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NATIONAL BROADBAND PLAN WORKSHOP

ECONOMIC ISSUES IN BROADBAND COMPETITION

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P R O C E E D I N G S

MR. BAKER: Good morning. Welcome to another Federal Communications Commission staff workshop for the development of a national broadband plan. I'm Jonathan Baker, the FCC's Chief Economist. On my left is my co- moderator Scott Wallsten. Scott is the Economics Director of the Adoption Group in the FCC's Omnibus Broadband Initiative.

Today's workshop focuses on economic issues in broadband competition. In many regions of the country, Internet users can choose from at most two wire line broadband access service providers and perhaps one or more wireless providers. This observation leads to three questions that will frame our discussion today.

With this market structure, do broadband access providers exercise market power? Can and should we encourage entry and competition in the provision of broadband services? And what regulatory strategies should be employed in markets that may not be competitive soon?

To discuss these topics, we have assembled a panel of five outstanding and accomplished economists, all of whom are among the top researchers on competition and regulation.

Two of our panelists, at the far end of the table, have taken leave from their academic positions at the University of California in Berkeley to serve as chief economists in the federal agencies concerned with competition and consumer protection.

Joseph Farrell is the Director of the Bureau of Economics at the Federal Trade Commission, and Carl Shapiro is the Deputy Assistant Attorney General for Economics in the Antitrust Division of the Department of Justice.

I am particularly delighted that Carl and Joe can join us, both because it reflects the close cooperation among our agencies, and because I have co-authored articles with both of them and have learned a great deal from working with them.

Three of our panelists are professors at leading universities. Judith Chevalier is the

William S. Beinecke --

MS. CHEVALIER: Beinecke.

MR. BAKER: -- Beinecke Professor of Finance and Economics at the Yale School of Management.

Shane Greenstein is the Eleanor and Wendell Hobbs Professor of Management and Strategy at the Kellogg School of Management at Northwestern University.

And Marius Schwartz is Professor of Economics at Georgetown University.

I haven't co-authored anything with Judy and Shane and Marius yet, but their articles are all worth reading and it would be great to write something with you guys, too.

MR. WALLSTEN: That's why we're at a separate table.

MR. BAKER: So our plan for this morning is to hear 15-minute presentations from each of our panelists. We'll go through in the order that they're sitting -- Judy, Shane, Marius, Joe, and Carl. And then I'll ask each of the panelists if

they have any comments on what the others had to say, and while all this is going on, my FCC colleagues, Chuck Needy and Jonathan Levy, will be collecting questions from the audience in the room and online, respectively. And in the remaining time, Scott and I will select questions from among those submitted in others that we might have to ask our panelists.

So with that introduction, let's begin with Judy Chevalier.

MS. CHEVALIER: Oh, I'm supposed to sit. Right. Oh, I've never -- I'm not used to that. I'm used to teaching. Oh, it's like a Teleprompter. Okay. I'm getting it. Okay.

All right. So today I'm going to talk a little bit about broadband competition and product bundles, and, you know, there are many things one might think is interesting about competition in this sector. And one of the things that I thought was interesting to focus on, and I have contemplated in various situations and as had the Commission, what effect this has on competition in

this industry.

I'm looking -- I'm thinking today about product bundles. So I'm thinking about the fact that most access providers -- pretty much all the ones that I'm familiar with -- when they sell you services like Internet access, telephone or television services, they tend to sell them in bundles, right, so you can the double to play or the triple play.

And, you know, as economists, we may be interested in what is the effect of these bundling strategies of the firms in these industries on competition in those industries, and what are the things we might want to look at to try to measure whether these bundling strategies are helpful to consumers, or whether these bundling strategies are harmful to consumers, or whether these bundling strategies mask situations in which products were prices may be difficult to obtain on a standalone basis.

So those are the things that I'm interested in. And I think it's worth -- oh, I

didn't realize this is so dynamic -- okay -- I think it's worth knowing how economists think about either tying or bundling, and we mean two different things when we say tying and bundling, but let's talk about them together.

Economists have thought a lot about ways in (inaudible) or why companies might want to when they sell a good tie it or bundle it with the purchase of another good. In many cases there may just be simply -- and that's not on my slide; but it ought to be -- efficiency reasons for this, right?

So almost every product we can think about is in some way, shape, or form a bundle of attributes or it's tied together, right? So I don't think anyone thinks that there's any problem with the market because less shoes are always sold tied together, you know, you must purchase them together with right shoes.

You know, it's probably efficient for that to happen, and so we see those goods sold together. We might think it's less obvious that,

you know, when you buy Internet service, there's a -- or when you buy television service, there is a different price for your Internet if you do buy television service than if you don't buy television service from your cable operator, though that may well come from the costs of supplying the two services separately versus together.

But it's hard to know. Economists have looked at other reasons why products might be put together in bundles or tied together in the market. One reason has to do with price discrimination. Providing bundles may be a way to separate customers who are willing to pay a lot for one thing and little for the other, and allow the firm selling them the goods to extract a little more profit if they bundle than if they don't bundle.

The other -- you know, the reason that we might worry about bundling or tying his situations in which a bundle or tie takes place in order to exclude some kind of competition from a

rival. So the thing that economists really worry about is suppose you have a monopoly in one market, so you're a monopoly provider of a good. And there's another market that's competitive, and that competitive market is selling a complement for your good, a good that is sold together, so I mean that you might want both of.

So I'll give you an example. So, for example, you may want a cable modem and you may also want Internet telephone service, okay? And those things may be complements, right?

And we would worry if the cable Internet service provider tied the purchase of cable telephony to the cable Internet purchase if that was done with the purpose of, or with the effect of, excluding competitive telephone service providers from competing.

So exclusion is one of the motives for tying and bundling that economists think about. There are others that are probably secondary, though I put some up on the slide.

I'll just -- let me just -- sorry --

briefly mention one point, which is, you know, it's important to realize that tying and bundling, we see that in the marketplace, so when we see products sold as bundles or, you know, you can only buy good B if you buy good A, that can be pro-consumer and pro-welfare. That can be a good thing.

But there are circumstances in which that could be a bad thing, like this monopoly extension argument that I mentioned before.

Okay. So, you know, we have these models that economists write down of tying and bundling. I'll briefly mention one because I think it's sort of a simple one to see. I'll give you sort of a quick version of it.

But it's important to realize that economists, you know, we don't write down models that look exactly like -- that have all of the complexities of the marketplaces that we're trying to market here, right? So, you know, most of the models that I -- you know, there are models of, you know, why would you have bundling and could it

be bad, you know, some of those are looking at a monopolist provider of good A trying to tie in or, you know, force purchase of good B.

You know, that's a situation which isn't, you know, a perfect match for what we see in the marketplace, right? And so we don't have -- it's important to realize that economists that I know I do not have models that exactly match into the competition that we see in this marketplace, right.

So, as Jonathan mentioned, many people -- most people in the U.S. are going to have -- if you exclude wireless; you were talking about wireless -- but if you exclude wireless are going to be thinking about one or two potential providers of Internet access. That's certainly true in the household -- in most households, that you may have one choice or two choices for getting Internet access.

You have competitive providers and substitutes for phone service. You may have one provider or two providers of television services,

as well as substitutes for television services that you could get over the Internet, and, you know, not every customer cares about all of these products and services.

And so, these are -- these are -- and we think that probably if we were to look from a production perspective, there are situations in which these things -- there are, you know, perhaps synergies in supplying more than one of these, right; that it's cheaper to provide two of these products to a household than to provide each separately -- the sum of each separately.

So there's a lot of complicating factors when we think about mapping the kind of models that economists write down about tying and bundling into real markets.

So I'll just quickly give you an example. There's a paper that my colleagues, Keith Chen and Barry Nalebuff, wrote called "One Way Essential Complements," and that paper is looking at the situation where you have two goods and A is completely -- in order to consume B, you

must consume A.

So consumers can enjoy A without B, but can enjoy B only if they buy A. So that would be a situation where, let's say, you can't get telephone service unless you buy Internet service.

And in that marketplace, they do a lot of stuff. I'm not going to go through all of the details. They do a lot of stuff to think about in that market how would -- what would happen -- what would be the incentives to tie the goods, what would be the incentives to price the goods if the provider of one good is different from the provider of the other good or if the provider of one good is the same as the provider of the other good.

And one of the results they have -- so one example that they give in their paper -- explicitly is cable modem service and IP telephony. I'm going to skip this, because it's too complicated. Sorry about that.

When I sent my slides, I was ambitious.

MR. BAKER: That's cool.

MS. CHEVALIER: Yeah. Look I got some good graphs. Okay.

What do they have in this model? One of the things that they show in this model is suppose you were a monopolist, and you are providing -- and, of course, cable modem providers are not monopolist -- but suppose you were a monopolist providing the essential good, and there was a competitive provider -- there was another firm selling this secondary good. And you were thinking about entering the market for that secondary good.

So suppose you were the Internet service provider, and you were thinking about going into telephony, they have a very strong results in their paper that you have -- the monopolist in their paper has incentives to charge a very low price for this secondary good and that has the effect of driving out other firms that might try to provide that secondary good.

Now in their particular model, so, for example, in their model what they suggest is the provider of Internet service may try to stimulate

demand for its Internet service by providing very cheap IP telephone and that very cheap IP telephone may drive out competitive providers of IP telephone.

And in their model, that's actually fine, because consumers actually don't care in their model. That's an outcome of their model, but consumers don't care.

In the real world, you know, there's big gaps between the models and the real world, so, you know, there are models that you could write down where it would be a very bad thing to have the provider of Internet telephony -- I mean Internet service drive out competitive providers of Internet telephony, especially if they are differentiated from the incumbent.

So there are big gaps between the models and the reality. We have models that can give us kind of benchmarks of what we might expect in certain circumstances, the effect of these bundlings to be, but the world that we look at is a much more complicated than the world that we're

able to model specifically in our little models that we write down.

So where does that lead us? Well, I think that leads us to a point where this is kind of an empirical question, and this is where I'm hoping that, you know, one of the things I'd be willing to -- you know, so mostly I've said that, you know, there's lots of things that could happen in this market, in these markets, and it's hard to really tell whether they're good for consumers or bad for consumers and how to assess this bundling.

But, you know, data really would help with this question. So what kind of data would we need to look at these issues? So I think some interesting data -- if you had data on prices and quantities for the kind of bundles that cable service operators and telephone operators are providing, ILECs are providing, what would you do with that?

Well, you could look at things, like, what are the average revenues per customer of customers who take one, two, or three products

from this provider. And you might look at some questions like given the prices charged for the bundles and non-bundles in these marketplaces, how much would consumers have to value some competing voice over IP service push to actually buy it? You know, so given the price that the cable -- the implied price of the cable telephony in the cable bundle, how much would the person have to like better Vonage or another voice over IP provider to actually buy it. That would be a useful thing to know empirically about a set of markets and a set of competitive situations.

And, you know, for what customer types, because of the way prices are bundled, goods are bundled, for what customer types are there customers who, you know, in theory are passed by two services and could access competing services, but because of their preferences, let's say they don't want television or they want Internet, but not phone service, or the phone, but not Internet, there may be a set of customers for whom if you look at the set of bundles that are available,

those bundles really kind of make one of the providers very unattractive to a customer with those preferences. And so for a customer with those preferences, they're not facing as much competition as a regular -- as a customer who has, you know, more typical preferences.

So that's something you would want to look at in the data. Finally, I'm just good to get a tiny little example that I -- you know, I should say that I have not -- I'm not a real expert on broadband access in Canada, so there's probably tons of things that the people in the FCC could tell me about why things are in particular ways, but one thing I think is kind of interesting is if you look at cable's share of broadband access in the U.S. versus Canada -- and it turns out the measurements I could find are slightly different; lines in the U.S. versus revenues in Canada -- you'll see that in the U.S. cable, you know, the U.S. and Canada are alike and different from the rest of the world in that much of the -- many customers access broadband through cable in

the United States and Canada, which is, for the most part, not that true in the rest of the world.

So they're alike in the sense that, you know, about half of residential customers access their broadband through cable in the U.S. and Canada.

But an interesting difference between the U.S. And Canada is that only about two percent of business lines are provided by cable service operators in the United States versus 20 percent of business lines or business revenues from Internet service in Canada.

So there may be lots of reasons for that. There may be differences in the quality of service build out that the cable providers have provided in Canada versus the U.S., but I think one of the possible explanations has to do with just the way the products are put together and bundled and the offerings that have been offered typically in the United States may make purchase of Internet access via a cable operator less attractive for businesses in the U.S., given their

set of preferences than it is for residential customers. And that seems to be true, you know, relative to Canada.

So I think that's a -- just sort of a suggestive statistic and there's -- if, you know, I had a little more data about pricing and quantities in the U.S. in various markets, I might be able to look at the question of, you know, what is it that keeps cable from being competitive in the business market in the U.S., but leads to actually be a fairly substantial competitor in Canada. And that may have something to do with, you know, bundled pricing, and it may have something to do with quality of service. It may have, you know, something to do with, you know, the quality of DSL.

But all of those things, you know, are worth investigating, and I think we -- I don't know that we quite have the data to do that at the present. Okay. Thanks.

MR. BAKER: Thank you. Shane? Well, let's put up your slide here. That will take a

second. Okay.

MR. GREENSTEIN: All right. There we are. Okay. Let's do a test. Oh, good. That works. Okay.

So I'm going to present actually a paper that I wrote some months ago. It's titled "Glimmers and Signs of Innovative Help in the Commercial Internet," and it's directed principally at the third question Jonathan identified about regulatory structures for the present era.

First, let me begin by thanking the organizers, and I'll just say I'm just going to present a synopsis of this chapter, and, to put it context, it's actually part of a larger book project about the commercialization of the Internet. One of the latter chapters has a chapter about lessons from that commercialization, and that's essentially what this chapter is.

And the funding for it came from the Kaufmann Foundation and Searl Foundation and from my home school.

So my plan is just to give a little overview, and then tell you the list, and then conclude.

So the paper itself addresses what seems like a rather simple question: What are the symptoms of healthy behavior in an innovative industry, such as the Internet?

It's actually rather an elusive answer if you explore it at all carefully, and my goal for the essay is get beyond Yogi Berra. I'd like to do better than a few aphorisms. I don't aspire to have a precise model. The question itself doesn't lend itself to that.

Why would you ask such a question? Because, first of all, fostering innovation is a worthwhile goal. It leads to economic growth.

Second, and I think more deeply, there is not general agreement about how to assess progress. I actually think we'll all agree that the regulatory structure of our parents from 40 years ago is no longer very relevant, but I don't know that we'll agree on what's the right one

going forward.

There's an awful lot of "we know innovation when we see it" in discussion, but not agreement on actually what that is.

And so that was part of my goal was to try to provide some sort of guidelines to think through those problems.

The other reason, if I could be more specific, is the world we live in today, the market we live in today needs this question. And it's because we're in an interesting trade-off between presence of market power and presence of innovative advance. And I'm -- three examples in the essay address -- motivate the question, but let me briefly summarize.

The first one is from the diffusion of broadband nationwide that is an improvement to users. There's a replacement of dial-up, and everyone recognizes that that brings higher bandwidth.

And yet, at the same time, coincident with that was a concentration of delivery of

services, which presumes -- opens the question of the presence of market power and what effect it has on innovative conduct.

A second example, to motivate this question, comes from the pervasiveness of platforms in the Internet value chain. By that I mean, again, a platform is something that firms do where they bring together a number of complementary components in order to integrate them and provide services for users. They may also have an organization of lots of participants in the industry along standardized interfaces. And again, it's designed to actually bring a new service, to provide users with something they didn't previously have. And that's an improvement.

However, coincident with platforms, one of the lessons of the last 25 years is that platforms are also coincident with the presence of market power, and so, again, there's this open question when you see these proliferate about whether there's something to be done.

And I just wanted to give a lot of examples today that I don't think that we live in a network of networks anymore. I find that phrase to be quite misleading.

It's a network of platforms, and that's the way the major firms think about it. And Microsoft, Intel, Cisco, you know, Research in Motion, Apple, Google, Oracle they all have platform strategies. That's the way they talk, and we should just say that.

The third motivation has to do with contractual incompleteness. This is value chain that changes frequently enough that assumptions that went into negotiations become obsolete and things have to be renegotiated. And that happens frequently in this market, and, as a consequence, the legal defaults and the regulatory decisions that decide what's status quo in the absence of a renegotiation play an incredibly important role.

So that's motivating why you might think about these -- the problem of how to assess where you are.

So, all right. What symptoms would you look for? So I came up with a list. The list is economic experiments, vigorous standards competition, entrepreneurial invention, and the absence of unilateral bargaining. I'll explain those in a minute.

Why is that list interesting? First of all, it's not the usual list, and in particular, the shocking thing if you go look at legal education or engineering education in the United States today, most engineers and lawyers are not taught this. They are taught, you know, precedents from several decades ago, and, you know, then they walk into this world and where do they go?

So that's one of the reasons it's interesting. A second one is I want to stress innovative conduct. A lot of people do touch on the topic, but it's never been brought out as making the whole explicit and that was another one of my purposes.

Okay. So let me go into detail. In the

interest of time, I'll be brief. What's an economic experiment? It's a market-oriented action designed to help affirm, learn, or resolve some uncertainty about an unknown economic factor. If you want, the rule of thumb is it's cheaper to experiment in the market than it is in a laboratory.

You know, if you want to understand how to design a search engine that will appeal to many people, you don't give it to the white-coat guys in the lab and give them six months. That's actually not what you do.

You go out. You design it, and you see if users -- if it has traction with users. That's an economic experiment. There are lots of experiments in the Internet and have been for the last 15 years. And, you know, we could just go on and on about all the various ones that have come out, where people, where the firms learned from their experience, and, you know, a lot of it failed, too. That's just the way experiments are.

Well, experiments, however, are a little

bit interesting because that when you talk about an economic experiment on a market-wide level, it's not the way Wall Street typically talks. Wall Street is typically focused on an individual firm's welfare.

And just to give -- the paper gives a couple examples, but I'll -- just to highlight one is to give you the contrast. Think what happened in the WiFi market, or, if you will, the 802.11b market of the early part of this decade. There was an 802.11a, too, by the way, which hasn't deployed. Why -- it didn't deploy widely, well, because they learned from experience that B was more popular. But that's another matter.

In addition, it was called WiFi when it first deployed. That came later. And if you actually will talk to the people who designed it, they had not anticipated the hot spot at all. That wasn't the market structure they were anticipating. It came about through learning, and everybody learned from each other.

The entire market-wide learning is --

have a great deal of number of positive externalities in it. And on a market-wide level, it was quite good for the country; on an individual level not necessarily so.

So again, I want to stress that the market-wide sense of learning is what is you want to look at.

Second, vigorous standards competition. Why emphasize that? More of it is better than less, once again. I emphasize that because most bleeding or leading edge technologies cannot be deployed without something routine or some coordination in a dance of their deployment. Quite typically that routine or process is negotiated in advance in a standards body, not always in a public standards body. Sometimes there's disagreement, and so you get multiple standards being deployed in advance.

And that's the interesting thing: There's disagreement in advance about the right way to do things, and, as a society, we benefit from seeing competition among the different

choices when you don't know which one is right.

I would say that it's an inherently messy and confusing process, and particularly to outsiders. I've even done a couple case studies on standards competition, and it's even messy when you get into the details. It's inherently open-ended. It's inherently frustrating. It's not a static activity. Anyone involved in it never has anything nice to say about it when they're done.

On the other hand, it's better than the alternative, the fastest way to slouch towards dystopia is to give a monopolist sole control over the determinants of standards.

And that's basically my point, which is vigorous standards competition, more of it is better than less of it or monopoly control.

I want to note a very interesting qualification here that competition among designs isn't the only thing that occurs in vigorous standards competition. You also have competition among sponsoring institutions. You may have similar designs but different organizations

sponsoring them, and different processes are anticipated in how they're going to be updated and firms will care about the way those processes operate.

And so, again, competition among process for changing the design is a different way to think about standards competition. Again, this is a focus on market- wide gains.

The third one, more entrepreneurial invention is better than less. You might reasonably ask, well, how is this different than learning, and this one focuses on the participants rather than conduct.

So an entrepreneur in this context is someone who takes a financially risky and organizationally challenging action in pursuit of a business opportunity. They're often the first to attempt to deploy, distribute, or service something.

You might affiliate this kind of risk-taking with small startups, and certainly it is true that small startups do tend to do this

kind of activity. But I don't want to make the mistake of saying that it's exclusively done by small startups. That's not true at all.

Entrepreneurial action can be taken by large firms. However, to be precise about it, usually in the environments where you find large firms taking risky actions, you tend to find (inaudible) funded small firms as well.

So, that's a symptom. Again, this is one of those interesting ones where none is a bad thing more than none is good. It's unclear after a certain point whether more and more is incrementally even better. But the key observation is more than none is better.

Okay. Since they're often the first thing to do something, you might reasonably ask what are the causes for the first to perform. And the interesting thing about entrepreneurs is some of the causes are outside of their own control. The causes of lots of entrepreneurship are things like low development cost, low delay of getting to market, strong appropriation rights for small

firms.

One of the remarkable things today in our world is that Web 2.0 type start ups have extraordinarily low start up costs. By VC standards, we've never seen anything quite like this. And to contrast it with, for example, integrated circuits, where the start-up costs for a firm can be $50 million at a minimum, for example.

You know, you can start a Web 2.0 firm for under $100,000 and sometimes much, even much, less than that.

So because many of the determinants of these cost delay and appropriation are outside the control of the small firm, it raises the question of what it is that existing established firms can alter in order to alter the situation for small firms. And they can do things such as releasing information, buying out options, and the paper discusses a number of these.

Finally, last, yeah, good. Three minutes. Perfect. The last one: The absence of

unilateral bargaining. Why the absence? Because more is better. Less absence is a better thing. I was trying to put them all in, you know, more of the thing is better.

So what do I mean by that? Unilateral bargaining is one party has bargaining power to proffer a take-it-or- leave-it offer and others have no choice but to accept. In a room of lawyers, they're going to all stand up and start tearing their out when I say this. I recognize that the law describes this in different terms; that almost some of my purpose here is to raise the question.

And I wan to raise the question because if you look at the Internet value chain today, bargaining is pervasive. There's technical interrelatedness everywhere. You know you have negotiations going across firms everywhere, and you do have the possibility for unilateral bargaining in a number of key places.

And generally speaking, that's actually not a healthy thing, because it raises the

potential that the established firm can offer a bargain that protects itself rather than helps the market-wide participants innovate.

I talk at some length about bargaining breakdowns in the paper and why that may or may not be a symptom. Just to be clear, a breakdown per se doesn't have to be a symptom of unilateral bargaining. It can be.

So what are the issues? Well, the paper actually uses more illustration than general argument. Most of the illustrations are taken from the Microsoft antitrust case, not because I'm particularly trying to pick on Microsoft, but because A, I thought that actually the case should have been brought; B, also because Bill Gates was really good at this. And, you know, we should actually admire him for it. I mean he's actually a quite accomplished bargainer. And C, you know, it's all public.

So it made it possible to write down what they did precisely. And it wasn't -- as I said, I wasn't particularly trying to pick on him.

I think this is actually fairly pervasive behavior.

But often it is -- firms attempt to do this pervasively, but they're often disciplined by markets. So that's the interesting thing.

So, again, the question I want to offer is we should stress market-wide gains. Wall Street doesn't think this way, once again. The market-wide gains from having competition discipline the kinds of bargaining firms do.

Okay. Wrapping up. So the question you might want to ask is what type of concerns would trigger intervention. And again, what I tried to do is say here are four symptoms where less is unhealthy; more is healthy, and that would in real time, as you're trying to decide whether to do something, frame the kinds of conversation one would have about this market. You would expect intervention to be triggered, therefore, when experiments are slow. Standards are not introduced very quickly. The rate of entrepreneurial invention has been slowed or you

find a pervasive one-sided bargaining being used by a particular firm.

These principles are illustrated in two cases in the end of the essay that are well known. I was just doing them for illustration -- the Cogent-Spring negotiations, for example, which did break down, and where I'm treating Cogent as the entrant and Sprint as the established firm.

And really here there was a competition, a very classic competition policy issue where two firms were providing the same retail service and they were interconnecting and, you know, boy, what a classic situation. And then the, you know, the bargaining between them broke down over paying for a particular co-specialized asset between them to share data.

And consequently, they negotiated, and Sprint gave in on the bargain primarily it seems like their customers were really mad. And so that's an environment where, you know, competition did discipline them.

The other example I used is Comcast and

Bit Torrent, again, a very well-known example, and the basic point is there are to externalities here, arguably even more, first of all there is the obvious one that Comcast has to look after all of its customers, and there's a negative externality within its own systems from one customer to the next, because Bit Torrent takes all the available capacity, and, therefore, reduces the quality of service for other customers on the same loop.

There is another externality here, which is the innovation incentives of the entrepreneurs. Should Comcast have unrestricted rights to change how any application operates on a system. You change the incentives of every present entrepreneur.

In addition, there's been arguably, even an inter-temporal externality here as well, which is all future entrepreneurs might have a different incentive to innovate if they believe they can't deploy their product any longer.

Okay. That was all I had to say. Thank

you.

MR. BAKER: Thank you very much. All right. Marius? Yes.

MR. SCHWARTZ: Okay. Thank you. No picture, but I'll know next time. Thank you for inviting me. It's a pleasure to be here.

To paraphrase, I think at least one of John's questions, should we be thinking about doing something about broadband, and the backdrop behind this kind of question is perceptions by at least some people that broadband Internet access providers have one, substantial market power, and secondly, concerns that they might misuse discretion in pricing or in non-price in terms of access to their networks -- misuse of discretion.

Now this -- these concerns in principle could apply to any place in the Internet value chain. It doesn't have to be confined to broadband, and we should be mindful of that.

And so the first place I'm going to start with is what standards should we think about in deciding whether to even consider intervention,

access intervention, whether it's in broadband or anywhere. Okay.

And my view on that is that you need two preconditions. One is what -- oops. That's okay. One is that there should be clear evidence of a serious competitive failure, and secondly, that there should be a reasonable prospect that regulation will improve things.

And let me take them in turn. The conditional one is a screen, and so you want it for -- and there are two operative words, clear and serious; clear because you can easily mistake certain conduct and say it's a problem when, in fact, it isn't. So there's always a risk of convicting the innocent when you intervene.

So you'd better have some clear evidence that that seemed so obvious I didn't put it on the slide.

The serious is because in any industry there are going to be some warts, some things that somebody complains about. And you want your standard of intervention to be more than just not

everybody's completely happy. If you set it that low, you're really inviting politicking and (inaudible) seeking and just too much of that. So that's my screen. Now the second question, suppose you've met that screen, do you have a reasonable belief, not certainty, but a reasonable belief that regulation can do better. And this is so what I say resisting the Nirvana approach to economic policy. The Nirvana approach says that just because the market is not perfect, don't jump to the conclusion that the government can do better.

As far as I know, the term came from one of my UCLA professors. For those who don't know, at the time, the economics department at UCLA was known because of its laissez-faire leanings as the University of Chicago at Los Angeles.

So -- so, but because today' talk is about broadband, I'm going to look at these conditions in a particular setting of broadband. And I'm going to have three slides on each -- the competition issue and the regulation issue.

Okay. The competition one is short. The interventionist view basically says, look, wire line mass market broadband, and by mass market I mean residential, small business, is a durable duopoly of the local cable company and the local telephone company, the old ILEX.

And I have two responses to this; number one structure that the durable duopoly premise is questionable; and number two conduct and that's maybe just as important. But even the duopoly can exhibit strong rivalry. Whether it does or doesn't is a question for particular industries, and in particular, it's wrong to say oh, duopoly is just one away from monopoly. It is arithmetically, but it's not in any meaningful sense.

Okay. So the first one is broadband a durable duopoly? Now you're sort of flooded with facts and figures, so I'm not going to add much to that. I think you've got as much as you can handle on that front.

But let me just hit some high points.

On the wire line broadband piece, the fixed wire line or land line broadband, it's not purely a duopoly. There's some limited overbuilding, RCN. I say that because they're my provider and I love them. But this is not a paid endorsement.

There's some municipal fiber, but we certainly don't want to overstate that today for sure. Now on the other hand, potentially much more important is wireless competition, and that could come both from fixed wireless, like Clear Wire, which is terrestrial-based, perhaps satellite -- Hughes is an example of that -- as well as probably more important mobile wireless.

Now people will say that look, users face a trade-off in performance. Mobility -- mobile wireless just doesn't give you the bandwidth that the fixed connection does, and that's probably true today. In fact, it is true today.

But it gives you mobility. Now in order for mobile wireless to constrain the behavior of fixed wireless, landline, we don't need all of the

users to view these two things as perfect substitutes; right. We just need to have enough users on the margin that view them as good substitutes.

Now do I claim that today there are enough users that view them as good substitutes? The question is for what purpose. If there was a merger today and you wanted to define an antitrust narrowest product market, I probably would not make the claim that the two broadband landline providers that you would have to add in wireless to get the narrowest market. No.

But on the other hand, if the question is one of longer-term trends -- and I think that's the relevant horizon for thinking about regulation -- then you do want to look a bit ahead and say well, do you think there is good prospect for an off competition in this space.

And there I think it's a lot harder to reject the premise or reject that view that there could well be constraining influence down the road. Okay.

Now a good example of this is the history of cellular telephony, right? It started off as a -- clearly a complement to the fixed wire line, but over time it evolved into a substitute. Now it's certainly true that people were saying any minute now, any minute now, it will be a substitute. And it took longer. But it did eventually get there, and today there's no disagreement that old phone companies are suffering substantial losses of wire lines on the telephony side as people cut the cord.

Now if you then look forward to a universe that includes both fixed and mobile wire -- fixed broadband and mobile broadband -- most users will enjoy at least five or six competitors. So how do I arrive at this calculation?

You've got the local cable company. You've got the local ILEC providing either DSL or, in Verizon's case, FIOS. And then in addition, you have in regions where the ILEC is neither Verizon nor AT&T, you have four independent national mobile wireless providers. All right?

So that brings you up to six.

In regions where the ILEC is either Verizon or AT&T, you have three independent wireless providers. So that's how you come up with either five or six. And that's assuming that you're treating Verizon wireless and wire line as one, and similarly for AT&T.

So five or six is pretty darned good, I would say. Okay.

Let's (inaudible) to conduct. Yeah. Indicators or rivalry.

And I'll just give three that caught my eye. Okay.

One is technology upgrades in response to competitors. So on the land line broadband side, the cable companies reportedly are deploying their DOCSIS 3.0 upgrades first in regions where they are facing competition from either Verizon's FIOS or from AT&T's U-Verse. Okay.

And I've put at the back of my slides some recent references from the trade press on this. It will be very nice to actually try to

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document that more systematically. That's one thing you folks may want to do.

There are lots of examples you can find like that from the mobile space. I won't bother trying to recite them.

The second category of evidence is comparative advertising. Right? On the land line broadband space you have the Comcast versus DSL; right; Comcast with the Slowsky's ads, you know, those turtles that the DSL speed is so slow.

Today you have Verizon touting FIOS against the cable guy; right. That's all competitive advertising. That suggests competition.

On the mobile side, you've got the fastest network versus most the reliable networks -- all these TV campaigns you're familiar with.

Finally, the one that's maybe less obvious is Apple's I-Phone exclusive contract -- in this case, with AT&T -- but they also have exclusive contracts abroad. That's their business model.

And interestingly, I'm not taking a position whether that's a good or bad thing the contract itself. But it is an indicator of competition among wireless providers. And that's because if there was no competition among wireless carriers, then the amount of money Apple can extract from AT&T should be independent of whether it's offering the I-Phone also to Verizon, in which case it makes a lot of sense to offer it to everybody; right?

The fact that they are offering it exclusively at least according to the trade press, Apple is able to command quite a premium because it's playing off AT&T against Verizon. The one who's got the I-Phone is going to be able to steal some customers from the other. And Apple is extracting in the rent from that.

The point being that the I-Phone exclusivity is an indicator of competition among the wireless carriers. Okay.

Now let's turn to regulation. What do I have, John? About six minutes or?

MR. BAKER: Four.

MR. SCHWARTZ: With interest. Okay. Broadband access regulation. I'll go quicker because I think you know that story.

Regulated monopoly paradigm doesn't fit. All right. We know there's a traditional concern in telecom going back to the regulated AT&T (inaudible) world. And that's a price-regulated monopolist in one market can't make much money on the core service; they have an incentive to vertically integrate into adjacent segments, where the faces lighter price regulation, like long distance, like equipment in the case of AT&T; and discriminate against competitors in the segments in terms of access that it grants them to the bottleneck. Fine.

Now in a regulated monopoly setting, Carl teased me today -- he said that I thought you were a regulator, and I said I'm a cautious regulator. In a setting like that, there's a pretty good argument for sometimes for even pretty intrusive regulation.

And the prototypical success story that's touted is the FCC's unbundling of customer premise equipment from the wireline network, right, through the use of standardized jacks and plugs as opposed to hardwiring the phones, not known as the Part 68 rules which was issued in the mid-'70s.

The point is that this paradigm just doesn't fit today's network -- broadband landscape. And for two reasons, one, I see the risk of anti-competitive conduct is being much lower, and, therefore, there's less need for regulation. I also see the prospects for good regulation is being much weaker; that is, regulation will be a whole lot harder. So two last slides on each of these.

Okay. The anti-discrimination risk, I think, is lower for two reasons. One the incentive is weaker. A big part of the incentive, not the only part, but a big part of the incentive for the old band system to discriminate was that they were regulated on the price they could charge

to retail customers.

Now broadband provider are not price-regulated, which means that if there's a richer supply of complements -- applications, content -- that increases the demand for the core service broadband lines, then they can make money on them through expanded sales of broadband lines and utilization, because they're charging a non-regulated price on that. Okay.

So, conversely, discriminating and restricting the supply of independents is going to harm them. Second and probably more important is the weaker ability. Even if for some reason a state monopolist decides I'm going to keep out independents, okay, and Shane pointed out to a concern you don't want to control the stand on the hands of a monopoly. The point is here broadband providers, even if they wanted to, they could not exclude a complementer from the market, okay.

If Comcast doesn't take you, maybe Verizon will take you. The I-Phone example actually fits in here as well. Apple not only can

prosper with access to just a third of the nationwide wireless user base, it actually chose that course; okay.

The second long kind of laundry list -- if we have time, we can come back to this -- is that, you know, putting aside a discrimination issue, the anti-competitive discrimination issue, discretion in pricing or network management may be beneficial, okay.

One concern has been about should we let broadband providers charge applications providers for the right to access end users. Wouldn't that be terrible.

Well, there's some bad aspects, but there's also a good aspect. One predictable consequence of allowing these kinds of charges that follows from the logic of two- sided markets is that if a broadband provider can charge content or application providers who derive their revenue from advertising for the right to access end users, it makes it more attractive for the broadband providers to expand the number of end

users and their utilization, which he then does by cutting the price to them.

A good example of that was AOL's -- okay. I'm at zero, but that's all right. A good example of that was AOL's decision in 2005 to try to switch towards an ad-based model, and to do that it eliminated charges to subscribers, which confirms this kind of story.

Okay. The big point here is it's going to be awfully -- lots of other good reasons for discretion. It's going to be awfully hard to tell them apart, to try to separate the good from the bad, and then in particular it's going to be very hard in this world, because this world is not a world about plugs and jacks. It's a world of much more complicated technology. You have to get into policing internal traffic management, both on wireline and wireless networks. And in the wireless space, you're faced with additional complexity of policing software interfaces, between the network and devices, the network and applications and all of this is going to be a

nightmare in my view.

So my point is I'm more than open to being persuaded, but it seems to me at this point there's serious reason to doubt whether we should be going down the path of regulating this space. Sorry.

MR. BAKER: Thank you. Joseph?

MR. FARRELL: Okay. Are we on? So I should start by saying that what I'm going to say today is my views and analysis and doesn't purport to be that of the FTC, the Chairman, or any commissioner.

When we ask about broadband competition, the first question that comes to my mind is what is broadband exactly. And it's a question that I'd like to urge that we not try too hard to answer.

So as someone who's spent some time both in the antitrust world and in the telecom policy world, I think it's only a slight travesty to say that whereas in antitrust we often do define and indeed spend a lot of effort defining markets, we

try to remain aware, a good antitrust practice tries to remain aware that market boundaries are often somewhat fuzzy.

And I think sometimes in regulatory policy debates there's paradoxically a stronger tendency to act as if the definition was the end of the discussion. And if you do find broadband to be at least 768 kilobits this way and 200 megabits that way, sometimes to forget that there are things near those boundaries are even far the other side of the boundaries that may have some impact.

So, as Marius was explaining, I can't remember whether you actually said this, but this is a retro view, even narrow band may compete somewhat for some consumers. More importantly perhaps, not all broadband services are equally substitutable for all consumers, and one should pay attention to that.

And it's also true that defining broadband for the purpose of subsidy and other public policy programs could turn into an issue.

This is a pervasive issue in universal service programs, and, as usual, the more one can resist giving too much power to a definition, the better off we are.

So, for example, in subsidy targeting, it seems to me there's scope to think about the question instead of giving money to those who build out networks that are defined as broadband, is it an interesting idea to subsidize elsewhere in the value chain, for example, in applications that will raise the demand curve for the kind of Internet access that consumers want, and avoid defining what kind they're supposed to want if they are wanting broadband.

A second area in which there's sometimes a temptation for too stark a dichotomy is in classifying markets as competitive or not competitive. Again, in antitrust, here I think we do -- antitrusters -- do better on this. It's rare in antitrust, I think, for someone to ask, "Well, is this market competitive or monopolized?"

And in telecom policy, perhaps partly

because of the history of regulated natural monopoly, where in some specific sectors, as in customer premises equipment, there was a conscious and explicit decision that this sector is going to be competitive while the rest remains a regulated monopoly. I think there's sometimes a temptation to go too far in the direction of saying this one is competitive, this one is a monopoly.

Obviously -- it seems to me obvious -- broadband Internet access, whatever that is exactly, is not exactly a monopoly and is not exactly competitive, and it's somewhere in between. And we're very accustomed to dealing with that and competition policy, and I know people in telecom policy are too, but sometimes that gets a little forgotten in some of the debate.

So if the question is not is it competitive or is it monopolized, but is how can competitive is it, and what do you do with that information, that gets a little closer to the kinds of considerations that Marius was talking

about. And I'd like to just focus on two or three aspects of that.

The first is, it seems to me, when you ask is there enough competition as opposed to will competition be enhanced or reduced by this merger or something like that, you do need to ask in more detail what question are you asking. So Marius made the case -- and I think it's a very credible case -- that it would be fraught with risks, probably unwise, to decide there's little enough competition in broadband Internet access that price regulation would be a good idea. All right.

And that's for two interrelated reasons, I think; I'm not sure if I'm paraphrasing Marius or saying something a little different. One is although it's far from perfect competition, there's a reasonable amount of competition in at least many markets, and so you probably wouldn't gain all that much by way of lower prices for consumers.

And secondly, we do know that when you do price regulation, you change the incentives for

quality improvement and it's likely that that would be an adverse effect, and you'd want to worry about that because quality, including aspects of network management, is an important competitive dimension or a consumer dimension here.

So that brings me on to the much more vexed topic of vertical regulation, and in particular issues along the lines of what's known as net neutrality. And Marius mentioned and described briefly the, I think, generic argument for vertical laissez-faire, which is essentially if a provider does something by way of vertical relationships with applications provider or network management strategies that, on the one hand, contributes an additional profit flow or saves it costs or something like that, but, on the other hand, is at some -- in some sense anti-consumer, the incentives reflect both of those effects; and in citified settings, reflect them in reflect them in an efficient way.

So as we know, Marius mentioned one of

these -- of the issues that Phil Wiser and I in a paper five years ago or so described as exceptions to this principle of internalizing complementary efficiencies and that was the regulated platform price, regulated bottleneck.

I think another one that is also potentially very important is consumer information. So in order for the demand curve to shift up in response to a quality improvement, consumers have to know about that quality improvement. And in order for a demand curve to shift down in response to a restrictive network management practice, consumers have to know about it.

Disclosure is not always appealing to those who are doing the marketing. And even if it's appealing, it's not an easy thing to do. And at the Federal Trade Commission, we spend a lot of time worrying about disclosure. It's not just a simple answer to all of these problems. Let me just give you a couple of the many ways in which disclosure is not straightforward.

One fact is consumers' attention to disclosures is limited. Not everything can be prominently disclosed. If it is, prominently ceases to be prominently.

So if everything is in 14 point type, it really doesn't help. Okay?

So if you have a firm with complex vertical relationships and network management structures and a complex consumer contract in other ways for that matter, if you say everything has to be prominently disclosed that doesn't work. So what is it exactly that has to be prominently disclosed and how do you enforce that?

And that relates to a second point, which is for lawyers to analyze was it in the disclosures is relevant and a sensible thing to do, but it doesn't really answer the economic question of whether the demand curve has shifted as it would be if consumers had the information up front and central in their heads.

And so disclosure policy needs to be more reality-based and more thoughtful than just

asking well, is it in the fine print. Is it in the contract that you could have read, but probably didn't?

So there's a real challenge in complex markets. On the one hand, one would like to allow for experimentation and flexible vertical relationships and network management policies and so on. On the other hand, to the extent that decisions may be let's say facially anti-consumer and you're relying on the customer demand response to discipline firms' choices of those things, you need to have an effective mechanism of disclosure. And that's not a very simple thing to do.

Let me just mention one more issue that doesn't usually come up in this area, but the FCC is a natural place to talk about it, terminating access.

So, as many of you know, this is a problem that's been important in telecom policy for decades, and it arises if you allow a broadband or other Internet access provider to charge applications providers for access to its

customers.

And essentially the point is that that charge in certain circumstances -- and it depends how the pricing is done and whether things get averaged out; but in the old long distance world, they did, and one could readily imagine that in Internet access world where it was allowed they would be also -- that charge may end up being paid only to a small extent, and this is especially true if there is excess competition -- only to a small extent by the access provider's own customers to a significant extent by its rival's customers.

And that creates competitive and price setting problems. There's a, I think, piquant or interesting, thought-provoking contrast in attitudes to this kind of thing, which was very lively, and it took me quite a while to understand this fully, but this was very lively when I was here -- actually, it wasn't here; it was 1919 M Street in 1996-97 -- because the terminating access issue looks very different depending on

whether you're oriented to competition policy or to traditional regulation.

And it's the same feature of terminating access that makes it suspicious from a competition policy point of view; that is, the charge is largely paid not by the firm -- not by the customers of the firm that imposes it, but by customers of other firms, in many cases, this firm's rival. That makes it very worrying, I think, from a competition policy point of view.

On the other hand, this also implies that demand for the firm's product is highly inelastic with respect to this charge. That makes it a goldmine for Ramsey pricing, and if you're a traditional regulator who wants to allow the firm to cover its costs by imposing charges that won't seriously affect the demand for its product, it's party time.

So it seems to me that over the last 15 years or so, there has been a big shift away from the latter attitude and towards the former attitude. So my main point, which I hope has come

through, is that there are actually a lot of subtleties in this area. I don't think it's helpful actually to try to decide is the broadband market competitive yes or no, although a lot of the stuff that you would end up debating if you tried to debate things on those terms could be given a more helpful interpretation. Thank you.

MR. BAKER: Joe mentioned having been at M Street. I ought to explain that about a dozen years ago, I had Joe's current job and Joe had my current job. We've swapped positions. So that's another fun thing about having Joe here today.

Let's talk to -- hear from Carl next.

MR. SHAPIRO: Well, unlike John and Joe, who have each gotten promotions apparently, I'm back in the same job that I was in 13, 14 years ago. So, well.

But as a representative of the Justice Department, I'm delighted to be here, and particularly with Joe here, Joe Farrell at my side, since we are colleagues back in Berkeley and co-authors, it's particularly easy to find harmony

with the FTC on some of the competition issues that will come up.

Now I'm not a telecom jock, unlike Joe, for example. But the Justice Department has a great deal of experience in this area, so we're, you know, very much looking forward to engaging in ongoing dialogue with the FCC on these and related issues.

You know the Antitrust Division, you know, has quite -- has played quite a role historically going back from the AT&T breakup, modified final judgment, the implementation of the '96 Act, and then various significant mergers more recently in the industry, including AT&T, SBC, Verizon, MCI, and others before that.

So at a general level, talking just coming from that antitrust perspective into this set of questions about broadband, it strikes me -- you know, there's some references that points to, you know, we want to define the market, which, of course, is a familiar concept in antitrust -- you want to define what broadband is. I would just

issue a preliminary warning about doing that and often people use our horizontal merger guidelines, which are all about whether the product -- whether a price increase could be profitable.

I would just note that in this area where there's new technology coming, and potentially, we hope, additional competition from wireless, the question in terms of exclusionary conduct or potentially horizontal mergers would be whether it would prevent the prices from falling.

Okay. Prices have been falling, so I just -- we should just avoid possible confusion there. Okay. I can't leave without waving in front of you the Antitrust Division's report from a year ago, Video -- excuse me, "Voice, Video, and Broadband: The Changing Competitive Landscape and its Impact for Consumers."

Now unfortunately, when you publish a report that has changing in the title, it quickly becomes out of date. So it's -- so, you know, that's part of the Division's more recent role here.

Let me -- at the risk of being slightly pedantic, I guess, go through some of the what I see as preliminaries or context in just a couple minutes to think about as we think about competition in broadband.

And I'm going to focus -- really think about what I think maybe Marius called the mass market, really think more about mass market, which I think of consumers and small businesses, basically mostly households.

So and these -- so, for one thing, you know, as used in virtually everything else in the information technology sector, along with a set of complementary products, okay -- computers, skills, applications that come on -- devices, okay, in conjunction with the access itself.

So if you were talking about measuring adoption rates, you really got to track the presence of those comp -- or absence of those complementary inputs.

Broadband is a moving target. Okay. And so I would just echo what we've already heard:

Defining it in a certain way as, you know, one to three megabits per second -- you know, whatever, you know, that's very static by nature, okay. It creates artificial boundaries, particularly given the need to look ahead. It's much more congenial I think to -- and that -- to do what the Commission is doing I think, which is to track usage and availability across the different bands and then see how that moves.

I mean I come at this thinking much more like product lifecycles and how things move. And then you can ask questions like well, are the adoption rates of faster speeds of broadband being delayed because of affordability or deployment or lack of competition rather than taking snapshots, which is not as informative.

And, of course, when we get to thinking about product market definition or competition, you know, it's going to depend a lot on the applications that are used by a particular consumer. I found it quite interesting in the recent -- and I guess I'll call it -- I don't know

what you guys call it -- but this -- the big slide deck that was released a week or so ago by the Commission. Very interesting that it seemed from that that there was little need for speeds above five megabits per second unless you were going to do high-definition video streaming.

So that suggests for a lot of applications, maybe holding aside some high-end corporate type of things or a very special the sort of one, two to four megabits per second is where sort of the action, if you wanted to think about consumer demand and choices there.

But that is going to move over time. I think we've already heard products are significantly differentiated. It seem -- a vertically differentiated in some sense with these different speeds.

So it seems quite natural to think about if there's two providers or even let's say one who can provide the fastest speeds -- I mean there's some evidence again in your status report that in for many households only one provider can provide

the higher speeds. I presume that's going to be cable, you know, as opposed to DSL. So one provider at the high end, two in the sort of the mid-range -- let's say that's the DSL or the second wireline -- and then three or four or more at slightly lower speeds -- let's say wireless.

So then you're into some interesting questions about if you have competition at the lower end that pulls down the prices there how much does that indirectly, through chain of substitutes arguments, pull down the prices higher up. Okay.

And because -- and with tracking this information hopefully on a pretty detailed basis, adoption of different plans and speeds and the terms and conditions there, you could hopefully identify that degree of substitution.

Okay. That seems to me pretty important. But I really want to strongly echo, repeat, what Joe said and I think others too is to say the market is competitive or not competitive, you know it's a natural language for people to

fall into, particularly if you're coming from a regulatory history where you say if the market's not competitive, we have to do something. If it is competitive, we can stay out.

Well, you know, I'm more inclined to think well, competition it's not dichotomy. It's not yes or no. And then, you know, when you get to policy levers, you know, if particularly if we're not talking about price regulation, if we're talking about some other things like I'll get to spectrum availability, then you don't need to be driven -- you know, the question is how much more competition can you bring. What would be the benefits of more spectrum, not whether the market is or is not classified as competitive to begin with. Okay.

Okay. All right. We all know this -- conditions vary by locale, so if were to talk in terms of relevant antitrust markets, we would be looking at consumers in different areas as affected differently. That's pretty standard.

Okay. So then that's kind of setting

the stage, I guess. So let's look ahead to the current and future competition and the market structures and how they vary in different locales.

Everything I see and read suggests it's not very likely that we'll see, and I think your own materials indicate, that we'll see more than two wireline providers in a lot of areas, okay, just because of the (inaudible) costs, although, you know, they obviously can -- there's decisions to be made how much they build out those networks and what sort of capacity they build and so forth.

So when we think about how much more competition -- places to look for more competition, we pretty quickly go to the wireless, okay, wireless area.

So now there's what seems to me is these, you know, somewhat technical questions about what the capabilities will be of wireless providers over time. Clear Wire, you know, is an important example. We have to watch and see, you know, how much their service will be adopted, and we could look for some of the same indicia of

competition there, for example, that Marius points to among the wireline guys in terms of comparative advertising. Of course, ultimately consumers shifting around, okay, price responses -- those sort of things.

I think it's premature to really predict exactly how that's going to play out, okay. So there's some encouraging early developments, but it's still early days.

We certainly do have -- I think where we come from in the Antitrust Division is saying if we normally think well, two is a lot better than one, okay, but three is better than two. We like bigger numbers, I guess what it comes down to.

So, but, you know, that's somewhat doctrinal I guess you could say, but, you know, it's evidence-based. So, you know, we know from the cell phone experience -- it's already been alluded to -- there were significant benefits of going from two to three and four. Okay.

We know indirect broadcast satellites came in and, you know, came after -- competed for

cable, basically MVPD. That seemed to have triggered due to cable, okay.

And often the benefits of these added players is not necessarily in terms of price, but it could be in terms of innovation. I think this echoes actually Shane's point about experimentation and diversity as being an important driver of consumer benefits.

So even if we postulate that wireless will never reach the speeds of the wireline guys, okay, that there are a bunch of consumers that won't substitute for, it could still inject significant competition into the market; and, of course, having the advantage of the mobility as well.

And that relates back after two Judy's point about they're going to be sold in packages and, you know, that can get pretty complicated, but there are basically different competitive advantages to different players, including some of the wireless players, who can then offer services and packages that are attractive.

Okay. It is a little bit worrisome that if it's true, as your report says -- this is slide 135 -- 50 to 80 percent of homes may get speeds they need from only one provider.

So, you know, I came -- before I read that, I thought, oh good, we can talk about two and then going from two to a little more, and I'm like whoa, we got to pull back. You know, maybe there's only one.

So I'm interested in learning more about what's behind that statement, you know, to what extent that's true, how many marginal consumers there are so that we can still get some competition; that is, what are the speeds that are being referred to there really and what timeframe and how much competition do we get even in those speed ranges -- discipline of pricing let's say or incentive to improve products in those speed range because we have more competition a little bit lower down on the speed dimension.

Now that's -- as I already alluded to this before, this seemed to me very heavy duty

empirical question, I guess, you know, in the sense that my understanding is these -- the different carriers offering different packages and plans and so there's a possibility of price discrimination against the consumers who need these the most -- of the most demanding needs, but then we have the question about, you know, how much can you engage in that price discrimination through product lines, and that's just -- that's an empirical question. Okay.

In terms of policy levers, you know, just for the same reason I don't like to just say the market's competitive or not, or there are entry barriers or there are not, you know, I go well, what decisions you can really base on it, you know, and how does that help us.

So what are the decisions here? Well, one important decision is what can the FCC or anybody due to introduce more competition into the market, whatever we think of it, because it's not, you know, we all know it's not going to be to model perfect competition. There's big economies

of scale.

So what can we do, and spectrum is one we really want to emphasize and encourage the Commission to do -- to move forward where it can, to make available more spectrum for these broadband services. I mean I certainly sense in your own materials a lot of that same view; that there's rather strong language about demand for these wireless services. It's going up rapidly. It takes a long time to get spectrum online. There are obstacles. It's really needed.

So this seems -- and it seems almost urgent in the sense if it takes years to free up new -- to identify, free up, and make available, put into use new spectrum, there's no time to spare, looking at your own charts on how the demand is growing, you know, 150 percent a year, something like that, more than doubling year over year.

And my understanding even, you know, AT&T in particular with the I-Phone, for example, has already apparently in at least in urban areas

running into limitations, and they surely would be a limitation for others who'd want to provide more direct competition with wireline broadband.

So there's a lot of issues behind that about, you know, where would you find the spectrum, what do you do, you know, the process of making it available.

There's also the competition policy question about if you have spectrum to allocate, what do you do to let's say make sure it's used in the most valuable way. Okay.

And part of the most valuable way is by injecting more competition into the market. So I think a good way to think about this is in terms of foreclosure value and use value for spectrum, and you want the spectrum to be put into the highest use value. I'm thinking of some type of auction now implicitly.

But incumbents may have some foreclosure value as well, and so care needs to be taken to set up these rules to try to direct -- while, of course, there are many benefits of auctions in

terms of putting the spectrum in the highest value hands, it's not so straightforward when you've got significant market power. Okay.

And so that's something that requires more -- may require some careful study and rules in terms of ultimately auctioning off the spectrum.

The other area, transparency, I think Joe's covered it some. I think -- one can think of improving the quality of competition through improved information, even if one doesn't increase the number of players or even -- we think there might be -- hopefully, there would be some impact on the offerings, and, you know, the real danger are features that are not salient, but actually matter a lot to people and can affect profit significantly, and where the incentives are not well aligned.

So, you know, one of the obvious ones is just the distinction between advertised and actual speeds. Okay. And that's noted in your materials as well.

Okay. The -- I'll leave it there, I guess, with one last point. The -- you know, we then slide into let's say heavier duty forms of regulation, such as Marius' warning us not actually against but to be cautious about, let's say, and that seems -- those points seem very well taken. You know, I think a big issue here given the Congressional desire to increase the adoption and availability and affordability of broadband we naturally want to ask well, if affordability is significantly slowing adoption, at least among certain groups of consumers, what do we want to do about that to achieve these national goals.

You know, subsidies would be one way to go. Another way to go would be to do something to try -- more in the competition sphere to try to increase affordability, and it strikes me as the evidence is somewhat mixed right now in terms of how much affordability is limiting adoption versus other missing components to go back to the information ecosystem, if you will, that people don't have the skills. They don't appreciate the

value that broadband can give or it could be disabilities.

You know, there's a number of things that are mentioned, but to the extent it really is affordability, then we need to look for ways to increase adoption there because deployment is nice, but adoption is ultimately what drives benefits, and that's where we would get to these regulatory questions. Thanks.

MR. BAKER: Thank you. That was terrific, all of you. I'd like to take a few minutes and see if any of the panelists like to comment on anything they've heard before. Why don't I just start here and see if, Judy, do you have anything you'd like to add having heard the others or?

MS. CHEVALIER: I guess I'll make one point about this disclosure issue that Joe raised. You know, so, I agree that, you know, we often, you know, that economists have finally gotten themselves used to thinking about things like consumers having limited attention spans and

limited cognitive capacity to, you know, process all of this information.

But I guess I'm still a little more optimistic about the role that disclosure could -- disclosure of network management practices, for example, could claim consumer decision-making because, you know, I think just like, you know, we all think that, you know, we need some consumers to view two products as substitute for a market to be competitive, I don't think we all have to read the disclosure statement, right? But we need some consumer to read it on -- the disclosure statement and write a long blog post about, you know, how outrageous it is that Comcast is doing this for, you know, for consumers to, you know, become aware of things.

And so, I guess I'm just a little more optimistic that, I mean, you know, there are situations actually where disclosure, you know, you can think of situations in which disclosure might be problematic, but, you know, I actually am kind of optimistic that even fine print disclosure

of network management practices could, even though most consumers are going to ignore it, and actually most consumers don't care probably about those practices, but that the consumers who care about those practices are going to, you know, process that information seems to me, you know, as something that could be potentially beneficial to the market. So.

MR. BAKER: Okay. Thank you. Shane?

MR. GREENSTEIN: Yeah. I'd like to focus -- listening to everyone rather than my planned remarks, I would say there were a couple of open questions that showed up, and I just want to highlight them.

First, I think it is an open question whether two is enough, and that's an open question and, to be honest, we think it's better than one. I think we're all in agreement on that. But there is not agreement about whether that's enough, and I'd like to just to highlight that there is a popular view that prices are too high.

And I'm no fan of price regulation

either. But we should at least take acknowledge that that's a popular concern, and, you know, it's -- to be realistic, it's a real concern when $500 a year per to a cable firm, and the variable costs don't justify it.

And there's just -- you just can't find maintenance expenses that justify anything like $500. I think in a bigger Breznehan model you would estimate under differentiated competition, which is what we have here, that you've got market power because price is well above variable expense.

There's large fixed costs. We all recognize that. So it's a comp -- you know, we're not going to jump to a conclusion that it's necessarily a bad thing either. But I think it's an open question.

Another open question, which I really want to highlight, is the role of entrepreneurs. Just because we have interdependence here by itself that's not sufficient to say that we on the market-wide level have a good situation if

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entrepreneurs don't have an easy time getting in and they have new ideas and we don't have a structure that makes it easy for them to do what they could do under some settings and not others.

And again, I'd also like to raise the open question about the difference between potential and actual competition. I mean I want to put it that way because that -- we all recognize poten -- there's potential wireline, wireless competition in a differentiated world, but what it actually is going to be five years from now, none of us know. And it's an interesting and it's an interesting open question to look at.

Finally, I guess I'd have to say, you know, again, we're all in agreement that the old regulatory paradigm doesn't work. But necessarily that sort of takes you in two directions. It takes you towards either, well, either you don't do anything or you do something very thoughtful. And so it doesn't really, you know, leaves you with this open question.

And I just again want to highlight that and in particular I want to be very specific about disclosure. Disclosure to consumers isn't the only thing here. Disclosure to business partner to business partner is incredibly important in the Internet value chain today. In some parts of the Internet, it's high participation and open disclosure. And in other parts there's very little disclosure at all.

And there is an open question about whether there's a regulatory role for intervening to force disclosure business partner to business partner. You know, there's a consumer question as well. I'm not dismissing it. I'm just highlighting, you know, there's this open question. I don't know the right answer either, but I think we have to recognize it's there. Okay.

MR. BAKER: Marius?

MR. SCHWARTZ: So let me agree with Shane that we don't know the answer. I need dissent.

And a couple of quick comments.

MR. BAKER: That's my job.

MR. SCHWARTZ: A couple of quick comments -- one picking up on a point that I think Carl made and the other one on the disclosure issue.

On the issue of two versus three, I think most of us as competition folks would say three is better than two, presumptively. But the particular example of the cell phone, I think there's a difference between the world where you have two and it's known to remain two -- it's blockaded by law or by franchises or by spectrum limits -- versus in a world where you have -- so I would put the old cellular duopoly in that box, and B.T. Mercury in the U.K. in that box -- versus a world where there are two, but there may be more coming.

And I think that I worry much more about duopoly in a case where you know you're stuck with two than a world where it's not protected duopoly.

The -- so, you know, I certainly think

there are benefits from having a third, but I worry a little less about the two in a world where it's not blockaded -- stuck to two.

The other point is on the disclosure point, this is David Clark, one of the prominent scientists in the Internet, made some nice remarks to the recent TPRC a few days ago when the disclosure question was posed to him, and he says, "Look. Number one, if you actually want to know -- if I'm a network, I have to convince you -- explain to you exactly to you what I did, that's going to be terabytes upon terabytes of information." He calculated in his head what it would be. I can't do that. But it was huge.

The second point is well, why might I not want to do that. Well, imagine that my business model is to tell people, look I'm going to manage my network so that on average, you're going to be happier with the way all of your applications work than you will on the other guy's network. Now I'm not going to tell you how I do it, because that's my secret sauce; right.

So what I'm going to tell you is trust me. I'm going to take care of you. You don't want to go to the other guy, but I'm not going to tell you how I do it.

Now this, I think, that argument is an interesting one, and it speaks a little bit also to Shane's point about disclosure being important not only vis-à-vis consumers, but vis-à-vis business partners.

If I have to explain to everybody here is how I do things there's a lot of issues about spillage of competitively sensitive information. That's all I have to say.

MR. BAKER: Okay. Joe, anything to add?

MR. FARRELL: Well, just to pick up on a couple of points that Marius mentioned. Yeah, I mean obviously one doesn't want -- this is the point about the consumers' attention budget that I made -- one doesn't want a vast data dump on the consumer, and it doesn't achieve the disclosure goals.

So disclosure of sufficient statistics

is kind of the goal. But then, of course, who decides what's sufficient and how you disclose those. So that then becomes the disclosure question.

In terms of the three to two with anticipated entry, I'm not entirely sure. I mean I think with the cellular or PCS episode, there were dramatic price changes even though it had been known for years that PCS was coming, and so it doesn't -- I don't think always works that way, but it could potentially.

MR. BAKER: You have anymore, Carl?

MR. SHAPIRO: Let me say a little more about the two versus three issue. It's compelling, I guess. So one question is two enough so that we don't need to get into old-style scary regulation. Okay. And I think, you know, and I've heard certainly Marius saying well, probably it is, because old-style scary regulation is scary. Okay. So that's one.

On the other hand, that, of course, is a completely different question than could we get

significant benefits if we had the third instead of two -- a completely separate question, okay. And the answer to those both might be yes. Okay.

The -- and that's one reason that I spent the time on spectrum because that seems to be the most promising way to get a third or make a third player or even a fourth player stronger -- so as a matter of actual policy levers, okay. And we do spend a lot of our time, you know, looking at industries where there's two, three, four, five players, and, you know, we're looking at a merger and reducing that. So, you know, some of them look like this, and some of them look like other industries, but we generally see a lot of benefits of three versus two, okay, and, you know, for that matter, we don't like exclusionary conduct that keeps out the disruptive entrant who might be three.

At the same time, I want to I think agree and echo what Shane said. You know, if one -- if you look at the prices, and I don't know what the variable costs are, you know. If you're

talking about the variable costs of serving one customer over a period of months or something, you know, that sort of time scale and I would think that it would be pretty small. You mentioned service, support, okay. So and that's not an unreasonable measure of marginal or incremental costs for various purposes.

So, sure, the margin is going to be very big, okay. So I like to talk in terms of technical market power, okay, which is price cost margins of some measure, okay. So that's pretty high there with that cost measure.

And the reason I say technical is because market power, you know, then that gets lawyers excited, okay. And it has, you know, and for good reason it has a lot of meaning in antitrust and other areas. So there's clearly technical market power, okay, but it doesn't mean there's monopoly power in a legal sense, you know, and all sorts of other things.

So at the same -- but I have to say I don't think we should be indifferent to the fact

-- we have to let's say recognize that that technical market power is a necessary feature given all the fixed costs that are necessary in this business. So I would -- how -- you couldn't expect a competitive price, whatever that would mean, to be at this low incremental cost. That wouldn't be sustainable in terms of getting competitive rates of return on investment.

So that's why technical market power may be, you know, a "competitive" price in terms of competitive rates of return on investment.

So you just have to be cautious they are about making too much of that margin. Okay.

Now if there were a merger and that was going to increase those margins a lot for the investments that have already been made, I would say well, that could be a significant reduction in competition for that question. Okay. But, you know, that's not to say we expect the market to drive prices down to those incremental costs.

MR. BAKER: Okay. I don't think Shane said otherwise, if he's talking about fixed costs

had to be covered, too.

MR. SHAPIRO: Right. But the question then is if -- it's fine. Suppose we thought the incremental cost was $10 and we see a price of $50. So what do we make of that, okay? What are we going to do about that? And if that -- if $50 is not affordable for a bunch of people, where do you go? That's all.

MR. BAKER: Sure. I think maybe I'll give the mic to my colleague, Scott, here for a few minutes to see if he has some questions.

MR. WALLSTEN: Right. So --

MR. BAKER: Either have your own or from the audience.

MR. WALLSTEN: -- right. We have -- and we have both.

So when you're answering, when you're thinking about this, when you're answering these questions, you know, it might be nice to just assume hypothetically that somebody had asked you to write something by some deadline, like, say, February 17th, and you had to have answers to some

of these questions. Or maybe, you know, how specifically you might pose those questions in, if you were writing such a plan, how you'd go forward with it.

There wasn't much talk about barriers to entry specifically except spectrum and a little bit about exclusionary behavior. Do any of you have thoughts on whether there might be particular barriers to entry other than spectrum that may have to do with perhaps bundling or tying that prevent potentially more competition and again other than the very high fixed costs inherent with this?

MS. CHEVALIER: So when you -- can you just clarify? When you say more competition, do you mean, say -- you don't mean more pipes into the house? You mean?

MR. WALLSTEN: So it could mean anything. I mean the think the discussion was absolutely correct that it's hard to say, you know, it's hard to define, to say whether or not it is competitive, but things are imperfect

substitutes for each other and wireless -- there's going to be some degree of substitution between wireline and wireless for consumers for some applications.

So it could be entry into, you know, any aspect of that.

MR. SCHWARTZ: I don't know about it, but this is more of a question to you, (inaudible). You asked a question, and I'll give you question, but hopefully with some content, which is there anything you can do to reduce switching costs? You know, I mean people talk about at least the residential broadband being a sticky service because at least from my experience if I think about switching my provider, oh, my. It's a headache.

Now people do switch. But I'm wondering have you guys looked at some things you might do to reduce switching costs, because that would be a barrier, right?

MR. WALLSTEN: Mm-hmm. Okay. Absolutely. That's good.

MR. SHAPIRO: Well, Judy, I'm surprised you didn't talk about bundling.

MS. CHEVALIER: Well, when I was asking what kind of competition, I was implicitly saying if we're not talking about the pipes, then we're talking about -- then we must be talking about competitors like, you know, voice over IP providers -- you know, like Skype or Vonage or something like that, and I do think that there's going to be situations in which, you know, a consumer would have to value whatever is different about those services pretty substantially for those services to look attractive given that the incumbents have the ability to move their margin around the different products that they're offering. So, I don't know the answer.

MR. SHAPIRO: Yeah. I would just pick up on that in a slightly more general or theoretical way I guess and say to the extent people want to enter with point solutions, you know, with smaller product offerings, less complete product offerings than the incumbents

have, it can be tricky because of exactly what Judy said. The incumbent can respond on that dimension and not necessarily change the overall package.

Now, you know, that's -- then you have to get into the whole term barrier to entry, right? I mean it's a barrier to entry to have a really good product -- for the incumbent to have a really good product. So is that low prices? Is that -- so I don't mean to be suggesting that's anti-competitive, okay, but they can make entry hard.

MR. GREENSTEIN: There is -- I mean I could be really -- there is a part of the software world right now peer-to-peer, you know, that's following on the lessons they've learned by watching some of the less savory parts of peer-to-peer, shall we say.

And that's legal. Uses of peer-to -- peer that is concerned about what regulatory rules -- it is a lever you guys do have to have control over -- are going to be in place going forward.

And they will design different kinds of software depending on what different kinds of network management rules are in place. And their behavior will change if, you know, if those rules, as sometimes happens, end up in regulatory ping-pong between the courts and the agency for the next eight years that will also affect their behavior a lot, too.

So it's not exactly a barrier to entry and Carl's remarks are correct. You know, it's -- but it is a cost and a piece of uncertainty that one part of the software world is paying very close attention to.

MR. FARRELL: So I wanted to say a couple of things about barriers to entry. First of all, it's been my experience as someone whose career has revolved around trying to think about stuff that you think better when you minimize abstract nouns and maximize active verbs. And so rather than asking what is a barrier to entry, ask if things aren't going well, will someone enter.

And I think that can sometimes help. Of

course, you know, it's still a complicated question. Broadband over power -- broadband over power lines is one technology that people sometimes have been excited about, and it's one where I understand there are, in some cases, regulatory and institutional issues with somebody trying to offer that.

Municipal broadband systems is another area where I'm not going to opine on what the right answer is, but whatever it is competition advocacy might want to push for it.

MR. WALLSTEN: Shane, I mean you've talked about a network of platforms and the need to have a sort of a constant flow of experiments and innovation, and, I mean that was part of a healthy ecosystem; and there was one point in your slide -- which one of your slides which you didn't say but that was really hard to figure out how to measure that.

And so I wonder. So two questions about it. One how might we actually think about this -- begin to think about measuring it? And the second

one is are there bad experiments. I mean can a -- when a firm with market power experiments, how can you know whether the outcome from that is going to be good or bad and how do you?

MR. GREENSTEIN: Oh, yeah. As we have two of the deepest thinkers on platforms and, you know, sitting right over here, I'm almost hesitant to even address the question.

You know, yeah. It's hard to measure. And the second thing is even though I can't do it now, but there's other examples in the paper. I deliberately took them from the Microsoft antitrust case, just because they're well established and well documented.

But there -- and, you know, the Comcast example is a pretty good one. You know, they were not transparent about what they were doing. They didn't let anybody know. They just went ahead and experimented. It negatively affected lots of other players in the market. It might even negatively affect them far into the future.

That looks like a negative experiment to

me. For example, say, you know, I think it's much more harder to use one that the Commission got involved in AOL's cutting off interconnection on instant messaging; right? That one's harder because there's a positive side to that, which is continuity and quality. And there's a negative side to that, which is reducing the number of participants. And then there were -- right -- there was -- and that is a difficult one, and whether it was a negative or positive and they had to think that one through.

So to be fair, yeah, it is hard. I wouldn't want to be arguing, yeah, let's move in with, you know, with no caution whatsoever. Gosh, no. That's a bad recipe.

MR. FARRELL: So let me just follow up on -- partly on what Shane just said and partly what he said earlier, which I meant to comment on earlier and didn't. We do know that the incentives in platform management, particularly imperfectly competitive platform management, are pretty hard to model and not that easy to

understand, and in many cases understood differently by different experts and possibly understood differently by different business people.

And so that's an argument I think -- although we always ought to pay a lot of attention to our best thoughts and calculations about what a firm's incentives are going to be, it's also an argument I think for retaining a sense of the uncertainty and those calculations, and where does that take you from a policy point of view?

I think it tends to take you in the direction of saying there's an additional biodiversity benefit to having more platforms that is not captured in the does competition constrain pricing or does it provide salutary incentives for network management.

How you go forward with that beyond just saying this is an additional reason to want more competition, of course, is tricky, but I think it's important to keep that in mind and especially for something that we've perhaps decided is an

especially important industry for consumers going forward.

MR. WALLSTEN: So we'll ask some questions from the audience and that came online. First, how does it affect the analysis when a single company owns multiple -- more than one platform? So though if Verizon is the wireline and the main wireless provider, for example, how does that affect how you think about the degree of competition between the two?

MR. SCHWARTZ: Is that to me, Scott.

MR. WALLSTEN: You spoke about it most directly, so.

MR. SCHWARTZ: Yeah, well, actually I took a conservative approach by saying even if you assume that Verizon wireless and wireline and you treat them as one, you still would get five competitors in the universe fixed and wireless combined; right?

There's an argument to be said -- to be made that maybe you should think of Verizon wireless and wireline as more than one, like maybe

one and half, not two, but -- and that's because at least in the wireless plans that price based on a national basis and so they may not be able to tailor their pricing to completely internalize any negative competitive effects that they might -- and cannibalizations that they may have away from their broadband wire line.

So I'm kind of agnostic on that, but I took the conservative approach of saying even if you treat them as one, you still have five players.

MR. FARRELL: I think we should not assume that a firm is going to compete with itself. And so where a single firm owns multiple platforms, I think the right treatment is to treat it as one competitor, not as two.

It's conceivable that sometimes a firm will have its divisions compete with one another. It's conceivable that the nationwide pricing thing would kind of force them into competing with each other, although I don't think so actually. I think what you would find is that instead of

having a lot of competition in some places and less in others, you'd have it kind of averaged.

But I would say very firmly that we can't assume as a basis for policy that a firm is at all likely to compete with itself.

MR. SHAPIRO: I feel an institutional obligation to agree vigorously with Joe. I feel a personal obligation as well. The other way -- even if one says, fine, they don't -- it's just one. We're not going to say that -- go to this one and half business. It does come up if you had newer spectrum, okay, because now you'd have this issue, well, Verizon wireless might have some very good use for the spectrum, and yet we would in some ways like to make it available -- put it in the hands of somebody who'd compete against their wireline broadband.

And that gets into these use and foreclosure value tensions that I mentioned earlier.

MR. FARRELL: Yeah, and let me just come back on that a little bit. I think it's

economically implausible and a mistake as a policy matter to assume that a firm will compete itself, but if a firm gets more spectrum or more capacity, that doesn't necessarily mean that it won't use it. Right, so we can take into account the beneficial effects of a single firm getting more capacity without judging that it was, therefore, competing with itself.

MR. SCHWARTZ: Just in case it wasn't clear, I wasn't claiming that firms always compete with themselves.

MS. CHEVALIER: I do think, you know, something -- there's been like this grade inflation in this conversation I feel like, and now we're talking about numbers like five or four. And, you know, I mean I think and, you know, and wireless, you know, is potential competition for wireline, but it's -- but for I think the short run, it's a pretty imperfect competitor for wireline Internet access, and I think, you know, people are talking about three versus two. Well, you know, there's a lot of people who I think, you

know, we're all urbans here, right, but, you know, I think there's a lot of people for whom one is, you know, what they're looking at.

So, you know, I just think we -- you know, when we think about the set of consumers out there and what, you know, again, Carl mentioned this as a local market, and you really, you know, I think you really have to take that seriously when you think about this, because, you know, you asked about, you know, what should we be focusing on for policy issues. You know, I think a kind of interesting question is, you know, is it the four -- is it getting from four to five in the markets where, you know, that's relevant or, you know, or is it, you know, one to two in places where that's relevant.

So I do think, you know, you kind of want to -- I mean I would, you know, calm down a little bit about the wireless, because I, you know, I -- and power line, you know, I'll never in my lifetime is that going to happen.

So --

MR. SCHWARTZ: You had the courage to bring that up.

MS. CHEVALIER: -- I know. I'm amazed you had the courage to bring that up, too. So and, you know, I think it got a --

MR. FARRELL: The third rail or the third wire.

MS. CHEVALIER: -- yeah, exactly. So, you know, I --

MR. WALLSTEN: It's never live, so it doesn't happen.

MS. CHEVALIER: -- yeah. So, I mean we should be so lucky to be able to have the conversation about whether Verizon wireless is going to be a serious competitor to Verizon wireline Internet access.

MR. WALLSTEN: That actually I think it's a good segue way to another sort of a set of questions. Well, I was going to combine them into a single question.

And that we've focused almost entirely on the last mile and except for the discussion of

sort of the entrepreneurial ecosystem. How should we think about competition for backhaul and also in different parts of the country. I'll read this from one questioner in particular. It says I'm a small ISP who pays a minimum of $100 per megabit per second per month for Internet backbone bandwidth when ISPs in urban areas pay $3 or less per megabit.

He says this is due to the incumbent telephone company's monopoly around to the middle mile. What is the optimal way to deal with this?

MR. GREENSTEIN: Who wants the hot potato? You know there's -- okay, I'll -- there's a -- I'm trying to be provocative today.

The -- so, you know, on that one, oh, wow. So, you know, there's gradations, and this -- and that question almost embedded in that question. So in the low density parts of the country, often wireless ISPs have very few options for their backhaul choice, right. So that's what's motivating the question.

In -- even in some dense but not super

dense parts of the country, there are actually quite limited options as well because, as a matter of fact, distance plays such an important role in deciding how to backhaul data.

And in even in urban areas, arguably there are some options aren't. So you want to be able to at least at a minimum on a policy level divide up those situations and not have a one size fits all solution. A second remark you would make is you would want to ask whether the classic competitive problem is arising where you have multiple firms competing in an end market, but one of them is selling backhaul to the other.

And the backhaul price is not otherwise disciplined by a market force. All right. That's a classic -- and so when I've heard this question, this topic raised, the very first question I have is how prevalent is the classic competitive problem here, to which no one has ever given me a good answer. So I'll have to say it's an open question.

And there is this additional issue,

which is when you get into low density areas, costs are high. I mean if it costs $70 -- if you've got a 70-mile, you know, line to backhaul the data or you're going to do it over wireless towers using some high-capacity spectrum, which might not be used very frequently in that environment, it still costs something.

And so then you've got a different question, which is what's the cost of -- the actual cost of doing the backhaul and are the costs related in some systematic way to the prices that the wireless ISP is facing.

And that's, you know, though motivating the question again, it's an open question.

MR. BAKER: Well, I think it's time for me to wrap up here. First of all, I thought I would -- not quite summarize, but I thought I would kind of recount some of the things I think I learned today or just some of the things that remind you of some of the things were raised that caught my ear.

Judy told us that we might find some

broadband customers have only one supplier because of bundling, and Carl echoed that market definition depends on applications as a related point.

Shane emphasized, I heard, that we might see problems by looking at slowed experiments or delayed standards setting or a slowed rate of entrepreneurial innovation or one sided bargains.

Marius told us that we might find a duopoly performs well, but maybe it doesn't. And Carl said well, that might be true at particularly the high end or by region, and Judy near the end agreed the regions, too.

Everyone talk about the benefits of having more firms, but then the question is will we. Marius and Joe talked about ways -- the possibility that the mobile wireless providers might someday be close enough substitutes for wireline service, and Carl pointed out that it could possibly low-end service might be a close substitute for high-end service, but maybe not.

But even if it's not, it might be worth

encouraging. And then we went to talk about policy instruments and I heard Joe and Marius both caution against price regulation, and Joe talking about using disclosure to shift out demand, Carl adding using it to increase competition. And Shane adding that the importance of using disclosure -- having disclosures between firms and their business partners and Judy being sympathetic to disclosure as well.

And then Carl emphasizing spectrum availability as a policy instrument for helping increase competition if we can make sure we avoid foreclosure when doing so and that -- then we had a -- and there were a number of other policy instruments that in the interest of time I won't mention, but about -- but there was some discussion of regulatory uncertainty in various ways and clarifying the rules for -- from everything from peer-to-peer regulation to municipal wireless service.

And then -- but I thought that the most -- the best summary came from Shane when he told

us that whatever we do, we should do something thoughtful. And I think we could all agree on that.

So thank you. I want to thank our panelists for a terrific and interesting and informative program. We've learned so much today from them. And thank all of your for coming and listening to this and joining us today.

Thank you. Let's thank the panelists.

(Whereupon, the PROCEEDINGS were adjourned.)

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CERTIFICATE OF NOTARY PUBLIC

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.

/s/Carleton J. Anderson, III

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