THE BROOKINGS INSTITUTION

BRINGING INTERNET ACCESS TO EVERY AMERICAN: THE 5TH ANNIVERSARY OF THE NATIONAL BROADBAND PLAN

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P R O C E E D I N G S

MR. BROTMAN: (in progress) -- end of our discussion. And we'll talk a little bit about past, mainly how the National Broadband Plan was developed, and some of its key aspects. Certainly present, where it stands now, some of the things that have been achieved or have not yet been achieved. And then certainly doing a little bit of future forecasting in terms of things that currently are in planning or should be in planning with respect to either expanding or implementing certain aspects of the National Broadband Plan.

I thought I would start just by giving a little global perspective. When the National Broadband Plan was released it was the 52nd National Broadband Plan that was released in the world. I know many people in the United States thought wow, we have this National Broadband Plan, but we were really part of a large group of countries which had preceded us. But just to give you a little sense, since that period now 150 countries have National Broadband Plans, so roughly 100 more countries have released National Broadband Plans since the release of our National Broadband Plan, and that constitutes about three quarters of the countries around the world. So this is not just a domestic issue or domestic phenomenon, but also really a larger global conversation in terms of individual countries looking at how they can best develop their broadband capabilities.

Let me just start also with a little historical note, how the National Broadband Plan began. The National Broadband Plan is really part of a statutory framework that Congress passed. Many of you know the Stimulus Act, which is formerly the Americans for -- the ARRA, which is the American Recovery and Reinvestment Act of 2009, which was signed in February of 2009. Ironically February 17, so many of the key miles are always on the 17th. And as part of that about one percent of the appropriated

funds were dedicated to broadband principally to be administered by the National Telecommunications and Information Administration and the Department of Commerce and the Rural Electrification Administration and the Agriculture Department. And as part of that legislative package there was a mandate that the United States develop a National Broadband Plan.

And so that basically sets the table for our discussion today. It's a great pleasure to welcome two extraordinary colleagues and people who were central in developing the National Broadband Plan and continue to have enormous influence and very thoughtful reflections on the Broadband Plan. I also should mention the empty chair here. Bob Quinn, who is senior vice president of the federal regulatory and chief privacy officer for AT&T, unfortunately could not be with us. And so I just wanted to acknowledge why you see the empty chair there. But here are the gentlemen we have here, and as I said we're very grateful to have them. My colleague here is Blair Levin who many of you know. Blair has a role here at Brookings. He is also a nonresident senior fellow. He is in the Metropolitan Policy Program here at Brookings. And then seated next to Blair is Austin Schlick. Austin is the director of communications law at Google. And once upon a time Blair and Austin had different roles to play as the National Broadband Plan began.

I thought it would also be useful just to begin with reading you the Congressional mandate. So the Congressional mandate in the legislation was to maximize the use of broadband to advance -- and here's the quote -- "consumer welfare, civic participation, public safety, and homeland security, community development, healthcare delivery, energy independence and efficiency, employee training, private sector investment, entrepreneurial activity --

SPEAKER: It's very narrow. (Laughter)

MR. BROTMAN: -- job creation, and economic growth, and other

national purposes." So that's a very, very broad mandate. Blair starts in June of 2009, which is about four months after the legislation passes. And so why don't we start the story from there.

Blair, so you have this legislative mandate, you've just been asked by I think it was then Acting Chairman Copps to join, and you're four months behind schedule, and you have a legislative mandate also to deliver a National Broadband Plan within a finite period of time. So first day on the job, what happens?

MR. LEVIN: Well, there were two fundamental things you have to do right away. I might note parenthetically, I'm not sure I've told this story. After Copps asked me to do it the second question he said is what are you going to do about Title 2 and I said nothing. He said no, you should do something. I said no. Look, if that's what you want hire somebody else. That's a lawyer's issue at this point, but I was also thinking Julius is going to get here, it's the first thing on his agenda. He'll take care of it. It will be done before the Plan comes out anyway and we'll never have to worry about it again. Proving the great vision that I have about how issues play out. But there are two fundamental things, one you've got hire people and second, you've got to establish a process. So we had hundred of great resumes. We had challenges getting them all hired quickly, but we were able to do that. But the second thing was we kind of quickly developed a kind of three act play, how do we lay out the facts about broadband, which we did at the September meeting, how do we lay out options, and then how do we make recommendations. And so we laid that all out and then in August really ran a series -- really pissed off a lot of people by making them stay in Washington to do about 20 different workshops on what we identified as key issues so that instead of having lots of ex parte meetings the way the FCC usually does it, we just had big open meetings with all the relevant meetings and kind of had workshops on all of the things. And that's what

enabled us to be able to do it in time.

MR. BROTMAN: Austin, I think you joined a little after. So Austin was the General Counsel of the FCC. And clearly there was an important legal aspect here because we have a number of different issues. SO maybe, Austin, you could talk a little bit from your position at that time as General Counsel, again when you see this broad mandate, when you know what Blair is going to be doing, what was the sort of thought from the General Counsel's office?

MR. SCHLICK: Yeah, it was a very different role to be thrust into. I'd been at the agency before a the Deputy General Counsel for Litigation so I knew my way around the FCC and the legend of silos is fundamentally true, it all comes together at the commissioner level. But at the viro level, you know, they know cable or they know broadcast, or they know telephones, but there's very little cross-pollenization traditionally at the agency at that level. That all changed with the Broadband Plan where really the entire agency was focused on this one mission, a mission that had a deadline. We were hiring people as fast as possible to do. And it reminds me of the stalk scene in war movies who is the fresh recruit, who is me, coming off the farm is flow into the warzone and the doors open and there are bodies going this way and trucks going that way, and forklifts going the other way. And that was very much the situation when I arrived about a month after Blair.

The role was also a bit different. Traditionally the role of the General Counsel in advising staff is fundamentally you can do this or you can't do that, Congress allows it, Congress doesn't allow it, the current rules allow it or don't allow it, if you want to do it you have change a rule, this is the process for doing it. What Blair's team was doing was making recommendations not only to the FCC but also to other agencies and to Congress. And obviously Congress not at all constrained by statute, they write statute.

Other agencies, we had no particular expertise in telling the Department of Energy what they could or couldn't do under their statues. So it was much more of a consultative role, and a fun one. You know, I think of the Incentive Auction where I recall our conversations, Blair asks well, do the broadcasters have a legal entitlement to be paid for the spectrum that they're using if they relinquish it. Answer, no, they don't. Well, could we have wireless carriers pay them to give up the spectrum, just have a transfer. Well, no you probably couldn't because there's something called the anti deficiency act and it requires that all money on account of a federal asset goes to the Treasury and then is disbursed from there. So Congress has to do that, and that conversation in a way ultimately led to the Incentive Auction provisions and the Spectrum Act.

You know, other things. We would like to make broadcasting more efficient by having broadcasters share channels. If broadcasters share those channels will they lose their must carry right, the right to be carried on cable systems. Answer, no, they wouldn't. Well, what if we put them over the top, would they lose it then. And so you have those sorts of questions. And working through it was just a tremendous experience and a great way to be engaged immediately in the full gamut of the issues, not only before the FCC but also before sister agencies.

MR. BROTMAN: I think one thing that Austin just pointed out is that this was not the FCC National Broadband Plan, this was the National Broadband Plan, which means that Congress delegated the FCC as the lead agency, but obviously was looking for input from a variety of other agencies in governments. I'd be interested, Blair and Austin, in terms of the interaction with other agencies in government in terms of getting the best input from them and the best feedback while they're also understanding that the FCC is really taking the leadership role here.

MR. LEVIN: I think the record was actually mixed on that. And if I had to

do it again, and if somebody wants to recommend a similar kind of thing, I would say it ought to be either at the Department of Commerce or at the National Economic Council. That the authority -- the stamp of the President is really important because the FCC is an independent agency; I think it was problematic for us. Now there were certain good things about it. You know, clearly one of the things Congress cared about was connecting everybody, and that involves universal service, and there was a lot of expertise at the FCC. A second thing -- and in some ways the most successful part of the plan -- was the spectrum piece. The FCC plays a key role in that. But if I had to do it all over again I think the implementation would have been a lot better and the input would have been better if we really had been doing it out of the White House. And indeed the Broadband Opportunity Council, which the Commerce Department is running, and which mirrors a recommendation in the Plan, does have that ability. And I think they can be more successful in implementation.

MR. BROTMAN: Why don't we maybe do a top level review of what is in the Plan, what the framework of the plan essentially articulates, and then we can have a baseline for where we are today and where potentially we're going tomorrow. So I'll leave it to either of you or both of you --

MR. LEVIN: Well, I'll say the vision is pretty clear. Ubiquitous, affordable, abundant, bandwidth with everybody on and using that platform to better deliver public goods and services. Four basic strategies to do that, driver fiber deeper, use spectrum more efficiently, have an adoption strategy, and then figuring out in all of the different silos how you can use that platform to improve public goods and services. That's pretty much it.

MR. BROTMAN: I think one thing that's interesting is obviously there were other agencies involved, but there was also a lot of input and feedback from the

private sector and you talked to a number of companies, which obviously AT&T is one of, and then also a number of NGOs and think tanks and others. I'd be interested a little bit in terms of what the input was from some of those other actors.

MR. LEVIN: Well, first of we ran a very open, transparent process. We told everybody ahead of time, here's what we're doing this month, next month; we kind of plotted it all out ahead of time. We did blow a lot of people's summer vacations, but I think they got a lot bigger bonuses at the end of the year so that was a good thing I guess. I will simply say we pretty much talked to everybody. And one of my favorite moments was when Harold Feld who -- I think most people in the audience knows is one of the leading public interest advocates -- tweeted something -- or no, he actually wrote a blog saying I am going to cry uncle, enough already, you've had enough workshops, you've had enough public notices, I can't do this anymore. And so if you can exhaust Harold Feld, who is a very energetic guy, you know you've run a lot. And I would say one of the interesting things, and one of the real benefits of running a process this way is that nobody gets hung up on one issue. In other words, if you have 25 different issues that you're juggling, you're talking to people and like the cable industry really liked our adoption thing and they really disliked our set top box thing, I think if Bob Quinn were here he would say he really liked the spectrum stuff and really didn't like the special access stuff. Pretty much everybody was in that boat. And so, you know, it wasn't like we were trading off things, but we did have kind of a consistent viewpoint, which is, is this driving affordable, abundant, ubiquitous bandwidth, is this helping get people on, is this helping drive public goods and applications. And so at least they could understand where we were coming from even if they disagreed tactically. But the notion of, you know, if you put all your eggs into say for example a Title II basket and you're just debating that one thing, the debate I think is a lot more problematic than if you're seeing

where the tradeoffs and seeing kind of like a bigger picture is.

MR. SCHLICK: I think there were some permanent changes at the FCC. Obviously there was this immediate -- you know, the snake trying to swallow the rat and just process it through, but the focus of the Commission I believe was permanently changed and broadband is now the preeminent service overseen by the FCC. I think that most Commissioners would agree and most staff would agree regardless of their assignments. That was a permanent change. This idea of a workshop process really hadn't been done before, now it's standard procedure at the FCC. The aspiration of working across bureaus I think carried over. The reality maybe, maybe not. An interesting thing about Blair's project is it was largely staffed by outsiders. And that was necessary simply because the agency didn't have the available staff to do the work. It was desirable in the sense that Blair wanted outside ideas. I think that was quite intentional. But there was a cost to that, and the cost came around at implementation time that you didn't have people who were deeply invested in the proposals of the Plan continuing on with the agency. Some did, but most didn't and that -- you know, if we are going to talk about how to do it better next time I think you'd want to seed the implementation with people who are involved in development. Blair, you may disagree.

MR. LEVIN: No, no, actually I quite agree and I take responsibility for that. I would first say the most successful part of the implementation clearly was the spectrum chapter; that was largely written by Ruth Milkman, head of the Wireless Bureau, and John Leibovitz, who was the Deputy, both of whom stayed. And I think part of the reason why that implementation worked better is exactly what you just said. That they understood it and they had a kind of an intellectual commitment to making sure it really happened.

The adoption thing, which I think is one of -- where I would say where

we're most efficient, several people stayed but then the Commission didn't move forward and those people left. And I think that was a problem. But the big point is you want that kind of combination of outsiders and insiders to drive creativity, to drive new ideas, but you absolutely have to have people sticking around who have a commitment, who -- you know, one of the things that's really interesting to me in Washington is the way some people own a narrative and other people own a problem. I've spent most of my life in the private sector, people own problems, and they solve those problems. They don't own a narrative, they don't own a story. But in Washington people own a story. They have world view where they're trying to sell their world view. Well, that's all kind of the currency of the realm, particularly in an election, but you really need people to own a problem. Ruth and John owned the problem of spectrum. That's one reason why I think it was successful. And that's one thing that -- if someone else were to do this one of the things I would say is if you really want to be successful you have to make sure there is order of magnitude, a third of the people who work on it stick around, own the problem, and make sure it works. Because you don't solve a problem in a single moment, you solve it through incremental steps, course corrections, long-term commitment.

MR. BROTMAN: I mentioned that the United States was 52nd in line in terms of the release of its National Broadband Plan, but I would be interested whether or not any of your thinking reflected some of the other National Broadband Plans that had come before. In other words, where did the United States see itself fitting into this larger global picture?

MR. LEVIN: We did, but we very consciously -- there were some people who thought the purpose of the Plan was to do a ranking. And let me take a moment to do a brief commercial interruption to say that the work you did on the Net Vitality Project was really great and I really wish you had done it before the Plan because it would have

given us a lot of valuable insights about the relationships sort of thing. I think we were similar in the sense that we both believed there's no single individual metric and that you have to look at both the deployment side and the adoption side and kind of how do you use. All of those things working together. But we looked at a lot of other countries. There were certain differences between the United States and others that I think are really important. The United States is the only country other than I think Canada that has 90 percent -- 2 wires passing 90 percent of the homes. And that is a really big difference. Our cable industry got started earlier, got much farther penetration. So there was a market structure difference with a lot of countries that I think matter.

The most significant thing we got from other countries, and again of the things that I take responsibility for, because I think in terms of creating -- part of my job was to create political capital for these ideas, and as I look back one of my biggest failures was to create political capital for the notion that there needs to be an ongoing entity that both measures how we're doing and holds people accountable. And the measurement shouldn't be stripped. I mean because as your Net Vitality Index demonstrates, it's -- you know, again it's not a single number, but somebody -- and by the way you get the idea is wrong, you know, and then you have to course correct for those. But somebody on an annual basis should be saying how are we doing, we said we were going to do this this year, did we do it, maybe shouldn't have done it. But on some kind of regular basis. I actually asked the Chairman of the FCC to do that. He said yes but his PR person vetoed it saying if we did that people would criticize us. And I said well that's a good thing. Like none of us are running for the senate, we don't care; we should be willing to be judged. And if the criticism is bad we should argue it. But they very consciously thought that that was a bad idea. And I think that's a huge mistake. One of the things I wrote in my own filing in the Broadband Opportunity Council was you've got

to have annual reviews. That's what Korea does, that's what Japan does. They have a level of seriousness about it. It's not about a press release one day, it's not about personal branding, it's about an incremental step by step, how are we doing, how are we doing, kind of measuring it. I think that's really critical. And that's the biggest thing I got out of the other countries.

MR. BROTMAN: So since none of us are running for the senate, I think we're in the position to maybe do a little bit of retrospective analysis and ask the question five years later given what the plan aspired to be how is it doing? What do you think have been sort of the major successful milestones that have been achieved, and where do you think the National Broadband Plan still needs to essentially aspire either higher or implement better? Austin?

MR. SCHLICK: A couple of thoughts on that. First, just to Blair's earlier points, if you're interested the Benton Foundation has to some extent taken up the charge of keeping track and it's frankly fairly generous. It's almost an effort grading system where, has done nothing, in progress, done a little, done. But they go through each of the 200 recommendations of the Plan and rank them. It's also interesting, you can view by responsible agency, which Blair did assign work out. And what surprises me about that is that the agencies other than the FCC and Congress as well really, their percentages on this effort scale aren't very different from the FCC. If you'd asked me five years ago I would have said that the FCC would be markedly further down the road of implementing the Plan than the other agencies.

In terms of metrics, I think a problem again -- Blair, please agree or disagree -- there were so many recommendations. And when you say there are 200 recommendations, the tendency is to give each one of them an equal scoring, but some of them -- you know, you have make 500 MHz of new spectrum available for commercial

use. That's really, really important. The FCC should establish a website so that the public can track progress on the Plan. Not as important. And the scoring system tends to equalize them. In terms of what has happened as a result of the Plan, spectrum absolutely, a focus on the importance of freeing up spectrum for commercial broadband use, we have the Incentive Auction statue, we have the AWS-3 auction, we have a more serious commitment to spectrum sharing. That is you take spectrum that is currently being used typically by the federal government and find out when and where it's not being used. The most obvious example is today's 3.5 GHz band where the Navy has about 13 carrier groups which are in the oceans off the coast and was claiming the entirety of the spectrum throughout the United States for that -- for the use of these aircraft carriers. And yes, they come into port in Norfolk and San Diego and you know where they are and when they are. And there was no reason why that spectrum couldn't be used elsewhere, and now thanks to the President's Council of Advisors on Science and Technology, and thanks to the FCC that's being done. So freeing up spectrum is one thing. Unlicensed spectrum is another. That was the recommendation of the Plan to complete the TV white space which is using the vacant space between TV channels for broadband use. And unlicensed spectrum is now recognized even by big carriers like AT&T which historically thought it was something to be minimized and now with wifi offloads, you know, they are saving billions in network investment costs because you have your home wifi, you have your office wifi, which is taking traffic off of their networks and putting it through the wire line network without AT&T or Verizon, or Sprint or T Mobile having to build a tower and have spectrum for that.

So spectrum, a tremendous success. I think the other major success is the focus on next generation networks. Before the Broadband Plan the FCC's approach to broadband had been first under Chairman Powell, we should do everything possible to

allow industry, cable and telcos to build what they want to build. So that would be DSL, Verizon temporarily deploys FiOS, AT&T build fiber-to-the-node, it was DOCSIS 2 for cable. And there really wasn't much talk about pushing the technology. I think the assumption was that we could just watch as industry deployed. Blair established challenge goals that at the end of the Plan there were five aspirational recommendations or goals for 2020. And one of them was 100 megabits per second service to 100 million Americans, and another was gigabit connectivity to anchor institutions. And that was really a new way of thinking about broadband, that there would be benefits from having more capacity than frankly we knew what to do with in 2009, 2010. That has led I would argue directly to today's construction of gigabit networks. And one way that has happened, not the only way, but one, is that Google submitted comments on the National Broadband Plan and supported the idea of gigabit networks. And one of our founders, Sergey Brin, was being briefed on the proposed recommendations to the FCC and the team discussed with him all the benefits of gigabit networks. And he said well if it's so great why don't we build it ourselves. And everyone stammered and went back and ran some numbers and came back and said yeah, we can do that. So we started looking for test locations just to see if this could work technologically. And also as a regulatory matter we wanted to see whether cities would welcome a gigabit network and whether they would do for their part what's necessary to have a lower cost deployment and to improve things like permitting procedures which slow the pace of construction. And it turned out that cities were extremely interested. We had a national -- I don't want to say competition because it wasn't quite that, but certainly national audiences, and picks Kansas City for our first deployment. Now we have selected eight markets for rolling out our service. That's eight metropolitan areas. We're talking with four more and hope to deploy there. Interestingly, when we announce that we are going to a market the next

thing that happens is that the incumbent telco announces that it will be providing gigabit service there and to their credit -- and this is all for the good -- they beat us to deploy because they have a network already in place. We have to build a network, which is a multiyear process. They have a network. So invariably when we announce that we are going into an AT&T market, AT&T deploys gigabit service before we do. Now they don't deploy it everywhere and you can see a price difference between markets where we are and markets where we aren't. But, you know, this is a good thing. Cable companies provide better service at lower prices where we enter the market. And now you're seeing deployment of gigabit networks where Google is not at all involved. You know, the idea has caught on. We're seeing in Kansas City, our first network, that economic development is clustering at the gigabit neighborhoods. We have a small business renaissance in Kansas City which is attributable in large part to Google Fiber's presence. They call themselves the silicon prairie and it really, you know, has become a regional tech hub. Provo, Utah the same thing, has had a real uptick in investment in particularly tech oriented small businesses since Google Fiber is providing service there. And again it's not just Google Fiber, it's the cable company upgrades, it's network, the telco upgrades. So this national emergence of gigabit networks as a real thing, not just anchor institutions, which is what Blair envisioned, but to residential customers. And we didn't fully anticipate the demand for small business service which we were a bit late on that. Now we're offering it, but what our gigabit internet product is is essentially a business product for residential users and it turned out that businesses wanted it too. So we're serving that. So just seeing this expansion in a way that I imagine is faster and more widespread than what Blair imagined.

MR. BROTMAN: Since we're talking about gigabit I would certainly let Blair have equal time to talk about Gig.U which is a project he's been involved with, and

certainly that has some origins in the National Broadband Plan.

MR. LEVIN: Well, so if you go through the buckets of fiber spectrum adoption uses -- I'm going to do it backward. In terms of uses it's a mixed bag. There have been some wonderful things, some of which were done by plan alumni Nick Sinai, who worked on energy, went to the Office of Science and Technology Policy and did a wonderful thing called a green button which gives consumers access to information about their energy uses. We have a long way to go in the country, but that's something where I think the Broadband Opportunity Council can play a huge role in realigning the way agencies think about how they deliver goods and services.

Another really great thing I think is the Consumer Finance Bureau. You could have mixed views on the political of that Bureau, but that is the first agency that was actually building in the broadband era, and so the way it interfaces with consumers, it's a completely different thing. Sixty-five percent of the complaints are basically resolved without human interaction by virtue of utilizing data and stuff like that. That was an interface built by a guy named Erik Garr, who was basically my partner -- he actually really wrote the Plan more than me because he was sitting in the writer's room for the last three weeks of it. A great guy who then went on to do that and now is actually running Google Fiber in North Carolina, where Google is competing with AT&T under an agreement negotiated in the North Carolina Next Generation Project by another broadband plan alumni, Elise Cohen, who did a terrific job down there.

So on adoption, I think in some ways the best thing we did was the conversations with the cable industry that led to internet essentials. I wished we had done more, and I'm glad the FCC is bringing up lifeline which obviously needs to be brought into the broadband era. Very complicated politics and difficult politics, but if you actually look at what people have said about it, a lot of which is in the Plan, but there are

some beyond that, there's actually a consensus about certain elements of reform. Hopefully the FCC will do that. But cities really have to play a key role in that one as well as in by the way the uses. And I should have mentioned Google is doing this new venture called Sidewalk that I think will accelerate that. Other companies, SYSCO, IBM, AT&T, lots of folks are doing that. It's a great I think very exciting space.

Spectrum, Austin has already mentioned. I think that was clearly in the short -- in what we know now the most successful part. I think after the Incentive Auction will be even more so.

And then finally we get to the fiberware. I think in 2020 the thing I probably will be proudest of is the way we kicked off what I think of as this game of gigs. Google deserves really the credit for it because without them it would not have happened. We were stuck -- we looked at where cable and telco were, and we understood enough because -- like we had a lot of consulting and Wall Street types, where kind of cable kind of had this part of the market, telcos has this part of the market, they competed for this part of the market. Not true to say they weren't competing, but the competition was like, you know, what's the competition between say Neiman Marcus and Wal Mart. Yeah, they're both retail stores, but do they really compete? That's kind of the analytic framework. But what that meant was they were both were better off harvesting the prior investment rather than investing in next generation networks. That wasn't true in the early phase of the internet, but by 2009 that had become true. So what could spark going to the next generation? We actually couldn't figure out a good regulatory path to go there and we were so grateful that Google kind of said we'll kick it off, and we did recommend some trials, but the Google Fiber thing was much better. Gig.U is kind of an offshoot of that, focusing on university communities. You know, and I'm very excited. It's still in the kind of fiber to the press release mode, but I think by the end of 2016 you're

going to have a very significant number of American communities that have not just one, not just two, but three options for affordable gigabits. And then the rest of the cities then will start to develop use cases and applications that will change the economic, so that by 2020 I think we're going to have affordable gigs in a very significant part of the country and that will really help make us at the top tier of your 2020 Net Vitality Index. So I'm very excited about that.

MR. SCHLICK: I think there's also a more pedestrian accomplishment which is the period 2010-2012 was really extraordinarily productive at the FCC. And the reason is that the table was set by the broadband plan. And while the FCC may have decided not to have a publicly available checklist, there was that checklist. And I remember it was on a legal size piece of paper printed in landscape and we would go through it all the time and, you know, see where we were. And so you had some really major items -- inter-carrier compensation being an example, data roaming, an order of which obligated carriers to cooperate with each other in carrying data where one doesn't have a network. You know, those sorts of orders ordinarily would have spent 18 months deciding whether it was a good idea, and then 18 months implementing it if it was decided it was a good idea. We were handed a list of good ideas and so that allowed you to have the 18 month implementation without the spin up period. And that was tremendously helpful.

MR. BROTMAN: I think one of the long-term achievements has been the articulation of the broadband ecosystem. So clearly we're talking a lot about broadband networks, but I think one of the genius aspects of our National Broadband Plan is looking at broadband as an inter relationship among networks, devices, and applications and content. And I think the Broadband Plan speaks very clearly in terms of the ecosystem, and again getting back to the Net Vitality Index, it gives us a way t then begin t look at the

ecosystem across countries and to begin to look at metrics and analyze that from an ecosystem perspective and not just a network perspective.

I would love to open the floor for questions. I think there's a microphone here. If you could just say your name and if you're affiliated with anyone that would be fine. And if you have a particular person you would like address a question to that would be helpful.

So let's begin. Question right here.

MS. STANTON: Thank you. Lynn Stanton from TR Daily. It might be more for Austin, but really for either of you. You mentioned this internal checklist. Do you think the Commission still approaches the idea of the Plan in that way, or is it more of just sort of a cultural, we need more broadband, you know, as much as we can? And if the latter, do you think there's any aspect of the Plan that kind of gets lost by not looking recurrently at the plan and all the various aspects that were ticked out in it?

MR. SCHLICK: I'll start by largely agreeing with what Blair said earlier. Yes, I think your second situation is where we are, that much of the work assigned to the Commission has been accomplished. Typically if it wasn't there's a reason. And as the Plan becomes more distant, as there is staff turnover, as intervening priorities arise, you have a loss of focus on those, which is why I think that you should have, as Blair says, a periodic review. Not necessarily by the FCC, and the Broadband Opportunities Council should serve that role now. It's five years later, maybe five years is the right period, maybe it should be less. I don't know. But absolutely you need to have periodic revisiting. And that gives you the opportunities to get rid of the ideas that weren't good ideas or they just aren't going to work out, and to refresh. You know, the competition focused items of the National Broadband Plan, Blair mentioned special access reform, the recommendation for rules that would promote competitive development of set top

boxes so that your set top box could have some of the capabilities of your smart phone. The plan didn't address the cost of video programming, which are tremendously important to broadband deployment simply because people want video with their broadband, and so if programming is not affordable, that's a real impediment to broadband.

Infrastructure development. The FCC adopted a very important order in 2011 which lowered the costs of utility pole attachments for telephone companies and addressed some problems with getting polls ready for attachment by new entrants, but not all. And so that's something that really needs to be revisited in light of what was done in 2011 and the problems that still exist. So, yes, absolutely I think we need to have a refresh.

MR. LEVIN: I would say the single most important sentence in the 400 pages of the plan is the opening line of the implementation section, which his this plan is in beta and always will be. And I think that's the right attitude to have. You know, there are a variety of things, whether you look at kind of E-Rate or Lifeline or some of the universal service things now coming. Some of them have been done, like intercare comp reform, some of them haven't. So it's kind of following that model. But I would just say I thought it was interesting that Chairman Wheeler in the context of talking about the Comcast merger decision pointed out that it was in the middle of the process when kind of broadband replaced multi channel video as really the -- both from a market perspective, but also from a government perspective as the center of that focus. And I think that's an example of how you have to keep adjusting, course correcting, and I think he's doing a great job in that regard. But I would not -- you know, we weren't writing the Ten Commandments. This was not meant to be permanent and I would be the first to say though I enjoyed writing in my comments on the Broadband Opportunity Council

some things that basically was for further details about this proposal see section 6.2 of the Plan. I did a number of those because there are some things that are -- they are just foundation stones to help drive next generation deployments. But nonetheless, you know, someone could do a new one and come up with all kind of wonderful things we didn't think of.

MR. BROTMAN: Yes?

MR. SIMMONS: Hi. Jamal Simmons with the Internet Innovation Alliance. So my question is around how the private sector efforts next generation networks are impacting low income, urban, and hard to reach rural communities?

MR. LEVIN: This is a great question and it's a great debate. And I have to say most of what I read is 100 percent wrong. Let me tell you what I mean by that. I read a lot of things that say these efforts are creating a new digital divide. That is false on the law, it is false on the facts, it is false in terms of any kind of economic analysis.

Number one, the cable companies and the telco companies are required to go -- or were required to build everywhere in exchange for which they got a monopoly. Google is not getting a monopoly. So the number one -- the point that if you want to treat everybody equally you should force Google to build everywhere, or some other people like Ting or some of these other -- that's false as a matter of law. We have never required the (inaudible) to do that. It's false as a matter of fact. If you look at what's actually happening in places like Kansas City or North Carolina or others, no one is worse off, everyone is better off because what happens is -- and Austin got this exactly right -- actually I used to kid Milo Medin, who was doing Google Fiber and is an old friend, wherever I would go and just speak on Gig.U inevitably the next day the mayor would get a call from the incumbent saying by the way, are there any schools that you need connected or, you know. What always happens is they come in, they lower prices, they

offer higher speeds. Everybody is better off. And if you look at what happened in Kansas City -- correct me if I get this wrong -- about 92 percent of what we might think of as the higher income neighborhoods get Google Fiber and about 88 percent of the lower incomes. That is not really a significant difference. And so as a practical matter in the real world you're not creating a digital divide.

And then finally I would just note that as a practical matter what happens is Google says we're going to do this and they are committed to building gout everywhere in the city, but the obligation kicks in when a neighborhood gets a certain percentage. So it's not the same red lining. What inevitably happens in 100 percent of the communities where Google Fiber has gone the telco announces they're going to do it too. So now you have two. And then what happens is the cable industry announces that they're going to do it too. Now three. A couple of years ago cable is saying never going to do it, no one wants a gig. Wonderful article in January of 2013 where the cable executives were all talking that way. Now they're saying they're going to do it. But the interesting thing is because of the nature of the technology of the cable industry, when they upgrade they don't upgrade by building out neighborhood to neighborhood, they've already got the pipes, they just change out the electronics. So when they do it, it's actually for the whole community. So my point is if you understand actually the details instead of just engaging in silly rhetoric, which unfortunately lots of people do, everybody in the community is going to have access much more bandwidth at a much more affordable price in 100 percent of the communities if you let the game play out. But if you say oh, my god, Google coming in is going to create a new digital divide and then nothing happens, then we can be -- you know, I just got back from a week in Cuba where everyone is equal on access to broadband, which is to say none of them have it. (Laughter) So, you know, if you want to have that system, hey -- if you like the status quo, yeah, keep Google up. Or

as Milo from Google Fiber once somewhat controversially but nonetheless accurately said, if you don't like us, if you don't like what we're doing, have fun with your Time Warner cable. And, you know, that kind of pissed some people off, but it does represent if you want to change that you have to have a certain kind of asymmetric entry method because it's really hard, it's very difficult to do, and it's only a company like Google that could really kick off this game of gig.

MR. SCHLICK: Blair did a very effective job being the heavy there, so I'll be the good guy. (Laughter) No, there's --

MR. LEVIN: I love playing bad cop.

MR. SCHLICK: There's a real issue and it's not a digital divide issue but there an inclusion issue. And we want to reach as many residents in our metro areas as possible. And what we have learned as we rolled out Google Fiber is how to market to neighborhoods. We are doing a much better job now at Hispanic outreach for example as an area. We have a program in Austin where we're working with the Public Housing Authority, which was a great way to reach lower income customers quickly and in large numbers. Our rallies as Blair said in Kansas City are lower income neighborhood rallies, which is the process by which a neighborhood indicates whether it wants Google Fiber or not, have been hugely successful. I think the number is eight of the nine lowest income neighborhoods in Kansas City. I might be a tick off, but I think that's the number, qualified under the rally system. So it's been a huge success even in terms of where Google Fiber is able to deploy. And we don't have the money and we don't have the ability instantly to build everywhere. So there's very practical research on where we can build, and our job is to ensure that we reach out as broadly as possible and bring in all the different types of neighborhoods. You know, build cost is a huge thing. And it happens that when you have a neighborhood where houses are farther apart, and maybe

it's up in the hills and maybe there is a requirement to dig underground, it is more expensive to build there and therefore those are actually the last neighborhoods to get served, and those are the high income neighborhoods. So the places where the economics dictates that we really can't build sometimes are typically the highest income areas. And when you have denser populations it's usually less costly to serve and that's a great thing for inclusion.

MR. BROTMAN: Yes, right here, and then here.

MR. OFREDO: Dennis Ofredo from the Charles Koch Institute. And I had a question about you guys talked about the benefits of the private sector with the spectrum and as well as fiber, what has been the biggest challenge for the private sector under the National Broadband Plan of expanding or anything like that? Or has it been a challenge?

MR. LEVIN: I'm sorry, what has been the biggest challenge to the private sector?

MR. OFREDO: Yes, yes, under the National Broadband Plan.

MR. LEVIN: I think there are different challenges for different sectors in terms of responding. We very consciously focused on what government should do as opposed to what the private sector should do and I think it's fundamentally the job of the government to kind of set the landscape that then allows private actors do to certain things, so that you see things like performing inter-carrier comp or you see things like access to rights of way, access to poles. And then you let private sector actors who are doing the bulk of the investment do that. I think that we have to be honest and understand that there are enormous challenges facing certain parts, for example, rural phone companies. They had a certain business model that was premised on everybody buying a wired phone line and that they would get government support to do that, and

they would build out under certain assumptions. And 3G and 4G undercuts that. So I think that's a very challenged sector. And I'm not sure that we got it 100 percent right, by the way, in how we proposed universal service to address that sector. I think there's a challenge for all the private actors on both the application side and the network side to get everyone on. And there have been some private efforts which I deeply respect and I praise the private actors, but fundamentally at the end of the day that's going to have to be -- the government is going to have to take responsibility. And I think it's unfortunate that we've waited so long to reform Lifeline, but I'm glad we're doing it now. But the private sector is going to have to step up in various ways as it gets reformed to do that.

And then finally I would say I think to me where I think it goes next, in the next -- I'm very excited about both the spectrum side and the game of gigs, which means that from network side I think we're going to get where need to go, but the ability to delivery health care, education, public safety, all kinds of other things with creative applications, I think that's where the next big upside -- what I think about as the civic Internet of Things, and the ability to provide information. Tom Wheeler has talked about for example how come Uber can get right to where you are, but when we do 911 we can't get that kind of information. You know, people are losing their lives because we haven't done that yet. I'm very excited about some new potential in that area. But there is still a lot to be done.

MR. BROTMAN: We have time for one last question. Did you still?

SPEAKER: Thank you so much. My question is on --

MR. BROTMAN: I'm sorry, you are? Yeah, the mic is on.

SPEAKER: It's on? My question is of a concern over the security and ethical issues of the internet in the future. We see that everything alive is connected to internet and like to some sort of wearing your smart phone can collect your data off your

body movements, your running, and can predict how healthy you are and sell them to the insurance company. So it's very probably in the future that the internet can predict well every people's feature, character, preference, and his social net. So how do you think we can treat this data in the future? Thank you so much.

MR. SCHLICK: I'll start with saying everything you described is wonderful. You know, the idea, search, Google did extremely well with the search engine. We figured out how to do it in a way that people wanted and it was quick and accurate. Now we're working on predictive search, which is the idea of using information that we know about you. And I think you may have said sell, which we do not do. We are not selling the data, but we are using it if you opt in to predict what you want to know. Do you want to know that now is the time to leave for your plane, that you need to go now because traffic is bad? Do you want to know a sports score of a team we know you follow? So this is all wonderful technology that has amazing potential to benefit day to day life, to promote economic growth. And the question is do users have choice and is the data secure. And those are the things that we need to be working on and I think that's widely recognized. Certainly we at Google are trying to do our part, but that's really -- the nub of it is being sure that you're in control of how information about you is used and that those who you don't want to have access don't have access.

MR. LEVIN: The one person I really wanted to bring on that I wasn't able to bring on was actually a person to run that part of the Plan, and it was a long complicated story, but eventually we were not allowed to hire them because they had signed a document that kind of made them -- there was a conflict thing, but it was too late to hire anybody else. I would say that that would be one weakness I would say in the Plan. But I would also say I don't think the issue was ripe then. It's absolutely ripe now and if the next president of the United States were to call me up and say I want to do

something like that, what should be the topic, one of the big ones is trying to build political capital that effectively balances both the need for data from an economic perspective as well as the use of data. Because remember, when we're talking about health care and education, we have to have the data to improve those services, with the understandable concern about security and privacy. So that's a balancing act that we're -- you know, we're going t muddle through for some time. Eventually there will be an absolute crisis and then people will say we need a clearer solution. And I think a plan could help develop both the intellectual foundation as well as the political capital for that kind of solution. But we didn't do that in the Plan and that will eventually need to be done.

MR. BROTMAN: Well, I think the big headline here is the National Broadband Plan is alive and well. And clearly we've seen, as Blair said, it's a beta process and very organic. And we've seen a number of different offshoots and implementation in new areas that essentially are being explored. So I would certainly say this is the beginning certainly of a five year commemoration, but hopefully we're not going to have to do this in five year increments, but we'll be able to be involved in this as it evolves.

I'd like to thank our great participants here. Austin Schlick and Blair Levin. (Applause)

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I, Carleton J. Anderson, III do hereby certify that the forgoing electronic file when originally transmitted was reduced to text at my direction; that said transcript is a true record of the proceedings therein referenced; that I am neither counsel for, related to, nor employed by any of the parties to the action in which these proceedings were taken; and, furthermore, that I am neither a relative or employee of any attorney or counsel employed by the parties hereto, nor financially or otherwise interested in the outcome of this action.

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