: Actually, they get paid.

Ms. Blank: You get paid. But you don't get paid very much, let's put it that way. And, you know, let's just say, I know you're not here because of the lunches we're going to serve you, okay. But we are delighted at your presence. So I am confident that you now let me get this job in an amazingly short period of time, as I've sort of seen this schedule laid out, but you're going to get it done right. And that when it is completed, the network that you folks put together will save lives, it'll improve the quality of services that first responders can provide around the country.

So again, I thank you for agreeing to be part of this enterprise and for launching off onto this board to see where it gets you. And with that, I have the pleasure of swearing you all in. So if everyone will stand. I think I'll go to the end of the table so you can all see me. All board members. You will stand and raise your right hand. Repeat after me. I, and give your name, do solemnly swear.

Group: I (inaudible) do solemnly swear.

Ms. Blank: That I will support and defend The Constitution of the United States.

Group: That I will support and defend The Constitution of the United States.

Ms. Blank: Against all enemies, foreign and domestic.

Group: Against all enemies, foreign and domestic.

Ms. Blank: That I will bear true faith and allegiance to the same.

Group: That I will bear true faith and allegiance to the same.

Ms. Blank: That I take this obligation freely.

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Group:	That I take this obligation freely.
Ms. Blank:	Without any mental reservation or purpose of evasion.
Group:	Without any mental reservation or purpose of evasion.
Ms. Blank:	And that I will well and faithfully discharge the duties of the office.
Group:	And that I will well and faithfully discharge the duties of the office.
Ms. Blank:	On which I am about to embark.
Group:	On which I am about to embark.
Ms. Blank:	So help me God.
Group.	So help me God.
Ms. Blank:	Congratulations to all of you, you are officially aboard.
Group:	Thank you, thank you.
Mr. Fleming:	Ladies and gentlemen, I'm Bill Fleming, the HR Director here at the department. I've got an Appointment Affidavit in front of you. If you will sign about halfway down, just under Block C where it says, "Signature of Appointee," and then I will collect these from you. And this is the official document that does allow us to pay you a slight salary, thank you, Doug (inaudible) Thank you.
Ms. Blank:	And Chairman Ginn, you are now official, so the meeting is yours.
Mr. Ginn:	Thank you, Madame Secretary. And thank you, first of all, for your support. So far, I've just had outstanding support from you and Larry and Ana Gomez and a whole lot of people here at NTI. I appreciate it. Well, we have a quorum and we're open for business. I want to thank each of you for agreeing to serve. I think the Secretary had it right. We are all doing this because we see a need and if we have some sort of capability that will help us conclude this project successfully, it will be well worth our time.

And I've talked to almost every one of you and the story is the same. I'm here because this is important and if I can make a contribution, I want to do it. So I think we're starting in a very good place. The second thing is that, you know, this is the first time that we've had a board meeting. Some of us have not known one another and so immediately ahead of us is building a team effort, coming together around concepts that we believe |

are important and being able to execute on those concepts. And it's not simple. This is the most complicated telecom project in the nation's history, without question.

And when you look at requirements, it becomes even more complicated because you don't have to study this issue very deeply before you recognize that we need to cover every square meter of this nation and do it effectively. We need to be able to cover a forest fire in the remote canyons of the Sierra Nevada and then we must penetrate the concrete and steel of a Manhattan sky scraper. It turns out that wireless signals don't do that very well. And so we have these enormous coverage requirements and we also have very detailed requirements from Public Safety in order for them to do their job. And you lay all on top of that reliability and all the other--encryption and all the other things that we'll be dealing with, we got our hands full.

Now, when confronted with this kind of problem, my instincts are to go back to first principles. And to do that, I need to tell you a story. It was 1982. The FCC was issuing licenses, the--Bell Labs and Motorola Labs had basically done a lot of work on selling their technology. And the debate was on around whether this was going to be a viable service or not. The point of view at sort of the higher echelons in business was that this was a high-end service, that it was probably only going to be economic in major metropolitan areas where you had a lot of windshield time, and that it was probably not a good investment because you couldn't earn a return if you took a license in sub-major markets.

So I was an engineer in California, so I took a group of engineers down to LA in 1984 and we put cell sites into a number of the venue sites. And we did that because we want to understand a lot more about how customers would react to wireless. And what we discovered was really revolutionary to our way of thinking, because, as you remember, McKenzie came out with his '82 study and said by the year 2000, there'd only be a million customers, right. And that it indeed was a high-end service and would not penetrate much beyond that. So we took these Motorola bricks, as we call it, affectionately, down to Los Angeles and we would go up to users and we would ask them, "Who is your best friend? Would you like to give them a call?"

And, of course, we got the typical response, which I would say is the socialization response where some guy would say, "Hey, Martha, I'm in the middle of the coliseum and I'm talking to you. No wires." And we sort

of suspected that. But what we did not expect is when we got out to the workers, when we got out to the people who were coordinating trying to deliver a part to make sure that the scoreboard would work, or a coordinator that was trying to get a team to a venue site, or a telephone call to public safety to help someone who was injured from a fall in the stands, these people came to us and said, "I got to have this. I need this to improve my job." Totally not understood by the industry at all, so we go back to San Francisco and we tell our board that this is a second Alexander Graham Bell opportunity. It's going to be a major, major service.

The point of this is that people said, "I want to have this because it will allow me to do my job better." And basically, I think our test is--and we're going to cover a lot of things on the agenda today, enabling resolutions. We're going to talk about how the network might be organized. But we will be successful when that police chief or that fire chief comes to me and says to me what those technicians said in LA 25 years ago. "I need this because it'll help me do my job." So that's the challenge.

We'll have all kind of measures of success but we will know if we're doing our job when our customers, our users, vote on our behalf. And I just want to make that--I just want to make that point to all of us. We're going to get bogged down in basically enabling resolutions and we're going to talk about various network options and how to deliver services to the customer. And we're going to talk about advisory boards and all that kind of stuff. And they're important, we need to do them. But our real test is we've got to provide capabilities to public safety to allow them to do their job better. So that's where we start, okay. And I--I think that is our mission and we'll be measuring ourselves against that criteria as we move forward.

Again, I just say this is a massive project. It's complicated and it's going to be hard work. You just know that going in. So that's where we are. I would also say that, you know, there have been attempts at this before, some of them have not succeeded but I think we ought to remember what is different this time. What is different this time, we have a reasonable budget, we have spectrum, we have a board that's independent that can move this project. You know, one of my concerns that I've voiced all around is that I'm not worried about the technical aspects of this project. My concern is basically the overlay that would prevent us from executing contracts and getting this thing moving. And so if we can get over those

kind of administrative hurtles, I see that as the biggest challenge and not the more technical challenges which tend to dominate our conversations.

So we're in a good position. We've been allocated some really wonderful resources, the spectrum is outstanding. So we need to take that and we need to mature it in a way that our customers want to vote for us and say, deliver that capability to my department. So that's--that's sort of the essence of what we're trying to do here. So those are my introductory comments. Let me pause here for a moment and see if any board member would like to add anything to that? Yes, Sue?

Ms. Swenson: Sam, I'd just like to say that, you know, we've had some discussions about how helpful it is that we have had such good input coming into this. There's been a tremendous amount of work in advance of this board coming together. And so we're not starting, you know, we're not starting from scratch, so we have some very good input from public safety and that has really created this basis for some of the discussions that, you know, we've been having (inaudible).

Mr. Ginn: Yeah, I think kudos go to the Interoperability Committee because they set the stage for our tasks. And it made us implementers more than trying to work through all that they have done before us. So I think we--there's a thank you to the Interoperability Committee for all the work that they've done.

Ms. Swenson: Absolutely.

Mr. Ginn: 'Cause they've set the foundation.

Ms. Swenson: Right.

Mr. Ginn: Right, thank you. Any other comments?

Mr. Holder: Well, I'd just like to thank everybody, first off, for agreeing to serve on the board. I was intrigued by the fact that everybody's getting paid and then Dana told me right away that I didn't. Dana's responsible for the funding of the Justice Department and she's always tells me I'm not getting money, you know. I've also had a--kind of a flashback to when I had to raise my hand and get sworn. I thought I was going to get, like, a Congressional Committee thing here. I was getting a little concerned about that.

But I think the work that we are about is extremely important. The ability to allow first responders, people in law enforcement, the ability to speak

with one another quickly, effectively in a 21st century way is of critical importance. And the work that we are going to be engaged in is something that will make law enforcement better, first responders better, and make our nation more safe and more capable when dealing with emergencies. This will not be easy. There will be hurdles that we'll have to deal with, obstacles that we'll have to overcome. But this is a board that I think is uniquely situated, uniquely constituted in order to deal with those kinds of issues and we are glad to be a part of this effort.

Tony West, who is the Associate Attorney General, is my designee who will be working with us, as well. Tony is responsible for a great many things within the department. He's the number three guy at the department and so he and I will be constantly working together on this. And as I said, I'm just glad to be a part of this effort and look forward to working with all of you.

Mr. Ginn: Thank you, sir. Madam, do you have a comment?

Ms. Napolitano: Well, let me just echo what the Attorney General said. We're pleased to be part of this effort from Homeland Security. We work very closely with first responders all across the country. We have used the framework that Homeland Security begins with what happens in our localities and our home towns. The interoperability issue and having that and having that protected network has been really a question for the country since before 9/11 but became particularly acute post 9/11. But it's also very important for responding to disasters of all types, and we see that in any number of ways. So we are happy to be a part of this.

We were very active in the initial discussions about having such a broadband network set aside for first responders and public safety. That was really the first kind of public policy hurdle we had to jump over and then get the Congress to agree with the wisdom of our ways. So I think this board and the caliber of those who have been selected to be on the board and your willingness to put in the time and the effort to give us a good out product is very, very significant and important for our overall work for the country.

Under Secretary Rand Beers is with me and he will be my designee on the board. He runs the NPPD element of our department which with deals with all of the critical infrastructure of the country and its protection. So he'll be in an ideal place to provide insight and also, I think, some other help and expertise in respect to the discussions that the board will have.

	So, Sam, thank you for sharing and we look forward to being part of this effort.
Mr. Ginn:	Thank you. Well, thank you, Madame Secretary. You know, this is our first meeting. We're about to evolve as a team that works together, I hope. And I think maybe it would be appropriate if we kind of introduce ourselves to one another. So Tim, let me start with you and tell us a little bit about yourself.
Mr. Bryan:	Okay. Well, good morning. My name is Tim Bryan. I currently serve as the Chief Executive Officer of the National Rural Telecommunications Cooperative. We manage a great deal of technology needs for all of the rural electric and telephone companies around the country. Prior to that, served on a few wireless boards, Nextel, Clear Wire, Iko and ran the largest cable TV operator in Europe. And I, like Sam and I know like the rest of the group, I would say I'm keenly interested in getting something built. I think it's a great project. I think exactly as Sam said, a confluence of events have come together here that make this imminently buildable. Spectrum and money and frankly, an advance in technology that creates an ecosystem to get it built. I'm looking forward to it. Thanks for allowing me to serve.
Mr. Dowd:	Good morning. I'm Chuck Dowd, I'm a deputy chief with the New York City Police Department. And on 9/11, I was the commanding officer of the communication section, New York City 9/11 system police radio. Everybody knows that story, everybody knows what happened. This is a huge step today in fixing that. And as Sam said, we need to roll up our sleeves here and get this done. And thanks for all the support that public safety got here in Washington, particularly from the attorney general and Homeland secretary, who very early on clearly saw the need for this and we appreciate your help in that regard. And looking forward to getting this done.
Mr. Fitzgerald:	My name is Paul Fitzgerald. I'm the sheriff in Story County, Iowa and I think that's important because this network will truly bring coast-to-coast and border-to-border communications for all law enforcement. And I sat by my friend, Chuck Dowd. We have been working on this for quite some time. One of the things that is very unique about this is that public safety has always used the tools we were given. This is the first time that we can come together with such a group and we can have a voice in the type of service and the type of delivery that we need to have as we work to save lives out on the street every day. And I very much appreciate being a part

	of this board. Thank you, Madame Secretary. And I look forward to working with each and every one of you.
Ms. Blank:	You've all met me, but I should have introduced Larry Strickling, who you do need to meet, who is the real partner from the Department of Commerce who's going to be at all of your meetings and is in charge of helping to stand up this board and do everything that we can to make it operate effectively. Larry is the Director of NTIA, which is the organization here that's in charge of spectrum and broadband and all telecommunications.
Mr. Strickling:	Right. But since I'm not on the board, I'll pass and we'll send it down to Chief Johnson.
Mr. Johnson:	Good morning. My name's Jeff Johnson, past President of the International Fire Chiefs. I'm the CEO, Western Fire Chiefs Association. It's a pleasure and an honor to be here. I'm invested at least four or five years of my life in this very important initiative. I think I can say every great moment I've been witness to, and this is another one. From the Attorney General being a little ahead of his time -- and we greatly appreciate that, Mr. Attorney General -- to so many opportunities and moments from the Vice President saying that he and this administration are going to help solve this.
	There's been great moments. And the day that I met this board I knew this was one of those moments. The administration and the commerce secretary did a great job selecting our leadership and selecting this team and I'm really excited about where we're going. Thank you.
Mr. Farrill:	Well, good morning. My name's Craig Farrill. I'm a telecommunications executive from Danville, California. I've been in the wireless industry now for about 38 years working on system rollout and working with Sam a good portion of that period of time. This is a very big project but I think the good news for us on the technical side is that the pieces are all lining up for us. Subscriber equipment, the technology that goes into the network the network software, all lining up for us at this stage of time.
	So as several of you have said, there is a confluence of events, there is a right time and all the pieces have come into place. So we are very excited about the opportunity to work with public safety and make this new thing happen in the network community. And look forward to it, appreciate the opportunity to be with you today.

Mr. Keever:	Good morning. I'm Bill Keever. I'm also a retired telecommunication executive of about 38-plus years. I have had the opportunity to build networks in other countries, so now I look forward to the opportunity to try to build one in the--in my country, the United States. I also make wine on the side, so I have to worry about the maturity of the grapes at the same time.
	When Sam called me, my first instinct was to say, I can't do this, I have another thing to do. But upon reflecting, I said, you know, this is really an opportunity to do something that very few people are really qualified to do. And so I agonized and said, yes, I would do it. I, as Sue said, I'm thrilled that we are not starting with a blank sheet of paper, that we have a requirements definition document so we know what is to be done. So I view our board as not planners but doers and several of us on the board I know are very good doers, so I look forward to very positive results.
Mr. McGinnis:	Good morning. My name is Kevin McGinnis. I am the Chief of Northeast Mobile Health Services, which is the largest paramedic service in the great state of Maine. For the last 38 years, I've called my--my day job has been building EMS systems. My night job has been in the back of an ambulance seeing how badly I screwed up my day job. I also represent five national EMS associations as Communications Technology Advisor. And in that capacity, I've joined my friends, the chiefs, the other chiefs here, in the last four years, five years, six years--seems like forever, trying to get to this day. And having, until a few days ago, served as chair of the SafeCom Committee in DHS. I can tell you that all the folks that are represented in that effort are looking at us today and wishing us well. And they--we have every bit of their energy behind us in this effort. And I am looking--so much looking forward to doing this.
Mr. Reynolds:	I'm Ed Reynolds, also a retired telecom executive. These guys have all had 38 years. I have over 40. There you go. But over half of that has been in wireless. I joined wireless in 1989 when there were about 6 or 700,000 customers in the country and now there's over 300 million. I've had the opportunity to be a part of the evolution of the wireless business from analog to second generation to TDMA, GSM, third generation and LTE. And I had a great opportunity to build and operate very large networks. I spent the last seven or eight years of my career with Singular Wireless, which was the largest wireless company at that point, and we had not only achieved the status of largest company but we also, through an acquisition of AT&T Wireless in 2004, put together two huge networks, 25-30,000 cell sites each. And that was an unprecedented undertaking.

I checked with people literally around the world to see if anybody ever tried that before and the answer was no, not really. A few hundred but never that many. So I think those types of experiences have given me a background that, when Sam called, very similar to Bill. I said, we'll, I've got other things to do, like being retired. But this is a critical need, it's important for our country and as I reflected as Bill did, I believe that the background and experience that I have can be helpful here. And I'm delighted to be a part of this group and it is--I've gotten to know these people somewhat. It is a very strong group. This is a huge task but this group is up to doing that. Thank you.

Ms. Swenson: Hi. I'm Susan Swenson and I too have been involved in telecommunications for a number of years. The only thing I would add to that is that I did a little stint in software development before I retired. Still involved in quite a bit of technology. And like others, upon reflection--because, obviously, our schedules can still be quite busy, this is an unprecedented opportunity to make a difference for this country. And so it was really hard to resist Larry's conversation with me about why it'd be important to do this.

I also have found it very rewarding to hear from the number of people, since the board was announced, about the support and the interest in making this happen. I've actually been pleasantly surprised and astounded by people offering their help, even though they're not involved directly in the board. I think we have a whole community of people out there who are willing to do anything to make this happen, so I am particularly honored to have been selected. I thank you very much for that opportunity and look forward to working with this board.

And I just have to make a comment about this board. I think Jeff made the comment. I've been on a number of boards and I think the selection of the people--I don't know how Larry and Sam did it, but the people on this board have come together very quickly. And if you didn't know that we haven't been together for a long time, you would think we had. And so I think that also--we're off to a good start to really make something happen, so thank you.

Mr. Webb: My name's Wellington Webb. I bring mostly local and state government experience having served as both state legislator and a state cabinet officer, as well as Mayer of Denver, the largest city in Colorado, as well as President of the U.S. Conference of Mayors. And I've had the opportunity to watch our state deal with everything from forest fires to also, during my

tenure, watch Chuck's efforts at 9/11 and--but we've also had our own issues with providing security for the Oklahoma City bombing trial, the issues of Columbine, the issues of Pope John Paul the Second's visit to Colorado, and most recently, the Aurora shooting. And my brothers are both Denver police officers--former Denver police officer, so I know something about what users are looking for and I'm glad to also be here watching out for some of the interests of state and local government.

Ms. Hyde: So I'm Dana Hyde representing Jeff Zients, who is very much looking forward to being on this board. This is a key priority for the Administration and OMB will endeavor to get to yes, contrary to the Attorney General's assertions. As we work through a number of challenging requirements, administrative resource, whatnot, so we are here to support this effort and to get us where we need to be. Thank you.

Mr. Ginn: Anything else?

Mr. Holder: You know, one thing that maybe just to do, and maybe the other folks from the cabinet want to do this, as well, just to kind of give you a sense of who's here from the Justice Department, I addition to Tony. Maybe they could introduce themselves.

Unidentified Female: Molly (inaudible).

Unidentified Female: (inaudible) I'm a deputy to Associate Attorney General West.

Ms. McSweeney: Jill McSweeney. I work in the anti-trust division but I am assisting the Attorney General on this project.

Mr. Holder: But why are you--tell us a little more about yourself, Jill.

Ms. McSweeney: But I joined the justice department in March after serving in the Vice President's office where I had the privilege of working with a number of folks on this board in creating (inaudible) creates the FirstNet Network Authority, so very exciting.

Ms. Blank: I wonder if I could ask some of the commerce people here, as well, starting with Uzoma, to introduce themselves because they will also be people you will see.

Mr. Onyeije: Hi. My name is Uzoma Onyeije and I'm a telecommunications attorney and I left the consulting life to join NTIA to help with this effort. If the board approves one of the resolutions, I'll be serving as a secretary of FirstNet. And it's just--it's a pleasure to serve. I, too, think this is a great effort and

in all my interactions with the board, I have just come away more impressed each time, so I'm really looking forward to this.

Ms. Gomez: I'm Ana Gomez, I'm Larry's (inaudible).

Mr. Schwartz: Harry Schwartz, I'm (inaudible).

Ms. Pettus: Laura Pettus, I really (inaudible).

Mr. Ginn: Tom?

Mr. Power: I'm Tom Power. I work at the White House Office of Science and Technology (inaudible) just want to say how thrilled and humbled we are to have all of you serving. Thank you very much.

Unidentified Male: (Inaudible) I'm with the (inaudible) office of the CIO.

Mr. Andrews: And I'm Bruce Andrews, Secretary Blank's Chief of Staff and also sort of have the unique privilege of having been secretary--or not secretary, Senator Rockefeller's General Council and been in the room when this idea was conceived, so it's sort of exciting to see from an idea that, you know, started obviously among you all and as a group of staffers (inaudible) so it's good to have you all here.

Mr. Strickling: You also have Terri on the phone here, if you want to--

Mr. Farrill: Terry's on the line, too, Sam.

Mr. Ginn: Yeah, Terri?

Ms. Takai: Hi (inaudible).

Mr. Ginn: Terri, are you there?

Ms: Takai: My name's Terri Takai. I'm the former Chief Information Officer for the State of Michigan and for the State of California. In those two responsibilities, I was responsible for the public safety communication system in Michigan and then for the public safety communication system funding, as well as the 911 funding in California. Probably one of my greatest remembrances and one of the reasons why I feel this board is so important is I remember dispatching a very small team of radio technicians down to New Orleans for Katrina and actually having them help set up, at least, a small backbone in reprogramming radios to try to help when the states really rose to the call of being able to support the first responders at that time. It's a really great honor and pleasure to be a part of this board.

	I think it's an important opportunity to unite the public safety communities, the national governors, as well as the state CIOs, all of whom are going to be responsible for really making all of this happen. And I really appreciate the opportunity and really look forward to my contribution. I currently serve as the Chief information Officer for the Department of Defense. Thank you.
Mr. Ginn:	Thank you, Terri. We know that you're in on important business and we'll look forward to seeing you at our next meeting.
Ms. Takai:	Thank you (inaudible).
Mr. Ginn:	Okay.
Ms. Blank:	As long as we're getting the full cast. Rand, you want to?
Mr. Beers:	I'm Rand Beers, the Under Secretary for Homeland Security and have been involved along with Larry and (inaudible) try to set this up. And my assistant here, Michael (inaudible) also as the state CIO.
Michael:	Yes, thank you, Rand. I'm Michael (inaudible) I'm the Assistant Secretary of Cyber Security Communications for the Department of Homeland Security. But like Terri, also manage the public safety communication system for the State of Colorado. And I'm thrilled to be here to support (inaudible).
Mr. Ginn:	Okay. Have we covered everybody?
Ms. Hyde:	Just to round out the USG team, from OMB on a day-to-day basis.
Mr. Finland:	I'm John Finland. I'm on Dana's staff at the (inaudible).
Ms. Hyde:	(Inaudible) as well as Randy Lion, who I believe is with you in Colorado.
Mr. Ginn:	Yeah, good. Well, thank you. You can tell by the introductions, this is a pretty talented group. I just--in wrapping this up, I want a special thank you to Larry Strickling and Ana Gomez. They have really done yeoman's work and I thank you very much. It's been a pleasure to work with both of you. You've delivered on every challenge that we've offered you, so thanks. Okay. We're ready to move into the agenda, the meeting. We have a number of enabling resolutions. They are driven by statutory requirements and bylaws which dictate how we're going to try to run this place. So I would like to ask for help from Larry and Laura Pettus, who are familiar with the background of these. So on the bylaws, are there any

issues or questions that any board member would like to raise? If not, let me call for the question. Do I have a motion?

Mr. Keever: So moved.

Mr. Ginn: Okay. Any further discussion? All in favor?

Group: Aye.

Mr. Ginn: Thank you. Laura, I think you have the next two resolutions, so would you take those and explain them and answer any questions from the directors?

Ms. Pettus: Yes, of course. Thank you for the opportunity to be here today. I'm first going to talk about the state and local consultation process. As you're aware, the Act provides a basic framework to FirstNet to consult with regional, state, tribal and local jurisdictions on several aspects of the nationwide network. Some of those include the construction of the core network, the radio access network build out, placement of the towers, coverage area of the network, adequacy of hardening security, reliability and resiliency, to name a few.

In early May, NTIA released a request for information to seek comments on various issues related to the grant program. And at the same time, we asked the stakeholders to comment on any feedback they may have on how the consultation might work between the states and FirstNet. NTIA Received approximately 70 comments from a wide range of stakeholders. Primarily, the comments were used to develop the grant program requirements but there was very strong support for early engagement with the states in the consultation process.

FirstNet will need to figure out a way to strike a balance between the desire to get this network up very quickly and the need for meaningful engagement with the state, local and tribal jurisdictions. And it's going to be a natural tension that we're going to have to work through as a team, and so, you know, what I'd like to say is the consultation process offers you an opportunity. These jurisdictions have a wealth of knowledge. They know very unique challenges that they face in their coverage areas and their users. Of the 70 comments, 40 of them were received from regional, state, local and tribal jurisdictions and they're eager, they're ready to participate. They have really positive energy and I think there's a way to harness that for the betterment of the network.

So NTIA is recommending that FirstNet appoint a board committee to develop an overall strategy for the consultation process. Also NTIA can assist in conduction stakeholder outreach workshops, we can be issuing notices of inquiries as necessary to seek stakeholder and input on relevant issues, and we can report back on such activity. So we make ourselves available to help you engage in this state consultation process in any way that you need our help. So that is what the resolution is about.

Mr. Ginn: Any comments?

Ms. Napolitano: I totally support it but just a point of clarification. This includes territorial, as well.

Ms. Pettus: Yes. The state, under the statute, refers to the states under the Communications Act, which is also the territories.

Mr. Ginn: Yes, Sue?

Ms. Swenson: Sam, I just have one question for Laura and that is, you've done some of this work before. Because it, I mean, it feels like, the way the resolution's written, this is kind of a process that needs to be developed but--

Mr. Ginn: Sue, would you use the mic?

Ms. Swenson: Oh, I'm sorry. I thought it was on. I have to get a little closer, sorry. It feels like maybe this would be a continuation and we'd use some of our experiences that we've already done. Because we've done some of these outreach, obviously, to get input already for requirements and things like that. Would that be a fair interpretation of that?

Ms. Pettus: Yes.

Ms. Swenson: Okay,.

Ms. Pettus: It would be. We have a lot of experience. We work very closely with DHS and the Department of Justice in our outreach to first responders and to states and locals.

Ms. Swenson: Okay.

Ms. Pettus: What I would say from the comments is that we did not see a consistent theme or an optimal approach that was kind of accepted by a large group of commenters. I think there's a lot of different ideas about how the states are considering this consultation. And so I do think that we're going to have to work closely with them to just know what the expectations are to

	be sure that we can meet them, but they're also using the wealth of knowledge that's there. But we do have some ideas on how we might go about doing this.
Ms. Swenson:	Great, that's helpful, thank you.
Mr. Ginn:	Okay. You know what I would say about this is that these are our customers and they can give us a lot of information and guidance and we ought to be willing to take advantage of that. To me, it's just that simple. And so we just need a structure where that communication can take place and my understanding is that this resolution allows us to do that. So I'll call the question (inaudible) I need a second.
Mr. Bryan:	Second.
Mr. Ginn:	All in favor?
Group:	Aye.
Mr. Ginn:	Thank you. You have C, as well?
Ms. Pettus:	Yes.
Mr. Ginn:	Okay.
Ms. Pettus:	So as for the state and local implementation grant program, the Act dedicated funding of $135 million to assist states, regional, tribal and local jurisdictions with the planning for the nationwide public safety broadband network. The money is also available to identify the most effective and efficient way to integrate existing infrastructure and equipment into the network. In August, NTIA released a federal register notice, which each of you should've received a copy. The notice outlines the proposed eligible costs, the allowable activities, and the prioritization of activities in both rural and urban areas.

The grant program is currently envisioned to be distributed in two phases of funding. The initial phase would be used for planning and governance activities for the states, tribes and localities. The funding will ensure that states have the capacity and the resources necessary to participate fully in the consultation process. We have--NTIA has outlined some preliminary outcomes of the initial funding, some of which are to develop state plans and to enhance governance bodies to start to cover LTE broadband technologies. But additionally, we're looking at the states and localities to develop standard MOUs or agreements in order to figure out how to |

potentially access state and locally-owned infrastructure or fiber assets. And so that, you know, the first phase of funding will be about planning, capacity building, and will really help the states and locals and tribes ensure that they have the resources to actually participate in consultation.

The second phase of funding would be used to prepare and potentially undertake data collection activities. The phase two funding would begin after FirstNet is further along in your planning and your project plans. Specifically, NTIA would wait to release this phase of funding until we knew what additional details FirstNet might need with respect to the infrastructure and fiber and assets, and in what format that you want that data. The major comment we received is please don't make us collect data for the sake of collecting data. Let's make sure that it's usable, that it's in a format that they want and it's going to help in a meaningful way. So NTIA needs to consult with FirstNet on the grant program and in order to ensure that we're aligned with what your efforts are, as well as to meet the needs of the nationwide public safety broadband network.

So NTIA, in this resolution, is recommending that FirstNet provide feedback to NTIA on the program requirements and consider adopting a resolution that knows the importance of the consultation process. Also NTIA is recommending that FirstNet appoint a small committee to work on additional details on the date collection effort.

Mr. Ginn:	Any questions? All in favor?
Group:	Aye.
Mr. Ginn:	Resolution passed. Okay. We are on Resolution D in your package. Larry, I think you have this one.
Mr. Strickling:	Thank you, Mr. Chairman. The next resolution relates to the statutory requirement that FirstNet establish a standing public safety advisory committee to assist you in carrying out your duties and responsibilities under the statute. Today, we recommend that the board designate a subgroup of SafeCom, which is managed through the Department of Homeland Security as the public safety advisory committee required by the statute. We base this recommendation on first, the offer of the Department of Homeland Security to work with us through this, and also with the many numbers of public safety groups that are present today, working on this. We felt it would be useful and efficient to take advantage of an already existing effort at Department of Homeland Security in terms of meeting this statutory requirement.

	So the resolution recommends that--or asks that the board designate a subgroup of SafeCom as its public safety advisory committee and directs the Chairman to work with the Department of Homeland Security to get the committee established. And to appoint, after a consultation with the board, the chairman and vice chairs of the committee.
Mr. Ginn:	Any questions?
Unidentified Male:	(Inaudible) adopted.
Mr. Ginn:	A second? (Inaudible) discussion.
Mr. Webb:	Thank you. Initially, when I looked at one of the first discussion drafts, I thought that there needed to be some mention of some of the big seven organizations, like National Governance Association, U.S. Conference of Mayors. I think with the redlined edition of what we have here, going through chair and adding the words vice chairs, plural, I think can be accommodated, Sam, through your office as chair. And everyone's interests can be accommodated, so I certainly support the resolution.
Mr. Ginn:	Thank you. Thank you very much. Any other discussion? Just let me say that I know that the statute says we must have consultation. But I would say, on the other hand, we want it. Why wouldn't we want input into our processes and--so we can more clearly understand user requirements? And so I totally accept the idea that we need people out in the field who know the issues, who know the conditions, coming to us and communicating their needs. It's a natural process, in my opinion, and it's one that makes sense. Any other comments? Can I have a motion?
Mr. McGinnis:	So move.
Mr. Ginn:	Second?
Mr. Bryan:	Second.
Mr. Ginn:	All in favor?
Group:	Aye.
Mr. Strickling:	Motion--the resolution passes. The next resolution we're presenting deals with the need for FirstNet to actually take the license for the public safety spectrum, to be issued by the FCC. So the statute sets out that the FCC shall grant the license for the 20 megahertz of public safety spectrum, and this resolution would direct the chairman to formally request that the FCC immediately issue that license for the public safety spectrum.

Mr. Ginn:	I think this is just a requirement in the legislation, right Larry?
Mr. Strickling:	Yes.
Mr. Ginn:	Okay.
Mr. Bryan:	Yeah, I would only add, Sam, that there might be more to it than just getting the license. If there's an MPRM that's going to come out about the rules, I think we should just take notice that we probably have more work to do with the commission in establishing the rules and that--the technology rules so that then the technology group can start to figure out how this network's going to get filled, so I think we'll have additional fish to fry on that.
Mr. McGinnis:	I'd add to that comment that there is a good deal of work currently being done by--and has been done for the last few years by the Public Safety Spectrum Trust. And in transferring at least part of that spectrum to us from there. We're transferring some responsibilities wee need to be full aware of before we take them on. It's not impossible by any stretch, but we just need to do that very carefully, so nothing gets broken.
Mr. Ginn:	Well, rather than getting into details in this session, I would suggest that if you see any issues or concerns, you ought to state them and we'll deal with them. Okay, Larry. All in favor, by the way?
Group:	Move with that, move. Second.
Mr. Ginn:	All in favor?
Group:	Aye.
Mr. Ginn:	Good. All right, next one.
Mr. Strickling:	The next resolution deals with seven recovery act projects that NTIA awarded back in 2010. At that point in time, not knowing that what we were going to see with FirstNet, we allocated about $380 million to seven pilot projects to develop public safety projects in various communities around the country. After the passage of the Middle Class Tax Relief Act in February, we partially suspended these projects because we wanted to make sure that the 4G deployment that was envisioned in each of these seven communities would actually fit in and support and be consistent with FirstNet's plans.

So at this point, with the board now constituted, we'd like to start a more formal consultation process to get input from the board through its |

technology and planning committee as to how best we ought to proceed with these projects, both to protect the taxpayer money, as well as to ensure that any infrastructure that's developed through these projects will be usable by FirstNet.

Mr. Ginn: Discussion? Sue?

Ms. Swenson: Yeah, Sam. Just a question and maybe it's for Larry or somebody else involved in these projects. But are these primarily infrastructure only and nothing beyond that in terms of applications or services? I'm just trying to understand the scope of the grants.

Mr. Strickling: Well, it varies, obviously. At the time these grants were put out, we were still operating on this more network of network assumption, that individual communities, you know, through states would be developing these networks. Applications clearly has to be a part of that and I think each of these communities starting out are going to have to determine what services and applications they'd want to offer to their own first responders. Clearly, the landscape has been radically changed by the passage of the Middle class Tax Relief Act. And I think all of this is worthy of reconsideration.

There are some givens, though. The money either has to stay in the communities or we return it to the treasury. We don't have the ability to redirect this money to other parts of the country or to other projects. So the question is, how can we look at what the State of Mississippi wants to do, what the City and County of Los Angeles want to do and make sure that as they proceed, it's done in a way that will integrate fully with FirstNet.

Ms. Swensen: Thank you.

Mr. Ginn: Larry, on that question, just thinking about how we can take advantage of what has already happened. Could we evolve some of these into demonstration projects?

Mr. Strickling: Well, they were basically intended to be that. But I think we have the opportunity to work with the FirstNet Board to find the best way to spend this money in a way that, again, isn't a waste of the money but leads to some result that's useful to FirstNet.

Mr. Ginn: Jeff.

Mr. Johnson:	Thank you, Mr. Chair. I want to compliment NTIA for their position. It has not been easy. And as a member of the pubic safety community, we did experience a context change. The (inaudible) program was established before the passage of the bill that created FirstNet. It was, technically and functionally, a context change. And I think that this resolution is appropriate at this time to go back out and restudy where's a practical demonstration--where we'll learn practical lessons. And I do appreciate the fact that they have pushed pause until we could reach this day, pass a resolution and focus our initiatives. All of us are being careful to achieve the mission of public safety while not wasting money. Thank you, Mr. Chair.
Mr. Ginn:	Yeah, well, thank you. Yes, Chuck.
Mr. Dowd:	Thank you. And just to add to Jeff's comments. Clearly, the intense desire on the part of public safety to be fully interoperable was a concern in this venue because you had many different, you know, jurisdictions with (inaudible) grants. Not necessarily, you know, building to the same interoperability standards. So I think as we move forward, we can learn a lot from those areas. But I think we can also, at the same time, help to ensure that that interoperability happens as they move forward, so that money does not get wasted.
Mr. Ginn:	Yeah, that was really the point I was trying to make. We've go capability out there and can we evolve those projects into the framework of what FirstNet wants to implement. That's the question. Is there a second?
Group:	Second.
Mr. Ginn:	All in favor?
Group:	Aye.
Mr. Ginn:	Okay, Larry.
Mr. Strickling:	The next resolution, number seven, deals with the practical problem that we now have a board of 15 people, but you don't have any employees. And there's nobody to do any of the work. So I would like to mention that in the time since the Act has passed to get to this day, there has been a tremendous amount of effort made, not just by NTIA but through efforts lead by a steering committee. And I'd just like to acknowledge the efforts of Dana Hyde and Rand Beers and Tony West working along with me as a steering committee to get us to this point in terms of board recruitment, in

terms of laying out today's agenda for you, as well as thinking about how FirstNet might go forward after today. They've been ably supported by staff, who you've seen today.

The two people I would just like to call out for special mention, of course, are my deputy, Ana Gomez, but also Terrell McSweeney, who started with the Vice President's office on this issue several years ago as she relayed it. And probably the two of them are as responsible for where we are today as anybody else in the room. So it took a tremendous effort by a lot of people to get to this point. But going forward, it's clear that FirstNet's going to have to consider how it wants to staff up and make those choices, as you see fit.

In the meantime, what we'd like--what we are proposing here is that FirstNet enter into an agreement with NTIA to formalize the provision of services from NTIA staffers who can perform work on behalf of FirstNet, such as, you know, the accounting, the budgeting, the legal representation, various matters like that. And so we have recommended that the FirstNet board direct the Chairman to negotiate and execute an agreement between FirstNet and NTIA, under which, we will supply administrative, technical staffing and various other resources as you need to carry out your work while you are considering your own staffing plan.

Mr. Ginn:	So maybe the first time in history, we have board directors with no employees and no guidelines for operations. But we're getting there. We're getting there. Is there a motion?
Unidentified Male:	I so move.
Group:	Second.
Mr. Ginn:	All in favor?
Group:	Aye.
Mr. Ginn:	Thank you.
Mr. Strickling:	And then we would now like to recommend you actually appoint your first official representative through the appointment of a corporate secretary. And in that regard, we are recommending the appointment of Uzoma Onyeije, who you've already met, who has already been hard at work here the last couple of months helping to get where we are today. And we would recommend that the Board consider him and appoint him as the secretary, pursuant to Section 5.02 of the Bylaws.

Mr. Ginn:	Yeah, motion?
Group:	So move.
Mr. Ginn:	Second?
Group:	Second.
Mr. Ginn:	All in favor?
Group:	Aye.
Mr. Ginn:	Close vote but you made it.
Mr. Ginn:	Okay. Next one? [all speaking at once]
Mr. Strickling:	He's been nervous here. But I will point out he's been taking all the notes as if he was going to win that resolution, so thank you for that. Resolution Nine. Again, there are a number of matters in this space that we have been paying attention to but we would now like to have a more formal process to work with you on. And this deals with the issue of the matters coming before the Federal Communications Commission, which will directly impact FirstNet.
	With the issuance of the license, once that is done by the FCC, one of the things that will be coming in to the FCC will be requests for special temporary authority to use some of this spectrum in various parts of the country. These are all matters that FirstNet will want to consider and be heard on in terms of whether to support or oppose any such request. Similarly, there are other proceedings under way at the FCC, in particular, one looking at the back haul possibilities of the 4.9 gigahertz band where FirstNet may well want to take a position where they're interest could be or will be affected.
	So what this resolution recommends or what we are recommending to you is to pass a resolution to request us at NTIA to monitor these proceedings at the FCC that have bearing on FirstNet's interest. And as needed, represent FirstNet in any matter before the FCC based on direction we receive from the Chairman on policy matters and coordinating with the Chairman of the Technology and Planning Committee on any technical issues.
Mr. Ginn:	By the way, I support this. I think it's really the right thing to do. So do we have a--second? All in favor?

Group:	Aye.
Mr. Strickling:	Okay. And our last resolution for today is--deals with the issue of standards advocacy. Again, the statute directs FirstNet in consultation with the Director of the National Institute of Standards in Technology, a sister agency here at the Department of Commerce, to represent the interest of public safety users of the Nationwide Public Safety Broadband Network before any proceeding, negotiation or other matter in which a standards body will be taking action.
	So we are recommending the adoption of a resolution today that would have the FirstNet Board direct the Planning and Technology Committee, which is one of the Board committees that's been established by the bylaws to develop and implement a plan to coordinate efforts with NTIA to ensure that the interoperability interests of public safety users are represented effectively in these organizations. And requests NTIA and NIST to assist FirstNet to develop and execute this plan.
Mr. Ginn:	Let me say on this one, just some outstanding technical work is being done in Boulder. They have really been a tremendous resource to us already, and so obviously support this resolution.
Ms. Napolitano:	Sam, just a question on this for Larry. We have already been party to the Standard's body, correct? In other words, there's already been participation by the entities, in addition to the technical work being done in Boulder, we, I mean, the organization that you're talking about has already been party to this, have they not?
Mr. Strickling:	Yes. But this will formalize it and make it clear that now FirstNet will be represented in these negotiations through the folks in Boulder.
Ms. Napolitano:	Okay, great, thank you.
Mr. Ginn:	Yeah, again, a very competent organization there.
Ms. Napolitano:	Right, thank you. I'd move approval.
Mr. Ginn:	Second?
Group:	Second.
Mr. Ginn:	All in favor?
Group:	Aye.

Mr. Ginn:	Okay. Larry, does that conclude the resolutions?
Mr. Strickling:	It does. Thank you, Mr. Chairman.
Mr. Ginn:	Okay. We're not going to take a break. What I'd like to do is just have Craig Farrill move into network architecture. And I think it's quite a complement to the technical people on this board that, at our very first meeting, we're talking major concepts and how to get at this problem. And it's not that this is the final answer because we will be asking for comments and upgrades as we move through time, but I think Craig and the technical people who've been working on this have just done a tremendous job. So, Craig, have at it.
Mr. Farrill:	Thank you very much, Sam. All right. Do you want to take a break?
Mr. Ginn:	No. I think the secretaries are going to have to go and I want them to get a sense of--
Mr. Farrill:	She's nodding her head like this, "Go, go." Okay. Well, thank you very much, Sam. I would also like to put out a particular personal thanks to a couple of gentleman at NTIA, Derek Orr and Jeff Bratcher have just had a fantastic contribution to the work that's been done here. These two gentlemen go back I think as much as 12 years into the process of these requirements that we'll be talking about today. And they are some of the finest technical people that I have worked with in history and I'm very delighted to have that opportunity.
	But I'd also like to shout out to all the folks who have contributed to the National Public Safety Telecommunications Council. My understanding is that there are over 300 people who wrote the documents, a dozen editors and thousands of man hours that went into this. And they were writing to a board that didn't even exist, so they were acting in faith that the government would bring this through and I thank the Congress and the secretaries represented here for bringing that to fruition. So Sam asked me if I would summarize some of the work that we've done so far to evaluate ways we can bring this technology to market quickly.
	Several of the board members have commented that we are at an implementation stage in that we have many of the pieces prepared. Now we need to plot the course and then move into gear. So we haven't let the clutch out yet but we are revving the motor, so I'll talk to you a little bit about how the motor is looking today. So as Sam did, I'll go back to first principles here and advance the slides. I'll cover six topics today and

move through our initial understanding. And it is our intention to seek comment. We are interested in receiving comment from not only the--each section of the first responder community but also suppliers of all natures, software applications, infrastructure, hand sets. Because it will take a consolidated group effort to make this happen.

In-fact, I'd go to say that this is really an American initiative that's unprecedented. No other nation--Bill and I have done a lot of other countries, probably about 30 different countries, but no country has taken on this type of a task to really integrate the resources that we have here and funded it and given it spectrum, so we're excited about that. So we'll start with the rules and responsibilities, how we see the technical network fitting into those roles, a concept that we believe can move us out in a direction of positive success. What are some of the network objectives that we have and then talk about how the architecture builds up from where we are today and summarize that at the end.

So the charter for FirstNet really is two-fold, really, to establish a nationwide wireless broadband network that can enable firefighters, emergency service personnel and other first responders throughout the United States, its territories and its tribal areas, as well. And that those first responders would be able to effectively communicate with one another during normal business, but more importantly, during emergencies. And to use the technology to improve their response time, their efficiency, their collaboration and in so doing, reach those who are hurting or injured quicker, save lives and keep communities safe across the United States.

So we stand at a very interesting point from a design point of view. We have a mandate, we have just requested a license for a spectrum and we have $2 billion of initial funding available with $5 billion of funding to be added to that. Have a good, experienced board here ready to prepare this FirstNet nationwide network and move that into service. And as we've spoken about today, that there's a substantial amount of industry collaboration, user requirements, and venture to say we understand the requirements of public safely more than we've understood customer requirements in most businesses that we've operated in. And we've sought to do that very well. So we're positioned really to move ahead with the information we have but as Sam has said and will say it regularly, we look forward to the comments that you have of things that we've overlooked or missed. And we definitely want to hear those things.

So I'll move quickly through the roles and responsibilities here. As we look at a nationwide wireless service provider, the mission breaks out into several areas. While we have technical requirements, we do see the need to take a look deeper into the needs today, as well as the needs for the future. We're seeking to build a highly reliable, integrated broadband network that brings together resources both that exist at the state level, exist nationally and that would allow us to serve all the states, all the counties, all the territories and do that in a unified way.

So the proposal you'll be hearing today will lay out how we can create an over-arching architecture that would allow us to do that first objective. The second is to really look at where we have coverage, where we have service today. The U.S. investment in infrastructure's major. We'll talk a little bit more about this later in the presentation. There are a lot of states that have invested in trials and technology, the NTIA has a terrific test bed in Boulder that has been able to test a lot of that and look at the geographic capability of coverage at 4G and at 700 megahertz. And the geographic coverage requirement, as well as the specific user requirements are the first two items that we would look at meeting those needs for the first responder.

With those in hand, we move to the third step, which is really to produce a nationwide network plan. This would cover the architecture, the coverage, the capacity, and very importantly, the range of devices. The devices that a policeman, a fireman, an EMT need are quite different than a typical commercial user of a wireless organization needs. They're much more like an industrial user. This would be related to--if you look at somebody who is in delivery services or other services.

Also, importantly, the interconnection of networks is fundamental and the work that's been done through the Interoperability Committee allows a lot of those standards to be in place. Very pleased to see that most all of the standards are in place. Some of them have not been commercially implemented at this stage, but they do exist.

And our last phase of that is how we can rapidly expand the network once it's installed. So the expansion of the network as we see it would need to move quickly in the area of LTE evolution. It'll need to move quickly in the area of cell site implementation. So our plans there will be comprehensive. On page two of those--I need to change the slide. Thank you very much. We'd like to drive the public process for RFP, and working with the mobile network operators as partners, help develop that

infrastructure. We're talking more about that in a few minutes. Because we are working together as a group of public safety organizations, we will be able to aggregate a lot of the purchasing power and consolidate a lot of the requirements for those devices and bring scale that a single state or even a region of the country couldn't have done in the past. So that aggregation will unlock capacity for devices that we have not seen before and I think we'll all be pleasantly surprised how the device manufacturers come to support the public safety community. (inaudible)

Yes. You'll all be very happy with the changes in the cost of those as we look at having global economies of scale for those devices. We will have three other main steps here. The operations and maintenance plan detailing how we run such a national network, how you bring together federal users, state users, tribal users and local users on a unified platform that meets all of those needs will be worked out. So how that day-to-day operation, 7-by-24 reliable service is offered will be implementing a pricing and billing plan as part of that, so that networks will--network users will have an idea what their costs will be. And we're looking forward to that being detailed after we have all the operations and maintenance plans in place.

And then finally, there'll be a network operations step for evolution, how we grow that network. Standards are a critical part of what we will be doing here. Many of the issues when you attribute back to where we are today, attribute to closed standards. I think our openness to the standards that are there, whether they're European or U.S. Standards, provide a global platform for growing this network in a way that we've not seen before. And as we are a public-private partnership, we'll be learning how to do that in a more effective way, how we buy products, how we support interactions with suppliers. So all of those are the roles that we see for the technical community. So use that as a backdrop to move to our next slide.

The FirstNet nationwide network concept has the opportunity to leverage significantly all the work that public safety has done. I know for me, my heart was broken watching that television on 9/11 and seeing those officers and not being able to communicate. I just broke down and wept in my room watching that happen. Having been in wireless at that point about 30 years, it was heartbreaking to see it happen. So I feel a real honor to be here today to try to help that problem be turned around. All the folks who experienced that and thousands of other public safety workers have poured their lives into making an interagency

communications, and we like to call it possible, how to get the cost of that down so more agency people can have these devices.

Today, because of the prices of these devices, only the very few can afford to have them. We'd like to change that here at FirstNet and make sure that all the employees have an opportunity to have a device, so when networks are jammed outside, the organizations that provide fire, police and public safety have their communications working. And we want to open up three dimension for sure. Wireless operators, giving them the opportunity to partner with us to meet this nationwide need. The network and handset suppliers have been in contact with almost all of us board members already and are very keen to be part of the solution and offer products and services and help us integrate this network.

Mr. Ginn: Hey, Craig?

Mr. Farrill: Yes, sir.

Mr. Ginn: Can I interrupt you for a moment?

Mr. Farrill: Please, go.

Mr. Ginn: I have talked with the senior leadership of every major wireless carrier, Verizon, AT&T, Sprint, T-Mobile, and they all pledge their cooperation and support. And I thank them for that because they will be key partners as we try to put this network together. So, so far, so good, they're with us.

Mr. Farrill: Thank you, Sam. The other major community Sam will be talking a little bit later about the applications community and the--many of us have seen the explosion of applications on devices. And that has not been something that the public safety community could see. And we'd like to unlock that door and open up a flood of applications to the public safety community, and make it simple to bring applications that may meet the needs of Kevin in Maine, particularly, and may then also meet the needs of Chief Dowd in New York City.

So there's needs in New York City that are strictly unique. There's needs in Maine that are unique. So we want to make sure that there's a way to get applications on the phone, download them from the core network and Sam will be talking about this a little bit later. Been contacted by several people in this area who want to develop a public safety app store concept and a public safety download concept, similar to what we see on iPhones

and other smart phones. And I think it'll be a wonderful idea. Sam will be talking about that a little bit later today. Okay.

So in order to get us out of the blocks quickly, we spent some time with NTIA looking at the network implementation options for FirstNet. And three of them are on the left-hand side of your page here. The first would be to build a standalone network, which would only involve our assets, our cell sites, our resources. The second would be to work with a single nationwide operator, and the third would be to build a diverse nationwide network with multiple operators. The pros and cons we'll talk on in the next slide a bit more about the standalone. But you can read the pros and cons there on the slide.

I think the critical disadvantage of the single network operator is it doesn't allow all of the work that's been done by the wireless community to date to be deployed, and it doesn't allow a lot of the work done by various public safety organizations to be integrated. It doesn't work in favor of that. So we sought more of an open process and we'll be talking to day primarily about the diverse nationwide network, or what we're calling the FirstNet nationwide network concept. The advantage of this is that it provides us with the largest geographic coverage of the United States in the shortest amount of time. It provides us the ability to provide higher levels of reliability than any single network could experience.

And the two cons of that really are that it'd take some complex business negotiations with the carriers to get us there, and we believe that that can be done. And that they will be implementing, for the first time, some standards which have not yet been implemented for 4G LTE, for interconnection, for handsets, a number of different standards. But all of those standards have been vetted all the way through the standards process, so we think these cons are manageable and we'll talk a little bit more about that as we go forward.

Mr. Reynolds: Craig?

Mr. Farrill: Yes, sir.

Mr. Reynolds: This third option just lists diverse nationwide network with multiple wireless operators. But doesn't that also include the potential that in some areas of the country, we either won't have a partner available or a civil partner and so we may have to do--it's a combination of working with multiple operators, as well as some that we have to build ourselves to--

Mr. Farrill:	Yeah.
Mr. Reynolds:	--fulfill the mission, right?
Mr. Farrill:	Yeah, that's right, Ed.
Mr. Reynolds:	Okay.
Unidentified Male:	The second bullet really speaks to that.
Mr. Farrill:	Yeah, yeah, the second just--
Unidentified Male:	And we'll have to build some network ourselves and we'll have to probably use some satellite resources to fill in (inaudible).
Mr. Reynolds:	Yeah, if we're going to cover every square meter.
Mr. Farrill:	Yeah.
Unidentified Male:	We'll have to do that.
Mr. Farrill:	Every square meter will definitely want to be looked at (inaudible).
Unidentified Male:	Craig, can I ask a question?
Mr. Farrill:	Yes, sir.
Unidentified Male:	Would that also include the, you know, leveraging public safety infrastructure as well in this process?
Mr. Farrill:	Yes, sir. Absolutely. Yeah, when we're talking multiple wireless, it doesn't mean commercial. It means also public safety, if that would be New York or Houston or L.A., those resources brought in. So there have been a lot of questions about the standalone, so we took a look at what some of the reasons why the standalone doesn't stack up as the best workable solution. In the legislation, it was actually written that way, due to their realization that the cost of that approach would be too high. And the ongoing annual cost would be much too large for us to bear. The construction interval in the period of time to do it was--we've already seen people waiting. We're in year 11 from 9/11 now, so to wait another three to five years to build that out would be hurtful and painful for us all. So I think at the end of the day, building a standalone, we felt, did not deliver on the promise of FirstNet and was not the preferred solution.

What we felt was important, and the legislation also focuses heavily on this, is looking at the national resources that we have here in America, |

which are truly amazing. Those of us who grew up in the wireless industry over the past 26 years, I can remember when there were zero cell sites and zero customers. We had a phone that was the size of a giant briefcase in the car. It would be very good for heating up your car in Minnesota in the winter. But those devices you never see anymore. They didn't weigh 3 ounces, they weighed 35 pounds. So that goes back. And at that point, you know, we've gone from there to 285,000 cell sites across America, so that is an enormous amount of work. I can hardly communicate to you how much effort has gone into the site development.

As wireless carriers go, we spend years and years developing sites and that is one of the toughest parts of the cellular business. So 285,000 of those are in place. You can see some of the numbers on the slides. That doesn't count the additional thousands of sites from rural telecom operators across the United States, rural electric cooperatives who also provide telecom, the mobile satellite community's ability to reach the United States, as well as state and local--Chief Dowd, the state and local networks, which are already out there. So there is a need to bring all those interfaces together to bring a common core together that can speak the language of these interfaces and leverage that. And we think that will provide us not only the lowest cost, fastest time to market, but the greatest reliability.

Mr. Bryan:	Hey, Craig.
Mr. Farrill:	Yes, sir.
Mr. Bryan:	It's Tim. I just wanted to emphasize that particularly in the legislation and otherwise, I'm thinking, you know there is a direction to look at the rural communities as well as the urban communities. And I think that, you know it's the 80-20 rule, the rural electrics and the rural telecoms, for example, cover 80 percent of the nation's geography and have 15, 20 percent of the nation's customers and population. So I think it's good to have a balanced approach here on the slide and in our thinking, because covering every square meter is a tough thing to do without thinking about the rural aspects of that job.
Mr. Farrill:	Right. You know, it's been reported to us, too, that, you know, of the 60,000 agencies that are part of this, probably 59,000-plus of them are in the rural areas. So we have a very large constituency out there and I think as part of that in the network community, we want to have a dual track implementation, that we want to actually have a track that is focused on

dense urban and high-risk areas, and then have a separate network group that's focused on un-served areas and underserved areas. They'll have the largest geography, but we need to track these and invest in these in parallel.

So rather than getting around to the rural later, we're going to make this different, get around to the rural right now. And I think that will help satisfy, and that way, we can hear the voices because both voices need to be heard. We need to hear the rural voice as well as the dense urban voice. And there are many voices in each category, but that's part of our principle on the network side will be to keep that broken up. So--they'll also see some handset differences and user equipment differences.

Chuck's going to need some things in New York that are unique because of the concrete, the steel, the skyscrapers. Satellite's not necessarily his best friend. Doesn't work right in a concrete jungle. However, you get out in the middle of Idaho and South Carolina and South Dakota and it can be a great asset. So we'll be looking at technologies, as well as keeping a dual track throughout the effort. [all speaking at once] Yes, go ahead.

Mr. Dowd: If I could. I just wanted to complement you on the fact that you've built a lot of flexibility into this, a lot--and obviously a lot of thought went into it. You know, we don't want to reinvent the wheel here and build from the ground up.

Mr. Farrill: That's right. No.

Mr. Dowd: You know, there are literally thousands of commercial and thousands of public safety sites out there today that, you know, that we should be looking to leverage. And, you know, and there's no reason to be spending money to build stuff that already exists. And yet to the other point you made, the fact that it is very difficult to procure new sites.

Mr. Farrill: Yes.

Mr. Dowd: You know, the process is long and arduous. Anybody who's built a wireless network, whether it's public safety or commercial, knows the difficulty in getting sites, you know, the processes you have to go through, locally. So, you know, excellent thought process.

Mr. Farrill: Thank you.

Unidentified Male: Craig, in another life, I served at health and human services and the area was where there's a lot of territory and no people.

Mr. Farrill:	No people.
Unidentified Male:	Given the fact we're talking about the South Dakota, North Dakota, Utah, Wyoming, Montana, as well as Colorado. Which leads me to the question--I know you talked about rural and density in urban. Are tribes also connected in this?
Mr. Farrill:	Yeah, tribes are in--
Unidentified Male:	As part of rural?
Mr. Farrill:	I think most--I don't have that information today but I'm assuming they're mostly in rural areas. So if that's the case, is--I believe, from what the NTIA folks have told us, that there are some very special needs in tribes that we want to address.
Unidentified Male:	Well, I just raise the issue because normally, in most discussions, they get left out.
Mr. Farrill:	Right.
Unidentified Male:	And that it's also at the top of our list.
Mr. Farrill:	Okay, yes, sir. I think that's a good point.
Mr. Johnson:	Craig, I think Chief Dowd was channeling me. I want to just recognize, I think, the insight that you had to specifically less rural telecom, rural electric and public safety. You know, being from Oregon, satellite's going to be an important component. There's no way you could cost-effectively cover a state like that with just ground-based architecture. I think, also, understanding what you have, that there's a fundamental difference between public safety and commercial deployment. No one in their right mind deploys commercially where it isn't economically feasible. Public safety is built basically on the opposite side of that, which is we have to cover everywhere. So to recognize that we'll be leveraging that architecture, that investment, I think is very insightful.
Mr. Farrill:	Thank you, very good.
Unidentified Male:	Craig, if I might just pickup on what Chuck and Jeff have both said.
Mr. Farrill:	Yes, sir.
Unidentified Male:	As I've thought about the opportunity for partnering and utilizing assets that are out there, frankly, it--from having built and operated and

integrated networks over a long period of time, the public safety infrastructure, I think, is going to be more conducive to what we're trying to do because you think about the way it's built, you've got a large coverage area for each of your sites. Take New York City. There are thousands of sites that a commercial carrier would have, each one covering a very small territory. We need a more macro coverage and I think your network installations and antennas (inaudible) probably going to be a better starting point for that, frankly, than with the commercial, you know, cell sites with very narrow-beam, down-tilted antennas and that sort of thing.

So--and the same thing in rural. You've got the coverage where it just wasn't commercially feasible for one of the MNOs to build and operate there. So I think, for various reasons, public safety infrastructure is going to be very important to us.

Mr. Farrill: I agree, I agree. Okay. Slide number 11 here. This is an approach that we're seeking comment on. What we have in mind is a diverse network that allows us to have layers of backup. If you look at most metropolitan areas in the United States, you'll have anywhere from three to six wireless operators in that area. Of those three to six, some will have 4G and some will have 3G, some will have LTE, some will not. But there are backups that we can seek.

So the structure here on this diagram, you see a police officer who's primary path is to seek out the FirstNet nationwide network from his device wherever he is. His second path would be to look for a terrestrial mobile system, the first one on the list. That could be any of the terrestrial mobile system, the second, the third, the fourth. And then failing that, let's say some place in Eastern Oregon, Jeff, there could be no terrestrial mobile system out there and he goes--he really has no choice but to jump from his FirstNet choice and then go straight to mobile satellite. So there is a concept we'll get to later a little bit about how we will be able to change that situation by extending coverage, so I'll talk a little bit more about large area coverage.

And this is part of our rural team. So the folks who are working on the rural team will be focused on, how do we get large sites that serve enormous amounts of square miles at low cost? And that'll be, as you were saying, if it's not economical for folks--and Ed said the same thing, it's not economical for a commercial carrier to carry it. But one lone police officer out there, one loan ambulance is going to save one life, there's no price tag we can put on that.

So we want to be sure there's a way to cover that. Either the satellite hits it or we can get it from a mountaintop and using a very large, what we like to call boomer site, where we can serve that mobile with a higher power site and cover hundreds of square miles instead of, as Ed was saying, a few blocks. So we have a little rethinking, it's almost like devolving and I think we're going back to large cells because we need deeper penetration to building, we need higher power, we need more reliability.

And the bottom line of this chart really is that reliability is multiplied by the number of servers you have. If you think about a five-lane highway, if one lane is blocked, you have four other lanes you can pass through. This is the same thing here. We're looking at a five-lane highway. If we lose lane one, we still got four other lanes. If you only have a one-lane road and there's a rock in the middle of it, you're done. You're stopped. So reliability and communications networks works the same way, whether we're talking about voice communications or data.

Ms. Swenson: Hey, Craig, before you go, you talked about the police officer seeking out. I just wanted to clarify. He won't have to do anything.

Mr. Farrill: He doesn't have to do a thing.

Ms. Swenson: Right. So I just wanted to point that out because it made it sound like he would have to do something. It would be automatic for him and he wouldn't have to think about it.

Mr. Farrill: There are no buttons on the top of this device.

Ms. Swenson: Right. No toggling or anything.

Mr. Farrill: No toggle switches, yeah.

Ms. Swenson: The device is smart.

Mr. Farrill: That's right.

Ms. Swenson: I just wanted to make sure that that was--

Mr. Farrill: Thank you for the clarification, Sue.

Unidentified Male: Craig, one quick point.

Mr. Farrill: Yes, sir.

Unidentified Male: There's a couple context changes for public safety represented in here.

Mr. Farrill:	Yes, sir.
Unidentified Male:	And I think the first one is, our context, historically, is it's our network, we built it, nobody's on it and it's reliable to the degree we built it. You know, four nines, five nines, whatever. What I see this chart saying is you achieve reliability through multiple networks, number one.
Mr. Farrill:	Yes, sir. Right.
Unidentified Male:	Number two, we don't have to manipulate the device to find the best and most robust network and I think that's insightful. But I think the biggest part here is that it may not be our network that we own and control, but reliability is still achieved.
Mr. Farrill:	Yes, sir.
Unidentified Male:	And I think that's a key point. Because one of the conversations that we don't have in public safety, historically, is--and I'll just take me, for example. I am fond of talking about the reliability in my network. I'm not fond about talking what percentage of my service territory my network actually covers. So when you have more coverage, that changes the conversation. I think it's worth pointing out to our public safety partners, this does change the conversation, not just about reliability but full coverage.
Mr. Farrill:	Right.
Unidentified Male:	Yeah, thank you.
Mr. Farrill:	That's a great point. Yeah, I think as we get further into this, you'll see that for each county, each city, the objective would be to expand the coverage that they have. So the limits of the current public safety system would be extended by the commercial partners that we add to the mix. So for each commercial partner, many of them are regional and several of them are national, so that geographic coverage could go as far as that officer or that policeman, that fireman would like to drive. So thank you. Okay.
	So if we summarize the 300-page requirements document into six bullets, which was a rather daunting task to do, we heard these messages strongly from the community. We heard that ubiquitous coverage is mandatory, it's critical for federal, state, tribal and local organizations that we do need to come with a concept that will serve the territories, several of which are islands. And will cover areas of the United States which are

pretty difficult to cover. They're mountainous, uninhabited, difficult terrain and geography. So you ubiquitous coverage is number one.

As the chiefs have said, reliability is right up there with it. Getting reliability where you have multiple layers of backup and you can fall back to another network, Jeff, to your point, it's only--if you have one network and you have no fallback, when you run out of range or you run out of electricity, you're finished. What we want to be sure here is there's always at least two layers and typically three layers for each public safety employee. So the bigger concept is to think about how we can give those safety nets so there's always another layer that the officer or the EMT has a place to go. Redundancy is built in, in part by that.

But the critical part of this and the great work that's been done is the interoperability to make that happen. Couldn't even have this discussion today three years ago because these standards didn't exist. We have a test bid in boulder where we can bring these standards together, bring equipment together. We're grateful for the 67 companies and suppliers who've already arrived at Boulder and are working with us. And we look forward to dozens of other suppliers joining us. Cost is going to be driven down by the scale of this.

I remember Chief Dowd when we first met, you talked about how your officers typically have three or even four devices in their vehicles and that is going--that drives--so if you think about the number of officers that are out there carrying that many devices, the multiplier could put us up in the 20 or 30 or 40 or even 50 million devices need to be on this network nationally. So this is not a small task. But the good news is that the capacity of this spectrum that we have is very large and the ability to deliver packet data broadband to devices at 4G LTE is very, very significant.

So we're at the front end of an explosion of capacity and a brand-new standard that has great promise for us. So cost will come down and devices are being built all around the globe, both ruggedized devices but also less ruggedized devices. This is another area that we'll be working on. We will have a subscriber technology group that's focused on ruggedized devices, fire, in particular, as you guys face some of the toughest environments for physical shock, salt, water, dropping, heat, sand, you know, it's a nasty environment. Whereas if you have a PSAP operator sitting in a clean office, they don't really need a hardened device.

So we want to look at how we can develop devices that will fit users who don't have that same level, that you can get a device for a few hundred dollars and then there are hardened devices that, when you need it strapped onto a fireman going four layers down in a building, they've got a hardened device. So there will be--in the same way we're doing dual track on the network, we want to have dual track on the subscriber side. So we have devices that suit all kinds of administrative public safety users, as well as the front line public safety users, as well.

Mr. McGinnis: Craig?

Mr. Farrill: Yes, sir.

Mr. McGinnis: I'll just ask a question. I get what you're emanating about the lowering of costs, and obviously, this is a complex issue and we're going to have to talk a lot about that.

Mr. Farrill: You bet.

Mr. McGinnis: But one of the things that I think comes with that layer slide that you just did, I see each one of those layers pointing back at that police officer or the chief, anyway, with a bill on a monthly basis from each one of those. And my concern, and I think I've heard this in the public safety community, you know, a large concern is what is the cost going to be to us? And this looks like it's multiplying the costs by adding in additional players. And so I don't expect an answer now, it just is an observation, something that we should keep an eye on.

Mr. Farrill: Right, right. Yeah, there's a lot of discussion with a separate group going on on how we can make those business relationships where it doesn't multiply the fixed cost, but we focus on the actual usage of the user. So if User A never used alternative terrestrial network three, the usage charge would be zero, so there would be a different paradigm than thinking about having three access charges on every device.

Mr. Dowd: And Craig, I'm sorry, following up on Kevin's point, you know, that is a huge issue for public safety nationwide. You know, and again, you know, we need to be looking at, again, you know, flexibility of this and the issue of public-private partnerships and how we leverage our own spectrum in order to reduce or eliminate those costs.

Mr. Farrill: Right, exactly.

Unidentified Male: Yeah, I was just going to--the rural guy and the urban guy sitting right next to each other (inaudible) the same thing, which is the commercial relationship that develops is going to be probably one of the more fascinating elements of what this--what FirstNet's going to pull off. Because it's not just how do you cooperate and build it, how do you cooperate and potentially commercialize or use part of the assets that we've rightly listed? And then how does that bear upon ultimately getting access to the services? That's a--it's going to be a big topic, Chuck, no doubt about it.

Mr. Farrill: I think there's a good chance there'll be a Harvard business case about this particular issue 'cause it's a unique idea. But I think, Chief, if we don't drive those costs down for you, we failed. And I hear you, it's absolutely got to lower cost. The scale is so much larger here, though. I mean, if we actually do think about how we could get 20 or 30 or even--we did some projections at NTIA that would take it up to 100 million within, you know, five years. That's a lot of devices. That drives a lot of scale.

So I think our ability to get the total cost to you down--but let me also say this. Very important. It's very important that we recognize that 98 percent of the time, we're going to be running on the FirstNet network. These backups are backups, you know, we're not intending to go there. If we have a FirstNet network, we're always on our own spectrum. The bill for that is covered by our cooperation.

Mr. Dowd: And I agree. And even beyond the issue of backup, there still needs to be connectivity to commercial networks so we can talk to those that aren't on our network. You know, make a simple phone call from a public safety device. You know, you can't do it unless we have that kind of relationship.

Mr. Farrill: Yeah, yeah. And the other thing that we, the technical folks, are really keen about is the interagency dimension of that. So it's not only, you know, you may have your governor of New York may be interested in what's going on right now and he may be calling on the PSDN or he may have somebody coming in on Skype from the internet. You know, have somebody coming from Washington, DC all trying to get to a public safety professional in the field. So that whole kind of interagency, internetwork, is critical. So we're going to talk more about that in just a few minutes.

Ms. Swansen: But Craig, just for clarification, if you're on the FirstNet network, it wouldn't prohibit you from interacting with people outside of the network.

Mr. Farrill: No. No, not at all.

Ms. Swansen:	I mean, so you're not going to be limited to your FirstNet network if you're on it, it's just going to be that's what's going to carry the call.
Mr. Farrill:	That's right, yeah.
Ms. Swenson:	So I think it's important to understand you're not going to be confined to that. It's not just a call-around.
Mr. Dowd:	Closed user group.
Ms. Swansen:	It's not a closed user group for that.
Mr. Farrill:	Yeah, that's right, it's not a closed user group. It's actually set up so that, as you see the diagram here, we'll go over that--going to build that up on the next few slides. It's a great set up. Oh, Terri, I think I hear you.
Ms. Takai:	Yeah, Craig, I have a question. As I look at the objectives, how do we see the juxtaposition of FirstNet with the existing 700 megahertz closed networks? Do we see it as supplementing it, do we see it at some point as replacing it? I mean, have we given thought to how those two are going to work together in those jurisdictions where they have a robust, you know, at least either local or state, 700 megahertz system?
Mr. Farrill:	Good question, Terri. The fourth bullet really speaks to that question of national interoperability. And Chief Dowd's question is the similar question, is that the interface--that's one of the interfaces which is written but not implemented. So we will be working with NTIA to move that interface into reality as soon as possible so that PMR, you know, the LMR systems, I should say, LMR systems will be connectable so you can do Push to Talk between FirstNet and LMR from different branches of the government. So our intention would be to open those up to every state, county, city that has an existing LMR network and make that network's life as long as possible, so there would be no need to close that network down.
	We hope we can add significant head room in terms of capacity and quality and speed and functionality with the FirstNet. We believe strongly we can. So the principle is that we will connect to those networks in the government organizations and then also connect to the PSTN, also connect to the internet, also connect to private government networks, which are not even on the North American numbering plan, so there's a large number of those. So the number of agencies that we could connect to this makes the FirstNet core a bit like a bicycle wheel hub where you

have many, many lines coming into this hub. And it serves to connect those lines together and bring people together. And one of our revelations for me, if you're from the wireless industry, about ten percent of your traffic is group. That's a high number for wireless.

In public safety, about 90 percent of your traffic is groups. So it's the absolute inverse of what we are used to. So when you start to be thinking about how groups cooperate with each other, how they communicate, Push to Talk, conferencing, group messaging, group texting, group videos, that is the world that we'll be seeking and FirstNet will be a highly group-oriented form of network. So for that reason, we want to have these interfaces open and we'll push to get those open as quickly as we can.

Okay. The next few slides are kind of a build, so we'll walk through the evolution of one future path. And I will put this out to the listening community as a vision, a network vision of how this could come together. Thank you, you're a good prompter. I like this guy. So we start with the architecture that says we need a nationwide distributed core network, and that has two fundamental building blocks to it.

The first is an enhanced packet core network, or it's called EPC. The second is a service delivery platform, or SDP. Flip to the next slide. The role that the EPC plays is the role of switching. This could be switching calls or video transfers or text messages or Push to Talk calls. Switching, it's routing, it's scheduling, one of the very important functions there, and the user database, keeping track of users as they move around the country and looking at their capabilities.

This will also include their prioritization in the case of an emergency, what priority that user would have. The SDP is the domain where the applications live, where the voice applications, the Push to Talk, the messaging, the location services. And location services will also be a very important part of the future of public safety. When a man is down or incoherent, can't be found, his peers can find him, so location I think is going to be important. It's important in EMS. We were talking about this last night how finding the nearest ambulance or public safety employee to a crisis is critical, saves fuel, saves time, saves lives.

So location is one of the ones that will emerge as an enabler. And video will empower a lot of EMT applications, as well as fire and police. But we need to also be thinking about the fact that video is from devices that are not attached to humans. It can be on vehicles, it can be traffic cams, it

can be buildings, it can be areal, it can be from drones. Video can come from everywhere. So that means that we need a place to store that video and the SDP will also have warehouses that would allow you to store it, repackage it and send it down. So think of it almost like coprocessors. And this type of idea would be nationwide distributed in a hardened facility away from areas of risk, multiple locations so that we had network reliability, resilience and capacity.

So with the signing of the first terrestrial partner, initially when we signed that relationship with that terrestrial mobile operator, they have a series of frequency bands today. And we, as FirstNet, could arrange for the provision of devices that would work on what we're calling the A carrier RAN or Radio Access Network. That goes back to the core network of the operator, and then we interact with the core network of that operator on a national level. In many cases, the type of facility I'm speaking about, they are present in that facility for other reasons, so we would have direct secure transmission facilities to their networks that would be hardened and protected from attack.

The second evolution then is to add the Band 14, which is the 700 MHz radio access network to that location. So if you're in a county in Oklahoma or New York, as that set of radios is installed in existing cell sites and brought up within the core network and then tied back to the FirstNet core network, we then are able to see those users home on that Band 14 RAN. So this would be the early days of FirstNet as we add our first operator. And, in-fact, we hope to do this very thing through Boulder, where we can bring operators into Boulder and actually do this and demonstrate this relatively shortly. We have an existing test bed there. We should be able to do more of that.

So as we signed the second agreement, then the process repeats itself. You have, on the left, Operator A and the Band 14. The second operator comes on, you introduce Band 14 into their cell sites, they get tied back to the core network of Operator B. Operator B gets connected to FirstNet and our core network, we do the testing and interop and build that up and cause that to happen. And that would continue in each geographic area until you reach all of these. So in New York, Chief Dowd--so that one of those operators could be the City of New York. One of those operators could be the county. One of those operators could be related to another agency. So when you think of operators here, we'll look at relationships with each of those so we can bring together, again, the layers of RF and the devices can communicate.

Our job at the FirstNet core network is to be able to speak all the languages. If you remember the R2D2 character from Star Wars, he was the universal translator. He spoke all languages, he even spoke to droids. So the FirstNet core network--maybe this isn't a great analogy. I may regret this but it's okay. Got to have a little fun at this, eh? So the idea here is that we--this is our first area of development. We're going to move out quickly in the terrestrial area and in New York, particularly, it's got to go in parallel. We need to look at your system and then what the commercial systems can do and see which one we can get on the air the fastest.

And our ability to certify and test handsets is critical here at FirstNet. So we are looking at--we will hire laboratories and bring that research together so we're able to test devices that can access Operator A, Operator B. The critical thing that we need to remember is that every device we buy has Band 14 in it. So there's always Band 14. Band 14 will be the first priority. No officer or EMT ever has to make a choice, it's built into the software that--just like when you used to roam around the U.S., you know, 15 years ago, you had to update your roaming list. Well, we're no longer roaming. We will be homers on all of these networks. These will be home networks to us. We would be treated as premium customers, not as, you know, also allowed customers, such as a roamer sort of concept.

So this is the multiple terrestrial model and I think this'll address the county, the state and the tribal needs in a particular geography. So the way we're thinking of this, as I've been told there are 3,030 counties in the U.S., so if we're looking at each county and the geographic contribution that makes, looking at the coverage of each county, the depth of coverage of each county and then how we serve that with terrestrial systems, that's the grid we're going to end up filling out is how many carriers, 3,030 counties. And then we got the islands of Hawaii and Puerto Rico and U.S. Virgin Islands and so on. And we've got Alaska, which is very separate. So if you look at those situations, you know, we'll have a very large spreadsheet at some point that has all of that and we'll be looking county by county at how are we doing. And I think that'll be one of the ways we'll measure our progress here at FirstNet is how well are we doing and meeting those counties.

Population coverage is important but Sam's made it also clear that geographic coverage is important. All the board members that are in the public safety community have made it clear that the rural support part of

this is important. So again, the dual track is the way we'll get there, and we'll look at it county by county. Okay. So the very, very future vision of this would be--and I've added this, what I'd call the three-in-one concept here. This is the three-in-one concept of the terrestrial mobile is on the lower left of your diagram there. So for any--think of this county by county. For any given county, Operator A through N serves that county. There's Band A, there's our FirstNet RAN operating there and those various operators across that county. And then our users would also have the ability to go over to the A RAN or the B RAN or the N RAN of that network. The process for the satellite community is similar. There are multiple-- guess, Tim, six, five satellite operators today.

Mr. Bryan: Yeah, something like that nationwide over the U.S., yeah.

Mr. Farrill: Over the U.S. So--and we'll be at a smaller number in the satellite community but our hope would be that several satellite operators could be engaged. They do have different birds, they have different capacity, they have different speed, they have different devices. So--and they probably are different when you get to looking at--the Caribbean coverage is probably different than the continental coverage, which is probably different than the Alaskan coverage. So satellite will be worked in the same fashion. And we'd like to introduce then this third concept, and there's an industry out--this is very much like the military, so Teri, I know you and I had a great conversation about this on our telephone call.

The third dimension of our three-in-one vision is deployable systems. And these would be Band 14 FirstNet vehicles. They would be systems on wheels, which means that van would contain an EPC, it would contain a service delivery platform and a bay station and a generator. So it could be dropped into a location, it could be driven to a disaster, so if you had a Katrina, you could have multiple of these vans heading to that area, driving to that area. If you had a collapse of a highway like in Minnesota, you could have that flown into an area, it could be put in a shipping container. There's a lot of ways we could do these things.

But the key thing is with the huge technology advances we've had, we can put an EPC and an STP in a single rack and put that in a vehicle and move that to a site very easily. The other thing we can do with Band 14 is it's already been designed to provide link communications, so we can put a cell on wheels that has the ability to extend coverage. So if we were out in Iowa and we were trying to cover 100 square miles, we couldn't do that with a single system on wheels, we need COWs. So we sort of call these

SOWs and COWs. So the SOW is the core of the network and the COWs are spread around that and they can give you geographic coverage.

So if I go back to the Katrina model, if we'd had a coastal hit and 200, 300 miles were damaged and all the cell towers were down, we'd have the ability to bring these in. So this'll be a national initiative to figure out how many of these we need, where are they, how are they configured. But it's a manageable cost today, thanks to the significant developments in this area. So deployable is another way that you can get backup when--even if all the satellites were down. If all the terrestrial was down, you could move a system into that area.

Another way to think about this is if you had a system on wheels in an ambulance, for example, you are your own system. You wouldn't be connected to a network but you could have multiple mobiles running off of that network. If you had a fire truck with this device on it, you could have multiple firemen in a building working off of that device. So there'll be a number of specialized devices and capabilities that we're going to look at in deployables to tie to satellites but also to do microcells and local area coverage off the vehicle.

So this would be very similar to mobile tactical in the Department of Defense. In the commercial wireless industry, we have these things. They're COWs is what we call them and so we're adopting that idea here to FirstNet, that we think there is an absolute need for this in emergency services. So this is our three-in-one vision. Okay.

The next page is just kind of summarizing what does that three-in-one vision do for us? We see it creating this first point, which I think is a great way to capture it. Instant inner-agency communications and collaboration. We've talked a lot about interoperability. I mentioned that group communication is a dominant mode. Mission critical reliability. I've heard it said by many of my public safety peers as, you bet your life on it kind of quality. And we believe with this type of backup and the steps we're taking to get backup, you'll have that mission critical reliability that you need.

Coverage extensions into rural areas are absolutely mandatory for us. We don't have the reach here in the United States that we need. Some of that will be satellites, some of that will be expansion of existing coverage, some of that will be FirstNet coverage. Low cost customer devices are critical. We already see a number of these devices. I have a couple of

them with me. I'll just hand these around. These are in final stages. They're actual working devices. They're hardened. You can take a hockey stick and whack these around the hockey rink. They are very rigid devices, they meet the public safety standards. These are being developed for companies like General Motors in their manufacturing plants. They are a few months from commercial service. I was able to get a couple of these to show you.

Unidentified Male: How much did you pay for them?

Mr. Farrill: I just had--I borrowed them. So far, I haven't had to pay for them. The price tags for these are under $500. Yeah, this one is a smart phone, those two have their own applications. They do run video applications, they run group call, text messaging, that kind of thing. So I just wanted to show some of the rigorous work that's being done in that space, but at the same time, there is a product here which is a very typical Samsung Galaxy II. But if you'll notice this, it has a hardened case built in, so this is an example of the administrative-type device that I'm talking about so I'll pass this guy around, as well.

And these devices are, again, in the same price ranges you see today, so the commercial devices like this are available to us and will be available to us. So this is the kind of thing we'll be seeing in the test bed, so I just want to show you some of the ideas that are out there. I've got one more. Hand it down this way. So we will have a big focus on devices and making sure that we've got things that are interesting. We talked about deployable infrastructure a bit for large-scale emergencies and then ubiquitous coverage. Okay. I'm coming in for a landing. Clear to land.

So my summary for you all today is that we have a golden opportunity. We have the opportunity to do something that's never been done before and that's certainly why I'm sitting here at the table, as this is an exciting challenge for us at FirstNet to bring this to life. So we see this three-in-one type of network capability with redundancy as the way of getting the kind of mission-critical service that's been wanted in public safety for decades. We think with the approach to building this on core networks that already exist, working with partners in the mobile business, in the terrestrial cellular business, we'll make great progress.

Public safety users have done a great job in defining the requirements. We've studied those requirements. There's several thousand requirements but that's true of commercial networks, as well. so when

you start to look at devices like you're seeing here, the capabilities of these data devices always stack up to several thousand capabilities. So that's the way we work these days or the way we roll these days. So that will be there. The priority features that public safety is looking for are going to be part of the LTE infrastructure. So the EPC that we spoke about earlier has a new capability in its scheduling that we have not seen in previous generations, and that will allow us to prioritize the traffic of public safety. But more importantly, we have our own spectrum, so we will be able to use our own spectrum on an unabated basis, but also to share that spectrum with others.

We'll extend the coverage to un-served and rural areas, we'll get better economics on global economies of scale, and we'll also be able to use the spectrum very, very efficiently because we're starting with LTE as our first generation. So we have the most efficient wireless technology in the planet day one, and that's gonna be a great way to start with this. And we will also be able to produce quality of service on that network for voice in a shorter period of time as we push onto this. So I think you'll be seeing voice applications on this right away. So in conclusion, our next step would be to ask those of you listening to this webcast to look for an information request from us here and we will look forward to reading your comments and hearing your input on this vision. And we look forward to giving you more feedback in the future at future meetings. Sam, that's all I have for today.

Mr. Ginn: Okay. Well, just an outstanding presentation, Craig and thank you so much. Let me open up for questions and suggestions from the Board. Well, hearing on--I just want to thank Sue and Bill and Ed and Tim and public safety people who've been involved in this. It's pretty impressive and I'm really proud of the fact that meeting one, we have delved this much into the process, and basically offered concepts. Now, we understand that a wide array of community wants to come back to us and give us points of view about what you've just heard. And we're ready to accept those and we're ready to modify our concepts if indeed you have better ideas than we do. So with that, you'll be seeing the presentations, you'll have a chance to comment.

Now, let me talk about apps development, which is the next item on the agenda. I think we can go without a break because I think I can be done in ten minutes. Application development has had an interesting history. If you go back to the early days of when people combined software and communications to solve business problems, the typical model was that

you formed a central group, you looked at and defined requirements and field locations, you centrally developed the software, you took it out and you implemented it. That system worked for the most part, in most cases. But it was usually slow and cumbersome and it depended on the kind of application that you were working on.

I remember in the AT&T days, there was an application that came out where you could uncover central offices in a whole metropolitan area and remote those alarms into one location, so you didn't have to cover 29 other central offices 24 hours a day. There were tremendous savings associated with that. But you had other centrally-developed systems, like billing where requirements were different and they didn't work very well. Well, what has happened since the smart phone, we have turned apps development on its head. You can--we've all downloaded apps on our smart phone, and conceptually, that's what we want to do in our project. And what that's gonna entail is, of course, in our operating center, we're gonna have to define the interface requirements, we're gonna have to look at certification requirements.

But then we're going to invite the world to help us develop apps for public safety employees, okay. We're going to call together outside developers in a conference and we're going to say, "Here are the interface standards, here's what you need to get certified to be on our system. Now, go talk to your local public safety people and see if you can develop an application which solves their problem." Now, let me give you an example, simple example, of what I'm talking about.

There is a fire chief in San Ramon, California. He's sitting in a restaurant. One hundred feet away, a guy has a heart attack and he dies and he's CPR trained and it occurred to him that had I known that, maybe I could've saved that life. So what this energetic fire chief did is he went back to his office, he contacted everyone going through CPR and he said, "Would you be willing to be contacted if we have an emergency call?" They developed a program for that, so that the dispatcher could absolutely identify where all the CPR-trained people were and they would shoot a (inaudible) with a different tone on his cell phone to that person to get to the person having the heart attack.

Now, that's not something that we would likely develop centrally but it's something that has made a difference in that fire department and it allowed them to save lives. I sought that example because I think it demonstrates the kind of innovation that we would like to see at the state

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and local level. We just have to provide the model for them to do it. And so we'll be looking for innovators out there around the country, people who pick up on this capability, run with it, develop programs that go into the system. And the wonderful thing about it is that if Chuck develops something in New York and we put it on the system, every agency in the country can download it and use it. So I it kind of gets to the power of networking and is a concept that I think will work for us. The other concept that I've been thinking about, I'll just call open highways.

There's a lot of information in the states that Homeland Security or the Federal Government would like to have access to and vice versa. And I think we can develop a capability where you give us the requirement and we'll set up the communications package to allow you to do it. So I'm talking to you in concepts because I think we really need to take this about two or three levels deeper and we need to bring some people on board who really know how this stuff works and how it operates. But I think conceptually, this is what we're talking about.

We're talking about a whole new model for how we provide applications to public safety and I think it's a concept that's pretty exciting. So we're going to be working on that and at our next meeting, we'll have a serious update for you as to whether this--how this concept will work, if it will work and if there are show stoppers, how we deal with them. So that's kind of where we are on the apps development. Next steps, we need to form board committees. Over the next couple of months, we'll be doing that. We need to set up the test beds for both the network and the apps development. We need to get that done. and we need to communicate effectively with our users.

You know, it's--I'd just like to finish with this final point. We're kind of mandated to have advisory boards and communicate with them. Well, let me tell you where I think this board is. Whether we had that mandate or not, we need to be talking and we need you to be communicating with us, your thoughts and ideas, but you need to do that in a timely basis because I think you have understood from this meeting that we are going to take this project with a sense of urgency and we're gonna run with it. We'd be happy to have you comment and help us along the way, but we have a sense that we have a mission here and we're gonna get it done. So with that, I will open up other comments to the Board before we adjourn. Any other comments?

Ms. Swenson: Let's just say we're with you, Sam. We're with you.

Mr. Ginn: That's nice to hear. Okay. Thank you all for being here. Meeting adjourned.