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Main Commission Meeting Room
Federal Communications
Commission
445 12th Street, S.W.
Washington, D.C.

Wednesday,
May 31, 2000

APPEARANCES:

DALE HATFIELD, Chief, Office of Engineering and Technology, FCC
WILLIAM KENNARD, Chairman, FCC
SUSAN NESS, Commissioner, FCC
HAROLD FURCHTGOTT-ROTH, Commissioner, FCC
PETER CRAMTON, Chairman, Spectrum Exchange and Professor of Economics, University of Maryland
MORGAN O'BRIEN, Vice Chairman, Nextel Communications
CARESSA BENNET, Counsel for the Rural Telecommunications Group
MARK CROSBY, President and CEO, Industrial Telecommunications Associations
ROBERT PEPPER, Chief, Office of Plans and Policy, FCC
SHARON CROWE, Vice President, Bandwidth Markets, Williams Communications
LAURENCE GREEN, Director, Strategy Unit, UK Radiocommunications Agency
MIKE ANTONOVICH, Senior Vice President, Broadcast Services, PanAmSat Corporation

APPEARANCES (Continued):

RICHARD REECE, Chairman, Red Bat Communications
TOM HAZLETT, Resident Scholar, American Enterprise Institute
RICH BARTH, Vice President and Director of Telecommunications Strategy and Regulation, Motorola Corporation
JOE MITOLA, Consulting Scientist, Mitre Corporation
MICHELLE FARHQUAR, Attorney, Hogan and Hartson
ROBERT SHIVER, Chief Executive Officer and President, Securicor Wireless Holdings, Inc.

P R O C E E D I N G S

(9:05 a.m.)

MR. HATFIELD: If we could get started please.

I'm Dale Hatfield from the Office of Engineering and Technology. And I'd like to welcome you to the Federal Communication Commission's public forum on facilitating the development of the secondary markets in radio spectrum.

In February of this year, many of you may know that Chairman Kennard spoke at the Cellular Communications Industry Association meeting down in New Orleans. And he spoke about some of the serious difficulties we are facing in managing the spectrum to meet the explosive needs of wireless communications.

No part of our industry has grown as quickly and as competitively as wireless services. Unfortunately, spectrum is a limited resource and cannot be duplicated to meet this demand.

Chairman Kennard talked about the need to be creative and innovative in our spectrum management policies, so that we could enable future growth and sustain growth in wireless services and avoid spectrum shortages that would constrain that growth.

In that talk, he raised the idea of a secondary market in spectrum similar to what is occurring in other commodity markets today. He tasked us, the Commission, to explore the ways that we could facilitate the development of such markets to try and not only increase the efficient use of the spectrum already deployed, but to make spectrum available for new services.

Now this, of course, is a challenging task. This forum will help the Commission begin the process by soliciting views from the public. I want to thank -- welcome and to thank the panelists in advance for their participation. I know they are all very busy. And we really do appreciate their taking the time to come here to give the benefit of their experience.

I would also like to welcome Commissioner Furchtgott-Roth down to the left. His presence this morning with Chairman Kennard, of course, indicates the importance that the Commission places on this issue. So with that, I'll turn the microphone over to our chairman, William Kennard.

CHAIRMAN KENNARD: Thank you very much, Dale. And thank you all for being here. This is the beginning of what, I think, should be a very exciting and engaging debate that we need to have in this country about how to better manage the spectrum resource for the country. And we need to have a sense of urgency about how we deal with this issue, because spectrum is becoming increasingly important.

The Internet is beginning its migration out of the personal computer and into a whole variety of interesting network, hand-held, wireless devices. And that's a wonderful thing. And it's going to happen fast.

Today in the world, only about six million people are accessing the Internet over hand-held wireless devices. And in the next four years, that number is expected to grow to 1 billion. And today, that six million people who are using the Internet over wireless devices are located mainly outside the

United States. Over five million of them are located in Asian countries.

Well, this revolution is just beginning to hit the United States. And it's going to hit us fast. And we've got to be prepared for it. And we have to be prepared to manage the spectrum more efficiently so that we can accommodate all these wireless devices.

Now, the good news is that once the Internet makes this migration, it's going to democratize the Internet, because many more people will be able to access it at using cheaper devices. That's the good news. The bad news is that we are running out of spectrum, particularly the quality spectrum below 3 gigahertz, which is prime spectrum for mobile applications.

If you look at the way the Internet consumed bandwith on the wireline side, you can see why it's particularly imperative that we address spectrum management today. The data traffic on our wireline networks is doubled about every hundred days.

And if you import that same growth rate to the wireless side of the house, you can see that we'll quickly run out of spectrum. We'll have what I call a spectrum drought if we don't very seriously look to better management techniques for spectrum.

The good news, though, is that when the Commission has addressed these issues of better spectrum management, we've made progress. If you take a snapshot of the way we manage spectrum today and compare it to where we were five to ten years

ago, it's really a dramatic difference.

And we have spectrum options now, which have greatly improved the process of licensing spectrum. In fact, the spectrum option process alone has decreased by 70 percent the time it takes to license spectrum in this country.

We've moved to geographic wide-area licensing, which is more efficiently used as spectrum resource. We have gotten out of the mentality of what I call the mother-may-I approach to spectrum management where you have to ask the FCC for virtually every conceivable use of the spectrum. And we've gone to more flexible use.

So if you look at our newest services like PCS, we don't mandate what you use that spectrum for. You can use it for whatever the market will bear. And so if you look at the improvements that we've made in spectrum management, you can see that we've improved the process by importing more market-based management techniques to managing the spectrum. And that, of course, is what today's forum is all about.

Today's forum is about finding ways that the market can better assist the government in managing the spectrum. I believe that in order to accomplish this goal of better spectrum management, we have to establish as a goal that spectrum no longer be a scarce resource in our country, that we ought to find ways that the spectrum resource can be seen more as a commodity that can move freely in the marketplace, because that's how spectrum can best meet the market demands of today and of the future.

We've seen little pockets of the spectrum, the unlicensed spectrum, for example, where there are no entry barriers. People can freely enter and exit the marketplace, because they don't need a license from the FCC. And it's a wonderful little microcosm of innovation in the unlicensed spectrum.

And so we need to find ways that we can lower entry barriers across the board. One way to do it, of course, is by trying to develop a secondary market for the use of the spectrum. I'm very excited about this prospect because, to me, it imports another powerful market-based tool to spectrum management and gets us out of this Mother-may-I approach to managing the spectrum.

I like to use the analogy of real estate. If you think of spectrum like real estate and a block of spectrum being akin to a large office building, under today's management techniques, government tends to micromanage the process; that is, we give a license to every tenant in that building.

And every tenant in that building has to come to the FCC and ask us permission to use a block of spectrum or space in the building. Well, why not license spectrum in blocks and allow spectrum managers to license the spectrum to individual tenants? Take government out of the process.

We have begun that process in a very incremental way in the 700 megahertz auction that we'll kick off in the fall where we've imported the concept of a band manager, a licensee who will come and have a block of spectrum and move it around

among private licensees as the market demands.

The other thing that we're doing here is to look at technology to help us better manage the spectrum. The secondary markets approach is one of a number of important spectrum management tools that I'd like us to explore.

But we've also, thanks to the leadership of Dale Hatfield and Bob Pepper, we've kicked off a software-defined radio proceeding where we are going to look at software-defined radio as an important spectrum management tool.

We also have kicked off a proceeding to look at authorizing ultra-wide band or pulse radio as a way to better manage the spectrum resource. So these are all techniques that we should be looking at very seriously as we move ahead.

I am very pleased that the notion of creating a secondary market for spectrum has engendered a lot of debate, a lot of discussion, a lot of interest, because it's important that we move ahead quickly on this for all the reasons I've stated.

So I want to thank you all for being here and thank you for your help which we really need to better manage this resource. I think if we work together, government and industry, we can transform the way we manage spectrum in this country for the benefit of the American public and really revolutionize the spectrum management tools that we're using today. Thank you very much.

MR. HATFIELD: Thank you, Mr. Chairman. Commissioner Ness has joined us now here at the front table. Do you have an

opening statement?

COMMISSIONER NESS: Thank you very much, Dale. I look forward to the day when spectrum enables me to avoid the traffic jams that I had coming in from Bethesda. I'm truly delighted to be at this gathering, another opportunity for us to be examining ways in which we can better use this very valuable resource, spectrum.

And I want to commend the chairman for making spectrum management one of his top four priorities in his plan for the year 2000, for convening this forum and other fora to discuss these kinds of issues and for empaneling the technology advisory which has provided us with so valuable insights, so many valuable insights into how we can better use the spectrum.

And he mentioned also that we've examined and have begun proceedings for new and novel ways of using the spectrum, such as through software-defined radio and ultra-wide band alike. These, I think, are very, very good techniques.

And I'm excited about today's discussion about how we can find better ways to eke out more efficient use of existing spectrum that's already allocated or already licensed.

We have a very visible event going on right now. It goes on for a month. It goes on every two and a-half years, thereabouts. And that's the World Radio conference. The World Radio conference convenes approximately 150 countries from around the globe to talk about allocations of spectrum.

And I've attended three of these conferences over the course of the last six years. And it's been interesting the see

how during the course of the last six years the progress that has been made in thinking about how we use and reuse and share spectrum. It really is dramatic to see.

Our colleagues abroad have begun to adopt some of the concepts that we are using here in the United States. Little by little, we've seen that. We've seen the spectrum auction gather steam.

We've seen some of the other concepts that we've been talking, including flexibility, begin to take hold in the thinking of other countries. But also, we have an opportunity to learn from the experiences and ideas that they are using to make more efficient use of the spectrum. So I found this to be an extremely valuable exercise.

The discussions today should help us to analyze how we best create incentives for parties to give up spectrum that's lying fallow or that is not expected to be used for a considerable period of time and to put it into more productive use.

So I, personally, look forward to hearing your ideas. And, also, knowing how bad the traffic is going back and forth every day, if I'm not here the entire time today, I'm planning to listen to the proceeding on cassette, which I oftentimes do. And I will probably have plenty of time to listen to this over the course of the next few days.

So I want to thank, again, the Chairman for convening this panel. And I want to pass the microphone over to my colleague, Harold Furchgott-Roth.

COMMISSIONER FURCHGOTT-ROTH: Thank you, Susan. And I, too, want to commend you, Mr. Chairman, for making spectrum policy one of your top priorities. It is of viable importance to this Commission and to the nation, as a whole. I prefer to use the term "spectrum economics," as opposed to "spectrum management."

And it's not merely sort of professional courtesy here. But management sort of evokes what I would consider a hierachial view of the world. And there are a lot of economists who have given a lot of thought to spectrum markets and allocation of spectrum. Allocation issues are, essentially, economic issues.

We're very privileged to have here at the Commission many economists who have spent much of their career thinking about these matters. I think Evan Quarrel (phonetic), in particular, in Office of Plans and Policy has thought about these issues as much as anyone. And we're very privileged to have on the panel today Professor Cramton. And hopefully, Tom Hays may show up or may not show up. I don't know.

There was once a relatively obscure professor at the University of Virginia who in the 1950's and 1960's, wrote some -- what at the time were almost -- heretical ideas, ideas that said, you know, initial allocations don't really matter in markets. But if you have efficient markets, assets will ultimately come to be used by their highest-value users.

The assumption, of course, is that you have efficient markets in the context of today, efficient secondary markets

with zero transaction costs. Liability rules, to some extent, don't even matter that much, as long as you ultimately have efficient markets.

These heretical ideas at the time, ultimately, catapulted this relatively obscure professor, Ronald Coast, to the University of Chicago. And these ideas chafed conventional wisdom at the time.

But, ultimately, his ideas became conventional wisdom about how the -- not only how markets operate, but in fact, overwhelming supremacy, inevitabilty of markets.

And that is, in essence, what we face today. The issue is not how markets can aid the government-managed spectrum. The issue, ultimately, is how government can establish rules that do not interfere with markets.

The role of the Commission is not to manage spectrum. In some sense, it is to let markets develop their powerful beauty, their inevitable way of letting resources migrate to their best use. And what will it take to do that?

Well, I think economists such as Ronald Coast would say what we need is more efficient rights to promote better markets. There are lots of ways of doing that. I don't know that there are simple answers to it.

And together with those property rights, more efficient contract mechanisms, and more efficient liability rules, those areas -- property, contract, liability rules -- are the necessary ingredients for efficient markets, whether primary or secondary. And it's exactly as the chairman outlined.

We have those in real estate markets today. When one goes to a building or to any sort of property development, these rules are in place. And we, ultimately, wind up with fairly efficient allocation of resources. If we did not have property rules in place, if we did not have efficient contract mechanisms, if we did not have liability rules, no power on earth, no government on earth could wind up with efficient markets.

What we find today in spectrum markets is relatively few transactions involved in what might be called a secondary market. Once we have initial allocations for spectrum, they tend to be ossified there.

I'm reminded of my junior high class in South Carolina state history which was a state requirement that all 8th grade students take. And in the early years of the Carolinas, some British king created a set of lord and proprietors for the Carolinas and sort of assigned all of the property to these people.

Now, of course, it's not clear what right the king had to do this. And the people he assigned to it were just a bunch of aristocrats in England who never went to the Carolinas. And I also wondered why the history book, the 8th grade history book, never went beyond that.

How did we get from these eight lords and proprietors to the allocation of property that ultimately came to pass? And the answer is ultimately, while some people may have bothered with those people, it was the development of local property

rights, the local contracts, local liability rules all under local self-government that enabled this to all come to pass, not the proclamation from some distant king to a bunch of lord and proprietors who, if you had to go kiss their ring every time you wanted to do a transaction in England, nothing would have ever happened.

That is the challenge before this Commission. It's how do we turn spectrum into a market? How do we get to a point where the vision of a Ronald Coast come to pass? How do we get to a point where buying and selling slivers of spectrum to get to a point where there are these highly nuanced, highly subtle property rights that can be bought and sold with relatively costless contracts?

And when those contracts are violated, there are clear liability rules. And there's a clear government mechanism to enforce those contracts and property rights. How do we get there from where we are today? It's a long path. We will get there, eventually. It is just a matter of time.

There is, in my view, an inevitability to the power of markets that no government can stand in the way of. And that is for us to figure out how to get there from here. Thank you, Mr. Chairman.

MR. HATFIELD: Thank you. Okay. Let me go over the ground rules and talk a little bit about the format that we will be following. First, let me say that this is intended to be a brain-storming session intended to raise issues.

Depending upon the outcome of these sessions, then we

may be able to take some actions immediately, while other proposals, of course, may require policy debate and rule changes. And so I want to stress that we are sort of at a pre-NOI stage, or pre-notice of inquiry stage.

And, essentially, what we're trying to do here this morning is just conduct research to determine the scope of the issues that we will be addressing. Accordingly, we have three panels today.

Panel one will focus on why there is a need for secondary and what types of spectrum demand that the secondary markets might be able to satisfy. Our second panel will focus on other market models and practice that we might want to consider for the secondary market in spectrum. And then, panel three, importantly, will focus on how the FCC policies and rules can facilitate the development of secondary markets.

At the start of each panel, the speakers will move to the head table. Actually, we have our first panel up here already. And we'll need to do this quickly, so that our -- because our time is limited. And we anticipate, roughly, an hour for each panel.

We've asked the panelists to limit their remarks to about five to seven minutes. And I will -- Bob and I will try to hold them to that to make sure we don't overrun. And we'd like to ask each of the panelist to introduce at the start of their presentation.

We will moderate those questions. We've also set up microphones to the left and the right, so that we'll be able to

take questions for the panelists from the audience. And we would ask that if you do so, that you identify yourself and your affiliation prior to asking your question. So let's begin with panel one. And our first speaker is Professor Cramton.

MR. CRAMTON: Yes. I'm Peter Cramton, Chairman of Spectrum Exchange, a company designed to promote the efficient exchange of spectrum to create public value. And I'm also professor of economics at the University of Maryland. It's a pleasure to be here.

I believe secondary markets are essential for the efficient and intensive use of spectrum. Secondary markets identify gains from trade that are unrealized by the primary market which in this case is the FCC spectrum auctions. There's two sources of unrealized gains from trade.

The first and most important is that the best use of spectrum yesterday is not the best use of spectrum today. Business plans change. Technologies change. Consumer preferences change. This all leads to long-term needs changing and response to this highly uncertain environment.

The second is that short-term need for bandwidth is variable. You want to sell when you have a surplus. You want to buy when you have a shortage. These two sources of unrealized gains from trade lead to two broad categories of secondary markets, short-term and long-term.

The short-term markets are what has been emphasized so far, I think, and is what is commonly addressed in the press. And this is the buying of surplus capacity to satisfy peaks and

demand.

You should think of a real-time spot market, such as this run in electricity and other energy markets, for example. This, I believe, will be a major virtue of secondary markets in the future once flexible and standardized technologies are developed, such as software-defined radios.

However, I think that today and in the recent past the long-term secondary markets are going to be more economically important. This involves long-term transactions involving large specific investments where somebody is acquiring a license to build out a service and other things that they need to go along with that license. And I'm going to focus on these long-term secondary markets in my remarks.

A concrete example is the auctioning of encumbered spectrum. And a good illustration of that is the upcoming 700 megahertz auction to take place in the fall. Here, the needs of the market are not fully satisfied by the FCC's primary auction. The FCC is auctioning 30 megahertz of spectrum.

The spectrum is perfect for 3-G mobile services and for high-speed data services. But the spectrum is encumbered by the existing UHF broadcasters, blocking the use of this spectrum for these new uses in most of the major markets.

The spectrum is worth much more if the incumbent broadcasters can be cleared. And efficient clearing is facilitated by a secondary market. In particular, Spectrum Exchange plans to conduct a private auction before the FCC auction to identify the least cost-clear solution, resolving the

clearing issue before the FCC auction takes place. This reduces uncertainty and delay.

The Spectrum Exchange auction will enable bidders in the FCC 700-megahertz auction to bid with confidence that the spectrum will be clear at an early and at a known cost. Without this clearing auction, hold-out will delay or prevent efficient spectrum use, destroying public value.

The clearing auction lets all comparable stations in a broadcast market to compete to be the one to clear. Those stations that can clear at the least cost will do so, thus, minimizing any loss in broadcast service.

So, for example, in Chicago where there's four stations that need to be cleared in the 700-megahertz band, there's nine comparable stations. And these nine stations can compete to be the four that clear. The incumbent broadcaster in channels 59 to 69 will receive an incentive payment in return for a commitment to relocate and, in addition, may receive a clearing payment if they are the ones to win the clearing auction.

The private auction in the broadcast market identifies the stations that can clear at least cost and determines the market price for clearing. This is just one example of how a market mechanism in the secondary market, the private market can do something that the FCC is not doing in its primary market. And I believe that will always be the case.

It'll always be, regardless of how innovative the FCC is. And to date, they've been very innovative. There's

certainly much more that they can do and intend to do in the future. But there will always be -- the world is changing so quickly that private markets will be essential in identifying remaining gains from trade.

How can the FCC facilitate the secondary market? Well, in the case of dealing with incumbents, it's reducing uncertainties and distortions in the bargaining between the incumbents and the new entrants.

So in the specific case of the 700-megahertz auction, there's three things that they can do. One is allow early transition to DTV only. The second is to assure transitioning broadcasters of continued cable carriage. And the third is establishing a relocation rule for channels 59 to 69 broadcasters that limits the hold-out problem.

I very much agree with Commissioner Furchgott-Roth's remarks that the goal of the FCC now is, one, to make markets work better. And that should be the focus. And I very much like the term "spectrum economics." Thank you.

MR. HATFIELD: Thank you. Morgan?

MR. O'BRIEN: Thank you. My name is Morgan O'Brien. I am the vice chairman of a company called Nextel Communications. And I was the co-founder of Nextel.

When I heard that the FCC was going to be having this panel I -- uncharacteristically, for me -- volunteered to be the Nextel representative that came down to talk about this topic, because while spectrum secondary markets may be an abstraction for most people in this room and on this panel, for me for the

last 13 years I have done nothing but participate in a secondary market. And let me try to explain how that has worked.

Back in the 1980's when we founded Fleetcall, which became Nextel, it was our perception that there was an opportunity to consolidate the SMR market. And we, through what I think are very enlightened policies at the FCC, started a process in 1987 of going in and acquiring existing licensees and putting those licenses together.

After 13 years of doing that, we have made literally hundreds and hundreds of private transactions market-by-market throughout the United States and beyond the borders of the United States, acquiring spectrum in private markets from individual licensees. So if the question is does that process work, the answer is I know it works.

It's how I spend, and many others at Nextel, every day. And what have we achieved from that? We have taken spectrum which was allocated and assigned for one time and for one purpose and with one kind of technology in mind, which is basically was structured in the 1970's and we have, by putting that spectrum together, we have been able to pull that spectrum through from those limitations that were imposed in the 1970's to the most sophisticated digital network operating today in wireless without, essentially, any need on the part of the FCC to set rules.

Mostly what the FCC had to do and what the FCC did, and I think the FCC is really the hero in this story, is they simply let us do this. They stood back and, even though there

was much opposition at the time when we proposed doing this, the FCC simply let us privately work through the process of acquiring spectrum and implementing a new technology.

So if the question is does that work, to me, the answer is just so obvious. It's works exceedingly well. If I would wake up tomorrow and read that the FCC has made additional spectrum available in bands that Nextel could use for further expansion and new technology, that that spectrum was going to be made available free and clear and through option, that obviously would be the best possible news, because it seems to me anybody that has been involved in this process through the last 30 years, as I have been, the absolute best way for the FCC to make new spectrum available is by option.

Anybody who's been through a comparative hearing or lotteries, both processes that I have lived through, would have to agree that auctions are clearly superior. But virgin spectrum, clear spectrum in these bands is not available, does not exist, at least in places where companies like ours are interested in building systems, i.e., where the people are.

Where the people are, the good frequencies have long ago been assigned. So while we can think about the abstractions of how to do this, the harsh reality is that incumbents are there. And incumbents need to be dealt with.

And the pace of change, the pace of change in technology and in the market will not permit, and to the extent that the message is, I don't think the FCC should even remotely try to clear the spectrum through the incumbents through a

regulatory process, because the amount of time that that takes is simply not consistent with today's pace of technology in the marketplace that all of us are operating in.

So while it would be clearly preferable to a company like ours if the Commission were able to do that and just waive the regulatory wand and the incumbents are gone, they can't do that. They should not try to do that. But instead, they should simply remove restrictions in the rules from allowing the marketplace, the secondary marketplace, to work.

Every day, literally every day, I'm in contact with licensees who have licenses that under the FCC's rules under certain circumstances can either sell that license to me, trade that license with me, or let me manage that license. And when the rules permit that, that is the most efficient.

That is the best way of going, because if I have put a higher value on that channel than the current incumbent and the FCC rules permit, we can and we do every day work this out. And that is the best method. But there are frequently examples. And in the private radio services, the most glaring is the -- there are about 20 neighborhoods of spectrum that are reserved for private users.

There, the FCC rules do not permit the free marketplace to work. I have dozens, if not hundreds, of examples of current incumbents, licensees on those frequencies who would be happy to, and are ready to, do business with us or somebody else like us to transfer those channels or swap those channels, or whatever, but rules that are at this point at least

25 years old prohibit that.

So to the extent that I have a message, it is secondary markets work. The FCC should allow the secondary markets to be the primary method for clearing incumbents, but the rules must permit free transferability of licenses. And in these cases, they don't. And to me, that's a source of great frustration.

And why I wanted to come here today to say, yes, definitely use secondary markets, but you have to clear these 25-year-old rules out of the way.

MR. HATFIELD: Thank you, Morgan. Yes?

MS. BENNET: Hi. I'm Carrie Bennet. I'm general counsel to the Rural Telecommunications Group. And we're very excited to be participating in this proceeding to develop an exchange of ideas on the secondary markets for radio spectrum. It is especially important for rural America to have a voice in this proceeding.

RTG has over 60 rural telecommunications members. And we strongly believe that the primary way of getting spectrum, the auction process, has failed rural Americans miserably. RTG members do have some wireless licenses. They operate in MMDS, PCS, some with cellular. And, most recently, there was success in the LMGS auction.

Sadly, however, there are over 500 rural telecommunications companies who have been denied access to spectrum. And as a result our customers, rural Americans, have been unable to obtain wireless services. RTG members are all

affiliated with rural telephone companies and under section 309 (j) of the act, this is a class of designated entities that have allegedly been ignored by this Commission.

RTG has been active in almost every spectrum proceeding and been in frequent contact with the FCC to discuss these issues. Today, I'd like the FCC and you all to consider three areas and focus your attention on them. First, we'd like you to recognize that the FCC's partitioning and desegregation rules have been a failure as far as creating opportunities in the secretary market.

We'd like you to become aware of some of the actions rural telecom providers have taken to get large license holders to share spectrum in rural areas. There have been a few success stories. And lastly, we'd like the FCC to take some steps to improve the secondary radio spectrum market.

First of all, let's talk about partitioning and desegregation. It is not working. Out of all of the hundreds of thousands of licenses that the FCC has auctioned, less than one-tenth of one percent have been through the partitioning or the desegregation process.

Why is it not working? Well, there's no regulatory incentive for a licensee to partition or desegregate spectrum. The FCC's build-out requirements ensure that urban populations get covered, but not rural America.

The trend of the FCC is to consider substantial service, i.e., 20 percent of the population as meeting the benchmark to continue to hold licenses and get renewals. This

holds rural areas hostage. Licensees do not want to partition or desegregate small geographic areas that rural telephone companies are interested in serving. There's a variety of business reasons that we've been given for that.

The licensees, generally, fall into three categories. First, they are not interested in carving up the license area, because they feel it devalues their assets. We call this the Swiss-cheese approach. They don't want to have a piece of cheese and there's holes. And they think they are going to sell that license later, maybe, to Nextel that that won't be as valuable to Nextel or some other party.

They are also not interested, because they think that maybe in five to ten years, they might want to serve this area, because there's urban sprawl to these rural areas. Then we have the ones that are interested, but the transactional costs are too high to do a deal to three or four county areas.

RTG fought very hard to get partitioning and desegregation in the first place. And back in the PCS days, it was an exclusive right for rural telephone companies. The FCC took away that right and made it available to everybody. We fought hard to keep it. We fought in the Court of Appeals. And today, we still don't have the bands, pending some other partitions the FCC was considering.

While today I'm here to announce that we're dismissing our Court of Appeals case because partitioning and desegregation doesn't work for anyone, regardless of whether it's rural telephone companies, but what does work, the cellular

model worked very, very well.

If you all recall in the '80s, the FCC licensed cellular spectrum and told the licensees -- it wasn't through an auction -- but they told them, you build it or you lose it in five years. There was every incentive to build out those markets.

Today, they have recognized the need to build out PCS markets, for example, and Sprint being the one to be the first digital provider of a network in PCS recognized the value of working with rural telecom providers. Today, approximately 20 affiliates that mostly are rural telephone companies are helping Sprint PCS build and operate markets in the secondary rural markets.

These are done through management agreements, but they are very onerous management agreements. And this is due, in large part, to the FCC's Intermountain decision which requires a lot of hoops to jump through to be able to manage spectrum for someone else. I'm sure Morgan is already aware of this.

I think there's going to be another panel that will discuss in more detail the FCC's rules and regulations on that. Okay. The other thing that has worked very well is we are currently working on a fixed wireless provider. And due to non-disclosures, I can't disclose too much about it. But they are willing to lease spectrum to us. And, again, we ran into Intermountain problems with that.

Also, another license order, Next Wave, has entered

into an agreement in principle to have rural telephone companies build out those license areas that they don't have a license anymore. So I won't touch on that subject too much.

How can the FCC help? Well, we believe if the FCC continues its -- will get back to build-it-or-lose-it requirements, that would force these companies, these large license holders to let us use the spectrum to help them build it out, lease it, or manage it more then.

We also think that there's some clarifications that could be made with regard to Intermountain that would make it easier to do the management agreements or lease agreements. And I can get into those later.

MR. HATFIELD: Thank you, very much.

MR. CROSBY: Thank you. I'm Mark Crosby, President of the Industrial Telecommunications Association and advocate for the industry, as Morgan mentioned, the private wireless industry. I wanted to comment to Commissioner Ness, I share your frustration. I, too, live in Bethesda. And I am reduced to traveling secondary roads to get to where I want to travel in the morning. The main ones are too full.

Several years back concerning desegregation and partitioning, I was flattered, frankly, to be approached by a major PCS licensee, CBlock (phonetic), who approached ITA saying would you be interested in, perhaps, some of our spectrum? And I said, well, that sounds like a good idea. So I went up and chatted with him.

And we had several conversations, but their strategy

was, we want you to buy blocks of minutes of use. So I'm not interested in minutes of use, because the product that you wanted to put on the platform doesn't work for the private wireless industry. However, I am interested in pursuing for the private wireless industry access to your spectrum.

He said, no, no. We're not going to give you access to our spectrum. We want to sell you minutes of use. And so no agreement. We parted friends. But nothing came to fruition regarding desegregation and partitioning. However, I gave ITA a thought. I said, maybe, there's something here, since the private wireless industry is extremely hungry for spectrum. So maybe there's a play here.

So we, actually wrote a business plan. And we said, well, let me see what I can do. We could have multiple entities out there and win this auction. So to get access to the spectrum will require multiple agreements with multiple parties. And so that could be somewhat problematic. And I also need to achieve critical mass.

I need not only a significant geography coverage, I also need an amount of spectrum through these agreements, so it makes it worthwhile to pursue the effort. I discussed this concept with several major private wireless manufacturers, and they said, bring me a bit of geography. Bring me 2 megahertz, at least, in a significant part of the country. And we will consider producing a product that can handle private wireless.

At that point in time my superior said, we need to table this, because even at the time as the PCS environment was

a moving target, and unfortunately, I didn't want to table it because I needed spectrum, but we just had to stop.

So that's sort of a brief story of an unsuccessful attempt on the part of ITA to accommodate its members, it's spectrum needs through desegregation and partitioning. It's still on our radar screen. I just don't know how to proceed at this point.

However, one method to proceed, and the chairman mentioned, band managers. ITA is extremely excited about the opportunity of the band manager concept at 700. And we're very pleased with that decision.

And the reason why is -- and I don't particularly consider private wireless a secondary market -- you can handle private wireless and band managers because the Commission made some basic decisions. One, they allocated spectrum. They defined the technical ground rules. And they also defined who the licensee participants could be.

I think this is a great methodology to use the guard band at 700 efficiently. It had generated manufacturer interest. It will handle unique secondary applications. Site-by-site licensing is accommodated. What's also an assist, working with the incumbents in that band and the technology can be flexible. It doesn't need to be specific technology.

And, in fact, in the guard band, I think integration with commercial carrier infrastructure, indeed, can take place. There's nothing wrong with having a secondary served and having the products in the guard band have the capability to access

commercial platforms in other bands.

And I think that's a -- that was sort of like the objective for the desegregation. But you created a structure so that not only it maximizes technology and flexibility, integration with other platforms, a secondary market is served. And we're really looking forward to it. And I also think it creates tremendous opportunities for small businesses who, otherwise, could not play in a major auction.

They could be a band manager. They could be a strategic partner with a band manager. Or, indeed, they could be lessee customers. And it's the best of all worlds, I believe, for small business. And I really appreciate the FCC's courage to create band managers. Thank you.

CHAIRMAN KENNARD: Do you want to recognize --

MR. HATFIELD: Oh, yes. I want to recognize, and I should have done so earlier to the right down here at the far end of the table is Don Ableson (phonetic) who is chief of our international bureau and, of course, has a big role in spectrum economics here at the agency, not spectrum management. And to his left is Diane Carnell from the Wireless Telecommunications Bureau.

Commissioners? Chairman? You have any questions?

CHAIRMAN KENNARD: First of all, I want to thank the panelist. I thought that was some very interesting presentations; different perspectives but -- and that was very useful.

I guess one of the things that I've been very

interested in hearing is whether we can create a true spot market in spectrum. If we can have a spot market in petroleum or in pork bellies or in bandwidth on T-1 lines, for example, which some companies are exploring, is it feasible to have a spot market in spectrum, so that it can really be moved fluidly around in the marketplace?

And some people, when I first started talking about this concept, some people perceived this as very much of a threat. And I was very interested to hear Morgan O'Brien's perspective on the history of his company, because I studied that history.

And Nextel was a huge threat to the incumbent cellular business when that company was being put together. And I think we have to recognize that oftentimes when we try to import more market-based approaches to spectrum management or spectrum economics -- I'll use those interchangeably because I like both terms, frankly -- oftentimes this is a threat to incumbents, because the way spectrum has been managed, historically, at the FCC is that we have created a scarcity in spectrum.

And what that has done in this marketplace is it has created more value in the license than in the value of the innovating with the license itself. In other words, by creating a scarce resource, the value of the business often adheres in the value of the license itself as opposed to what you do with the license. And we saw this with our spectrum auctions, for example.

When we first moved to spectrum auctions, thanks to Evan Correll (phonetic) and the passage of the '93 Budget Act, this was not welcomed by the incumbent industry if you recall, because the incumbents saw that the auction process with spectrum -- the auction process would make spectrum less valuable as a scarce resource.

And I was here at the Commission when we did the first PCS auctions. And I recall just after we announced the auctions, the prices of cellular service started to decline. And you may recall that the incumbent cellular companies started trying to lock in their customers in long-term contracts.

They dropped, we estimated at the time, about 25 percent at the time of the auction. And now, we're selling more competitors in the market. And the cost of around these phone calls about is about 40 percent less today than it was three years ago.

So the point is that when we can move spectrum to becoming more of a commodity, we maximize consumer welfare. And we create more innovation and more services at cheaper prices.

So it's along like asking what is the failure straightforward spectrum -- question is can we get to the point where spectrum becomes a true commodity in the marketplace? And how do we do it?

MR. CRAMTON: I'd be happy to address that. I think the answer is, yes. But it's going to take some time. It's going to take a lot of work. The reason is that the spectrum isn't like pork bellies. Pork bellies are nice. You can store

them. You can transport them.

Spectrum is very much a commodity that if it's defined by time and space, and so the problem that creates is it makes the market for spectrum much less liquid than the market for pork bellies or sugar or other commodities. And so that's a challenge that needs to be overcome. Can it be overcome? Absolutely.

A good example is what's happening and has happened for over a decade with electricity where there are real-time spot markets in electricity in many places throughout the world. And electricity is also something that can't be stored, at least not very easily. And it is -- can be transported. But it's difficult to transport.

And what we find in that industry is that it requires a fair amount of centralization and coordination to get to the point where you can have a liquid spot market because of the illiquidity and also the other challenges that electricity faces.

Here, you have many challenges, perhaps, some that make it easier than electricity. And these challenges, I think, will be overcome through technology in the years ahead, because there is tremendous gains. So I see most --

MR. HATFIELD: You know, software defined?

MR. CRAMTON: Right, software-defined radios and other technologies that are being discussed. I think that what you said about incumbents versus new entrants and incumbents impose to markets, market innovation on occasion is extremely

important.

And one always has to recognize that the incumbents are going to be lobbying largely for the status quo that benefits them and against the innovation that is actually essential in an industry that is moving so rapidly. So I think that always has to be mentioned, always has to be at the forefront of our minds.

MR. PEPPER: I'd also like to note that on the second panel, Sharon Crowe and Williams Company has a lot of experience, not just in telecom which is where they are starting, but also in the energy area. We'll be talking about some of the lessons learned from some of those markets where there are spot markets. And so we are going to be pursuing that, as well. Did anybody want to --

MS. BENNET: I just wanted to say one thing; and that is, that until we can identify what the spectrum is that's available that's held by the license holders, there's nothing to move around or shift around.

And I think one of the things there is when the rules say you have this property right -- I'll go back to Commissioner Furchtgott-Roth's theoretical analysis -- is you have a property right that goes on indefinitely the way it's currently licensed.

So if the FCC had something in place where they could go to licensees and say how much capacity are you actually using, how much do you think you're going to need to project into the future, how much are you going to need in the next 10 years, and what you're not using, specifically in rural areas

where you're not even building out, make that available.

MR. PEPPER: That's a really good point. And it's one of the things that I wanted to ask Morgan, because when you started creating your market with the SMR's and created Fleetcal, you had to figure who had things that you wanted. I mean, how did you go through that process? And going to Carrie's point, what could we be doing to facilitate that today based on your experience?

MR. O'BRIEN: All right. It would be very tempting for me to say to the FCC, here are a few new rules that you can put on the books that would uniquely help Nextel.

In fact, I would be prepared to give you a list this afternoon. But I think the record would show that we're typically on the other side of this, where we say, just eliminate the restriction. If there is a dollar to be made on serving somebody in a rural area and the rules are sufficiently flexible, that dollar will be made. That entrepreneur will arise.

It may take some time, because there are opportunities in areas that are not rural that are being pursued. But I implore the FCC to stay the course of more flexibility for current incumbents.

And in the area of management agreements, I completely -- you would not imagine the lengths we have to go through to come up with what would be, in any other venue, would be the most obvious commercial transaction for a current licensee to permit Nextel to use some or all or their, quote,

"excess capacity."

But because of Intermountain and policies that have been on the books for 25 or 30 years, it's nearly, not totally impossible because we do it, but it's nearly impossible. Those are the rules that should be looked at and just blown away. There is no room for these rules in today's environment. There's no need for these rules.

MR. HATFIELD: All right. I wanted to ask, I see a little bit of tension here. I think from what Caressa's saying that we need to push licensees, you know, build or lose it, but yet we also hear we ought to let the marketplace have greater freedom. And those seem to be very much in conflict, or at least a conflict in my mind.

I mean, we don't say to somebody here who has a vacant lot in the District, you've got to build a building on the lot or the government's going to take it away from you. So I wonder if you could, maybe, crystalize or talk about that sort of fundamental tension a little bit more.

MR. CRAMTON: Well, there certainly is a tension. I'm of the view that, once you move to an auction environment where people are buying the property, the need for a bid-out requirement is much less necessary. In fact, I view the build-out requirements as a holdover from the comparative hearing days where that was something that you were offering the public for being granted a license for free was you were going to build out the area.

But now in the world of auctions, I think the aside

from warehousing spectrum for -- as an exercise of market power, the build-out requirements are not necessary. So I would disagree, I'm sure, with Carrie on this one.

MS. BENNET: Well, I think what Peter is, maybe, forgetting and we see it in other telecommunications policy is, just because you live in rural America, you shouldn't be relegated to second-class citizenship. You're entitled to services, as well. That's what the act says. That's why we had the universal service policies.

And the Commission is -- their job is to make sure that spectrum is available to all Americans, not just the ones that have to be, as Morgan said, where you can make a buck. Rural telephone companies exist, because nobody wanted to go there and serve it.

They had to create telephone -- farmers and ranchers started wires between their ranches to get the services out there, you know, 50, 60, 70 years ago. Now they see it. You know, we have this new technology that makes it a lot cheaper. We're trying to solve a universal service problem.

Wireless can be a solution to some of the universal service problems, because it can be done so much more cheaply. So these are not necessarily companies that are out to make a buck. They are interested -- they are co-ops. They are interested in providing service to these citizens that have been forgotten. And that's what I think we have to balance.

MR. PEPPER: Carrie, if I could just follow up, and then we'll want to open it up for questions from the audience.

So if people have questions, they might want to go to microphones. And then, we can take the questions.

The build-out issue is kind of an interesting one. When I lived in Iowa, in the town I lived in we had three grocery stores. And now I live here, and I have access to a lot more. But on a per capita basis, I actually had more grocery stores available, in other words, in terms of the grocery stores per people when I lived in Iowa.

If you have a build-out requirement and you have multiple licenses, do you impose that build-out requirement on everybody? And it may not be economic to have, you know, six full-service commercial mobile wireless operators in parts of rural America. Three may actually provide more competition in a rural market than six in New York City, based upon the market conditions.

So if you have a build-out requirement, could you apply it to a new -- don't you, because if you applied it to everybody, it wouldn't work. That's kind of the market realty. And as a practical matter --

MS. BENNET: That's true.

MR. PEPPER: -- how would you approach this?

MS. BENNET: Well, I think that what we're finding is in a lot of, sort of, these wireless services -- and I'll say this; it's mainly in the fixed services -- there's no interest on anyone's part on building out to rural America. So they probably wouldn't care if they lost it.

They don't buy the license for that particular area.

But, unfortunately, you license in these big giant areas where they have to take it's all or nothing, so they may not care. I mean, I can't speak for them, but they may not care if they lose it. And on the mobile arena, they may not want to build it out, either.

I mean, they don't have PCS services build out entirely across the country. So I think the question is we need to explore this with these license holders. And they need to get us some feedback on do you care if you lose it.

MR. PEPPER: Other questions from the audience?

MR. EISMAN: I have a question on unlicensed spectrum. First, do --

MR. PEPPER: Would you identify yourself so that -- let people know, Charles, who you are.

MR. EISMAN: Charles Eisman with OET. With regard to RTG, you know, from my reading there's all kinds of spectrum devices being built on unlicensed spectrum. Why can't some of the rural providers readily use unlicensed spectrum to meet these needs?

And secondly, even more generally, for the panelists, do you see the availability of unlicensed spectrum as incenting or disincenting the development of secondary markets? Thanks.

MS. BENNET: On the unlicensed spectrum, there are some rural carriers using unlicensed spectrum. Unfortunately, it's not the be-all-end-all. It doesn't do everything that we need it to do. And I'm sure everyone's familiar with the rural digital divide. And some other things that we need, we need a

lot more bandwidth to do it out in rural America. And some of that unlicensed spectrum can't do it.

Now, maybe, that will be resolved through technology. And the vendors will start making equipment to do that. And we can take advantage of that. But we're trying to keep all of our options open, as well.

MR. PEPPER: Can I go back and actually ask Morgan to answer the question that I asked, which was a slightly different -- I mean, you talked about getting rid of rules and not having new rules.

And the question I was actually asking is -- it has nothing, maybe, to do with rules -- and that is, what kind of information do you need to actually have the market that you've created or that you're using in terms of secondary market?

How do you find out about licenses that you want to buy versus -- I mean, and what you've done is over the last dozen, 13, 14 years, you know, very effectively figured out before others might find them licenses to negotiate and acquire them.

One of the things that we've talked about here is how do you create a liquid market? And Carrie pointed out that people just don't know who the potential buyers and sellers are. It's difficult to match demand with supply.

You were talking about licensees or utilization. Or are there commercial operators and companies that track that and do that? And how can that information facilitate the market?

MR. O'BRIEN: Well, there really is -- the easiest

part of this whole process is knowing where to go shopping, because the licenses are issued. The FCC's database reflects who has those licenses. And usually, it's a very simple process to line up.

And we know, of course, because we've been at it so long, have a very sophisticated process in which I can go in and rank the most desirable acquisitions by any number of different criteria -- for us, you know. And then, I go -- now I have that information, but the licensee does not.

So I know that this individual's licenses are basically worth twice as much to me as that because of the way they fit into either my current business plan or my proposed business plan. So I have all the information I need.

And I should add that in the 13 years that I've been doing this, the number of acquisitions we've made and properties that were for sale was probably less than 5 percent. So we have the same access to information that everybody else did. And we just went after people who had licenses. And we negotiated with them and came to a resolution in which their transaction with us was preferable to them to no transaction and maintaining their license the way it was. And there are many people who, despite all these years of our attempting to acquire their licenses, still have their licenses. And that's what makes this a great country, as I say. They can hold their licenses.

But more than those have either sold or traded their licenses to us. And that's, again, what makes this a great country. And we -- because we valued them more, and if somebody

else was, and frequently did, acquire those licenses because they, in turn, valued them more than we did at that moment in time well, again, that was fine. That was -- those were the rules of the game.

MR. HATFIELD: Is there questions from the audience? Yes?

MR. O'BRIEN: Let me just add while he's on the way up here that, parenthetically, the complaint we heard sometimes with our carrier licensing, as opposed to services where they are individually licensed, it's a little bit more difficult for people to try to actually find out where spectrum might be available.

So there's been some suggestions that we might want to do more in terms of collecting data and making it available. I mean, answering for us, there's certainly -- we would never object to having better information about who's got the licenses.

MR. SUGRUE: I also want to comment. One of the reasons why it's a great country is that the FCC has rules at 700 megahertz that the incumbents could rely on, so they don't necessarily need -- that that gives them a support mechanism. Good. I can say here I can protect it. And I think that's a counterbalance.

MR. HATFIELD: Yes?

MR. LEVANTHAL: Yes. Hi, I'm Norm Levanthal, an attorney with Levanthal, Center, and Lerman (phonetic). I'm curious about Professor Cramton's pre-auction auction. I gather

the concept is to set prices or terms in which you clear the existing broadcasters.

But I'm curious as to how this works when people who, I suppose, participate in this aren't licensees yet. They haven't won anything. So how do you force anyone to agree on what the terms are going to be, free location so that the people who participate in the FCC auction know what the so-called terms are?

MR. CRAMTON: Right. Well, one nice thing about the FCC auction is you know who the bidders are before the auction begins. So after the short-form filing date, you have the list of FCC participants.

And you sign a -- or we sign a contract with them that they agree to paying this clearing cost as determined by this market mechanism which is the clearing auction beforehand. And we have contracts with the incumbent broadcasters which says we agree to relocate or, perhaps, clear if we end up winning the clearing auction.

MR. LEVANTHAL: But unless each market signs on, it doesn't work.

MR. CRAMTON: Right. It runs into trouble when you -- you don't have to do it nationwide. It can be done broadcast market by broadcast market. But you need participation by all the incumbent broadcasters in a particular broadcast market.

MR. LEVANTHAL: And how successful have you been so far?

MR. CRAMTON: We're moving right along in our

discussions with the largest incumbent broadcasters in the 6069 block now.

MR. LEVANTHAL: Okay. Thanks.

MR. HATFIELD: Other questions from the audience?

MR. SCHROMM: Dick Schromm, ITT Research Institute. And I think, maybe, repeat it to anyone, it's a chicken and egg thing on the technology. Just how important is it if you have the right economic tools in place?

Do you think the technology will flow naturally? Or is it technology first, and then economic tools can be implemented? Just an opinion on the relative importance of the technology and the economic approach to spectrum.

MR. CRAMTON: Well, there certainly is a chicken and egg problem. And it's amazing how commonly we confront that problem. So I think that it requires creative work on both dimensions, simultaneously. There certainly needs to be a creation of a snowball that can get rolling.

I think that the FCC's role in this is very important in establishing rules that are conducive to secondary markets, and not just for the spot market that you're envisioning, but equally well for the long-term contracts that Morgan is involved with. And he's been doing it for 13 years.

It took a long time to do. It was a humongous job. And it was a humongous job for Craig McCall to piece together his network. And in situations going forward where the FCC can see that the current use is not the best use, relocation can be accomplished. Then it makes sense for the FCC to establish

sensible relocation rules that can get that snowball going and make things happen much faster than the 10 to 15 years.

MR. O'BRIEN: Okay. My answer to the question, from where I sit, it's obvious that economics takes precedence over the technology. I mean, if we are given access to the spectrum, and we put a certain value on it and get it, then it's up to us to figure out the technology that's going to get us the best return. And we don't get these returns out of some abstraction.

We only get these returns if we can find customers in this wide-open marketplace that's been created who value our service, the one we invent, more than the others. And so, I mean, I know I sound like I'm wildly enthusiastic about this free market, but that's because I've seen how well it works. It works.

MR. HATFIELD: Randy?

MR. PALMER: Randy Palmer with CTIA. Wouldn't the elimination of spectrum caps be another idea that would be helpful to the operation of a secondary market?

MR. CRAMTON: It's not clear. Spectrum caps are about creating intense competition in individual markets. And it's a judgment call that without spectrum caps at all from the beginning, I think it's very clear you get into a situation where there would be, if there were no controls and no DOJ, and so on, that you would have monopoly provider of service, which is certainly not something we want.

Now, many have argued that we are at the point now where the spectrum now -- where we do have enough providers. We

do have robust competition. And the spectrum cap is no longer needed in particular markets. And I would potentially agree with that that eventually the FCC should, probably, be moving to more of a case-by-case decision, rather than an instrument that is as blunt as a spectrum cap.

But it, certainly, has served a very useful purpose in bringing in new entrants like Sprint and Nextel and others to compete with a cellular duopoly.

MR. HATFIELD: If I could ask one more question of Morgan, Morgan, I believe Nextel is --

MR. O'BRIEN: It's good to see you here.

MR. HATFIELD: -- use, I think, what were called management agreements, in effect, where you were essentially leasing spectrum. I was wondering, do you still lease a substantial amount of spectrum? And what allowed that to occur?

And is there any -- what are the lessons in that, because that's what allows somebody who wants to hold spectrum, because they have an eventual business plan, but allows you to get access to it in the short-term. Could you tell me a little bit more about how that's worked?

MR. O'BRIEN: I could. It's worked exceedingly well, even though it was -- it made some of us, some more than others, nervous when we went into them, initially. There are licensees who, for a variety of reasons, will never, ever give up their license.

And I am pretty persistent. But even I, sometimes, acknowledge that that licensee's not giving up that license.

However, the licensee would recognize that putting their channels into a network such as the one we have built which has cost hundred of billions of dollars to build, obviously, putting those channels into our network increases their efficiency, and therefore, is a good thing.

What we need to do when we have an immovable object doesn't want to sell the license and that irrefutable fact that the frequencies are more usable when put into a network like ours, you have to have a management agreement or something like that to be able to make this work.

And we believe we have agreements that meet every single standard of the FCC's rules. And we wouldn't go into them if we didn't. But it would be a heck of a lot easier if the Commission just recognized this reality and laid out some nice, clear guidelines that everybody could look at. You know, it's not an insurmountable obstacle, but it would be a heck of a lot easier.

MR. HATFIELD: Okay. One final question from the floor if you could, please.

AUDIENCE PARTICIPANT: My name is Ellen -- and I'm a lawyer at Covington and Burling. The Chairman talked about creating a commodities market in spectrum. And I think the 700 megahertz auction is a good example of the FCC's really going part way.

I mean, it did provide for a lot of flexibility, but it channelized the band. It set power restrictions. And I guess my question is -- and, Peter, maybe you're the one to

answer this -- to what extent do you view the FCC -- that still being an important FCC function? Or to what extent when it reallocates or puts spectrum up for auction should it just say here's some spectrum? You can buy 36 megahertz. You can, you know, define your own market, et cetera.

MR. CRAMTON: Right. Well, I think that we're at the point where structure is still necessary, that the technologies right now are not sufficiently flexible to have anything goes. I think in the future -- and I don't know when this will -- whether it will be 10 years or 15 years, or what, where we really think of the spectrum as simply bandwidth.

And we're pumping -- it's just another pipe. We're pumping data through it. And all that -- we all have devices and are using technology that's sufficiently flexible that that's the best way to think of it. We are not at that point right now with current devices. And the benefits of structure can be enormous.

And I think you see them the best in, say, the UK and Europe where they really made more use of their 180 spectrum because of the rigidly imposed standard for GSM technology. So it's a trade-off. And it's one that the FCC's going to have to work very hard to manage appropriately.

MR. HATFIELD: I want to thank the first panel. And what we're going to do is we're not going to take a break. We'll just switch panels. It'll take a minute or two, and we're going to keep going. But thank you very, very much. This was terrific. Could we have the second panel come up?

(Pause.)

MR. HATFIELD: Okay. I think we're ready to get started. And our first speaker will be Sharon Crowe, please.

MS. CROWE: Ready?

MR. HATFIELD: Yes, we're ready.

MS. CROWE: Okay. I'm Sharon Crowe. I'm the Vice President of Bandwidth Trading for Williams Communications. I started with Williams in 1995 as director for Energy Trading with them. I have been a commodities trader for the last 12 years of my life.

I started in-trading with Louie Dreyfus, which was a trading commodities shop up in the Northeast. We traded in grains, metals, bonds, and other various other commodities besides energy.

So I've kind of seen the introduction of new markets and how they get started, the hurdles they have to face, as well as the successful and unsuccessful elements with adverse market conditions that have occurred. One of the things I want to just touch briefly on, because I know I only have seven minutes, and Bob will give me a hook, is essentially is what I'm trying to do is take a look at the model right now that we have going on in fiber, which is the band-width trading.

And there's been a lot of hype about bandwidth trading. So this is a simplification of what it really is. Of course, the traders engage in the exchange and purchase of goods. And then bandwidth is the frequency or capacity. So therefore, bandwidth trading is simply the exchange and purchase

and sales capacity of a communications channel.

And the examples of what's been going on in bandwidth trading are off-net provisioning and dark fiber swaps. So therefore, carriers have been conducting trades for years. And hearing the first panel speak, to hear that there's been kind of a similar one-off secondary market in Morgan's description, so the bottom line is you may already have a secondary market occurring in spectrum. It's not as visible as you think it is.

What's happened, though, in the fiber bandwidth market, which is new, is bandwidth risk management. So, essentially, when you're looking at a spectrum secondary market, what maybe you're trying to apply is a risk- management process where people who are long licenses can do full optimization of the unutilized capacity that they may have in order to reach full economic value for what they are holding.

And in the event, they could either do a sell-out to liquidate their positions, or easily take a look at what they are not utilizing and create an options market around it.

In trading, you have three elements, three faces of trading: The hedger, which is the entity that wants to maximize projected revenues from an asset base or customer portfolio; an intermediary, of course, which is someone that wants to arbitrage on the inefficiencies, getting in between the producer and the consumer; and, of course, the speculator, which looks to seek for profit for price movements or irrational market behavior.

A hedger can participate in all three avenues. So if you're long in asset base or if you have a good customer portfolio, you can be all three of these elements. If you're an intermediary, you can only get in the middle or you can speculate. And if you're a speculator, you're on your own.

These are the inefficiencies that encourage trading in any commodity -- contract parameters, term performance, volume and price. A lot of negotiations are one-offs. Every deal looks different. That creates an inefficiency in time-to-market. If you have a standardized agreement, that eliminates these problems.

You show the rules in which the FCC -- and say you create a committee similar to what we've done in bandwidth, and you say this is what we want to do. These are the rules we want to play under. You find a lot more ease for them to change policies that they have if you say these are the ways we expect to trade.

Infrastructure idiosycricies, operational streamlining, what makes the process a lot easier, I mentioned earlier, a lack of optimization of an asset portfolio. No market clarity, the old-school mentality, as if I'm long in this, I need to have it. I need to hang on to it, because there may be an urban area that will grow.

So therefore, this rural area may have to suffer. Or the fact is, it may be valuable more tomorrow. And another old-school mentality that I've heard is, just because you commoditize something doesn't mean that the price is going to go

down.

And a prime example of this is when natural gas started trading on April 4, 1990, the price was $1.50. Two weeks ago, it was $2.50. Today, it's $4.95. In 1992, the price of natural gas was 90 cents in February. In 1996, that price was 28 bucks. Okay. That's called volatility.

So when you're talking about trading in a secondary market, don't necessarily come to the conclusion that you're always going to have an inverted price curve, because that's not always the case. When you create a trade commodity, you create human perception which creates volatility.

And then, of course, price discrepancies, benchmarks, non-existent or archaic, and then what is one element of trading is the cost-based approach, instead of value-based. It's never about what it costs. It's never about what it's to build to maintain. It's always about what it's worth.

What is the marketplace willing to pay to utilize this type of capacity? What do they feel the option value is? What is the potential deferred value of it? If the market value is less below what you're long, then you need to call Solomon Smith Barney and get out of your business. If it's greater, then you need to look at trying to capture as much value as possible.

There are similarities in all the commodities markets. They are regulated, either by federal or state. They are economic -- standardization where you have a lot of players and ends up consolidating down to several -- or, I mean, down to

a few -- excuse me -- and then a standardization of the policies and parameters in which you operate under, and then infrastructure that is static.

Pipes, wires, barge, rail, everything that other commodities trade underneath, all the intrastructure remains stagnant. The most thing that's happened in energy in the last couple of years is 3D seismic and greater heat grade curve on power plants.

Nothing has happened in the transmission wires. Nothing's happened to the railroad. That's where a lot of inefficiencies in market revenues have been derived from the inefficiencies in the infrastructure. But what makes telecommunications different is the simple fact that the infrastructure is not static.

The equipment evolution changes every six to ten months. There are continued software enhancements. There's large-scale -- an issue with large-scale connectivity. Now, I'm from the fiber side, so I don't know if some of these affect spectrum. So excuse me if I'm like one off on this, and then, of course, computerized operational dispatch.

A lot of nomination process and dispatch process that happen in the other commodity markets are human intensive. I don't care how much software is in place, you still give a dispatch notice to a power plant operator to turn that power plant up or down, even if they have automated, generated control.

Telecommunications is the first commoditized

infrastructure market. Now, these are some of the perks and then the perils of any newly traded commodity. Price transparency, standardization, access to market and supply, incremental revenue mitigate risk, position management.

By that I mean you can manage exactly where your long and short and where your price volatility is as far as when you're out of the like-price terms. And then, of course, capital expenditure evaluation, if you have a forward-curve, you're able to look at the capital that you want to deploy, both incremental as well as investment, into building out your framework for your business.

The perils, of course, are events of default. And these always happen, always. Real-time spot market in electricity, yes. But we have bids at $2,000 and offers at $5,000. There's a $3,000 gap for one-hour in some parts of this country.

There's a price shortage in natural gas right now where the bid offers spread on a daily basis can be 25 to 30 cents. Liquidated damages, of course, if you don't perform, you know, you're going to have to pay. And a lot of people operate in newly traded commodities on a best-efforts basis. Well, there is no best efforts in trading.

Volatile pricing, of course, to any entity can equate to volatile earnings. So therefore, you have to manage your PNL's with market-to-market accounting and risk control a lot better.

Lack of sophisticated participants in trading, we

call them mollets, and warranty performance, daisy chains, one person after another. You know, this license goes to this person to this person to this person. To keep track of that, by the end of the road, who really owns it? Who really has title to it?

And is there a way to do a book-out where you can agree on price and everybody moves out of the middle? And then, of course, balance sheet depth, if you're going to play, you better come to the table with some credit or some cash in order to be able to participate.

MR. HATFIELD: You've got another minute.

MS. CROWE: Okay. I'm almost done. And the perks and perils are interchangeable. So it just depends upon the level of risk reward an entity seeks. It's all about leverage incompetencies and the value you bring.

What we feel is, if you can take trading and have a strength core in trading -- this happens to be our trading floor -- and leverage it with the capability of what you have in telecommunications, then your core competencies will shine through. And you have the opportunity to be successful in this marketplace. That's it.

MR. HATFIELD: Thank you. That's going to be actually what our auction room is going to look like there.

MS. CROWE: That's the guy I would love to talk to.

MR. HATFIELD: That's right. Laurence, you're next.

MR. GREEN: Good morning. My name is Laurence Green. I'm from the UK Radio Communications Agency, which is the body

in the UK which is responsible for launching most non-military radio spectrum.

Although we're an executive agency and a little bit separate from the rest of government, we are very firmly part of the Department of Trade and Industry. We report to the minister there who deals with E-commerce. That's Patricia Hewitt. And we're very fully engaged in formulating policy and advising her on what to do with the radio spectrum.

At the same time, you have a degree of operational autonomy in our licensing and enforcement. So, really, we've got the best of both worlds. We're a fairly medium-sized to small organization, about 550 staff, revenue about $62 million in fiscal '98-99, though in this year, we're expecting a slight increase in that thanks to the 3D auction which raised some $23 billion. We also hope the Treasury doesn't expect us to do that every year.

MR. PEPPER: That's in pounds, not dollars.

MR. GREEN: Thank you. I'm very grateful to be invited here today, because I think this is immensely exciting, the opportunities for spectrum trading. I feel something of a fraud being up here talking about alternative market models, because we don't really have a market model in the UK at the moment.

And I guess that the UK and Europe, generally, might be moving along a slightly different track. So I'm certainly not going to put forward what I'm saying today as a model I would suggest the United States follows, necessarily. But

nonetheless, I hope the UK and European perspective will be of some interest.

And our account legislation doesn't, in fact, allow licenses to be bought and sold, except in some limited circumstances, effectively, only if there's no change in the legal identity of a licensee and a company is acquired by way of purchase of shared capital.

This is a rather clumsy and inefficient and, by no stretch of the imagination, going to be called a proper market mechanism. We certainly recognize the potential advantages of the market, all the things we've heard about this morning making spectrum available more readily for new products, new services.

And the importance of this is underlined very much at the moment by the tremendous pace of change. And convergence, perhaps, is one of the main symptoms of this, the coming together of broadcasting, telcoms, and computing. And it's a very rapid rate of change, as I've said, and also extremely unpredictable, which makes it inherently unlikely that government is going to get the right answer if it tries to have everything by regulation.

In fact, we will very shortly be publishing a major study of convergence, looking ahead to the year 2010 looking at various scenarios of how the converging sectors might develop. And one of the conclusions of this study is very much that spectrum trading is extremely important, given the flexibility and responsiveness that's necessary to enable the maximum benefits to be derived from the larger economy and the digital

revolution.

We are starting to move a bit towards that direction. In 1998, we introduced spectrum pricing, what we call -- pricing where fees are set by regulation as a sort of surrogate market level and also auctions.

And, as I mentioned before, we've just concluded our first auction of surge generation mobile telephony. Well the principle there, of course, is that the fees should reflect the economic value of the finite spectrum resource, and therefore contribute to it more efficient use.

We feel that a spectrum market would re-enforce the positive effects of spectrum pricing and give increased incentive to use those to be able to realize the value of their underutilized spectrum, because they will be able to transfer it through the market to someone else that can have more value, and even would benefit that from -- so at its consultation in October 1998, coordinating spectrum through the market, that's how similar to market economics, spectrum economics.

That term, there's a very positive reaction to this which was pleasing. Over 90 percent of the responses favor spectrum trading in principle. But there were a number of concerns.

And some of those were heard about this morning over how do you safeguard competition? How do you avoid monopolies and duopolies building up? Should you be doing something to avoid speculation? Is speculation something you should welcome, as some economic theorists might say, as a way of helping match

supply and demand? Or is it, in some sense, harmful because of the burglar characteristics of the way you do spectrum?

Pricing stability, is that going to be a negative factor? What do you do about effective frequency coordination where you've got tightly packed band that have to be very carefully planned? So, by and large, we think that we will proceed with markets. But they will have to be a fairly firm framework of regulation.

And I think the bandwidth-free market forces on regulation is a very tricky one for the spectrum manager to get right. What this means in practice, I guess, is that we'll be looking to introduce spectrum trading selectively with a number of different, what we call, different trading modes.

And by now, gee whiz, the property market here, what I mean by trading mode is if you look at the property markets, you can buy freehold property. You can buy a long-term lease. You can buy a short-term lease. You can have a hotel room for a night. Each of those meet particular needs. And similar things apply to spectrum.

One operator will need to roll out a network and require a 25-year tenure. Another operator might just need a bit of spectrum to gather news or make an outside broadcast and just need the spectrum for a few hours. So there are a vast range of needs for the market can help meet.

Also a question about whether spectrum trading should be limited to where the spectrum has been auctioned in the first place, and one of the concerns we have is the possibility of

windfall gains. And again, economists tell us not to be worried about this.

But there is a concern, even if it's just a political concern about what happens if spectrum is sold relatively cheaply in the primary market by the spectrum manager, and then the price goes up over a very short period of time in the secondary market. So we do see a continuing need for regulatory framework, so markets need regulations.

I don't think the spectrum market would be any exception. One of the big differences between Europe and the United States is that in Europe we're a lot closer geographically to our neighbors which means that frequency coordination is a lot more important.

It's difficult to see how operators could have carte blanche to introduce whatever services and technology they liked in a band, because we'd be up against the problem that where that use would encounter to an ITU radio regulation requirement, they'd have to be hauled back to recording interference to another party in another country. And conversely, we couldn't protect them from interference coming from another country. So that's certainly an important constraint.

And also, we have the -- I'm not sure if it's a benefit or a disbenefit of mandatory EU decisions and directives on how the spectrum can be used. Sometimes, it works out well. As Peter said, we have the DCS, the second generation GSM. And sometimes it can work out badly. But when it works well, it works very well, indeed, as we've seen.

The only problem we have in Europe is that we are bound by a directive called the EU Licensing Directive, which governs the licensing of communications of all sorts, including spectrum. And this imposes certain requirements on the licensing process, including the need to publicize the availability of spectrum, consultation on the limits on numbers of licensees, opportunities to comment, right of appeal. There's a full-blown procedure there.

And the problem is that even where spectrum is traded on the market, the spectrum authority would have to be involved to some extent. At the very least, they'd have to be notified of a trade. And there would, probably, have to be some sort of right of veto.

And that would be enough to attract the provision to the licensing directive. And I won't go into all the details, but the problem is that the requirements of this license and directive would effectively kill a free market very quickly, because you can't really have a free market operating with all those constraints on having to publicize and give people rights of appeal and consult.

It's difficult, seeing how one party could agree to sell spectrum to another if they were bound by all those considerations. It would be very clunky. And it would take a long time. And it would be inefficient in market terms. The spectrum trading market wasn't intended to be caught by the licensing directive. But nonetheless, it is.

So we're working within Europe to try to lobby to get

that changed. And the European Commission, which in fact is the only body in Europe which can bring forward an amendment to the directive, is reviewing the whole body of communications legislation at the moment and have, in fact, proposed relaxing those restrictions on spectrum trading which is very welcomed.

But, of course, there are many variables, as they say. And we're going to have to look very carefully at the precise wording they proposed, because I think it's fair to say there are many concerns in Europe about the full-blown model that's referred applicated this morning.

It's a very different geopolitical and economic set-up. And that's going to affect how far and how fast we can go with spectrum trading. But I think overall, although Europe might have some way to go in developing a spectrum market as far as, I guess, the FCC could in the United States, I think we are going to move towards that solution as more and more people become convinced that it, in fact, is the only way to go when you've got rapid change and unpredictable change.

As I said, the only difference is going to be the precise balance between regulation and the market forces. There's a lot of work to be done, certainly. And I guess, therefore, European Union member states are going to want to move at the same rate.

And it's going to be particularly important, as commissioners have done, to make clear that they are not mandating spectrum trading. They are just allowing those member states that wish to introduce it. But that having been said,

there still are residual concerns in other countries in Europe that might lead to a fragmentation of the common market or the single market.

And that could lead to disadvantages in some circumstances. So there's quite a long way to go on that. And I wouldn't expect any change for the directive to really be in place before the end of about 2002. So that's going to limit the speed at which we can move.

So thank you very much for listening to me. And I have been very interested in listening to this debate. And I think I've got a lot to learn about developments in the states. Thank you.

MR. PEPPER: Thank you.

MR. ANTONOVICH: Hello. I'm Mike Antonovich, Senior Vice President, Broadcast Services at PanAmSat. I effectively run a secondary market for spectrum now, wireless spectrum. I run the Broadcast Services Group which provides sales and marketing and management of occasional use inventory on PanAmSat Fleet.

Our customer base is news agencies, broadcasters, resellers, brokers, distant learning, television-type customers for the need for satellite bandwidth and services. We offer integrated satellite teleport services. And it's a market that's in, not only our own facilities, but the facilities of nearly 2,000 providers worldwide.

So to create a market, when we talk about spectrum, it's kind of a lot like bandwidth, that bandwidth is a lot like

beachfront in Arizona. You know, you either have to move the ocean to Arizona or the customers to the ocean. And to make any of the bandwidth valuable, it does require significant capital expenses and an infrastructure.

And that just doesn't happen in a secondary market without, really, some strict and strong regulatory frameworks. Today, we operate occasional use, if you will, of the spot market capacity on 13 satellites around the world to roughly 2,200 megahertz is in the occasional use pool that we use to service customers like Williams, like the other people that arbitrage and end users directly, news agencies, broadcasters, and the like.

So how does the business work? Well, we have very -- three kinds of inventory, really, in the business. We have specific inventory we've set aside on a long-term basis to support this business, so that customers know or they have some surety of knowledge that the bandwidth is going to be there to support their nonfull-time use.

There's a great deal of other inventory that is available on a rolling-window basis to support opportunistic use of bandwidth, you know, before full-time users come along. And I think that's much of the model we're talking about here in terms of the spot market is how do we use it efficiently, you know, prior to it, you know, finding a terminal user, a permanent user?

And the third type of capacity that we also acquire is resale capacity from existing customers who either don't have

a full-time requirement, or who only have a fractional requirement for the bandwidth they operate on. And so we provide arbitrage for that market, as well.

So we, and many others in our industry, operate in that nether world between customer and the bandwidth to add improved value of the bandwidth to our customers. Now, to make that happen in any market, you've got to be able to book it and manage it.

We operate a 24-hour scheduling center. You have to have technical resourses of managing the bandwidth and monitoring it to ensure performance, facilities on the ground in our case, specifically. We are effectively a linocite microwave with no guy wires to the ground.

The satellites are held there by gravity and engineers and events people to make it work, because the bandwidth, as I've said, is nice. But it's nothing without the systems to manage it and to operate it. So how has the business worked for, you know, the geostationary ark business? It's worked well.

The FCC licenses and authorizations are, in the public view, the standards of getting licenses are defined. The terms that one gets licenses are long enough to justify the significant capital investments, in our business a satellite is, typically, a $250 million capital expense with large operating expenses in order to make the bandwidth partially valuable.

The rest of the value comes between the ground segment that we provide or third parties provide. And that's

the whole value equation takes off, because it's about the development of that resource. And we've heard some debate this morning about the due-diligence standard, if you will, use it or lose it.

And in the satellite business, domestically, I think it's worked very, very well. If someone's acquired a license, they've had a time period to get a satellite and facilities in place and prove they have the financial wherewithal to get there. And it's worked.

Where it hasn't worked very well is on the international front where the time periods for developing satellites or the diligence required to maintain those licenses hasn't been nearly as strict, what we would call in our business paper satellites where the firing times of nine years or more to develop a satellite just simply doesn't work anymore.

The bandwidth is there. It's available to be used. And typically, it's a two- or three-year process to get a satellite built. And when slots are sat on for nine years, it creates some -- a scarcity, you know, by a paper process and not by what the markets would do.

And in any spot market, obviously, it's not about the service provider. It's about the customer, who's out there that can take advantage of the bandwidth and the facilities that one builds.

In our business, it's quite clear it's been the broadcast community, distance learning, business television, and others. And to make all that happen, there have been a number

of key enabling technologies that have moved along with the whole development of satellite usage over the last 25 years.

In the old days, it was large, fixed antennas were the only means of accessing a satellite, with advances in technology, the deployment of satellite news gathering trucks and smaller and lighter equipment and the digitization of video, tremendous advances in the number of users and the reduction and the cost for service. So the megahertz for the operator and the benefit per megahertz of the user community as accelerated.

And we see the next wave being Internet-based video and Internet-based, data-type transmissions which are perfect for fractional bandwidth models where much of the information is no longer going to be full-time service requirements, but more bursting [sic] in nature, where the packet sizes and the way one moves digital signals today are terrific for getting more efficient use of bandwidth.

And we think that's something that's going to make a spot market for spectrum wireless satellite very valuable to users. Can this model work in other parts of the radio spectrum, 700 hertz or anywhere else?

Now, the answer is yes, if there's enough bandwidth there to support a user community, if it can be operated in a relatively interference-managed environment, if the capital investments required to use it can be validated in the market and with the cooperation and support of customers, service providers, and the agencies. Thank you.

MR. PEPPER: Thank you very much.

MR. REECE: I'm going to start by thanking Chairman Kennard, the Office of Engineering and Technology, and the FCC for the opportunity to speak at this forum.

My name is Dick Reece. And I'm the founder and president of Red Bat Communications. You've probably never heard of us. Well, of course, you've never heard of us. But we have been working on concepts related to a wireless bandwidth exchange for the last five years.

Red Bat is now being incubated by Diamond Technology Partners, a Chicago-based consulting firm, with extensive experience in developing new exchanges in market structures. Diamond recently played a crucial role in the formation of the Four GM Auto Parts Exchange and has also helped a fortune-500 company develop a wire line bandwidth exchange.

Red Bat is developing a real-time market that will not only enable spectrum operators, such as cellular and PCS carriers, to instantly sell their available capacity to consumers equipped with hand-sets capable of automatically finding the optimal carrier any time, anywhere, the technology is here already to operate this market.

And in the future with the development of software-defined radio, it will provide even greater opportunities to improve the efficient utilization of spectrum.

I would like to briefly describe the operation of the system. In our market, spectrum holders determine the available band within a certain geographic area, such as a cell site, and set prices for this bandwidth based on a standard unit of time

or packet of data.

The spectrum holders transmit their prices to the market which records and consolidates the offers and broadcasts this information in each appropriate location in a repeating data loop similar to a stock-market ticker. On the buyer side, auction-enabled wireless devices constantly monitor the broadcast ticker.

When a consumer places a call, the software in the wireless device matches the information from the ticker with user-defined parameters to select the optimal carrier. The head-set will, then, simply register and operate as a runner.

After the call is completed, the carrier receives payment through a clearinghouse where the market verifies that the rates billed were, indeed, the rates charged at that time and location. Some of you will recognize that this market is operating as a modified Dutch auction format where prices start high and descend until a buyer emerges.

Such a market would provide many significant benefits to consumers, carriers, and equipment manufacturers alike. In the interest of time, I would like to describe just a few of these benefits.

On the seller side, benefits to the spectrum holders and operators, one, this auction enables spectrum operators to implement yield management systems similar to those developed in the airline industry. Like the airline industry, wireless telecommunications is a business with very high fixed costs, the low variable costs.

So bandwidth is like inventory that constantly expires. It is similar to empty airline seats on a plane that has just left the gate. Right now, if the airline industry resembled the wireless industry, travelers would be locked into a single airline for long periods of time.

Even if your airline is fully booked, you wouldn't be able to switch to another carrier's flight that has plenty of available seats. And a carrier who has empty seats cannot offer those to available consumers who would, otherwise, be left behind.

Our auction enables wireless carriers to follow the highly successful example of the airline and implement a yield management model. In periods of slack demand, carriers could reduce their prices to stimulate usage. As long as the price is above marginal costs, the additional revenue will go straight to the carrier's bottom line. And consumers will benefit from calls they, otherwise, would not have made.

In times in regions where demand fails available capacity, carriers could raise prices to increase marginal revenue, thus making more efficient use of fixed assets, while efficiently distributing open bandwidth to consumers who are most willing to pay at that time and location.

Two, our auction will create market incentives and advantages to those carriers who devote resources to improving their network technology. The auction will also help smaller PCS license holders to attract users without absorbing the massive customer acquisition costs necessary to build a

subscriber base.

Three, the auction will create substantial liquidity for a wireless bandwidth exchange by enabling bandwidth owners, including third-party investors, to liquidate their assets, instantly. Current proposed exchanges are similar to a stock market for institutional investors. This auction will create a retail market, like a NASDAQ with additional liquidity.

Four, this auction provides strong market incentives for consumers to rapidly adopt software-defined radio hand-sets, since consumers with advanced SDR's will be able to use the lowest-cost spectrum or the most-advanced services.

And as the technology develops, newly accessible spectrum can be added to the auction whenever it is available. On the buyer side, the benefits to the consumers of this auction, the auction software and the hand-sets will enable consumers to customize and control their expenditures on wireless communications in powerful new ways.

For example, as a consumer, I would establish a threshold where the hand-set only completes my calls if the cost is less than, say, 15 cents a minute. Calls above this threshold will require a manual override.

These thresholds could be linked to my address book, so that calls to my wife will get through, regardless of price, while a call to my lawyer, well, that might need to be a cheaper call. Our manual downloads could be scheduled to operate automatically when prices fall. The possibilities are limitless.

In addition, the auction will use market forces to allocate channels to those who are willing to pay the most at that time and location. Moreover, the auction can provide access to all available bandwidth, rather than just that of a single carrier, thus ensuring that consumers will not be left at the gate.

Thank you for giving us the opportunity to present a few of the benefits of Red Bat's auction concept and for your continuing efforts to develop new markets in spectrum.

MR. PEPPER: Thank you very much to all the panelists. I'm actually quite intrigued by this concept that you've -- or, actually, more than a concept. You're developing the software.

Dale and I were just commenting that this -- something like this was first proposed by Ellie Nome, a professor up at Columbia University about three or four years ago. And everybody said, well, Ellie, you can't have momentary, you know, markets in spectrum like you've described.

So it's amazing how quick things move from theory to implement. And we'll see how successful, so that's very exciting. I was, actually, curious as I was listening to you in terms of how you think about the satellite market which is actually a fairly, you know, I would say, mature but it's a market where transfer time has developed over 20 years that's -- how would something like this be used to extend what you do? Is that -- have you thought about that?

MR. ANTONOVICH: In different ways. One of the more

interesting ways the model is going to change, we've gone to digital video, which has allowed us to more efficiently pack a satellite. We can get more channels of usable information through a satellite now, digital audio data.

It's all more efficiently loaded. But the model hasn't changed, those you will either audit for a full-time circuit or a part of time. And nothing really changed. Where the model starts to change, though, is when we're in a packet-type structure, like IP-based protocols where now, it's only a matter of a delivery of a service from one to another where customers will now have some ability to look at it more on the parcel delivery model where they'll be able to pay based on their priority.

Do they need it, like, there immediately? Or would next-day be good enough, and therefore have some ability to control price or time which has historically, like power and bandwidth, been fixed variables for us? We now create an independent variable called time.

And I think that's one where the market will start to differentiate and make better use of the satellite bandwidth, because today it's a premium to transmit on satellite because of, you know, of the geographic reach of satellites. But there's been no time or price relationships. And that'll change. And models like the auction model or a differentiated time and price model do fit.

MR. PEPPER: Sharon, how does this fit with some of the perils, for example, or things that you talked about that

are needed to create a market in terms of knowing what's been delivered, being about to confirm what's been delivered with the quality assurance that was the contract? I mean, how does -- how do you think about this what you've been hearing?

MS. CROWE: Well, essentially, on the standardization, it's always beneficial to bring those principles together that feel they will actively participate in the marketplace. And then you come up with parameters based on quality of service differentials or attributes.

And if somebody wants to offer a better quality of service than someone else, you can have a minimal price benchmark, and then other entities can participate in that market if you develop basic differential market, which is either a premium or discount to whatever service you want to.

And then, of course, the nomination and confirming process is always the most important part, because then you'll know when an act of default has occurred. So in spectrum, I don't know how the medium works. But the measurement process and the liability associated with not performing are two of the most important factors in any standardized contract. I hope that answers your question.

MR. HATFIELD: Yes. I was hoping Mr. Reece would respond to that, because that's one of the things that jumps to me with drop-call problems, and things like that. Can you specify a quality well enough to be able to make the market work?

MR. ROTH: Probably, in the future you'll be able to

if you have software defined hand-sets, and you define your pricing mechanism based on standard packets of data, rather than based on per minutes of use, so that if you want to increase the quality of a call, you may be able to increase the data rate at which that call is placed.

So you could, then, have a select -- you know, as a consumer, you could arbitrarily decide, well, you know the quality of this call is insufficient. I will accept a higher price in order to improve the quality of the call.

MR. ANTONOVICH: And, again, there's a difference between real-time and near-real-time in terms of error correction and error checking and other methodologies to ensure a higher delivery, reliability, quality of service. There are work-arounds now in the existing technologies for wireless that, you know, correct most of the errors people get now of all forms.

And in the last years, they've been breathtaking in the number of improvements we've seen in error correction and other methods.

MR. HATFIELD: I was just thinking, generally speaking, of the terrestrial mobile environment from a propagation standpoint is probably a lot tougher than transponder characteristics, and so forth. And it's sort of intuitively you have a more stable medium to work with.

MR. ANTONOVICH: Perhaps. But when we're talking about wireless PDA devices, personal digital assistance, I mean, there it's just a matter of ensuring that the information, the

files, the data is ultimately correct. It didn't have to be immediately correct. Obviously, it isn't available to a user until --

MR. HATFIELD: Good point. Good point.

MR. PEPPER: Other questions from colleagues? Doug Webbing from International up here.

MR. WEBBING: I have just one question. From what Mike said about the satellite area, I was just wondering, given the sort of transponder market you've been talking about or marketed use of transponders, what kind of lessons are there for the terrestrial wireless users in terms of either Commission rules that help you or rules, maybe, that hinder you or rules you either like to see added or not added?

Is there something, you know, that you could suggest that would help us to think about applying what you've learn today to terrestrial wireless situations?

MR. ANTONOVICH: I must confess, I probably don't, because I deal from a customer service perspective. And I, certainly, understand and appreciate what customers want. I have no idea what the FCC wants.

MS. CARNELL: Bob?

MR. PEPPER: Diane?

MS. CARNELL: Yes. Diane Carnell with the Wireless Bureau. Could I turn that question, maybe, to Sharon and Mr. Reece just to talk a little bit about what analogs you might see from other markets, particularly electricity markets or the utilities markets, of next steps that might get this process

rolling in the spectrum context?

And you, who are looking at it sort of more immediately in the spectrum context, whether there's something that you see that would sort of get this ball rolling that are more factors as compared to sort of other less important factors? You mentioned a number, but I'm wondering, you know, how do we get started?

MS. CROWE: Well, how we got started in wire-based telecommunications was we approached -- Williams and Enron (phonetic) approached Comtel about facilitating a bandwidth trading organization where we brought together 14 principals to sit down and discuss the marketplace in detail and create a standardized contract.

We took a couple of contracts that were out in the marketplace and, you know, sat in a room in Washington and again in Tucson and just went through it and created the type of contract that we felt was not only commercially feasible, but technically operational.

And that's the big issue, too, because the initial contract that we dealt with with Enron had commercial feasibility, but the technical issues were oversimplified. So it's beneficial for you to have your commercial people and your technical people in the same room when you're going through it.

And it was great, because it was trading perspective brought in, but there was also, like, no, no, no. You really can't do this. And this is why. That's one way to get started. Another is to look at the marketplace and see if it's going to

happen overnight.

Give yourself a timeline that you can easily work with and bring in entities like Mike's and Morgan's who are participating in this space with Red Bat's vantage point and the people that are sitting there saying, okay, we think that this marketplace is feasible.

I think that was speaking on the first panel -- thought it was feasible. Get down in a room and propose to yourself how you want the marketplace to work, and then approach the FCC with this, because dealing with the FERC and the FTC all these years, I know it's a lot easier to work with regulatory when you say this is what we think the market should look like, instead of expecting the government to give you some rules. And then, you come back and it's a back-and-forth go process.

That turns something that can become liquid in 12 months into something that takes three years. No offense to the government or anything, but it's just -- you know, you get lawyers involved -- I'm just talking about my corporate lawyers, too, you know. And I think that's a good start.

I know that I've kind of used the same thing with standardization, but it really does help, because market-adverse effects do happen. And you're better to be pro-active with regulatory with how you want the market to look like in the front, because when something like this happens -- I mean, when gas went to $28, when power went to $7,000, the FERC walked in and then all of a sudden, you get additional regulation.

If you want it to be a free market, then be

pro-active, sit down, get yourselves together, and create the marketplace the way you want it to look like. Sorry.

MR. PEPPER: Mark?

MR. ROTH: From our perspective, just a general obvious statement you need in order to form this market, we need buyers and we need sellers. On the buyer side, I think it's -- I think we have a pretty straightforward buyer proposition for the buyers.

And the seller side, that's the real point of inertia is getting the sellers to commit their capacity through this mechanism. And why we think we have very strong value propositions for them, particularly for smaller PCS carriers who have a difficult time building a subscriber base that they can actually sell to, especially in the face of nationwide marketing campaigns and nationwide coverage, how do they create a subscriber base and reduce their acquisition costs?

We think that we have a strong proposition for them. And those are the sellers that we were going to first approach. But in general, there's probably just a huge amount of inertia around the concept of applying management concepts to frequency or spectrum use. So I think inertia might be one of the biggest impediments.

MR. PEPPER: Any questions for anybody out there?

MS. CROWE: If I can make a comment, the best way to get sellers into the marketplace is by saying you have an asset base you need to preserve the value for. And you can either utilize it if the marketplace gets rolling; you can either sit

by and become a victim to whatever ends of developing. Or you can be part of the process.

And that's how we've been able to get additional carriers into the bandwidth trading arena by simply saying you've got $14 billion worth of value on the ground. Either step up to the plate, make the rules, or just become a victim to them.

MR. PEPPER: We've been hearing a little bit difference, I think, is Red Bat is a more of a retail-oriented market, as opposed to the wholesale market in terms of what we're trying to do at Williams and Amsat (phonetic).

And I'm curious whether you've thought about using the Red-Bat approach or, you know, what somebody else might call kind of a -- what Price Line's trying to do in some of their retail minutes in the long-distance business. How would you apply those approaches to the wholesale network capacity?

MR. ROTH: Are you asking to link into --

MR. PEPPER: Link into. Or have you thought about using the, you know, your approach to the kinds of issues that Sharon and Mike --

MR. ROTH: Sure, absolutely. We would if you have a wireless bandwidth exchange in an institutional model or wholesale model that, for us, would seem to resemble more of a futures market where they would be trading a capacity ahead. And we would be able to liquidate that capacity, instantly.

For example, if you had third-party investors coming into that exchange via bandwidth in certain locations, there

might be speculators saying, well, I think in Chicago at 5 o'clock on January 30th, there's going to be huge demand for wireless minutes. They could buy that, and then auction it off instantly through our retail market. So I think we'd be very supportive of -- we would help provide liquidity to a wireless bandwidth exchange.

MR. PEPPER: Laurence, a question. In the European context, are there the same kind of transponder sales in spot market and satellite time that Mike was talking about, do you know?

MR. GREEN: I don't know offhand, I must say. But I imagine that if it exists here, that means satellites are such an international sort of activity, I'd be surprised if something similar weren't going on in the UK. I mean, what we're seeing, I think, not just on satellites, but more generally we're seeing sort of little gray markets jump up in the UK.

We don't have a great deal of information on it. We just get anecdotal evidence they exist and look at base stations which is sort of like provided by third party for a small group, a close group of users. And there's some indications there that companies are buying and selling themselves just to get hold of the spectrum.

So that's a sort of a rather clumsy way of spectrum trading, but hard information is very difficult to come by. I'd just add to something that was said previously that was sort of interesting for marking in wireless minutes, so I guess the logic of convergence will be that it won't matter whether it's

wireless or wireline for many applications.

And one of the scenarios that we're exploring in this study is called "band revolution", where, because of the bandwidth demand, everything goes over to fiberoptic. And wireless is just used where it's essential, for example, for mobile or maybe for short-tail. I think you'll see that's the point of view of the user.

It doesn't much matter whether it's wireless or wireline in that context. And we'll see markets in just communications or bit transport, irrespective of whether they are wireless or wireline.

MR. PEPPER: Mike, you were nodding that this does happen.

MR. ANTONOVICH: I can help Laurence out. Indeed, they are very vibrant and vigorous broker reseller arbitrage for satellite spectrum and services in Europe, as in elsewhere and global.

MR. PEPPER: Are there differences among regions to -- some countries doing it in a way that facilitates it, for example, more than we do, lessons that we might learn in or, I mean, where do you find that --

MR. ANTONOVICH: Well, it's different. There's a service provider layer that one sees, globally. Some of the strongest international providers in our industry, satellite industry, are European -- British Telecom, GlobeCast, notably.

And in the U.S., there are a number of very strong providers, including Williams and others, who operate

internationally and globally. But that market is, right now, it's about digital video. Where I think the trend line is it's going to be far less about video and more about transactional activities far beyond the plain old television.

And I think that's where the models get very interesting in terms of the integration into the wireless PDA markets and a lot more hybridization of networks. It's going to be less about just geostationary satellites and more about integration of them into terrestrial wireless and terrestrial wired networks and more of an integrated networks approach to however one moves picture, sound, files.

MR. PEPPER: Thank you. Any further questions from the audience? Charles?

AUDIENCE PARTICIPANT: Yes. It occurs to me is that the wireless could have one complication that, perhaps, wireline and satellite doesn't have; and that is, is the time and wireline, I think, you pretty much have the control over the physical stuff by the -- being carried, selling the service.

With wireless, it's quite possible somebody buys the time and, perhaps, he's mobile. Perhaps, he now causes interference to a third party, a different licensee. How do you manage that liability? Okay.

Do you have all the wireless carriers in agreement, in consortium? Or do you have big liability problems? How do you ensure against that? How do you deal with that? I think it's an important factor.

MR. ANTONOVICH: It's a difficult problem, especially

when we get out of U.S. jurisdiction, if you will, and you're into a multicountry environment. The Europeans, as an organization, do an excellent job of managing and mitigating interference on a regional basis.

But one of the beauties of wireless, naturally, is users from virtually everywhere within that footprint, be it terrestrial or satellite, get access. It's also one of the hazards of tracking down interference and mitigating its use.

And as we get into more of the non-geosatellite systems, there's been a great deal of UN cry about interference that we're concerned about in the geostationary business from these low-earth satellites that are moving through the view of our customers.

Largely, most of these problems can be mitigated or managed. And it takes a lot of careful coordination activities by the various existing applicants and new entrants to the markets to manage it. It's not insurmountable. I mean, we certainly have to live with the laws of physics and propagation. But they work.

MR. PEPPER: Thank you. I thank the -- Diane?

MS. CARNELL: One quick question, probably, directed towards the Sharon Crowe again. I'm wondering whether there are any examples from other sectors of actions that regulatory authorities have taken or not taken that have been particularly helpful towards developing secondary market or potentially have been not terribly helpful in developing a secondary market that we might keep in mind as we move through this process.

MS. CROWE: Oh, yes. I've got a prime example for you.

MS. CARNELL: Okay.

MS. CROWE: It's called FERC Order 888, 889. And although it opened up the electricity market more for capitalism on trading and the separation of generation transmission assets from the utility base, it did not really touch on all the implications at managing a transmission grid that is not totally connected, you know, because you have connectivity problems between different regions, Eastern that connect to Western -- and TBA, and so on.

It didn't address all those issues. So they had to come back out with FERC Order, what they called 02 (a), which was the FERC Order 2000 which further died down into the opening up of the transmission grid for free access for all counterparties.

And because that element was missing in the original order, people claimed that that's why you had a power problem in synergy and TBA when it went to $5,000, $7,000 a megawatt hour when historical prices never topped off at $35.

And so, those are -- that's kind of the reasons why we're looking at the other element of telecommunications on a very technical aspect, because in electricity, you know, the grid finds a way of healing itself. In telecommunications, there's no second chance to be right. We'll lose the data.

It has to be retransmitted, especially with continuous feed. So that's why, you know, when you're looking

at issues, make sure that all -- you look at the glass as if it has no water in it. Everything that can happen will happen. Sorry.

MR. PEPPER: With that, I want to thank the panelists very much. This is, again, a great panel. And we'll switch panels and be back in about two minutes. Thank you.

MR. HATFIELD: Tom Sugrue, who is the Chief of our Wireless Telecommunications Bureau, has joined us down at the other end of the table. Are we ready? Tom Hazlett will start out if we figure out the technical problems here.

MR. HAZLETT: Hi, I'm Tom Hazlett. And I have a paper coming out. I know you all are going to want to read this. So we'll -- I don't have the paper for you to check out. So that's why I'll just pitch it here called, "The Wireless Craze: The Unlimited Bandwidth Myth, The Spectrum License Faux-Pas and The Punch Line to Ronald Coase's Big Joke." And, of course, it tells you everything you want to know about liberalizing radio spectrum policy.

And the interesting challenge that was issued by the Chairman of the Commission the last part of February has just sort of some terrific historical irony when Chairman Kennard suggested that we have wireline bandwidth markets. Why not markets in wireless?

Well, that was an interesting question posed in 1959 by Ronald Coase who later won a Nobel Prize for work coming out of his analysis of FCC radio spectrum policy. And, in fact, Coase thought that there should be radio spectrum markets. And

this was an intriguing idea to many people.

And he was invited to testify in 1959 to the Federal Communications Commission about his policy proposal. And the first question from an FCC commissioner was is this all a big joke? And, in fact, Ronald Coase found very little support for the idea of radio spectrum markets and, indeed, a long proposal that detailed what exactly should happen to develop property rights.

And property rights, radio spectrum markets was written for the Rand Corporation, a well-known think tank, that paid for the report, and then refused to publish it. And they refused, in part, because of an anonymous referee report that was now, in part, published by Ronald Coase some decades later when it was less controversial.

And part of the report said I know of no country on the face of the globe, except for a few corrupt Latin American dictatorships, where the sale of the spectrum could even be seriously proposed. This came out about 1960 and led the Rand Corporation to back away from going forward with this proposal.

And here we are today talking about exactly the sort of proposal that Ronald Coase had in mind with, hopefully, less dramatic controversy surrounding this road from public interest allocation to property rights to bandwidth markets.

And this is the flow of logic. Unfortunately, Bob Pepper brought up Ellie Nome's proposal a few years ago and because Ellie is not here, I'm sure there'll be no contradiction to this. (Laughter.)

The fact is that Ellie did not propose going to property rights to incite bandwidth markets. In fact, his idea was to go directly from public interest allocation straight to bandwidth markets. Well, that's a short cut that will not work. And in fact, policy makers in trying to put the market together, so to speak, were figuring out ways to have the market develop should really be worrying about traversing this political line of death for many decades has separated the public interest allocation system from property rights.

And, of course, you go back to the earliest days of radio spectrum regulation, the central logic of the policy was to preempt vested rights, private property rights in radio spectrum. And even today, the policy adopted in December of 1926 and before the radio act is still in effect.

And that is that you have to give up any claim to vested rights to have an FCC license. But the policy today has been liberalizing and the way that it can further add the combustion to the move towards bandwidth markets is, certainly, to allow these properties to develop.

Bandwidth markets, obviously, can develop without a rule-making and, in fact, will best develop without a rule-making explicitly on the subject of bandwidth markets. Wire line bandwidth exchanges are popping up all around. We've heard from some of the people involved in these.

And the key there, of course, is that the fiber creates private property rights in the radio spectrum and allows that market to develop quite spontaneously. It's also important

to see that the so-called glut or the great increase in supply in spectrum in the wire line part of the market is really responsible for exercising this development in these trends to create these bandwidth markets.

That should be a very important suggestion to the FCC that allowing more spectrum to be in use in more flexible ways, thereby increasing the effective supply of radio spectrum, is what we have to do. And, of course, in fundamentally enabling the market, there are various aspects of property rights to consider.

And the FCC is not unaware. There have been papers written by FCC people and other experts, including Evan Corell and Doug Webbing that go back many, many years that talk about flexible use, flexible technology, flexible divisibility of spectrum, and so forth, free transferability without license transfer delays, and the right to use unoccupied bands.

That's something that has not been so commonly discussed, but certainly, the ease of entry that will allow much more spectrum to come into the market would be probably the single greatest factor to get bandwidth markets going, because it would create this so-called glut of spectrum.

So this will unleash the cornucopia, the full property rights for spectrum users, gearing the telecommunications regulation wireless specifically to concerned restrictions limited to interference contours, shifting the burden of proof in FCC proceedings to those who oppose entry and use liability rules and streamlined technical adjudications to

allow entrants to come in and to use spectrum in new ways, unoccupied spectrum, that is with administrative short-cuts.

Sort of a footnote to this is that antitrust policy will have to move with the FCC policy, instead of having sort of the poor-man's antitrust policy that said there can only be so many licenses owned or various cross-ownership restrictions because there is this service limit to what a license is for.

We'd have to go to a generic antitrust standard which, in my opinion, is not at all a bad thing. You have to go? No. Wrap up here? I think it's plausible. There are lots of examples that people are familiar with showing the liberalization benefits to consumers. There have been spectrum reforms and liberalization really going on since the middle 1960's.

There's a lot of stuff going on now. I would suggest that there are still miles to go, vast underutilized spectrum, whether you look at the TV band, whether you look at the possibility for underlay rights, in addition to overlay rights that would unblock technology such as ultra- wide band.

In fact, the crowded spectrum today is vastly underutilized. Why? Because of limits on technology and flexibility. I would conclude with a punch line to Ronald Coase's joke which is that, in fact, I don't know why you want to characterize the government of Guatemala, but there are easier, better, more liberal ways to do spectrum policy.

And since 1997, in fact, January of 1997, the telecommunications law in Guatemala has issued a radio spectrum

license, something the United States has not seen. As you know, we issue radio station authorizations in the United States that actually regulate the apparatus.

Here, in the Guatemalan telecommunication context, this is the license. It's a one-page license. And it has five definitions of radio spectrum that go to the licensee or the owner. This is -- defines what they call a TUF, a T-U-F, Title to Use Radio Frequencies.

And this is -- I could use my algorithm Spanish to read this to you. But I'll spare you that. (Laughter.) But as you can plainly see, the fact is that this license very simply defines a block of radio with respect to geography, bandwidth, hours of operation, interference in and interference out, omissions in, omissions out, and has dates at the bottom. And that's it.

So this sort of liberal policy actually is working quite well in the Guatemalan context and should give hope to all of us, including Ronald Coase, that it is plausible to talk about the sale of spectrum, whether or not you be in a Latin America democracy or the United States. Thanks.

MR. PEPPER: Rich Barth?

MR. BARTH: Thank you, Bob, Dale. It's not particularly easy following Tom's enthusiasm with a message of don't do it when he's saying just do it. So I'm going to try and weave a somewhat more cautionary tale. Do it, but don't do it everywhere.

And I would base that recommendation on the fact that

for at least the next four years following, perhaps, Coase's time lines, it's not highly likely that we're going to see the Defense Department give up on all its spectrum. We're not going to see public safety give up on spectrum.

So there will be bands that are going to be encumbered by some sort of restrictions in the public interest that probably will evolve into different uses over time. But pushing against those brick walls, initial initially, I would not recommend as the easiest course of auction.

Let me roll back to the beginning, and then come to some points that I think are complimentary to Tom's. When I started trying to pull my thoughts together on today's presentation I, of course, immediately went where the Washington Post went this morning in the pork bellies and thought I could make jokes out of that and tried to think through Wall Street and how some early markets were created in this country and globally.

And really none, in my mind at least, simply apply in any ready way to the marketplace where we're at today for spectrum, spectrum management, spectrum allocation, spectrum property rights, and all the elements having to do with the secondary spectrum market.

The constraints are very real. You have a regulatory overhang from the Telecommunications Act in the '30s that's still out there inhibiting certain kinds of transactions. There are issues to be looked at there. There are certainly all the physics issues that were talked about earlier, propagation

characteristics.

You can't just compare spectrum at 700 megahertz at to spectrum at 1.9 gigahertz, 2.5, et cetera. There are clearly spectrum bands below 3 gigahertz that are much more able to be used for mobile applications than for fixed. Fixed would work there also, but fixed also works above 3 gigahertz much more easily keeping the lower spectrum which has the right propagation and other characteristics for mobile more available for those services.

What we would like to recommend from a more rural perspective is, yes, try some of these. Just do it spectrum marketplace new ideas, but be a little bit cautious in how you do it and where you do it. And I'd recommend that the Commission look at, perhaps, a bifurcation of two different categories of future licenses.

One would be a permissive reuse of spectrum which could be defined in the rules going forward for new spectrum allocations, and the other would be a permitted reallocation or reuse of spectrum by which a user would have to come in to the Commission and get prior approval, as opposed to in a permissive system getting -- merely informing the Commission of the change of -- the transfer of the license, the transfer of the use, the transfer in some way, shape, or form of the use of the spectrum for economic gain or not.

In the initial case for permissive re-use, we'd recommend that new spectrum bands that are auctions, as opposed to those that are otherwise allocated, be considered for a

permissive re-use. The key missing link here, however, is that the regulatory overhang, as I called it, of the FCC's process is still out there and not likely to be easily swept away.

I would commend the Commission to think of how it rethought its equipment recertification processes over the last 6 months, where the Commission did what we, in Motorola, call a core process redesign.

They looked at every aspect of taking in equipment certification application through the end game of issuing the certification and cast away many, many, many of those steps in order to streamline the process, fast-track the process.

In doing so, in a period of I think just about three months, the Commission went from 120-day processing time down to a 12-day processing time for its equipment certification. The Commission knows how to do this and needs to look at some of the processes that it has internally in place and has probably had in place for the last 50, 60 years and carefully desegregate them into those that are truly necessarily in the public interest and those that aren't.

And even on top of that, look at some permissive reuse, reapplication, re-licensing of spectrum-kind of scenarios, rather than just the permitted ones that we have today. I think that the band manager concept is one that sort of moves down this path. And that's pretty obvious.

And I think the Commission, particularly, in what I call odd-bands like the 4.9 gigahertz band, which doesn't seem to be generating a lot of interest on anyone's part would be an

obvious candidate to also license, perhaps, in a band manager-type of approach if it has to be auctioned. That's pretty much it.

I think the permitted versus permissive reuse of spectrum is the way to go, because you're not going to redirect the entire FCC system towards a new spectrum-free marketplace, nor should the Commission consider doing that in light of all of its other responsibilities in managing spectrum. Thank you.

MR. PEPPER: Thank you. Joe?

MR. MITOLA: Thank you. I'm Joe Mitola from the Miter Corporation. Miter is a public corporation, not-for-profit, chartered in the public interest, what Tom called a think tank. And I'm -- and we operate centers for the Department of Defense that do research for DOD.

I'm not speaking either for the DOD nor for the Miter Corporation. I'm just speaking as a guy who knows something about software radios. As many of you know, software-defined radio is an emerging technology.

It has its roots in digital radios, radios that use base-band signal processing for creating an air interface with the constraints on the transmission band being defined by the hardware.

Software-defined radio technology extends this digital radio starting point by including a wide-band antennas, wide-band RF conversion, wide-band analog-to-digital conversion, and then higher performance digital signal processing so that one radio device with a fixed piece of hardware can access

multiradio bands and modes that are pretty adjacent to each other, such as between 400 and 900 megahertz, for example.

For software radio, that's pretty close together and can do this with a software personality. Now, a single-channel software radio has -- only gets to use one of its many personalities at a time. Two-channel radios can use more than one at a time, and so forth. This offers a lot of promise.

For example, commercial operators are sponsoring the development of this technology, because it offers the potential of future proof in the infrastructure against changes in the air interface standards. If you look at third-generation wireless, for example, 3D based on wide-band co-division multiple access or WCDMA, there are enormous number of combinations of data rate, quality of service, tariff, and availability for these different modes.

Data rates range from a few kilo bits a second up to a couple of megabits a second for a single user. And so you look at this new technology. A WCDMA chip could be built like the Qualcomm chips are today, for IS-95, pretty much with a sing-function chip. However, that's unlikely.

It's more likely that the silicon in these handsets will have a programmable analog-to-digital and digital-to-analog conversion capability in there, so that while this third-generation rollout is very incremental and relatively slow and spotty in some places, it will be able to back off to second and first-generation personalities.

In other words, the wideband despreader will also

have an A to D function and all the rest of the GSM or IS-136 or amps or whatever the prior generations are will be done in software personalities. And this is something that's pretty well technology-in-hand today.

These narrow-band modes are almost entirely done in software. Now, you could unleash -- now these are in research labs, not in deployed products, just to make that clear. This technology could be unleashed for secondary markets according to the following scenario -- and since the Commissioner likes real estate, I'll use a real estate analogy:

About 25 years ago, my wife, Linanne (phonetic), and I bought our first home. It was a townhouse. On our first Thanksgiving there, the neighbors got together for a game of touch football in the backyard. There were no fences. We had plenty of room to play.

The next year we got together and we couldn't play, because everybody had fences, some for dogs, some for cat kids, some to protect their flowers from us football players. So the next Thanksgiving, we commiserated about the good old days when we could play football in the backyards.

Obviously, using secondary spectrum, it can be a lot like playing football in the backyard or in the backyards with a lot of neighbors. In the past, the only way to guarantee that the football players, the radio transmission devices would not crash through the petunias was to build these physical fences, the physical limits on the RF hardware transmission devices.

With software-defined radio, however, what we're

doing is tearing down these fences. The fences are going down, because we're creating a SDR handset that can access spectrum from 400 to 960 megahertz in one band and from 2 to 5 gigahertz in another band.

Now, this is a football player who can jump over the existing fences, kind of in stride. And as we progress towards a proliferation of even more affordable and smarter SDR technology, we're going to be approaching the backyards in my current neighborhood.

Now we live on a golf course. I still have the same wife, by the way. There are -- that's unusual. There are no fences in my backyard. There are, however, these discreet little white stakes that tell the golfers where their balls out of bounds, tell me where my neighbor's yard ends and mine begins, and so forth.

And what we're financially incentivized to do that, because the view of the green is worth money. So that's why we do it. And I get the divot taken out of my backyard every so often where we can throw footballs around and it's an open kind of environment like we're envisioning, I think, that the FCC's envisioning, maybe for spectrum.

But in order to have an orderly system with these almost no physical fences, you have to have good rules and automatic electronic-type enforcement measures. In the past, radios were not smart enough to obey the complex rules sets that I believe will be necessary to switch from, say, a cellular band, following Mr. Reece's kind of model, over to a police band

to get a few spare digital amps channels when you need them instantaneously and then back again a few seconds later to balance the loading of the cellular radio network against unused police channels.

Recently, I wrote a paper called cognitive radio for flexible mobile multimedia communications where I describe the technical details of a spectrum rental protocol by which software radios could actually do this. Police could get their spectrum for periods as brief as a few seconds to users such as cellular operators.

Within a few careers, this radio technology will be capable of accessing spectrum in this way and of automatically obeying intricate rule sets needed to assure equitable access back to the primary user. So if the cop pushes to talk, he gets to use the band, even though a second or so ago it was used by somebody else.

Now, I call this the spectrum seasonal protocol, because in my vision of the future, those to whom the spectrum is allocated would have the free market incentive to generate a revenue stream by charging secondary users for that spectrum.

This creates some financial incentives for the primary users to invest in the SDR technology required to offer the spectrum rental for well-orchestrated secondary use, in other words for rent. And I'll get to this issue of well-orchestrated in a minute.

I think it's going to take a combination of SDR technology, of SDR-based rules of etiquette have yet to emerge,

plus the financial incentives to take the next big step in secondary uses of spectrum. For example, if spectrum caps did not apply to spectrum rental, then you could have spectrum caps at limit in certain ways, and yet spectrum rental that somehow allows those who are generating a lot of revenue to get additional spectrum.

That's not a proposal. That's just a thought. Let me conclude, which I think Peter wants me to do, by emphasizing the fact that we need good rules. And it will take some well-instrumented, scientific experiments to develop them.

I know how I feel when I go in my backyard and I see some physical proof that a doberman has visited, conducting business in an unauthorized way. Now, if that doberman had had a smart electronic collar with a GPS, global positioning satellite motion sensor, I would have been able to persuade him not to stop for that long in my backyard.

Some secondary users of the spectrum are going to inadvertently fall into similarly undesirable behavior. SDR technology is like a new puppy. But it is a doberman, and it has teeth. If you can transmit anywhere between 400 and 960 megahertz on a watt right next to somebody's heart monitor, you have teeth.

So what we need to try to do is to create well-heeled SDR technology that has the technical rules embedded in the handsets and also in the infrastructure so that we can have both good football games and good neighbors. And as always, these are my personal views and not those of the DOD nor of the Miter

Corporation. Thank you.

MR. PEPPER: Thank you, Chuck. Michelle?

MS. FARHQUAR: I'm Michelle Farhquar. I'm a partner in Hogan and Hartsen Law Firm. I and I appreciate the opportunity to address these distinguished panelists here today and, really, applaud all of you for your leadership in sponsoring this forum.

I think the timing is excellent to launch the secondary market initiative for several reasons. First, as you've heard today, there's been a strong evolution of a wireline spot market.

There's also been emerging experiences and successes with secondary spectrum markets, as I'll discuss in a minute. Upcoming guard band auctions will also provide further practical experience for the FCC and the market and faster secondary markets on a broader scale will enable the FCC to identify underlying marketplace and regulatory barriers.

And I do believe that there are some out there. I've also had some personal experience that leads me to believe this back in January and February where I was approached by a very small LMDS licensee who wanted to buy some additional spectrum. And it's very difficult for someone in that category to know where to do, where to turn to.

We started with the FCC's data base and looked at all the LMDS licensees in particular market areas of interest, especially with some size and quantity, and then had to approach licensee-by-licensee, attorney-by-attorney to get what we

needed.

And it was a very slow, cumbersome, not an easy process. And I'm not sure that it really led to much fruitfulness. So I certainly, personally, have experienced the frustration that many licensees have in this area. By way of background, the FCC has options more than 5,000 megahertz of spectrum since 1994.

And as Chairman Kennard noted in his recent CTIA speech, there have been two very surprising results, almost a dichotomy. We still have a major shortage of mobile radio spectrum in particular, for the commercial operators in the urban areas. 3-G data networks need much more spectrum.

For private radio users, as well, they have very severe needs, again, specially in the urban areas and the urban markets. At the same time, we now also have large unused spectrum blocks and capacity which, unfortunately, to not match up perfectly with the most urgent needs.

Here, we have very little build out in the rural areas. And I'd go so far to say that rural consumers are dying of thirst in an ocean of untapped spectrum and completely agree with many of the comments of Carrie Bennet in that regard.

We also have lack of deployment and equipment for many of the spectrum bands half recently been auctioned. It's often been described as a chicken and egg problem where the licensees say there's no equipment. The manufacturers say there are no specifications or business plans.

And the end result is no build-out. By way of

secondary market experiences -- and these are really just the tip of the iceberg that I'll mention right now -- we've talked already about the wireline spot market. We've had some familiar with our firm with this particular area.

And it's interesting that a lot of these spot markets have been emerged as anonymous where the sellers of spectrum don't want to be known in terms of what prices they are offering on a daily or weekly or a particular basis. So clearinghouses have emerged.

And the third-party brokers have facilitated this process in matching the buyers and sellers. And the sellers, in particular, have benefitted from reduced marketing costs, the ability to off-load some of their excess capacity, and also guarantees from the clearinghouse or broker that they will get paid.

So they are able to offer their spectrum to buyers that might otherwise not meet their credit checks. With respect to wireless, there's been a long experience, both positive and some negative, with resale, which is a type of secondary market.

It's worked well in the paging area, have had mixed results in other areas. But one I'd like to point out that I've had some experience with is a company called Air Sell (phonetic) which is reusing excess rural cellular capacity, repackaging it, and then beaming up to the air with antennas that are focused on the airborne general aviation market.

So they are completely reusing an untapped spectrum base. They only need five or six channels of what's 800

channels-plus in a given market. And they are able to establish a nationwide footprint, because the cones that they establish are able to go much further in geography than they do on the ground.

Therefore, it's a win-win situation for a number of people, certainly for the rural cellular operators. They've got a brand new revenue stream. And that allows them to deploy further to more rural consumers. And also, they are not a direct competitor, because they are serving a whole different customer base, these general aviation fliers and pilots.

And also, there's no interference. They very carefully tested for interference before they launched this whole exercise. And the cellular operators had to reassure themselves of that, too. And there are very strong provisions in these contracts that ensure that the cellular operator can shut down these systems if there's even the slightest possibility of interference.

Also, the FCC has had long experience with ITFS lease agreements in the MMDS-ITFS arena since 1985, although wireless cable may not have taken off or worked, there are still allot of these agreements out there and many of which are still operational.

We've already heard about the satellite transponder capacity issues raised by Pan Am Sat (phonetic). And Carrie Bennet talked a little bit about affiliation agreements to build nationwide footprints for a lot of new nationwide wireless providers.

There are three ways that I've seen these done and accomplished. One is the nationwide carrier leases spectrum from other licensees. This is a model that Morgan O'Brien talked about a little while ago. Another is the nationwide carrier affiliates or has franchise agreements with a local licensee.

And the third way, which is the most difficult in many ways, is where the nationwide carrier encourages a local company to lease its spectrum and build out its market and then manage that market. And this becomes a little more cumbersome because of nature of the FCC's rules.

Also, wholesalers of micro wave spectrum capacity that are emerging. Pathnet is one of these. And I think they are finding that there are more buyers, perhaps, than sellers, ironically, because there are certainly microwave licensees such as railroads or utilities that have excess spectrum, but not necessarily a perfect match with potential buyers there, because sometimes the buyers want higher speeds or they want the bandwidth in certain places.

Upcoming, we'll have the guard band leases and cellular use of DTV spectrum as I mentioned before. There are number of potential barriers -- go to the next slide -- here. A transfer of control issues has been flagged earlier.

I think this is the category of all those old rules that Morgan O'Brien talked about earlier this morning. And I'll talk about those briefly in a minute. They may be overly flexible in some ways, bid-out requirements that Carrie Bennet

noted. And Red Bat noted a seller inertia. And that could be due, in part, to the very flexible build-out requirements.

You also have increasing spectrum values and a fear of encumbering spectrum prematurely. Carrie Bennet mentioned that, as well. And, in part, the wireless explosion and the promise of tomorrow has led to the view that there's a pot of gold just around the corner. And you better sit on what you have.

Don't encumber it, because it may be worth something next year. Then, the lack of excess mobile spectrum capacity in urban markets has been a problem. The lower prices that are being offered now to consumers, also the need to support both analog and digital customers has led to a real squeeze on the major carriers.

And finally, you have regulatory uncertainty, including FCC's concerns regarding their own enforcement authority over some of these secondary market licensees or lessees and interference concerns.

MR. PEPPER: Go a couple of minutes. And then focus on --

MS. FARHQUAR: Okay, okay. With respect to the transfer of control issues that have already been mentioned, many people don't realize that the Intermountain case where many of these issues spring from is only three pages long. It was a 1963 Commission decision. And it flagged six primary areas.

The first is, does the licensee have unfettered use of all facilities and equipment? Usually, that's an easy

criteria to meet. So that really hasn't been much of a problem. The second is who controls the daily operations? This has been a major problem, because if you have the lessee arrangement, in particular, they are going to want to control the daily operations.

Third is who determines and carries out the policy decisions, including preparing and filing applications with the Commission? Here again, that's usually easily arranged and handled. Fourth is who is in charge of employment, supervision, dismissal of personnel? Another problem area.

The lessee will want to have some control here. Who is in charge of payment or financing obligations, the money, the expenses? Also, a problem, the lessee will want some control here.

Finally, who receives the moneys and profits from the operation of facilities? A very big problem area. Potential contract issues, these have been flagged in a number of the franchise agreements I mentioned, as well as some of the wire line leasing models in the air sell contracts.

You have a lot of leverage with the licensee, both in terms of whether or not they want to enter the agreement and in terms of pricing. The lessee's comfort with a very indefinite status and indefinite rights is a problem. Licensee responsibility for the lessee can also be a major problem if the lessor is going to be held responsible. Interference, technical, and operating parameters have to be worked out.

The length of the contract term is a major problem

for the lessee, because if he's going to be building out equipment in the particular band, he wants to ambitize it over the life of the equipment or for tax purposes. So he's going to want as long a term as possible.

Indemnification issues, who is responsible for outages, for interference, for damages, breach of contract provisions? When can you walk away? When can the licensee take back the spectrum if they need to, and renewal and extension rights.

MR. PEPPER: Why don't you wrap up with FCC?

MS. FARHQUAR: FCC problem areas, the FCC -- some issues that have been discussed with respect to the FCC's role raised some problems. Should the FCC be a clearinghouse? Should it have broad regulatory authority over lessees? Should it review the contracts? Should it arbitrate? Should it draft samples or models? Should there be limited licensee flexibility?

And I, on the next slide, have just some positive thoughts here with respect to urging the establishment of a private sector secondary market with a more minimal FCC role, providing strong FCC support and endorsement for these markets, almost like a part 15 set-up, a general frame work that would clarify licensee control, the lessee's role, the technical issues, but maintain a lot of flexibility.

MR. PEPPER: Thank you very much, Michelle. Bob?

MR. SHIVER: I'm Bob Shiver, Chairman and CEO of Securicor Wireless. Before I begin, I think it may be

appropriate to see if I could spot -- earlier, I thought about spotting some of my time to Tom while we were going. First, I'm pleased to be here.

MR. PEPPER: It's no option market, no.

MR. SHIVER: Well, we don't have to discuss price. First of all, I'm pleased to address sort of the Commission on the issue of secondary markets in spectrum trading. Spectrum policy changes by the FCC over the past five years including the options of spectrum partitioning and desegregation have brought us closer than ever to real secondary markets in radio spectrum.

As I think you've seen from the panels today, this is truly a critical issue facing our industry. I'd like to speak briefly about my company today and why I'm here. Securicor Wireless is the largest service provider in the 220 band. We have a nationwide spectrum footprint and served customers throughout the United States.

We have been the dominant bidder in both of the 220 auctions held by the Commission acquiring over 200 licenses on a nationwide, regional, and local basis. We have developed patented linear modulation technology for use in the 220 and other bands that permit quality voice and data services over five kilohertz channels.

Finally, we also distribute land-mobile radio products to the public safety and private user communities. The history of the 220 band has had many twists and turns. Originally conceived by the FCC as a test band for the development of spectrally efficient technologies like linear

modulation, 220 service providers have persevered to the bulkization [sic] of demand by lottery, through numerous court challenges, and through delays in our auctions.

Today, the build-out of the 220 band has obtained a critical mass and its service providers have now rationalized their spectrum holdings through the auction. The 220 band has emerged as a strong competitive force in the specialized wireless markets and the test envisioned by the Commission 10 years ago has proven to be a solid success.

We're now ready for the next stage of our development. Securicor believes that the development of a free and open secondary market in radio spectrum will greatly enhance the wireless service options available to all private users.

The spectrum market auctions are a good, but imperfect, delivery mechanism to the market and leave significant spectrum demands unmet. While they are clearly a great improvement over past licensing methods, auctions are held infrequently, are subject to legal challenges and delays, require significant managerial time, and capital investment, and certainly involve uncertain outcomes.

They are not well-suited to meet the demands of many private organizations and cannot accommodate, among other items, spot market needs. A secondary market inspector will supplement the primary market and enable spectrum providers to offer their customers a portfolio of spectrum options where and when they are needed.

We believe this secondary market can be best realized

through private suppliers of spectrum such as the guard band managers recently approved by the Commission for licensing of the 700 band. These private organizations, in turn, must have flexibility to meet market demands spectrum in all forums.

Our experience suggests that the best way to meet this demand is through spectrum leasing. Since the 220 band auctions, we've been actively seeking business and franchise partners to help us with the build-out of our nationwide and geographic licenses, certainly a challenge for any wireless provider.

One partner, the national rural telecommunication cooperative, has helped us immeasurably in lease task. We have partitioned and desegregated licenses in many of the rural areas to the NRTC and this community. We continued to have discussions with more parties interested in entering the wireless business in their local markets, markets which may otherwise not be on our roll-up schedule for some time.

We have found partitioning and disaggregation to be an imperfect proxy for spectrum leasing. The auctions, of course, value nationwide and geographic licenses at a premium. We've paid such a premium for our licenses in the auction.

To break up such a license through partitioning or disaggregation simply doesn't make commercial sense. And we cannot recapture the premium we've paid by doing this. Our spectrum holdings are a core asset for our future. And like all wireless companies, we strive to maintain those assets.

We are hopeful that this clarity will further

stimulate interest in partitioning licenses. Like most wireless companies in our business, Securicor has entered into various business relationships, including management, resale, and equipment leases arrangements.

We're always mindful in these ventures that the fundamental obligations of a licensee to maintain control over his license. We believe this spectrum lease can accomplish this by providing for proper oversight by the lessor-lessee. However, Commission policy in this area, particularly the Intermountain microwave decision, seems to provide otherwise.

Accordingly, the relationships we have structured have been by necessity, time and resource-intensive, cumbersome, costly, and difficult to administer. How, then, may the FCC facilitate the creation of a free and open secondary market through spectrum leasing? We have four recommendations.

First, the Commission should confirm the application of a licensee control obligations adopted in its recent 700 megahertz guard band decision. This will enable a lessor licensee to responsibly meet its obligations by providing for oversight of and recourse against.

It's lessees without unduly limiting the flexibility of the relationship. Second, construction requirements imposed on licensees should be defined in terms of substantial service, rather than set benchmarks expressed in terms of geographic and population coverage.

This will help assure that licensees may respond to the real demands of their markets without the need to build-out

and carry expensive infrastructure before the market will support simply to preserve the license.

Third, the FCC should count the build-out by spectrum lessees, resellers, and others towards meeting the licensees' construction obligations. This will provide licensees incentives to participate in the secondary market and seek partners in markets that they may not otherwise reach.

Fourth and finally, the Commission should continue all efforts to broaden the reach and availability of its universal licensing system. This, of course, will provide the core data base of licensees necessary for a secondary market in spectrum.

With these actions, the Commission will continue to -- the momentum it has built in the past few years towards an open secondary market. This is especially important to remember that many countries look to the FCC's policy as a model for their own.

We believe that the Commission may facilitate the creation of a truly international secondary market in spectrum, promoting service options and spectrum availability, not even dreamed of a few years ago. I appreciate the opportunity to share my views today.

MR. PEPPER: Thank you very much, bob. I'd like to, actually, ask the first question of Michelle, because this Intermountain case keeps popping up as something that stands in the way of allowing the kind of, you know, lease arrangements, and so on. Now, the Commission -- I mean, this was a Commission

action in 19 --

MS. FARHQUAR: 1963.

MR. PEPPER: -- 1963. And as I think about it, the Commission does not apply all the Intermountain criteria in the broadcast area, for example, with management agreements. What did the Commission do there?

MS. FARHQUAR: What the Commission did there was that it allow lease agreements and management agreements, both for the radio and increasingly, to some more limited degree, on the television side. But it was a very conscious decision by the FCC where they set forth a new frame work which is not necessarily the Intermountain frame work.

And it was done at the Commission level. But there's no statutory requirement that the Intermountain criteria be met. It was done very specifically by the FCC. And it's continued down through time.

Now, what happened, I guess, in the late '80s, mid-80s is that the FCC became very concerned that cellular licensees were overusing management agreements. So it basically put the crimps down a little bit with respect to these agreements and issued this 1986 policy guidance and reaffirmed the Intermountain standards and actually sharpened them up a bit. There may be some liberalization that's happened de facto since then, but certainly not that they've announced.

MR. PEPPER: It's not a statutory --

MS. FARHQUAR: It's not a statutory guideline, no.

MR. PEPPER: Tom, did you have any questions? Dug?

MR. SUGRUE: Well, let me just try one. And I found the panel very stimulating. I guess I love thinking about these long-term things. And it inevitably gets back to what should we do next week in order to move the ball along?

So I might just ask each panelist if there was sort of one suggestion you could give us that we might do and implement sort of to get the ball rolling in the next months here, what would it be?

MR. PEPPER: Why don't we start down here with Rich and then --

MR. BARTH: Yes. I would recommend deconstructing the process. Dale's going to hate it when I know say bring Ken Nichols down from Columbia and have him do what we did up in the lab, because he just took it apart and removed steps that were completely unnecessary.

If you take away the frightening bureaucratic hire 50 lawyers to get it done process, you really don't have to change a lot of other rules of the road for the FCC. And you'd still make it a more user-friendly system to approach and create a marketplace for transferring spectrum rights.

MR. SUGRUE: And by process, you mean the entire spectrum management process? Or do you mean --

MR. BARTH: No. The process of obtaining waivers, and the process of obtaining license transfers. There are just so many steps and legal requirements that you can't do it as a common citizen. You have to hire some wonderful law firm like Michelle's and pay lots of money to do it. I think you want to

make it a user-friendly process, an online process, preferably.

MR. SUGRUE: What does the FCBA think of that? I don't know. Michelle?

MS. FARHQUAR: I'd probably do three things if I could expand that slightly. One is to look at ways to increase incentives to build-out in rural areas, because I think that's important concern. The other is to really look hard at the Intermountain criteria, because I think staff are giving guidance to some licensees at one level that you can do this and that, whereas other licensees aren't hearing that guidance.

And I think it's important to issue some new frame work or guidance as to what the current standard really is. And then, I would really encourage the FCC to get a private sector entity to become a clearinghouse for some of this spectrum information.

MR. PEPPER: Tom?

MR. HAZLETT: Yes. I actually had four for you. Thanks for asking. First, along these lines, it should be easy to find out how the spectrum is being used. And it's not easy to find out how the spectrum is being used at the FCC.

So there should be a spectrum registry that's put together, probably, with outside help. And the qualification should be that you can read it without an attorney. Why these things need lawyers -- sorry again, Michelle.

Secondly, the FCC should really try to develop the voluntary reallocation principles that are already started with PCS and some other context with so-called overlay rights. But

specifically, they should develop underlay rights for low-powered services that could use the same concepts, essentially, in reverse.

Third -- and I'm surprised nobody attacked the property rights concept. Maybe, given the context of the panel here, it's not on the forefront, but the typical attack ant property rights concept is that there are some services that should be left outside the market -- police and safety, public safety, and things of that nature.

But, you know, the services that you were talking about here make a wonderful case for the underutilization of those bands. And the benefit to public safety and public services could happen in a more liberal environment.

So to effect that and move that forward and get past the political roadblocks, there should be a competitive bidding for enterprise or market-level communication systems for public service where you would take private providers of services that would bid to the FCC to provide services to public safety organizations like data processing contracts with the government or, in some ways, like the next tell model or the Fleetcal model that, essentially, allowed a given band to provide more than taxi dispatch services in the initial days and did that plus with extra services.

But those contracts should be the subject of the bidding. And finally, the last thing is to -- and this goes back to what was said on the previous panel about how you don't -- if you're trying to create new market institutions, you don't

want to get into an back and forth with a regulatory agency which is the administrative process now in terms of the rule-makings.

If you could privatize a rule-making, you would turn it around. And instead of the FCC putting out a notice of inquiry and writing the rule-making the comments from the public, the FCC would actually sponsor a competition for private parties to write the rule-making. And some people cynically will say we've already privatized that process. I won't get into that. But that actually is an important aspect of that.

The Commission cannot act without information from the private sector. Essentially, all the information's out there. And the Commission does have to rely on that. But instead of having the FCC in an open-ended process have to initiate rule-makings and report and orders, you turn it around and you set the timetable and you have a series of, presumably, two rounds of private rule-makings competing to actually create the rules for certain markets.

And you would have incentives for consortia or organizations or firms or individuals to write rule-makings that were quite good and quite plausible for the FCC to adopt, actually have a proposed schedule for a privatized, ultra-wide band rule-making in 2,000 which would start on August 1st and conclude on December 24th, I think would be a prime time for that sort of an order to the market. In case you need that schedule, I've got it here for you.

MR. SHIVER: I still think my idea of spotting some

time to -- I guess, Tom, my comment is more economic than anything else. Three years ago, when I took over this position, and Bob Kelly was our legal advisor, we had a whole host of local sites that had build-outs attached to them spread throughout United States.

And obviously, I had lots of questions about why we had that and what was the history for it, particularly since I did not come from a wireless industry, whatsoever. And the comments were that we had to maintain those to keep the license.

There, certainly, at that time was not really enough spectrum in the marketplace in those local licenses to build much of a business. There was not much of a technology or equipment option out in the marketplace during that time.

And the phase two of the auction, which would have brought a lot more spectrum into the marketplace on a national basis and certainly would have helped. I believe that was delayed two or three times over a period of several years.

If you added up the cost of maintaining those sites and, you know, on average it's any where from, you know, $800 to $2,000 per site per month, over 300 sites on a monthly basis, and then annualize that over the period of time that we said today, that's a significant amount of capital that we employ just maintaining those licenses because of old rules that had we had use of that capital elsewhere, I mean, we probably would have been into the marketplace with a more efficient consumer-based service much sooner than we said today.

So I really look at if there's one thing I would

change, you know, tomorrow it would the construction kinds of requirements that go along with that, because I truly believe it is an inefficient ruling that does not allow companies like ours and others to look at really what the marketplace is looking for.

As far as sort of working in rural America, we have found that to be a marketplace that we partner in. Sort of partitioning and disaggregation has worked with us, because we've found common ground with the national rural telecommunication cooperative.

Nevertheless, the build-out rules still apply. I mean, even today, we're looking, you know, how do you use a finite source of capital at any one in time? And where do you best put it to use?

Today, we still have a construction sites to maintain, sort of, the national license. So that would sort of be my wish list on it. And I think from there, there's a lot of other things that would fall forward from that.

MR. PEPPER: Thank you. Joe?

MR. MITOLA: Just briefly, my suggestion would have to do with technology development. I think the FCC made a great step forward in its notice of inquiry on -- radio that got industry more broadly thinking about this technology and its potential.

I think, maybe, a useful next step would be for the Commission to sponsor, not fund or whatever, but just kind of sponsor some experimentation in taking SDR technology and

experimenting.

For example, the FCC would be a great point man for getting NTIA and, maybe, APCO (phonetic) or others together to say let's get this SDR technology together and in an experimental situation, maybe, getting Tom's underlay rights sort of idea to do some experimentation on what kind of constraints, algorithmic, automatic, real-time, things that a transparent to the user.

What kinds of things that we build into these radios so that they are well-behaved, you know, like a doberman that knows where to do, as opposed to in my backyard. I think that that can happen, but it's going to take some experimentation and some leadership by the FCC to do that. Thank you.

MR. PEPPER: Thank you. That's good. Thank you. Are there any questions from the audience? Doug?

MR. WEBBING: I just wanted to go a little further out field to Tom's question, because Tom's question was, as obviously the head of a bureau that has the biggest licensing load is, what can we do quickly?

But I also think a number of panelists here and earlier talked about the auction is not the answer to everything, but a very step the Commission took. And, of course, that took legislative change.

I just wondered if, even though this is the longer, further-out looking issue, are there any major legislative changes that any of the panelists think could really help this process? And, obviously, I'm thinking about the communications

act or whatever.

MR. PEPPER: As you look at what you've proposed, did you see the need -- I mean, I guess another way to ask dug's question is based upon the wish list how much of this can we do here within our statutory authority?

Or do we have to go outside and go back to Congress and say, well, there's some great ideas. But we can't do them? I was -- actually, what I was hearing most of were things that, in fact, are already within our authority.

MR. HAZLETT: I mean, all of us want to ask the question what could we do tomorrow to skip Congress. And so, I mean, there are a number of things. In terms of the long-run political support you have to put together for an act of Congress, it's probably best to try plan B first. And, you know, I think there are a lot of things.

I mean, some of these realistic ideas for stripping away this buildout or whatever are things that the Commission can work on. I had a question, maybe, a pointed question for Michelle. And that was why are the sellers reticent to -- you know, why do they hide behind the middleman broker or whatnot? Is it possible you know that?

MS. FARHQUAR: Price discrimination issues in terms of where they set the pricing for their customers.

MR. HAZLETT: I see. Interesting. Okay.

MR. BARTH: Well, the one piece of legislative change that I think helps the FCC and its quiver of various tools would be lease-fee authority that we would promote very strongly as a

legislative, long-term fix. It's not going to happen this year. But we can continue to advocate for it on the Hill.

MS. FARHQUAR: And I would agree with that. That can make a big difference in the private radio market, in particular.

MR. HATFIELD: Carrie has a question.

MS. BENNET: Yes. I didn't get a chance to talk enough before. But my question is on the leasing arrangements. We are in the process of working out some pretty major lease arrangements. And we don't think we can wait six months for you all to figure out Intermountain.

Is there a process whereby we could come to the FCC without leases and have you bless them as -- maybe, like we have the assignment of license process. Could we treat it as if we may have a transfer of control and come forward and say look at this and tell us is this effectuating a transfer of control between lessor and lessee?

And if so, can you just go ahead and approve it? And then, we've kind of gotten your blessing. And we can move forward and not have to worry about our business plans being screwed up if we did violate those rules.

MR. PEPPER: I think that question was asked the Tom. You can submit them to Tom has let and he'll --

MS. BENNET: It's a forum.

MR. PEPPER: Sure, you can submit them. And I mean, I would look at the band manager, 700 megahertz order is our current thinking on that. We didn't purport to overrule

Intermountain, but if you interpret Intermountain in light of what's explicitly permitted there, I think we tried to be quite clear as what we were permitting so that people will not have Intermountain problem.

And now, if you could fit what you're doing within that, I think we'd be a long way there. If you can't, then we can talk about it, but at least then there's an order saying we're going to do it in this band. And you're saying, well, let's do it over here, as well.

MS. BENNET: And just as a further example of where we're struggling right now on working on one of these things -- and I'll get some advice from the panelists on this as well -- the lessee doesn't really have any rights if the lessor or the licensee screws up on its license for the other areas.

And like we have, you know, Bob with a nationwide license, and in one area he may screw up and that may affect the whole license, and we're leasing from him. What rights can we get from the FCC to get that part of the license for us? Can we -- I mean, maybe, that requires some legislation. I don't know.

It definitely would require a rule-making or some sort of guidance from the FCC to tell us that we have particular rights. And we've been a good lessee and affecting the licensing almost. Can we get the license?

And we're struggling with this on our leases, because we want kind of that right built into our leases, but we need FCC approval for that. And we can't do it. And that kind of triggers the transfer control issue again. And anyone have any

comments on that?

MR. PEPPER: That's actually, I was going to say, a great lawyer's question. So, Michelle -- it raises a very interesting question that I don't think, you know, a lot of people here have really thought about.

MS. FARHQUAR: Well, I think they've thought about it in the context of indemnification.

MR. PEPPER: Right.

MS. FARHQUAR: And, certainly, that's covered in, not all, but some contracts I've seen. But the other issue really would constitute a problem area that you'd have to get the FCC to fix or address.

MR. PEPPER: Right. Which goes to, I think, what Sharon Crowe and others were talking about in terms of liability for failure to perform under a contract. But what you're suggesting is that the -- you're suggesting that, in fact, the liquidated damages would, in fact, be the license in a sense. And that's something that we --

MR. SHIVER: I don't know. If I lease a house from someone in Arlington County and they stop paying their mortgage and the bank forecloses on it, I think I'm just taking a subject -- I don't know that I have rights as the lessee against the bank. And I'm not sure.

Now, except in the installment payment context, the incidents in which we've actually revoked licenses is fairly rare. I think that's a fair statement. So I don't know how real a problem it is. But I understand it's at least a

theoretical problem. And in the installment payments context, it's a real problem.

MS. FARHQUAR: And, certainly, the FCC in the past where licensees have had those types of problems have allowed STAs to keep operating for periods of time, months, even longer sometimes just mainly for the customer's benefit so they don't lose service immediately.

MR. PEPPER: Right.

MR. SHIVER: That fundamental question, we have probably done more of those kind of arrangements vis-a-vis because we have a national license. It's sort of led us to almost three different agreements. One is obviously disaggregation when the two parties can't agree on, you know, what happens.

And then, the other is partitioning. And probably the one we've done the most of is where both sides recognize the partnership that you're entering into, you recognize the risks on it if, you know, either party doesn't do what they are supposed to do. But we still have entered into it. And because of that, those parties have continued to work together.

So I think if there's some clarity that could ever be made on that issue, it would hum. But in the meantime, there are ways around it that we've been able to work with, principally because we spend enough time with sort of our partners on it, knowing what they need and what they are trying to do and where we're headed and trying to make them work together.

Obviously, it's too early in the relationship to know if, you know, how the party's going to perform. But, you know, so far we're quite happy with it.

MR. PEPPER: I think that, actually, we've got to wrap up. But thank you very much. And I think this is a really good question, Carrie, because it takes the sort of legal issues and things that we do to the next level of how do we facilitate, you know, creative arrangements, even before we get to the purely liquid spot-market that we heard about earlier.

I want to thank this panel. And I want to thank all of the panelists. It's been extremely informative and very interesting. Dale, did you want to --

MR. HATFIELD: Yes. I'd like to add some thanks and recognition, too. One is for Lisa Gaseford (phonetic) in OET who really did the heavy lifting of pulling this all together. And sitting over here to the left is Bob Califf (phonetic) who is no longer with the Commission, but he did a lot of the initial ground work.

We got a lot of help from Brian Permont (phonetic) in Commissioner Furchtgott-Roth's office in identifying panelist. Laurence Green, I wanted to particularly thank you for making the trip all the way from the UK to help us out today, and then Linda Paris, Maureen Partino, and Mary Beth McBerry for helping with the press coverage, and then Dan Oliver, Jeff Rear, and Steve Balderston for helping with the meeting room set-up, and then Charles Harrington for also helping on logistics.

So thank you very much. It was their hard work that

really helped put this together. So with that, thank you very much.

(Whereupon, at 12:41 p.m., the meeting in the above-entitled matter was adjourned.)

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REPORTER'S CERTIFICATE

FCC DOCKET NO.: N/A

CASE TITLE: SECONDARY MARKET FORUM

HEARING DATE: May 31, 2000

LOCATION: Washington, DC

I hereby certify that the proceedings and evidence are contained fully and accurately on the tapes and notes reported by me at the hearing in the above case before the Federal Communications Commission.

Date: _5-17-00__

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Muriel Barclay
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I hereby certify that the proceedings and evidence were fully and accurately transcribed from the tapes and notes provided by the above named reporter in the above case before the Federal Communications Commission.

Date: _6-14-00__

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Terri Mathews
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I hereby certify that the transcript of the proceedings and evidence in the above referenced case that was held before the Federal Communications Commission was proofread on the date specified below.

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