Joint Meeting of the

Nuclear Regulatory Commission

And the

Federal Energy Regulatory Commission

Tuesday, April 8, 2008

10:04 a.m.

FERC Headquarters

888 First Street NE

Commissioner's Meeting Room

Washington, D.C. 20426

Agency Participants

Nuclear Regulatory Commission

Commissioners' Offices:

Chairman Dale E. Klein

William Orders, Assistant to Chairman

Jerome Murphy, Assistant to Chairman

Commissioner Gregory B. Jaczko

Josh Batkin, Assistant to Commissioner Jaczko

Thomas Hipschman, Assistant to Commissioner Jaczko

Commissioner Peter B. Lyons
Doug Doe, Assistant to Commissioner Lyons
Allen Howe, Assistant to Commissioner Lyons

Commissioner Kristine L. Svinicki
David Pelton, Assistant to Commissioner Svinicki

NRC Speakers:

Michael Mayfield, Director, Division of Engineering, Office of New Reactors
Patrick Hiland, Director, Division of Engineering, Office of Nuclear Reactor Regulation
Scott Morris, Deputy Director, Reactor Security, Office of Nuclear Security and Incident Response

Federal Energy Regulatory Commission

Commissioners' Offices:

Chairman Joseph T. Kelliher
Leonard Tao, Assistant to Chairman Kelliher

Commissioner Suedeen Kelly
Elisabeth Blaug, Assistant to Commissioner Kelly
Kevin Huyler, Assistant to Commissioner Kelly
Aileen Roder, Assistant to Commissioner Kelly

Commissioner Philip Moeller
Jugnasa Gadani, Assistant to Commissioner Moeller
Jason Stanek, Assistant to Commissioner Moeller
Robert Ivanauskas, Assistant to Commissioner Moeller

Commissioner Jon Wellinghoff

FERC Speakers:

David E. Andrejcak, Acting Director, Division of Bulk-Power System Analysis, Office of Electric Reliability
L. Keith O'Neal, Acting Director, Division of Reliability Standards, Office of Electric Reliability
Regis F. Binder, Acting Director, Division of Logistics and Security, Office of Electric Reliability

P R O C E E D I N G S

(10:04 a.m.)

CHAIRMAN KELLIHER: Good morning. This meeting is called to order. I don't know if both of us have to gavel it, for it to officially begin, but let's cover our bases.

(Laughter.)

CHAIRMAN KELLIHER: I want to welcome our colleagues from the U.S. Nuclear Regulatory Commission, to this joint meeting with the Federal Energy Regulatory Commission.

This is the third joint meeting of the two Agencies since the August 14, 2003 blackout, reflecting the continuing commitment of the Agencies to work together to address issues of common concern.

I want to offer a special welcome to Commissioner Svinicki to this meeting, and congratulate you on your confirmation. Now, you showed the necessary patience that nominees have to show from time to time, but I just want to reassure you that my nomination, my first nomination, took 750 days, so you should fee comforted by the contrast.

I also want to congratulate Commissioner Jaczko for his successful renomination and reconfirmation, and I think reconfirmation is a good thing. Jon and I experienced

that last December, so, congratulations to you.

Now, FERC and the NRC are different agencies with different statutory responsibilities. The NRC's primary task is protecting public health and safety, and FERC has a number of different statutory missions, but the one that's most relevant to the meeting today, is our regulatory role over the reliability of the bulk power system, as provided by the Energy Policy Act of 2005.

And that mission at FERC is discharged by the Office of Electric Reliability, headed by Joe McClelland, on the left. Joe is doing an excellent job. Let me take the opportunity to say that.

And it's really been a major new mission for the Commission. That and enforcement, are really the two growth missions of the Commission, and we're spending a great deal of our attention in those areas.

And we discharge our new duty by establishing reliability standards proposed by the Electric Reliability Organization, to govern the bulk power system; by directing changes to approved standards, to improve them over time; and by ensuring effective enforcement of approved reliability standards.

Now, our reliability mission and the NRC mission to protect public health and safety, are entwined. One well-established risk to the reliable operation of bulk

power system, is the sudden shutdown of large nuclear power plants.

By the same token, the loss of offsite power caused by a grid failure, is a major concern to the safe operation of commercial nuclear power plants, and that relationship was demonstrated by the recent Florida blackouts.

FERC also has infrastructure and economic regulatory missions that are related to the work of the NRC. If our country is going to build large numbers of nuclear power plants, we will need a bulk power system that can move that power to where it is most needed.

And it's also important for FERC to understand the timing of nuclear power plant additions. Widespread cancellations of coal plants have created a situation where the United States may rely largely on natural gas generation for incremental electricity supply, until additional nuclear plants are operational.

Some have called natural gas a bridge fuel to that point where we have large wind generation and large nuclear generation coming online, but as Commissioner Moeller has said, that could be a very long bridge.

So the timing of nuclear plant licensing and construction, is of particular importance to FERC.

So I welcome our colleagues from the NRC, and

look forward to this meeting. Commissioner Klein?

NRC CHAIRMAN KLEIN: Thank you, Chairman Kelliher. It's a pleasure to be here. We hosted the last meeting at our headquarters, so it's a pleasure for us to be at your headquarters for this joint meeting.

Obviously, I'm joined by Commissioners Jaczko and Lyons, and our newest Commissioner Svinicki. She has come with a great amount of experience that she's had, both as a member of the Wisconsin Public Utility Commission, Department of Energy, and also at the Senate, where she's worked for a number of years with energy policies, and then, most recently, for the Armed Services Committee, where I had spent a bit of time with my former position, before coming over to the NRC.

So we're glad to have her with us. We still have one position unfilled. As we all know, we're approaching a particular time in our history, in November of years divisible by four, and so we will wait to see what happens with our fifth Commissioner.

It's a pleasure for us to be here. Obviously, as Chairman Kelliher indicated, there is a lot of joint interaction between our two Agencies. It's a busy time for us at the NRC, with license renewals, with power-up rates, and with the other radioactive materials that we regulate for medical applications and industrial uses.

It's certainly, on the power side, it's very busy with the new applications that are coming in.

We currently have nine applications inhouse for 14 reactors, so we're very busy in that regard. However, one of our most important activities, is for the safe operation of the existing fleet, and so that's one issue that we clearly focus on, and certainly impacts the activities with FERC.

As Chairman Kelliher indicated, a lot of activities started with the August 03 Blackout. That obviously impacted several or our plants. We had a Memorandum of Agreement that was signed in September of 04, so we have a lot of common interactions.

And so we look forward to a very productive meeting today, and I'd like to thank you again for your hospitality.

CHAIRMAN KELLIHER: Thank you. With that -- yes?

COMMISSIONER MOELLER: I just want to point out that one of the unknown successes of government regulation, is the way these two Agencies dealt with the nuclear industry over the last 15 years.

With FERC bringing on wholesale power competition and the safety regulation of the NRC, we've gone from capacity factors 15 years ago, of roughly 70 percent, to capacity factors of over 90 percent now. That's the

equivalent of adding about 25 reactors to this country's grid, and that's power we need.

So, in the face of competition, the nuclear industry stepped up. It's now run better and safer than ever, and, again, long before any of us arrived, these Agencies worked at that, and it is, again, a success that's largely unknown, and I hope our predecessors realize the good job they did. Thank you.

CHAIRMAN KELLIHER: Thank you, very well said. Any other comments from our colleagues on both sides?

(No response.)

CHAIRMAN KELLIHER: No? Why don't we turn to Panel I. Panel I is already here, so we're going to start from left to right, with Dave Nevius, Vice President of the North American Electric Reliability Organization. Welcome.

MR. NEVIUS: Thank you, Mr. Chairman for the invitation to address this joint meeting of the Commissions. We've been involved in several of these sessions, and I'm glad to be back.

I'm going to talk today about regional planning processes for the new reactors that have been proposed.

Proposals to build new nuclear units in the 1100 megawatt to 1600 megawatt range, or even larger, in some cases, for initial service in the next ten years or so, means that coordinated, wide-area studies of the

transmission grid must be initiated and must be initiated soon.

These are not plug-and-play sized units, so such studies involving the generation developers, transmission providers, and regional planning coordinators, are required to ensure that adequate transmission outlet capacity and reliable offsite power supply is available for all these units.

One of NERC's concerns regarding transmission, is that it has lagged behind both demand growth and the addition of generating capacity, for a number of years. The current grid in the United States, comprising over 160,000 miles of transmission operating at 230 KV and higher, saw about 2,000 miles of new lines added between 2006 and 2007.

While plans have been announced for the addition of another 15,000 miles over the next ten years, this is still only at half the rate of growth in projected electricity demand, so transmission still lags behind other increases.

Not surprisingly, this lag in transmission development, has led to grid congestion and reliability concerns in several areas, including the Northeast and the Southwest.

The transmission planning horizon is driven, in large measure, by the current resource planning horizon,

which is generally about three to five years. The problem is that it often takes much longer to plan, site, and build major new transmission, than it does generation.

In many cases, even after the need for new lines is agreed upon, obstacles are encountered in the siting process, that may take many years to resolve. For this reason, planning for transmission needed for large new nuclear units, must be initiated as soon as possible, to avoid having transmission become an impediment to bringing new units into service on schedule.

In addition to the siting issues, the question of who pays for the required transmission expansion, can sometimes also present issues that must be resolved.

As both Commissions know, over 30 units totalling more than 40,000 megawatts, have been proposed or announced for initial service in the 2015 to 2018 timeframe.

Significant investment in transmission, is vital to support these units, including their larger safety loads following reactor trips, to ensure that they are reliably integrated into the bulk power system.

Because of long lead times for major transmission development and siting, transmission planning must be initiated sufficiently far enough in advance, to ensure that transmission will be ready to accommodate these units when they are licensed and ready for operation.

Many of the new plant designs have advanced features that reduce somewhat, the offsite power requirements for accident mitigation, and, subsequently, the bulk power system support that's required.

However, a stable bulk power grid is still required to prevent plant trips. Construction of required transmission facilities and system improvements, will ensure that these new generators are interconnected with the bulk power system in a reliable manner, and that their offsite power requirements are met.

In addition to new transmission lines, the reliable integration of these units, may require new switching stations, transformers, and even the upgrading or replacement of existing circuit breakers to handle the higher short-circuit currents imposed on the system by these larger units.

In one case, 35 circuit breakers will have to be replaced to accommodate the higher short-circuit currents, with the plan to make these and other system reinforcements spanning seven years.

Interconnection feasibility and system impact studies, are currently underway for the integration of most of the proposed units, so that's the good news.

In addition to these individual system studies, the Eastern Interconnection Reliability Assessment Group,

which covers the six regional Councils in the Eastern Interconnection, are preparing a ten-plus-year system model, including stability data, which will allow the entire Eastern Interconnection to be studied for the combined effects of all these units.

It's one thing to study it on an individual system basis, but when you put them altogether, you need to look at how the interactions take place.

And accurate modeling of the generator characteristics, is a must for these studies, so there will be some data needed on these new units, to do that properly.

Again, the issue of how costs of the needed upgrades are allocated, can be a major issue, especially when reinforcements may be required in one area or one state, to mitigate a system limit in another state. This is that interconnected nature of the grid that needs to be appreciated.

The good news is that two-thirds of the proposed plant additions, are at existing sites, and that generally means that required transmission additions, will not be as extensive as they would be at a green field site.

I should say a word about the National Interest Electricity Transmission Corridors. The designations announced by DOE on October 5th, became effective with DOE's denial in February, of several requests for rehearing. The

FERC has issued a rule, I understand, on how it plans to proceed, upon receiving requests for it to exercise its backstop siting authority for transmission.

So far, we've not heard of any transmission additions needed for the integration of nuclear plants that are running into siting problems in either of these two NIETC areas.

Finally, for our part, NERC will continue to monitor the integration of new generation into the grid and encourage coordinated efforts by plant developers, transmission planners, and planning coordinators, and report on the status of these efforts in our 2008 long-term reliability assessment that will be coming out this Fall.

NERC will also continue to emphasize the interconnected nature of the grid and the importance of having a robust and flexible system that will provide economic, environmental, and reliability benefits for all. Thank you. I look forward to your questions at the end of the panel.

CHAIRMAN KELLIHER: Great, thank you very much. I'd like to now recognize Michael Mayfield, the Director of the Division of Engineering of the Office of New Reactors at the NRC.

MR. MAYFIELD: The last time we were with the Joint Commissions, we presented a slide that showed parallel

regulatory paths. I should be -- I guess it's in your book, and it's my first slide. Thank you.

It shows the parallel regulatory paths. Our goal in presenting that chart, was to raise awareness, both with the Joint Commissions, as well as with the industry, to the awareness of the parallel review processes and the need for early and frequent communication and coordination.

Coming out of that meeting, the NRC Staff was directed to hold a public meeting to facilitate discussion on that subject. The meeting was held on May 30th. FERC, NERC, NEI, the vendors, the Independent System Operators and a number of new reactor applicants, attended. We had 50 people in the meeting, representing 30 organizations.

There were seven actions identified. NEI took the lead on three of them. My colleague, Dave, took the lead on one, and NRC took the lead on one. The other two rested with the applicants and the current power plant operators.

As we followed up on this with our colleagues in preparation for this meeting, we can report to you that all actions have been taken, and that the dialogue is continuing. We anticipate continuing our positive interactions in this area.

The next slide is the map that we've shown you, pretty much each time we've briefed you. We've added a few

new sites, mostly in Texas and in the far West.

These are some new additions and new announcements since the last time we briefed you. To date, the industry has proposed 33 new nuclear power plants at 22 sites.

There is one site, the Watts Barre site, that's shown as the yellow circle. That's being licensed under Part 50 of the regulations, as opposed to a new reactor licensing under Part 52.

When you go through this, you find most of the proposed new units, continue to be in the South and Southeastern United States. When you look at the declared plant types and make some assumptions about the undeclared plant types, you get to something on the order of 44,000 megawatts of electricity that would be added, and, as Dave noted, perhaps as early as 2016, some of those units would start coming online.

Chairman Kelliher, on the next slide, you had indicated interest in the timing for this. This chart illustrates the licensing review schedules for the plants that have been proposed and accepted.

And you will see that we are actively working on this. As the Chairman noted, we have nine applications inhouse for 14 units. We are also, in parallel with that, doing the design certification reviews on the remaining

reactor types.

So, we are quite busy with this at this point in time.

One of the other major changes since the last time we briefed you, is that we now have paper in hand, as opposed to proposals, so we are actively engaged in executing our reviews against these schedules.

And the last slide in the package, is simply a chart, a table to make things a little easier to figure out, what plants are where. There is one addition that's not on this chart, and that is the plant in Idaho.

And since the time this chart was printed and added to the package, the website has been updated. All of this information is available on NRC's public website. That concludes my remarks. I'll pass it on to David.

CHAIRMAN KELLIHER: Thank you very much. I'd like to now recognize David Andrejcak, the Acting Director of the Division of Public Power System Analysis, the Office of Electric Reliability, FERC.

MR. ANDREJCAK: Thank you. Good morning. My name is David Andrejcak. I am the Acting Director of the Division of Bulk Power System Analysis in the Office of Electric Reliability.

My presentation today will cover the generator interconnection procedures for larger generators in the

regional planning process, including FERC's role as a backstop siting authority.

FERC Order Number 2003 requires jurisdictional public utilities to amend their open access transmission tariff to include standard interconnection procedures and agreements for all generators greater than 20 megawatts.

The scope of this Order is to facilitate nondiscriminatory interconnection to the grid and lay out the process that ultimately leads to the development of needed infrastructure for the nation's bulk power system and to help preserve reliability, increase power supply, and lower wholesale prices to the nation's customers.

There are two types of interconnection services available under Order 2003. At the time the interconnection request is submitted, the customer must request either an energy resource interconnection service or a network resource interconnection service.

During the generator interconnection process, three interconnection studies must be performed: A feasibility study, a system impact study, and a facilities study.

These studies are performed in sequential manner and provide increasingly detailed analysis of the system, costs, and timing needed for construction.

The final step in the process is the execution of

the interconnection agreement that specifies terms and conditions of the interconnection.

Order 2003 states that the transmission providers will receive, process, and analyze interconnection requests in a timely manner. The transmission provider will use reasonable efforts and processing and analyzing interconnection requests from all interconnection customers, whether the generation facilities are owned by the transmission provider, its subsidiaries, or others.

The transmission provider will assign a queue position, based upon the date and time of receipt of the valid interconnection request, and the position in the queue is not differentiated among types; it is strictly first-come/first-served.

Surges in the volume of new generation development, are raising concerns in the current queue approach in some regions.

These delays have been observed in areas of the country that operate Regional Transmission Organization and Independent System Operators for organized markets.

In response to this, FERC held a technical conference in December 2007, on interconnection queuing practices. In the Order that followed the technical conference, the Commission states that there are reforms

that can be implemented to expedite the queue management system.

These reforms may include: An increase in staff; perform interconnection studies for clusters of new generation; increase the requirements for getting and keeping a queue position; combine the feasibility and system impact studies; and consider other approaches to prioritize queue processing that provide protection against discrimination comparable to the first-come/first-served approach, that are more efficient.

Along with the generation interconnection process, FERC monitors and participates in the regional planning processes. In Order Number 888, the Commission encouraged utilities to engage in joint planning with other utilities and customers, to allow affected customers to participate in the facilities studies, to the extent practicable.

However, in the past decade, industry trends indicated a decline in transmission investment, relative to load growth. Transmission capacity per megawatt of peak demand, has declined across the country.

This is reflected in the amount of transmission service interruptions or curtailments and rising congestion costs in organized markets.

In order to address FERC's and the industry's

concerns, the Commission issued Order 890 in February of 2007. Order 890 states that each public utility transmission provider, would be required to amend their existing tariffs for coordinated and regional planning process that complies with the nine planning principles as defined in Order 890.

To address the needs of long-term transmission and generation projects, industry trends are indicating longer planning horizons. Planning horizons are usually for a ten-year outlook, but some entities have begun to look as far as 15 years to accommodate the interconnection studies of the nuclear units and other long-term projects.

FERC's role in backstop siting authority, will be an important addition to the process. This provides for federal siting of electric transmission facilities, under certain circumstances, and authorizes the Commission to issue permits to construct or modify electric transmission facilities in a Department of Energy-designated national interest electric transmission corridor.

In addition, FERC Order Number 689, determined that the proposed facilities, must meet the following five specific statutory criteria: First, it is in the public interest; second, it is used for interstate commerce; third, it significantly reduces congestion; fourth, it enhances energy independence; and, fifth, it maximizes the use of

existing facilities.

The more transparent and coordinated regional planning process, will further these priorities, as well as support the DOE's and FERC's responsibilities under the Energy Policy Act of 2005.

In conclusion, I would like to summarize by stating that the Office of Electric Reliability is actively monitoring new generation connection of new nuclear and other fuel types; also, Staff is monitoring and participating in the regional planning processes and closely working with the Office of Energy Projects, to provide technical assistance where backstop siting may be requested.

At this time, our panel would be happy to answer any of your questions.

CHAIRMAN KELLIHER: Great, thank you very much. Now, are numbers are large and our time is somewhat short, so I think, if we go with three minutes -- I'll defer to my colleagues at the NRC, who are more expert in numbers -- but if we go at three-minute rounds, I think that should keep us pretty much on time. So, Joe, can you be the bad cop on timing? Cut me off viciously, if I extend, so that I'll live by the same limits.

Let me just ask -- and Dave, I just want to say that I'm not going to ask you questions, and that's because you're ours and we can ask you questions whenever we like.

(Laughter.)

CHAIRMAN KELLIHER: So, don't have your feelings hurt. But I really had a question on the length of construction. What is a rule of thumb on how long it takes to construct a nuclear power plant? On your chart -- I assume construction starts at the end of the hearing?

MR. MAYFIELD: There is a possibility that within the regulations, they can begin to do some work early.

CHAIRMAN KELLIHER: Okay.

MR. MAYFIELD: But there is a definition of the beginning of construction, and that comes a bit later. But the timeframe is obviously dependent on the specific design and the vendors doing the construction.

There have been plants built in Asia in five years or less.

CHAIRMAN KELLIHER: Okay.

MR. MAYFIELD: So that's probably the short end of the spectrum.

CHAIRMAN KELLIHER: But a lot of the hearings seem to be ending in 2011, and if you add five years to that --

MR. MAYFIELD: But there would presumably be some work done early.

CHAIRMAN KELLIHER: All right, okay, well, that's helpful. Now, there have been some projections that the

U.S. might add 125 more nuclear plants, at least I've read that in the trade press.

Is that -- that is hard to believe, given the lack of construction for a such a long period of time. It seems almost like a sedentary person just running a marathon, and --

MR. MAYFIELD: We're starting --

CHAIRMAN KELLIHER: -- doesn't run enough.

MR. MAYFIELD: We're starting to feel that way, with just what's on the table today.

CHAIRMAN KELLIHER: Okay, and we're talking about 30 units that are on the table, not 125.

MR. MAYFIELD: Yes.

CHAIRMAN KELLIHER: Okay. And then just another question about the grid: Is the grid robust enough? If you were to assume that every proposed plant is built, is the grid robust enough to accommodate those increases?

MR. MAYFIELD: I'd have to turn that one over to my grid colleagues.

MR. NEVIUS: With the additions that will be needed, yes, it will be, but the key is, can those additions be defined and made in sufficient time to reliably integrate the plants into the system.

So I think it's important -- and we're starting to see signs that it's taking hold, that this message of

getting started with these studies, the interconnect studies, the feasibility studies, and the more detailed studies that Mr. Andrejcak spoke of as part of this generation interconnection process, do move ahead smartly, because you never know when you might run into a siting issue with a line on a new right-of-way.

CHAIRMAN KELLIHER: Okay. And my last question goes to the nature of the applicants. Most of them seem to be vertically-integrated utilities, and these would be rate-based facilities, but are some affiliates of vertically-integrated companies?

MR. MAYFIELD: I don't know the answer to that, sir.

CHAIRMAN KELLIHER: Okay, but to the extent -- David, to the extent that some of these projects are vertically-integrated utilities or their affiliates, are they building in their service territory where they are also the transmission provider?

MR. NEVIUS: In most cases, yes, but because of the interconnected nature of the grid, you could have situations where a reinforcement may be needed outside of that utility's service territory, in order to strengthen the grid sufficiently to be able to accommodate the new plant.

CHAIRMAN KELLIHER: Okay, thank you very much. Chairman Klein?

NRC CHAIRMAN KLEIN: Well, thank you, Joe. In a similar way, we have access to Mike a lot, so I will not ask him questions.

(Laughter.)

NRC CHAIRMAN KLEIN: But I did have a question for David at NERC. It's related to the question that you asked about the grid.

It's my understanding that there are certain sectors of the grid already that are pretty well taxed, and at some times plants seem to have to compete to get onto that grid system.

Clearly, we have a map of where these plants are going to be located, but on your Slide 2, you talked about transmission lags, demand and capacity growth at some times, so I guess, for our question, for the plants that we have already underway, have you looked at that transmission system to ensure that there will be the capacity available?

MR. NEVIUS: That's what the impact studies, the initial impact studies, are designed to do, to look at, is the grid adequate, as is, or are there reinforcements needed?

For example, in Texas, the five or six units that are proposed to be added in Texas, four of them are at existing sites; one, I believe, at a green field -- or two at a green field site.

They found that they have had to not only reinforce an existing right-of-way, add additional circuits or upgrade those circuits, but add a few miles on new rights-of-way. So there are additions that are going to be needed to reliably integrated these size plants into the system.

So those studies are taking place now. My reference to the interconnection-wide study, is to look at the entire grid. Texas is looking at -- or ERCOT is looking at Texas.

We need to look at all six regions and all the plants in the Southwest and Northeast, that are being added, and there are 20-some that are in that interconnection, to see how they might interact and what additional transmission is needed to make sure the grid is robust enough to handle all of them at the same time.

So those studies are underway and there are more to come.

NRC CHAIRMAN KLEIN: If you have to have a new transmission line, how long does it take to do that?

MR. NEVIUS: It's not as predictable as constructing a nuclear power plant, although you can run into delays, as well.

There have been projects that have taken 20 years. The 500 KV loop around Washington, D.C., was planned

to be added in 1974. I remember that I was doing planning studies at the time, and it took 20 years before the final section of that -- yes, I'm old -- the final section of that --

(Laughter.)

MR. NEVIUS: -- was finally added 20 years later.

There are proposals now on the table to bring new lines into the Northeast, and already opposition is lined up against some of those major projects, some 765 and some 500 KV projects, so it can take a long time.

That's why it's important to get started, to define the need early, and to address any siting issues early on, so they can be resolved.

NRC CHAIRMAN KLEIN: Thank you.

CHAIRMAN KELLIHER: Commissioner Kelly?

COMMISSIONER KELLY: Thank you and thanks to the Staff from the NRC for coming today and joining us.

David and Michael, I had some questions about FERC's policies in light of your testimony. You have focused us on the importance of ensuring that the process for approving, constructing, and interconnecting nuclear power plants, proceeds without any undue barriers.

And it makes me think about our own regulatory processes, and whether we should look at our current

processes to see whether they should be updated, improved, to achieve this objective.

Some of the things that you mentioned in your testimony, were the difficulty of getting transmission sited. Mr. Nevius, you talked about the concern about who pays for transmission upgrades.

None of you mentioned our queue process, but I was wondering if that has become an issue in the siting of nuclear power plants, or, Mr. Mayfield, in connection with your timelines for processing the applications. We have a new planning provision in place to mandate regional planning among all utilities under our jurisdiction.

Do we appropriately take reliability into account in that planning process? Any thoughts that either of you have on areas that we should focus on under our jurisdiction, and ask ourselves whether we should be doing anything to improve our processes?

MR. MAYFIELD: Commissioner, the reason we showed the parallel process chart, was to try and focus some attention, not so much with the two Commissions or even with NERC, but with the industry, the applicants that are proposing new nuclear power plants, to try to heighten some consideration with them, of the outreach they needed to do with the transmission system operators.

We weren't hearing a lot of dialogue. It's not a

regulatory responsibility for us, but you hear things in many discussions, and we weren't hearing as much dialogue about that as we thought we should be hearing. So we have started pushing on this, and have -- I think we've been reasonably well satisfied that the industry is paying attention, from what we hear, but, again, we don't have specific regulatory responsibilities, so it's hard for us to judge whether it's really going to be effective or not, or if there are issues with FERC's regulatory process.

And that's something that I'd have to turn to David for.

COMMISSIONER KELLY: Thank you for using your bully pulpit, and for pointing it out to us, so that we can use ours. Thanks.

MR. NEVIUS: As far as I can see, there are no issues with the processes themselves. FERC has a well-defined process for generation interconnection, and going through the various stages, the impact study, the more detailed interconnection feasibility and then, finally, the facilities determination, and as Mr. Mayfield said, I think the industry, both on the nuclear developer side and the transmission planning side, has taken heed of the need to move ahead.

These are long-lead-time plants, and some of the transmission will be long-lead-time transmission, so I think

we're seeing a real increase in attention, and using the processes, so I don't think it's a problem with the process; I think it's just getting into the process and using it.

COMMISSIONER KELLY: And do you see, then, enough attention being paid to reliability?

CHAIRMAN KELLIHER: Short answer.

MR. NEVIUS: Yes.

(Laughter.)

COMMISSIONER KELLY: That was the right short answer.

CHAIRMAN KELLIHER: Thank you. Let me now recognize Commissioner Jaczko. You can't see the clock, so, Joe, can you give Greg a 30-second and zero-second warning? Thank you.

NRC COMMISSIONER JACZKO: Hopefully I won't use all of my minutes.

I guess my question is, we had recently an event that Chairman Kelliher referenced, in Florida, with the blackout, and I'm wondering, to what extent there have been lessons from that, that can be applied to how we develop and plan transmission for the future.

In particular, my focus there is the reaction that we had two nuclear units properly respond in that event, and shut down, which, of course, then took away several thousand megawatts to the grid.

So, I'm looking at Dave, but is there anybody else who might want to comment on that?

MR. NEVIUS: We're into the analysis of that event now, and just yesterday, I sent a letter to the NRC, inviting their staff to participate in that analysis and to share with us, any observations or findings that they have, from the perspective of the plant.

This is under the terms of our Memorandum of Agreement between NERC and the NRC. I was going to mention that in the next presentation, but we will develop lessons learned, the root causes for this event, share those throughout the industry.

In some cases, it may lead to additional standards or revisions or clarifications of existing standards. In other cases, it may simply be raising the awareness of the industry to those issues that resulted in the particular event.

So we've done that. We do that with all major events, working with our regional organizations.

NRC COMMISSIONER JACZKO: Thank you. I appreciate that.

MR. HILAND: If I could add, we plan to accept that invitation.

NRC COMMISSIONER JACZKO: Okay, good. I'm glad we could facilitate that here. And, again, Mr. Nevius, this

is probably a question for you.

You raise a lot of -- your first slide, I think, talked about transmission issues. I guess this is a question Commissioner Wellinghoff and I were discussing even before we started.

In the end, who is ultimately responsible for addressing these issues, in your mind? Is this a variety of different agencies? Is there someone who has this ultimate role, or is it ultimately the private sector that should be responsible for dealing with them?

MR. NEVIUS: I think it's a combination, Commissioner, of the transmission planning authorities and the regulatory agencies, in this case, the FERC, especially with your new Order on regional planning, to address these issues.

There have been obstacles and impediments that have made it difficult to develop transmission. There was a report done for the Secretary of Energy, several years ago, on this issue.

Former Commissioner Moeller, Betsy Moeller, chaired that Subcommittee on Transmission Grid Solutions. There are a number of very, very excellent recommendations that were in that report, which haven't really come to fruition.

So I think we need to continue to work on that.

I think the FERC is in an excellent position to push on some of those recommendations.

NRC COMMISSIONER JACZKO: Thank you.

CHAIRMAN KELLIHER: Thank you, excellent timing. Commissioner Moeller, our Commissioner Moeller.

COMMISSIONER MOELLER: Thank you, Mr. Chairman. I also want to send greetings to our newest joint colleague, Commissioner Svinicki, along with Pete and Senate colleagues together. It's good to have you here.

I occasionally hear people talk about how France does nuclear, and why can't we do it? And they don't realize that France does it their way, which is one reactor design, very definitive decisions on waste, and we have more of a system where we allow reactor designs to compete.

And a question for Mr. Mayfield, and, if you're not the appropriate person, please guide me to who is, but can you give me the two minute and 15-second version of the different technologies that are on your chart, the AP-1000, I think. What are kind of the very quick differences between the various different reactor designs that have been proposed?

MR. MAYFIELD: Two minutes and 15 seconds?

(Laughter.)

MR. MAYFIELD: Okay, the AP-1000 and the ESPWR, are basically passive safety system designs. The ABWR is an

advanced version of the boiling water reactor. That plant has been built in Asia in a couple of places.

The EPR and the USAPWR look very similar to the pressurized water reactors that are in operation in this country and around the world today.

The emphasis in the United States today, is on standardization within a particular design type. So the people that are going to build AP-1000s, all of those AP-1000s are going to look and operate very similarly.

So, the standardization that the French, in your example, have, they have three or four versions of their plants, but within a particular type, they are very similar. So, for the AP-1000, the AP-1000s that are built, they will be very similar, and similarly with the EPRs and so on.

So, there's a strong push towards standardization within a particular design type, but, to go a lot further than that, I think we're going to use up a lot more than your 52 seconds and my knowledge.

(Laughter.)

COMMISSIONER MOELLER: Thank you.

CHAIRMAN KELLIHER: Great, thank you. I'd like to now recognize Commissioner Lyons.

NRC COMMISSIONER LYONS: Thank you, Joe. David, I appreciated your invitation to the NRC to participate in the lessons learned review in Florida. I think that's very

positive, and I'm very glad we have already accepted, and we'll look forward to that.

I did also have a question for you. On the National Interest Corridors, I'm curious whether that legislation has really been exercised yet, whether you can comment on if it is likely to assist some of the siting issues that the country is going to be facing?

MR. NEVIUS: I guess the answer to the first question is, no, it hasn't been exercised yet, and the FERC has just issued a rule describing the process it will follow, if and when it gets a request. But it has to get an application from an entity that has been unsuccessful in getting a transmission line sited in one of these corridors or zones -- the Northeast and the Southwest -- before anything begins to happen.

I think it has to have a year in which the party has tried to get the line sited through state siting processes, before they can come to the FERC, so, no, it hasn't been exercised yet.

NRC COMMISSIONER LYONS: Okay, thank you. Well, I certainly hope it will prove to be successful, and also help with some of the issues associated with siting the nuclear plants.

The only other thing that I was going to mention, was more in the nature of a comment, but, again, to

David. I had the opportunity recently to visit the Midwest ISO, and certainly came away extremely impressed with that organization.

And I don't know, in detail, how that fits within the overall NERC structure, but I gather it's at least one key part of it.

And certainly I was very favorably impressed with the operation, the coordination, and the backup capabilities that they had, were of particular interest. And it even struck me that there may be some benefits from having some of our staff talk with some of the staff in the different ISOs, from the standpoint of software reliability and maintaining operations, in spite of whatever crises may occur, but I'm certainly very, very complimentary of what I saw at that site.

MR. NEVIUS: There is an organization of all of these RTOs and ISOs, called the ISO/RTO Council, that includes all of the operating RTOs and ISOs. It would probably be appropriate to ask that organization. I think Gordon Van Wylie from ISO New England, is the current Chair of that Council, and you may want to ask for an opportunity to visit with all of them.

NRC COMMISSIONER LYONS: I think there at least is the potential for benefits, because we certainly maintain regional offices, from the perspective of maintaining

continuity of operations. It was clear that at least MISO, and, I assume, all of them, have given great attention to continuity of operations, and there may be some commonalities there.

CHAIRMAN KELLIHER: Thank you very much. Commissioner Spitzer?

COMMISSIONER SPITZER: Thank you, Mr. Chairman. We had similar circumstances in some respects, 35 or 40 years ago, with the construction of nuclear facilities. There have been some elements of law that have changed; other circumstances are similar.

Some of the utilities report to me, difficulties in negotiating with vendors, and I've been told and surmise that some of this is a consequence of some of the cost overruns in the '70s, that created issues with state regulators in terms of passing through those costs.

I was wondering if you had a reaction to what lessons could have been learned from the last construction cycle, and whether that had any extrapolation to the relationship between the utilities and the vendors?

MR. MAYFIELD: I wouldn't venture off on the part about the relationship between the utilities and the vendors. That's just not something where -- I hear stories, as much as you do, Commissioner.

I think that the NRC, our Commission, went back

and looked at the Part 50 licensing process, and when we created Part 52, when the Commission created Part 52, they looked at what were the obstacles in the licensing process and how could those be addressed to assure that the public had an adequate opportunity to participate in the licensing process, and yet keep the process manageable for both the staff, as well as the applicants.

I think that in Part 52 that's on the books today, we've done a very good job of that. I suppose it remains to be seen, once we have plants up and running, how effective it truly was, but I believe we've made giant strides forward, compared to the Part 50 licensing process, from the first wave of plants.

How that translates into business cases and interactions with state regulatory authorities and rate-setting authorities, I can't really venture down that path.

COMMISSIONER SPITZER: And Commissioner Moeller alluded to the process in France. They obviously have the unitary form of government and we have the additional complexity of the states.

Maybe if they could describe their competing state interests, how do you handle informing the states about the progress of the various applications, particularly since an application in one jurisdiction, may have an impact on an application in another?

MR. MAYFIELD: There is continual outreach with all of the interested stakeholders, which includes the states. Our process is very open and public, and there is regular outreach.

My colleague that's the Director of the Division of New Reactor Licensing, has recently been in Kansas, dealing with testifying to state regulators there.

So we have a fairly active outreach program to make sure that all stakeholders are informed of where we are, what's going on, and how it's moving forward.

CHAIRMAN KELLIHER: Thank you. Commissioner Svinicki?

COMMISSIONER SVINICKI: Thank you, Chairman Kelliher, and, Commissioner Moeller, thank you so much, and my fellow Commissioners, as well, for a warm welcome.

It's always so encouraging, in a new position, to encounter familiar faces, so thank you very much for that.

I don't have any questions. I would like to thank the panelists for their presentations, and as someone who is just immersing myself more completely in these issues, I'd like to commend both staffs for the obvious work that's gone on.

The 2003 blackout was an unfortunate catalyst for these interactions, but I can't help but think that a closer coordination between the two Commissions and between the two

staffs, and an early look at all of these issues, I think augers well for electricity consumers in America, and I'm just encouraged by this activity and hope that we can continue this interaction. Thank you.

CHAIRMAN KELLIHER: Thank you very much. Commissioner Wellinghoff?

COMMISSIONER WELLINGHOFF: Thank you, Mr. Chairman. I am looking forward to this opportunity to have some time to ask questions of our NRC colleagues, and appreciate them being here today.

Mr. Mayfield, I have a question with respect to your licensing process and with respect to something that the Commission has recently been going through with respect to other energy infrastructure projects.

And the question is, do you look at the issue of need with respect to these projects?

MR. MAYFIELD: There is a regulatory guide that deals with -- one aspect of it deals with the need for power, and it's actually part of the environmental review.

COMMISSIONER WELLINGHOFF: And do you in any way look at competing projects in a region and how they may interact?

MR. MAYFIELD: That's part of the economic analysis that goes to the need for power, and to tell you more, sir, goes beyond the area that I know much about,

other than I know that that's in there, because we've had some dialogue on how you assess the need for power, as well as, you know, is there an interaction with the grid?

COMMISSIONER WELLINGHOFF: Drilling down into the technology questions a little further, Mr. Nevius and perhaps Mr. Mayfield, you may have a comment on this, but, Mr. Nevius, in your presentation, you indicated that advanced features in the newer plants, may reduce the need for offsite power.

I'd like to understand a little better, the current need for offsite power by existing plants, and how that may change with these advanced features and what those advanced features may be?

MR. NEVIUS: I think I would probably defer to Mr. Mayfield about some of the design features, and he already talked about some of the five or so different standardized designs.

But my understanding is that there are some different characteristics.

MR. MAYFIELD: In the passive designs, the safety systems don't require electric-driven pumps, for example, so there is a lessened emphasis on the need for a reliable source of offsite power.

The current units and for the non-passive designs, they derive their source of energy for safety

systems, from the grid. So, once there's an interruption, then the turbine trips and they disconnect the output breakers, but the feed back into the station, comes from the grid.

So there is a need for a reliable source of offsite power. In general, for the passive systems, the need is less and the reliability is lessened, but we still insist on their being a source of reliable offsite power.

COMMISSIONER WELLINGHOFF: And the passive systems, are the new? In other words, there's no passive systems in existence, currently?

MR. NEVIUS: That is correct.

COMMISSIONER WELLINGHOFF: Thank you, Mr. Chairman.

CHAIRMAN KELLIHER: Great, thanks, Jon. Why don't we now turn to Panel II, and why don't we start with Dave Nevius, who is still the Vice President of the North American Electric Reliability Council, and then we'll continue from that point on.

MR. NEVIUS: Thank you for that confirmation.

(Laughter.)

MR. NEVIUS: I turn my phone off, so I'm never really sure, but I hope I still am. Thank you.

(Laughter.)

MR. NEVIUS: In October of 2004, at the request

of the Nuclear Energy Institute's Grid Reliability Task Force, NERC began developing a standard to ensure that the transmission system has the capacity and capability to support the safe operation of nuclear power plant safety systems and that the necessary agreements would be developed and put into place.

The need for this standard stems from several incidents that led to degraded grid conditions that caused nuclear power plants to exceed their tech spec limits.

In most cases, this was the result of grid operators simply not fully understanding the plant's requirements for offsite power quality and reliability, mainly, voltage support for critical safety systems.

The new NERC standard requires plant/grid interface agreements to be developed and implemented, that specify requirements for communications and coordination between the plant operators and the grid operators.

These agreements are to reflect the nuclear plant interface requirements specified in the licenses for the plants.

The NERC board approved the new standard in May of 2007. We subsequently submitted it to the FERC in November, and just last month, the FERC issued a NOPR, with comments due by April 28th.

The standard is intended to take effect in the

United States, approximately 15 months following the FERC approval.

In the meantime, NERC will continue to address this important coordination issue through its three-year cycle of readiness evaluations of transmission operators.

Let me also mention something about some other key standards that are of interest and importance to nuclear power plants. These include: Grid frequency and voltage performance and control standards; transmission planning requirements, which we've already spoken of; reporting on system operating limits, so that we know that the system remains within its safe reliability limits; emergency system restoration, which is a critical element from the perspective of the nuclear plants; and then accurate modeling and monitoring of internal plant loads and requirements, so that the system operator knows what the loads are that are being placed on the system by the nuclear power plant, especially by the safety systems.

One final point that's not covered in the slides that I submitted, relates to the Memorandum of Agreement that I referred to earlier, between the NRC and NERC. I signed that on behalf of NERC a couple of years ago, as did Louis Rayes, the Executive Director of Operations for the NERC.

Under the terms of that MOA and its appendices,

as I mentioned, I've invited the NRC Staff to participate with us and with the Florida Reliability Coordinating Council, in the analysis of the February 26th system disturbance in Florida that led to the tripping of the two Turkey Point nuclear units.

The product of this analysis, will be the findings on root causes of the disturbance and lessons learned that will be shared throughout the industry. There may be some lessons that would be shared throughout the nuclear industry, as well as among transmission operators.

I'll stop there, and I anxiously await further questions. Thank you.

CHAIRMAN KELLIHER: Thank you very much. I'd like to now turn to Mr. Patrick Hiland, the Director of the Division of Engineering, Office of Nuclear Reactor Regulation at the NRC.

MR. HILAND: Good morning, Chairman Kelliher and Chairman Klein and Commissioners. I, too, have provided some slides in your reference book. I do have some graphics at the end of my discussion, that I will articulate so everyone could understand the descriptions.

I'm going to talk about the progress since we last met in January of 2007, the reliability standards activities that we have participated in, as well as the nuclear power plant uprate, the progress that the NRC has

made over the past several decades, and just give you a brief description of our license renewal program and its status.

When I spoke last year to this combined Commission, I talked about a tool that we use, which is a Generic Letter. Based on feedback that we had received from our inspection program, we had submitted this Generic Letter, and, at the time, we had not yet received all the responses and had not drawn conclusions.

What the Generic Letter was intended to address, was our perception that there was some lack of detailed training from the operators in the plants and transmission network operators.

That Generic Letter was sent out with a list of about ten questions. Each licensee was responsible to respond to those questions, and in August of this past year, we've completed our evaluation.

We've concluded that no safety or compliance issues were identified. We did identify the need to validate the grid contingency analysis that our licensees have in place.

We have been working with NERC to identify a method that we could actually get real live data, that is, when a nuclear plant were to trip offline and the offsite power grid stabilizes, what is that value and is that what

they actually calculated and is that what they actually planned on?

We continue to monitor the grid reliability on a daily basis. Each morning, we have a 7:45 meeting that our staff goes to and briefs our senior management on the status of the grid across the country, based on accessing the individual transmission safety operators or ISOs to draw that data in.

If there is a stressed grid condition, we utilize our stakeholders and the regional offices and our resident inspectors at each individual site, to alert them to those stress conditions, so they can monitor the plant operations that day and see what maintenance activities they're doing, and if there's any added risk that the plant might be taking and aren't aware of the grid conditions.

Our involvement with the reliability standards activities: We continue to work with both FERC and NERC in review of those standards. We provided comments on the standards revision process, as well as, we looked at the numbers.

There's about 200 reliability standards, and we selected ten, and I would call those the critical ten to our industry, to the nuclear power plants.

We went through those standards and provided comments. Those were in the generation and load balancing,

the emergency preparedness and operations, modeling data and analysis, transmission operation, transmission planning, and voltage and reactive loads.

More recently, the new standard on nuclear plant interface coordination, which assures reliable offsite power, is open for public comment, as you are aware, but we have met with both FERC and NERC staffs to provide our comments.

Regarding the uprated nuclear plants, the NRC has had in place, a process whereby for the past three decades, since 1977, where a plant can apply to increase its power output. Those increases typically would run from two to three percent, up to as much as 20 percent.

Over the past -- since 1977, 5,200 megawatts have been added to the grid, and, looking forward to what could possibly be added over the next several years, would be an additional 2900 megawatts.

The power uprate applications must include a grid impact study from our licensees.

Now I'll go to some of the graphical displays and try to articulate them. The first graph that I have -- and it should follow Slide No. 5 -- is a picture of the United States that is color-coded with the FERC or the NERC regions, and it shows a couple of clouded areas.

This is provided by the Department of Energy, to

show the high congestion areas. Obviously, you know, the Northeast, right through the Washington, D.C. area, is clouded yellow, as well as on the West Coast and the State of California, are areas that currently are critical congestion areas.

If you'd turn to the next page, this is, again, the same map of the United States, but in this one, the red dots depict the power plants that have had an uprate. As you see, the plants are in the Southeast, some in the Midwest, but, again, that power increase, you would look at that as that would add to the congestion.

The following slide is just a graphical depiction of what I stated as far as the power uprates. The red is depicting the 5200 megawatts that were added by this process, and then the yellow was what we projected out, to a total of about 8,000 megawatts added in this process.

And then the last slide -- and this is one that I like to show when I get the opportunity -- this slide depicts the NRC's license renewal process and the impact that it's had on the nation's energy from the nuclear cycle.

The blue areas are about half of the graph and is what the nuclear generating capacity is, in gigawatts, for the total life of those plants. The added areas that are shaded in white, are what we've already licensed for renewal beyond the 40 years. A nuclear plant gets a 40-year

license to begin with.

The white area depicts the energy received from those plants that have applied for and received a 20-year life extension, and then the red part of that graph, are our projections, if the plants that are available to apply for a life extension, all receive that.

So the total area under that curve, is the total energy provided by the nuclear cycle. I just like to show that one. It shows something really good.

And that is all I have.

CHAIRMAN KELLIHER: I would now like to turn to Keith O'Neal, the Acting Director of the Division of Reliability Standards in the Office of Electric Reliability.

MR. O'NEAL: Thank you, Mr. Chairman.

It is my pleasure to be here today to offer some insights on FERC's role in the Reliability Standard development process. My name is Keith O'Neal. I am the Acting Director of the Division of Reliability Standards within the Office of Electric Reliability.

My Division is charged with the responsibility of monitoring the development of new or modified reliability standards that apply to the Continental United States.

We are also charged with reviewing Reliability Standards, interpretations of Reliability Standards, and filings proposed for Commission approval by the Electric Reliability Organization, or the ERO.

Upon receipt of the proposed standards, the Commission can either approve the standards or remand them back to the ERO. If the standards are approved by the Commission, they become mandatory and enforceable for the users, owners, and operators of the bulk power system.

In many cases the Commission has approved proposed standards and, at the same time, directed further improvements.

A review of the proposed Reliability Standards must consider the Commission's criteria for good reliability standards and ensure that approved standards are just, reasonable, not unduly discriminatory, and in the public interest.

We recognize that nuclear power plants represent a large source of electrical power generation and are important to the reliable operation of the bulk power system.

Accordingly, the ERO has filed with FERC for its approval nuclear plant interface coordination reliability standard NUC-001. For simplicity I will simply call this the Nuclear Standard.

In response to this filing, the Commission established Docket RM08-3 and issued a Notice of Proposed Rulemaking, or NOPR, on March 20th, 2008, to seek public comment on the Commission's proposed approval of the standard.

I will provide an update on the status of this docket and a quick overview of some of the areas for which the Commission is requesting comments.

Before I do so, a brief word about how reliability standards are processed at FERC. Commission review of reliability standards has typically been processed through the rulemaking or NOPR process to allow for

stakeholder and international input.

In this type of process the Commission can ask for comments on specific issues and actions that it proposes to take, assuring a thorough record upon which to base a reasoned decision.

After due consideration of all comments, the Commission issues a final rule. Stakeholders are allowed 30 days from the issuance of the final rule to request a rehearing.

Barring major rehearing requests, the final rule becomes effective, mandatory, and enforceable after the rehearing period has expired.

For the Nuclear Standard, the public will have 30 days from the issuance of the NOPR--that is, until April 28th--to respond to the Commission's proposals. A final rule will be issued after consideration of all comments and any rehearing requests.

The Nuclear Standard, as Mr. Nevius mentioned earlier, primarily concerns the agreements made for communication and coordination between the nuclear power plant and the transmission entities that provide interconnection and backup power supply services to the plant.

The issues the Commission requests comment on in the NOPR focus on three primary areas associated with these

agreements. Namely, applicability, scope of the agreements, and coordination.

The nuclear plant requires--excuse me, the Nuclear Standard requires the nuclear power plant operator to identify the entities responsible for providing services necessary for the plant to meet its NRC requirements, such as maintaining adequate offsite power supplies, and planning and operating an electric grid to respect transmission operating limits.

This may include entities that provide off-site power supplies to nuclear power plants at voltages below 100 kv who are not normally considered large enough to be part of the bulk power system and thus would not be required to be registered with NERC and subject to mandatory reliability standards.

The nuclear plant and the entity are required to execute a nuclear power interface requirement agreement, NPIR, specifically listing the requirements of the nuclear power plant and the offsite power provider.

It is the Commission's understanding that disputes regarding the terms of the agreements, including whether an entity should even have to execute such an agreement, would be addressed through the NERC registration process.

The second area that the NOPR seeks comment on is

the scope of the agreements. While a Nuclear Standard requires a three-year review process, the Commission would like to know how the standard addresses interim changes.

Is it feasible or necessary, for instance, for the agreements to incorporate a provision for amendments to accommodate electric system changes, or review nuclear plant licensing requirements as needed?

The third area is coordination. The Standard makes it clear that coordination between a nuclear power plant and the transmission entities supplying the offsite power to the plant is required, but it is not clear when the required coordination among transmission entities is providing services to a nuclear power plant.

Since the transmission grid is interconnected, the actions of all transmission entities providing services to a nuclear power plant effect one another, highlighting the need for coordination among these transmission entities.

In the NOPR, the Commission proposes to accept the operation and maintenance coordination provisions proposed in the Nuclear Standard as applicable to all transmission entities that provide interconnection or offsite power supply services to a nuclear power plant.

The Commission seeks comments on these and other areas in the NOPR in order to make a reasoned final ruling.

Thank you again for allowing me to participate in

this forum, and we would be happy to accept and answer any questions that the Commissioners may have.

CHAIRMAN KELLIHER: Thank you very much.

Now we have hardly any time on this panel, so I am just going to make a comment. I think there are nine of us, and I think we have 11 minutes. So I guess give me one minute then--

(Laughter.)

CHAIRMAN KELLIHER: --so I am just going to make a comment. That is really just to emphasize to our colleagues how different FERC's role is in reliability than when it comes to economic regulation.

In our role with economic regulation we are charged with regulating wholesale power sales transmission, but we actually do not really have authority over generation facilities. We regulate wholesale power sales, but not really the generation facility itself.

But reliability is different. We are regulating users, owners, and operators. It is a different legal universe and is much broader. So we actually, even if hypothetically nuclear plants were not owned by companies that also owned transmission, we would be setting reliability standards for nuclear plants because they fall within that much broader universe.

But we also want to be very careful that we do

not interfere with your nuclear safety operation. So that is one reason why, when we adopt reliability standards we do it by rulemaking, because rulemaking isn't subject to ex parte. We can have informal discussions all day long and, not in 10 or 11 minutes, but we can really have informal discussions so that nothing we do impairs your regulation.

Just one other comment. I really want to reiterate what Phil said, that we have seen very significant improvements in nuclear plant performance. I think it is a combination of things.

I think it is improvements in NRC safety regulation, but I think it is the incentive that was established by our forebears 40 years ago, 25 years ago: wholesale competition gives nuclear plant owners a great incentive to improve operation.

So I think it is a combination of that incentive, the profit incentive to operate the nuclear plants better, as well as improvements in nuclear safety operation, but I think it has had a good outcome for consumers.

So I am sorry, that might have been more than a minute, but--I am sorry we are so short on time. It is just the way the panels are operating, and our mutual time commitments.

So why don't I turn to Chairman Klein.

NRC CHAIRMAN KLEIN: Thanks, Chairman.

I just have a real quick question. This may be a David answer, but I will direct it to Pat. On your slide 5 you talked about power upgrade must include a grid impact study. So the question is: Who does that grid impact study? Who is responsible for evaluating that?

MR. HILAND: The applicant, or the licensee, in my experience they have to ask their Independent Operator, the ISO, to validate the grid impact study. Typically the ones that we have seen the ISOs will subcontract that work out, but they fall into a queue.

And as we have heard before, it does not matter what type of plant you have there is a queue that you must sit in before the ISO goes back and validates that. And what we are looking for is not only the capacity of the grid to carry that additional power, but also the capability to continue to provide off-site power if that nuclear unit were to trip.

There are two answers that we are looking for. And the ISO is the only one that can produce that answer.

NRC CHAIRMAN KLEIN: Thanks.

CHAIRMAN KELLIHER: Thank you.

Commissioner Kelly.

COMMISSIONER KELLY: I had a question for any of the panelists about advanced technology and how it is deployed in the nuclear industry.

As advanced technology moves from the labs to the possibility of commercialization, do you find that the nuclear industry implements that? And if you do find that, is it through the utilities perhaps wishing to achieve efficiency measures? Is it through the vendors who look to see their technology employed? Or do you find that NERC and NRC standards are forcing the acquisition of advanced technology?

MR. HILAND: I think the answer is "all the above." All the above. Currently, and you may have read in the press, and certainly the public in this room are aware, there's Digital I&C. The Digital Instrumentation and Control, and the transition of that technology into the nuclear industry is coming forward, but it is 20 years behind the times in some cases, in that the micro processors or the computers that people use to operate a lot of other industries are being introduced now, and we do have a major application that we just received a couple of months ago from the Duke Energy Company to convert their analogue systems over to a digital instrumentation and control.

So I think the answer is: All the above.

COMMISSIONER KELLY: Thank you.

MR. MAYFIELD: Commissioner, I think I would echo that. What we are seeing with the new plants is all of the Digital I&C systems make use of modern digital technology.

What is interesting is that it is not cutting-edge in the sense of the latest and greatest coming out of California. It is, rather, tried-and-true technology. So we have a pretty good feel for the reliability of it. We are not putting in the next widget that you six months down the road find out just is not quite right.

So it is pretty well developed and mature technology, and yet it is significantly ahead of where the current operating fleet and their analogue technology resides.

COMMISSIONER KELLY: Thank you.

CHAIRMAN KELLIHER: Thank you. Commissioner Jaczko.

NRC COMMISSIONER JACZKO: I would just follow up on the point that the Chairman made about the Grid Impact Study and comment about a situation we had recently I think with one of the plants that we received an application for for a power upgrade. They came in wanting a much larger power upgrade, but I think because of their lack of planning on what they would need to do to get the grid impact study they were actually reduced--actually had to reduce the size of that power upgrade because that lower power increase was able to get in the queue faster, I guess I should say.

So they wound up requesting about a 5 percent power upgrade rather than something on the order of a 16 or

17 percent power upgrade, I believe was the ultimate number, because that upgrade would have taken them I guess right now about 10 years or so to get through the queue to get that information.

So I think we still have some work to do, probably if nothing else than to communicate with our licensees our expectations, and that they need to begin interfacing with these organizations in a different way.

It is very reminiscent to me of the situation we had with Seabrook where Seabrook came in with a power upgrade and hadn't received that, hadn't properly communicated I think with their system operator and as a result were often asked to reduce power to comply with some reliability requirements.

So I think these meetings are a very good opportunity for us to communicate these issues, and I think it just continues to reinforce them. I think that our licensees still have a little ways to go to understand that they need to be more involved I think in some of these broader issues of reliability and understand the requirements that are out there that they need to comply with as well as our approval process.

So there wasn't really a question in there.

CHAIRMAN KELLIHER: Thank you, very much. Commissioner Spitzer.

COMMISSIONER SPITZER: Thank you, Mr. Chairman. This is really more of a comment--

CHAIRMAN KELLIHER: What I out of order? Commissioner Moeller, I'm sorry. I'm sorry, Commissioner Moeller, I'm sorry. There are so many Commissioners here I've lost track.

(Laughter.)

CHAIRMAN KELLIHER: Let's go with Commissioner Moeller. Sorry, Marc.

COMMISSIONER SPITZER: I'm Pavlovian when I am recognized.

(Laughter.)

CHAIRMAN KELLIHER: I apologize.

COMMISSIONER SPITZER: Really--and this is more of a comment--the traditional safety regime of U.S. NRC dovetails in with the reliability function that is new. I had the opportunity to interface with NRC as an Arizona Commissioner. There were some episodes with the Hassayampa Switchyard, one particular event, and then there were ongoing issues, and I wanted to really notably compliment you all.

There was a fairly strong contingent that came. There was a public hearing in Phoenix. This was the type of--these events, and series of events could have, unchecked, undermined the public's faith and confidence in

the regulatory system, as well as the operation of the facility. It is really a compliment to the U.S. NRC, the Commissioners and the staff that the public hearing in fact reinforced the public's confidence through the vigilance of the U.S. NRC.

Maybe just very briefly, if you could describe in general how you respond to episodes such as that, and how you handle them from a process point of view.

MR. HILAND: We have an Event Assessment Program ongoing where we look at, on a daily basis--any time an event gets called into our Operations Center, licensees are required to call in events that occur at their plant based on significance.

There is a hierarchy there. When we look at those we have to make a determination how do we respond. Do we respond with just our resident inspector? I mentioned to you earlier at each of our nuclear plants we have at least one, and in most cases two on-site resident inspectors to give us that first-hand information.

Those evaluations determine whether or not we conduct a special inspection, or an augmented inspection team. And then the worst case would be what we call an IIT, or Integrated Inspection Team.

Each one of those has a higher level of participation from the Washington corporate office of the

Nuclear Regulatory Commission down to the regional office, and then at the site.

In the case--and I believe you are referring to the--I have a former regional administration, I have to be careful about regional administrator here. I'm not as familiar with that case. That was before I moved into the corporate office. But that is how we do it.

On an event by itself, we look at it. As it goes up in significance, it will get higher level senior management involvement in the decision making. Then once we make a decision to go out to a site, we go out and do that at a regional basis.

MR. MAYFIELD: I guess the only thing I would add is, typically when we have to field those teams they do not rely solely on the regional inspectors and their level of expertise. They will reach to headquarters for specifics. And for the event in Arizona, there were specific experts out of headquarters that supported the region in that activity.

So we can bring a fair bit of technical weight to bear quickly when we need to.

CHAIRMAN KELLIHER: Thank you very much. Commissioner Lyons.

NRC COMMISSIONER LYONS: Thank you, Chairman Kelliher. I don't really have a question. I just wanted to

perhaps make the comment that I think the folks of this last panel on reliability standards really is an outstanding example of the cooperation between the staff of the two agencies.

I would like to think that that cooperation is facilitated perhaps by the meeting of the Commissions as well. The progress that has been made on the new NERC Standard, its impact on the safety of the nuclear power plants, the efforts that Pat described from the standpoint of grid monitoring that has gone on, all those I think are outstanding examples of the staffs working together very, very well.

So just my compliments, and thank you.

CHAIRMAN KELLIHER: Thank you. Commissioner Moeller--and I abjectly and publicly apologize.

(Laughter.)

COMMISSIONER MOELLER: Accepted. Thank you.

A brief comments, which is that I think most of you know that in the 2005 Energy Act Congress gave this agency new enforcement powers, very broadened, and so we are implementing those now in a way where we have a limited body of evidence.

However, you as Commissioners and staff at the NRC have really had a major enforcement program I think from your inception. So we would like to learn more about your

enforcement. I think you have four categories. How you undertake it. What the pros and the cons are of it. Not for today's discussion, but in general we want--at least I want to know a lot more, and look forward to that discussion.

CHAIRMAN KELLIHER: Thank you.

Commissioner Svinicki.

NRC COMMISSIONER SVINICKI: I thank the panelists, and I have no questions.

CHAIRMAN KELLIHER: Thank you.

Commissioner Wellinghoff.

COMMISSIONER WELLINGHOFF: Thank you, Mr. Chairman. I would like to put in a paid plug for the FERC Reliability Monitoring Center, and I have to, by way of disclosure, say it was paid because I heard the Senator yesterday, and Joe, and the brownies he and his son had made, and it was more than ample payment, but Mr. Hiland talked about the continued monitoring that NRC must do with respect to the grid, and I want to encourage them and hope that there will be continued cooperation between NRC and the FERC especially with respect to a Reliability Monitoring Center which is really going to become state of the art.

It will be the place in the United States to determine what is going on in the grid in real time. So I understand they are going to tour it today. I think it is a

real credit to Joe and his team and what they have done there, and I was so impressed with it yesterday that it will be a resource for everybody.

CHAIRMAN KELLIHER: Thank you very much.

Well why don't we turn to the third panel. I would like to now recognize Scott Morris, the Deputy Director, Division of Security Policy, Office of Nuclear Security and Incident Response at the NRC.

MR. MORRIS: Thank you, Mr. Chairman. Regis and I sort of choreographed it so that he would go first, so I want to defer to Regis. Not that I want to have the last word, I just--

(Laughter.)

MR. BINDER: Alphabetical order.

CHAIRMAN KELLIHER: Let me introduce Regis, then. Regis Binder is the Acting Director of the Division of Logistics and Security, Office of Electric Reliability.

MR. BINDER: Thank you, Chairmen Kelliher and Klein, and Commissioners.

On January 18th, 2008, the Federal Energy Regulatory Commission issued Order No. 706. That approved eight proposed critical infrastructure protection, or CIP, reliability standards.

These eight standards address the cyber security of the Nation's bulk power system, and include approximately

160 requirements and subrequirements.

The CIP Reliability Standards represent a significant effort by the electric industry that culminated in their filing by the North American Electric Reliability Corporation in its role as the electric reliability organization for Commission approval under Section 2.15 of the Federal Power Act.

Order No. 706 established the first mandatory and enforceable reliability standards for the cyber security of the electric industry. The Order also directed the ERO to develop modifications to the eight standards, to develop guidance to industry on several topics, and to develop mechanisms that provide additional oversight of how responsible entities are complying with the CIP reliability standards.

I should point out that several requests for clarification or rehearing of certain aspects of the Order have been filed with the Commission. And those are under consideration.

The main areas addressed by the CIP Standards are:

Identification of critical cyber assets to be protected, management involvement. This is primarily required through a cyber security policy.

Security of sensitive information. This includes

such information as floor plans of computing centers and security configuration.

Personnel risk.

Physical security of cyber assets.

Change control. This includes testing of significant changes to software and hardware.

Access control. This includes both electronic and physical access to critical cyber assets and revoking authorized access when no longer needed.

Establishing an electronic security perimeter. This involves controlling and monitoring all access points crossing the electronic security perimeter, as well as performing annual vulnerability assessments.

Incident response plans and recovery plans. Recovery plans include procedures to use stored information to successfully restore critical cyber assets as well as annual exercises.

Order No. 706 directed multiple technical modifications such as shortening the time period for reviewing access logs. It also directed several structural changes.

These include additional oversight in two areas. First, the list of critical assets developed by a responsible entity must be reviewed by another entity with a wide-area perspective to be sure that no critical assets

have been missed.

Second, any exceptions to the CIP standards such as for safety reasons claimed by a responsible entity must be reviewed and approved by a regional oversight.

The second structural change is additional reporting to the Commission required on two topics. The ERO must report annually on exceptions to the CIP standards that are claimed by responsible entities, including their effect on bulk power system reliability.

This important for the Commission's monitoring of compliance activities and for determining if additional modifications to the reliability standards are necessary.

In addition, the Commission directed the ERO to consult with the federal entities that are subject to both the CIP standards and the Cyber Security Standards developed by the National Institute of Standards and Technology, or NIST, and we required the ERO to report to the Commission on the effectiveness and implementation issues of the NIST standards.

The third structural change is a framework for controlling exceptions to the CIP standards that is based on the principle that no responsible entity can exempt itself from a CIP standards requirements. Also, the recognition that operating and safety considerations may necessitate an exception. Also, up-front reporting of claimed exceptions

to regional entities. Detailed regional review and approval of exceptions during an audit process. And annual reports of claimed exceptions to the Commission.

This concludes my comments, and I will be glad to answer questions after the panel is over.

CHAIRMAN KELLIHER: Thank you. Mr. Morris?

MR. MORRIS: Yes. Good morning, Chairman Kelliher, Chairman Klein, and Commissioners. I appreciate the opportunity to discuss in a very broad sense where the NRC is with respect to cyber security at nuclear power plants, and to provide some perspective on how what Regis referred to in the implementation of the CIP standards, and what we are doing at the NRC and how they relate.

On the first slide I just want to briefly cover the essence of our mission. This is no surprise, but I think the reason for mentioning it here will become clear in a moment.

Fundamentally our mission is to license and regulate the Nation's civilian use of special materials, and to ensure the adequate protection of public health and safety, and also to promote the common defense and security and protect the environment.

I highlight nuclear safety and security because those are the two principal things upon which we focus. Obviously electric--or power continuity and electric

reliability are important, but it is not clearly part of our mission, and that is why our interaction with FERC is important.

With respect to our instrumentation and control systems at the nuclear power facilities, the way that our mission translates to these INC systems is that our focus is on safety systems, security systems--and what I mean by that are any systems that are employed to ensure that the site itself is protected from threats; and also any systems that are required for effective emergency response or preparedness.

On the next slide I highlight how that manifests itself, how our nuclear safety mission is manifested with respect to those three categories of INC.

Then specifically with safety systems, our design requirements are very well established and understood. They are based in large part on IEEE standards and others. They are basically designed on three--the three measures you see there: redundancy, diversity, and independence, to ensure a high degree of reliability.

We do not--while our requirements are very strict in that regard, our review of those systems at the site is limited to a reasonable assurance standard. That means we do not do independent design verifications, but rather we do enough of a review to give ourselves and the public

reasonable assurance that they will do what they are intended to do.

We verify the implementation of those requirements in the field through inspections and enforcement, in addition to our licensing work back in headquarters.

From a nuclear security perspective, on the next slide, we operate in a slightly different paradigm. In the case of nuclear security we have prescribed what we refer to as a design-basis threat, which is simply a set of adversary characteristics that we require our licensees to be able to defend against with high assurance.

We are concerned about radiological sabotage clearly. The design-basis threat characteristics themselves are not publicly available information, but generally speaking and in our regulatory requirements we do offer a general sense of what it is comprised of.

I want to point out that we are applying nuclear security not to just safety systems but also, as I mentioned earlier, the security systems and the emergency response systems.

If you look at risk, security risk is the product of threat versus vulnerability, I think we would all agree that the threat is fairly high. The vulnerability, on the other hand, at least before 9/11 and even today in large

measure is fairly low principally because of the existing design requirements for safety reasons that I mentioned earlier, but also because, as has also been mentioned, the technology and use at many of these facilities for safety and safety systems is generally not susceptible. In other words, it is analogue, or it is solid-state logic modules, things that do not have software applications running on them.

That is changing. And if you will go to the next slide where I speak about post-9/11 requirements, the agency did quite a bit in security post-9/11. And with respect to digital INC, we recognize that the retrofits of some of these older analogue and solid-state logic systems are increasing. They are being used more and more in non-safety systems, but even--but now, as Mr. Hiland pointed out, we are receiving applications for safety-related systems that are moving toward digital technology.

In addition, all of the new reactors are going to employ digital systems. And so the need to have more robust security requirements to address cyber attacks is evident. And, as such, in 2002 we issued an order to all the power reactor licensees mandating an initial action to at least identify what things that they had on their sites that were potentially subject to cyber attack. That was followed up with another order in 2003 in which we supplemented the

existing design-basis threat to include cyber attacks. And we have codified that in our regulations early last year in the design-basis threat through a notice and comment public rulemaking, and it explicitly included external cyber attack in the list of adversary characteristics for which power plants have to be able to defend against with high assurance.

Finally, we have in 2006 proposed a new set of programmatic cyber security requirements or standards in 10 CFR 73.54. That is an ongoing rulemaking. We have received thousands of comments on that rulemaking, of which the cyber piece was just a small part of. We anticipate that rule to go final in the early 2009 timeframe.

But it is important to point out that there is fairly good alignment between what we are proposing in that set of rules and with what Regis just referred to in the CIP standards.

Quickly onto the next slide, since I am almost out of time, the Nuclear Energy Institute did not sit idly by--or the Nuclear Energy Power Generation facilities in the industry as represented by NEI, did not sit idly by. They were very aggressive to develop their own set of standards, in part based on work that we had already done; in part based upon looking at what NERC had done, and in trying to be compatible with the CIPs, and they developed what is

referred to as an NEI-404 document, which is a comprehensive cyber security program guideline.

Internally, all of the industry generator power reactor facilities have committed to implement an NEI-404 program by May of this year.

On to the last slide, as part of our ongoing review and dialogue between the staffs and between the industry and us and others, one potential regulatory issue did surface in this arena. And this goes back to my initial slide.

The NRC's cyber security requirements are not going to extend to power continuity systems. They do not extend directly to what is not directly associated with reactor safety security or emergency response.

The NEI-404 document does go beyond what our existing and planned requirements will be, and does include all systems and digital assets on their site, which would include power or continuity systems, but it is important to point out that the NEI document is not a compulsory document. It is not something that we require them to implement for things that are beyond our regulatory and statutory purview.

As a result, and when you look at the CIP standards that were issued, there is a discrete statement in each of the seven or eight standards where it specifically

exempts facilities regulated by the United States Nuclear Regulatory Commission from compliance with those CIP Standards.

So there is an issue there in the sense that our regulations for cyber security go up to a certain point, and end. Then there is this power continuity piece, which is covered by NEI-404 but not mandated by us, and is exempted currently by the FERC CIPs. So we are interacting to try to figure out what is the optimal way to bridge that. If in fact we determine that there needs to be enforceable regulatory standards in place how best to pursue that.

That ends my comments, and we would be happy to answer any questions.

CHAIRMAN KELLIHER: Great. Thank you, very much.

MR. MORRIS: I'm sorry I ran two minutes over.

CHAIRMAN KELLIHER: I think we could have two- or three-minute rounds, if that is the will of the group, because I do not think I need 10 minutes for concluding remarks.

So why don't we say three-minute rounds, and if we can come in a little under so much the better. I just really had a couple of comments--I am not sure I have questions in this area--but this is an area where it is very important for the two agencies to work together, because we understand the relationship of reliable grid operations with

nuclear plant safety, and the nature of the threat is very different than what FERC is accustomed to.

I think the cyber threat is different. It used to be perception of the cyber threat was some brilliant teenage boy who likes to wear a black trench coat in the basement of his home, but the cyber threat really is quite different and more organized, perhaps, than that.

A cyber threat to the grid is an indirect attack, at least at nuclear plants, and the reverse is true. In your agency you are much more of a national security agency.

We were talking briefly that agencies have personalities, and you were established in 1946 and entrusted with the secret of the atom bomb. So you have a bit of a security personality that you have had ever since.

You used to have the death penalty. People thought FERC was given strong penalty authority two years ago, but--

(Laughter.)

CHAIRMAN KELLIHER: --you used to have the death penalty for violating the Atomic Energy Act. So our $500 a day really did not compare too well with that.

(Laughter.)

CHAIRMAN KELLIHER: So I think it is important

for us to--we have studied how you have approached security, and particularly physical security, and how you have set a design-basis threat, and how do you get licensees to comply with that. And does that translate to us?

It does not translate perfectly because of the universe that are subject to reliability standards is much less homogeneous than the universe of commercial nuclear plant licensees, but we have studied how you have done things because we recognize you are a security agency more so than we are and we want to see what best practices you have that we can adopt.

I think this is an area where we do have a common threat, and so some kind of common defense is important. So I am glad our staffs are working in concert.

So that is a statement, and not even a statement in the form of a question. It is just an out-and-out statement.

So with that, let me turn to Chairman Klein.

NRC CHAIRMAN KLEIN: Thanks. I should point out that the current Commission has been very limited in its use of the death penalty.

(Laughter.)

NRC CHAIRMAN KLEIN: So we use it only rarely, although sometimes we would like to use it more often.

(Laughter.)

NRC CHAIRMAN KLEIN: I guess I have a question in that area for Regis. In terms of a lot of the issues that we deal with on security we have to handle on obviously a secure way. We don't want to pass information so the bad people get ahold of it.

How do you handle that information within FERC? Do you have special categorizations to safeguard information? Is it Secret? How do you handle that internally?

MR. BINDER: We do work with a variety of levels of sensitivity. We do work with classified information, although I do not believe FERC has actually classified information itself, or declared information to be classified, but we do work with information that has been classified by other agencies.

FERC has tools for handling sensitive and confidential information. We use a tool called "Critical"--CEI, Critical Energy Information, Infrastructure Information. It is a means by which we can control the dissemination of information but still share it with entities that need it, and we can interact with them.

That involves disclosure agreements--nondisclosure agreements, and it is used quite a bit at the Commission, especially for commercially sensitive information, and we are starting to use it more so for

sensitive security information now.

NRC CHAIRMAN KLEIN: Thanks.

CHAIRMAN KELLIHER: Commissioner Kelly?

COMMISSIONER KELLY: Thank you, Joe.

David Nevius, you are not a speaker on this third panel but certainly you are qualified to speak, and so I would like to ask you in your work to date on developing Cyber Security Standards if you have any comments that you would like to pass on to us here at FERC or at the NRC about issues you see arising, things we should be considering, or actions we might want to contemplate?

MR. NEVIUS: I don't have anything to add to what has already been mentioned by Regis Binder and Scott Morris.

COMMISSIONER KELLY: Well thank you for your cooperation with our staff in developing these standards.

CHAIRMAN KELLIHER: I just want to pick up on Commissioner Kelly's comments. We should feel free to ask any of the panelists, not just the last two, their views.

Commissioner Jaczko.

NRC COMMISSIONER JACZKO: I guess I do not have a question at this point, but I would certainly echo I think the importance of, and reinforce I think the good communication that has gone on so far in particular in this area with our staffs to try and address this potential issue with the power continuity systems. And I do think it is

certainly important to resolve that and ensure that we do have good coverage in this area.

So I certainly encourage the continued cooperation, and if there is anything that we can do to help facilitate that please let us know.

I would also just briefly comment that I appreciate the comments about enforcement that Commissioner Moeller had made. Enforcement is probably the most challenging aspect of the things that we do. We focus a lot of our time on the regulations, and the regulations that we write, but ultimately they are only as good as our ability to enforce them.

So I certainly, if there is anything else that we can do to help and share our experiences on enforcement, we would be happy to do that. And I certainly would extend the staff to you, as well.

So those are the comments I had. Thank you.

CHAIRMAN KELLIHER: Thank you. Commissioner Moeller.

COMMISSIONER MOELLER: Thank you, Mr. Chairman.

A brief question for Mr. Morris. I brought this up once before I think in our reliability discussions, but in one of your slides you talk about kind of the digital retrofits. Does the increased digitalization at all make you a little nervous?

To me, I have been in plenty of nuclear plant control rooms and the on/off switch is kind of reassuring, and the dials. You know, because you can see it. So I guess I would like your comments.

MR. MORRIS: Does it make me nervous? Yes, it makes me very nervous. That being said, however, I think we have got a structure in place.

I think Pat mentioned our work with the digital I&C steering committee that we have commissioner internal to our agency, and have interacted closely with industry and vendors, and that has helped force a very important dialogue between--to register our concerns, and the industry's concerns about impeding the operation of these--you know, the security of course is always in competition--excellent security is always in good competition with good operations.

It is very challenging to find the balance. Perfect security means you can't operate. You know, the most efficient operations often mean very little security. So struggling to find that balance is a challenge. And I think we have internally got a structure to address our concerns, which are very real.

I mean, you mentioned the on/off switch, but the newer plants are going to have a lot of human/machine interface issues, and touch screens, and digital procedures,

and, yes, lots and lots of concerns. But we have done I think a pretty good job of getting all those concerns aired and have a path of resolution on them.

COMMISSIONER MOELLER: Thank you.

CHAIRMAN KELLIHER: Thank you. Commissioner Lyons.

NRC COMMISSIONER LYONS: Thank you, Joe.

I guess first I just would like to add emphasis to the point that, Scott, you made on the need to continue staff interaction on the continuity of power requirements.

To the extent there are any holes between where our jurisdiction ends and where FERC is now exercising jurisdiction, we need to be very sure that those are filled. So I very much appreciate that point and certainly look forward to the staffs working together.

I did have one question. I don't honestly know, Mr. Binder, if you are the correct person to ask or not, but the title of your remarks was "Critical Infrastructure Protection." From the NRC's perspective, in the area of critical infrastructure we have had an extensive degree of cooperation and collaboration with the Department of Homeland Security, to the extent that they have been conducting so-called comprehensive reviews of--they have now completed a comprehensive review of every one of our nuclear power plants in the country.

I am curious if a similar process--I know that DHS has categorized a number of different elements of critical infrastructure. I believe there are 17 different elements. We are--and somebody can tell me I'm wrong on 17; I'm close--

MR. MORRIS: Yes, there are 17 and 1 sector of course that we are interested in, and you probably have it, too, with energy--but energy being the other one.

NRC COMMISSIONER LYONS: What I was leading up to was: To what extent is the grid considered part of that critical infrastructure? And are you part--to what extent is FERC part of a process like a comprehensive review? And I am leading up to wondering if there is anything to be shared here between our experience with the comprehensive reviews at all of our sites with whatever may be going on with our own Homeland Security from the perspective of security of the grid?

And again, I am not sure if I should be directing it to you, or maybe even to some of the Commissioners.

CHAIRMAN KELLIHER: Well, why don't we turn to Joe, or Regis. I'll defer to Joe on who can answer, and what we can and should say.

MR. McCLELLAND: We do participate in the Government Coordinating Council. DOE is the sector head for

energy, and we are one of the agencies that participate in the GCC effort.

Within the GCC effort, DHS has identified DOE as the lead for the energy sector. And so activities that are coordinated, identify DHS are vetted first through the sector head, and then brought to the entire group for dissemination and discussion.

Reg, do you have anything more specific to add in this forum?

MR. BINDER: The only thing I was going to add was to put the Cyber Security Standards in that framework of the Government Coordinating Council, which incidentally Joe didn't mention but I don't know if you're aware, every sector has a Government Coordinating Council and a Sector Coordinating Council that has industry members on it.

The thing that is--it is a little premature to say exactly how the cyber security efforts fit into the DHS efforts that you're familiar with because these standards were just put in place, but the industry is not really compliant with them yet. And in fact, as I mentioned in my comments, we have asked industry to actually modify the standards so that what ultimately gets implemented will be somewhat different than what we know today.

But certainly once the standards are in place,

compliance monitoring and enforcement will be a huge effort, just as was mentioned today with other reliability standards. That will become the focus. And that is probably the point at which DHS will have the most interest, once we are actually enforcing the standards.

MR. McCLELLAND: If I might just add one other thing, Commissioner, the identification of the assets is a requirement under the Cyber Security Standards. And the entities themselves have to identify the critical assets on their system.

This has been part of the Commission's NOPR, or the Commission's concern, that since it is a self-identification process it is a little different in that DHS does not come in and identify the assets, the entity does.

And what the Commission has proposed is to make this more of a regional view. In other words, the regions themselves would control the assets itself. Maybe I shouldn't say "proposed," it's the final rule.

The regions would have the responsibility to coordinate that identification as critical assets, and have a review process in place to validate those assets, so they don't vary from region to region and company to company. And there can be many, many, many critical assets per entity.

NRC COMMISSIONER LYONS: I meant my question to be much broader than cyber security, to cover the full range of extremely critical assets for which FERC has some responsibility.

CHAIRMAN KELLIHER: You mean natural gas pipelines and such?

NRC COMMISSIONER LYONS: Yes, things like that.

CHAIRMAN KELLIHER: Yes.

NRC COMMISSIONER LYONS: And I was simply wondering out loud whether there is anything to be gained in perhaps sharing lessons with what we've gone through with DHS on the comprehensive reviews with areas--I mean, I was thinking of the electrical grid, but certainly your responsibility in natural gas is, I don't know if it's large or not, but it is certainly another area that deserves that attention.

CHAIRMAN KELLIHER: Right. There probably are some things we can learn from that.

MR. McCLELLAND: Absolutely. I look forward to having our staffs coordinate on that with your staff to pick up the lessons learned and see how you folks have proceeded and how there might be parallels in our industry. I think that is a great suggestion.

CHAIRMAN KELLIHER: Thank you. Commissioner Spitzer.

COMMISSIONER SPITZER: Thank you, Mr. Chairman. Expanding on Commissioner Moeller's observation with regard to digitalization of the control rooms of nuclear plants, and this is a broad question maybe calling for some observations, if any of you on the panel have one.

The Smart Grid is an opportunity for efficiency and for the ratepayers, but obviously there are challenges in this balancing between security and efficiency.

Is the Cyber Security fix with regard to the Smart Grid of the future a technological fix, or a legal fix, or both?

(Pause.)

MR. BINDER: I'll take a shot.

(Laughter.)

MR. BINDER: I guess I didn't step backwards. It is very challenging from a security perspective. Obviously the more nodes that you have to protect, the more difficult it is to accomplish that protection and the more vulnerabilities there are.

I personally think that technology needs to play a very significant role, if that is going to be a secure endeavor. Perhaps there might be some legal issues involved, there usually are, but I think in my mind at least--but I'm an engineer--in my mind technology has to lead that.

CHAIRMAN KELLIHER: Any other takes?

(No response.)

CHAIRMAN KELLIHER: Commissioner Svinicki?

NRC COMMISSIONER SVINICKI: Thank you. To follow on that theme on technology, I think the panelists would agree that as we reflect on the threat environment, physical or cyber, the threat environment is not static. Within the NRC we have an Office of Research, and to stay on top of technologies and emerging threats.

I candidly do not know if FERC has any sort of research arm, or if you draw upon Department of Energy Office of Electricity Reliability. I know that former Chairman of FERC, Pat Wood, reached out to the Department of Energy, National Laboratories, years ago to begin to understand the vulnerabilities and the ease of exploit of those.

But the programs that we are putting in place, in your view do they have the kind of agility and nimbleness that we will need to stay on top of a changing threat environment in cyber, specifically?

MR. BINDER: I can comment on the first part. I I'll defer to Scott on the second part.

We do very much contact and rely on the expertise that is available int he Department of Energy, especially in the National Laboratories. We also work quite a bit with

the National Institute of Standards and Technology, NIST, and their expertise.

Actually, I talk about them like they are discrete entities, and they are in a way, but the efforts on the cyber security front at least actually have a lot of overlap in them.

Both NIST and the Department of Energy uses industry experts as resources and sounding boards, and the most successful efforts have been sort of interactive efforts, and we try to participate and interact in those and get the benefits of the knowledge it has gained as much as we can.

MR. MORRIS: I will take a shot at the second part of that question.

I think the way we have structured our existing requirement in the design-basis threat rulemaking and where we are headed in the proposed rulemaking for cyber security, it is structured in a very performance-based high-level programmatic way such that it is not prescriptive about what type of technology gets used, or what strategies are employed.

Rather, we set a standard that this bad guy cannot create this problem and propose a way to address that. And here are some programmatic elements that we need to have assurance along the way, and you need to have along

the way, so that we can all, excuse my comment, but to get that warm fuzzy feeling about it.

Again, we are not going to be doing design verifications. It is going to be how much information do we need to get? What we are saying is, they need to have certain programmatic elements that do not tie their hands on what kind of technology gets ultimately used, so that technology have evolve, strategies can change, and yet our requirements can still be satisfied to keep the bad actor away from the critical equipment.

NRC COMMISSIONER SVINICKI: Thank you.

CHAIRMAN KELLIHER: Thank you. Commissioner Wellinghoff.

COMMISSIONER WELLINGHOFF: Thank you, Mr. Chairman.

I just want to follow up on the comment of Commissioner Lyons that I think there is a lot that FERC can learn from the NRC's Comprehensive Assessments of Security. We have done some on the cyber security side.

I am not necessarily completely clear that our reliability authority subsumes physical asset security as well.

There may be some more authority that we need there, as well, because I think that is certainly an issue that we need to look at and address, and I think we have a

lot to learn from the NRC on that.

CHAIRMAN KELLIHER: Thank you. Colleagues, any more comments?

(No response.)

CHAIRMAN KELLIHER: If not, I am just going to make some very brief concluding remarks that I think it has been a very productive meeting, just like the other two. I want to thank the staffs for their hard work. And I think the meeting shows that we both recognize that to really effectively discharge our different statutory missions that we improve our change of success by working together, because it is undeniable that the grid and large nuclear plants are entwined.

And if our missions are entwined and we accept that is the reality, then I think this kind of level of cooperation is necessary.

So I am glad we did it, and thanks for coming to our home team this time, our court this time. I just want to turn to Chairman Klein for any comments he might have.

NRC CHAIRMAN KLEIN: Well I would like to thank FERC for their hospitality. So on behalf of my fellow Commissioners and our staff, I would like to thank you for having us down here.

These meetings are very helpful I think to not

only lay out areas of mutual interest, but also to look ahead of where could we work better together in other areas. And we do have a lot of areas that mutually overlap.

We have our distinct roles, obviously, but we also have areas of mutual interest, and I think these meetings are helpful just to branch out.

As Commissioner Lyons pointed out, we have information we can share, and you have information that you can share and help us be a better agency as well.

So I thank you and your staff and your fellow Commissioners for your hospitality, and we will keep the interchanges going.

CHAIRMAN KELLIHER: Great. Thank you. Well, with that, why don't we both gavel this to a close. Then I think we are going to have a group photo of all the Commissioners.

So, thank you very much.

(Whereupon, at 12:02 p.m., Tuesday, April 8, 2008, the joint meeting of the Federal Energy Regulatory Commission and the Nuclear Regulatory Commission Commissioners was adjourned.)