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BEFORE THE

FEDERAL ENERGY REGULATORY COMMISSION

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In the matter of: :

TECHNICAL CONFERENCE ON : Docket Number

SMART GRID INTEROPERABILITY :

STANDARDS : RM11-2-000

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Commission Meeting Room

Federal Energy Regulatory Commission

888 First Street, Northeast

Washington, D.C. 20426

Monday, January 31, 2011

The technical conference was convened, pursuant
to notice, at 1:00 p.m.

APPEARANCES:

JAMIE SIMLER (Presiding)

JOSEPH McCLELLAND

DAVID MORENOFF

KEVIN KELLY

MICHAEL TITA

JESSICA COCKRELL

TED FRANKS

RAY PALMER

ANNABELLE LEE

1 APPEARANCES (Continued)
2 JASON CHRISTOPHER
3 ELIZABETH ARNOLD
4 HEIDI NEILSEN
5 GEORGE ARNOLD
6 CHAIRMAN JON WELLINGHOFF
7 COMMISSIONER MARC SPITZER
8 COMMISSIONER PHILIP MOELLER
9 COMMISSIONER JOHN NORRIS
10 COMMISSIONER CHERYL A. LaFLEUR
11 DANIEL THANOS (BY SKYPE)
12 DARREN HIGHFILL
13 GIB SOREBO
14 JOHN LUCAS
15 DR. ANDREW WRIGHT
16 ED BEROSET
17 FRANCES CLEVELAND
18 MICHAEL ASSANTE (BY VIDEOCONFERENCE)
19 RON AMBROSIO
20 DR. NATE KUBE
21 WAYNE LONGCORE
22 ANDY BOCHMAN
23 JENNIFER SANFORD
24 THE HONORABLE BOBBIE McCARTNEY
25 ADMINISTRATIVE LAW JUDGE

1 P R O C E E D I N G S

2 1:03 p.m.

3 MS. SIMLER: All right. Thanks everyone for
4 settling in. Good afternoon and welcome to the Federal
5 Energy Regulatory Commission's Technical Conference on Smart
6 Grid Interoperability Standards.

7 The purpose of this afternoon's conference is to
8 obtain information to aid the Commission's determination of
9 whether there is sufficient consensus that the five families
10 of standards posted by NIST are ready for Commission
11 consideration in a rulemaking proceeding, as directed by
12 Section 1305(d) of the Energy Independence and Security Act
13 of 2007.

14 Today's conference will consist of welcoming
15 remarks by the Commissioners, seated to our left, to be
16 followed by remarks of George Arnold, NIST, National
17 Coordinator for Smart Grid Interoperability. We will then
18 proceed to our two panel discussions.

19 Panel members have submitted written comments and
20 I believe that they're available in the back of the room,
21 and they're asked to make short, five-minute opening
22 statements based on those comments. There's a clock in the
23 center of the pit here, if you will, to assist you in self-
24 policing, and if that doesn't work, Heidi will give you a
25 couple of extra seconds and then ask you to move on.

1 There will be a question and answer period for
2 each of the panel sessions, and we will close the day with a
3 wrap-up, including closing statements by George Arnold. The
4 supplemental notice issued by the Commission stated that
5 following this conference, interested parties may file
6 written comments by March 2nd.

7 The Commission may issue a further notice seeking
8 comment in specific areas based upon what we hear today, and
9 then reply comments will be accepted through March 16th.
10 Before we get started, please silence your cell phones.

11 For those of you not familiar with this building,
12 restrooms are located near the elevators, and there's a
13 cafeteria on the west end of the building on this floor. No
14 food or drinks are allowed in this room, please.

15 Finally, and to set the stage, I want to remind
16 people why we are here today by reading the operative
17 passage from EISA, which sets forth the Commission's
18 responsibilities with regards to Smart Grid standards.

19 Section 1305(d) states at any time after the
20 Institute's work has led to sufficient consensus in the
21 Commission's judgment, the Commission shall institute a
22 rulemaking proceeding to adopt such standards and protocols,
23 as may be necessary to ensure Smart Grid functionality and
24 interoperability in interstate transmission of electric
25 power and regional and wholesale electricity markets.

1 With that focus in mind, I look forward to a
2 constructive dialogue this afternoon. Mr. Chairman and
3 Commissioners, would you care to give us some opening
4 remarks please?

5 CHAIR WELLINGHOFF: Just very briefly. Thank you
6 Jamie, and I appreciate your opening remarks, and I also
7 appreciate you emphasizing for the panel the focus of this
8 conference. It's very important to remember that. I know
9 we have a lot of technical people here and you can get
10 really into the weeds very quickly.

11 We want to hopefully keep it at that higher level
12 on the issue of consensus and how that -- and where we are
13 on that point, because that is really the first threshold
14 determination that this Commission needs to make under the
15 statute.

16 But with that, I do want to welcome all the
17 panelists. Thank you for participating, taking your time
18 here. It's very much appreciated, the time you've spent,
19 and I've had an opportunity to review your pre-file
20 testimony and look very much forward to hearing your remarks
21 as well. Thank you. Anybody else?

22 COMMISSIONER MOELLER: Yes. Thank you, Mr.
23 Chairman. Thanks to the staff and all the people who are
24 here participating. We know it's an extraordinary effort to
25 come here and lend your thoughts to this. So thank you for

1 that. We have to follow the law, as both Jamie and Chairman
2 mentioned, in terms of deciding whether there's sufficient
3 consensus.

4 My concern all along is that although the promise
5 of the Smart Grid is extraordinary and I'm a full supporter
6 of giving consumers more information, better information,
7 more empowerment on the choices that they can make, that
8 this is going to take a while, and we have to make sure we
9 have our expectations in check, so that people don't get
10 expectations that are set too high and ultimately set back
11 the progress that we have here that's in front of us.

12 So this is going to be a long slog. It's going
13 to be difficult, and I'll look forward to listening to all
14 the commentary today.

15 COMMISSIONER SPITZER: I join my colleagues in
16 thanking those in attendance and those who have already
17 worked so hard on this, and redoubling our effort to move
18 forward. This is one of those proceedings where the process
19 is as important as the ultimate result, and I think if we
20 have a solid process as we've had so far, with the
21 opportunity for further comments as you've noted, we will
22 get the best work product for the ratepayers.

23 I'm also appreciative of the common acronym list
24 that I look forward to referencing frequently during the
25 course of these proceedings, and I thank you again.

1 COMMISSIONER LA FLEUR: Welcome to everyone.

2 MS. SIMLER: Okay, thank you very much. With
3 that, we're going to start with Dr. George Arnold.

4 DR. ARNOLD: Chairman Wellinghoff, Commissioners
5 and staff, thank you for giving me the opportunity to
6 provide some opening remarks for today's conference. To
7 provide context for today's discussion, I'd like to briefly
8 review three things:

9 The overall process that NIST is using and how
10 it's evolving. I'd like to make some comments on the five
11 IEC standards and why we selected them to start this
12 process, and I'd like to discuss what consensus and adoption
13 mean in relation to EISA.

14 I would note two things. One is that we're
15 moving from the process of standards development into the
16 beginnings of a regulatory process. These processes are
17 inherently different. The standards process is a
18 collaborative process in which people come together to reach
19 consensus on technical directions.

20 The regulatory process is an inherently
21 adversarial process, and so I think we'll be seeing today
22 the transition from what has been and needs to continue to
23 be a collaborative process in standards, into the, just by
24 its very nature, adversarial process in regulation.

25 The other comment I would make is that whenever

1 you talk about standards, inevitably there's a tendency to
2 dive into the weeds, and this would be a mistake. We're
3 talking here about an issue with the Smart Grid of huge
4 national importance, and so I'd like to close my remarks by
5 suggesting some of the larger policy issues that the
6 Commission, I recommend the Commission keep in mind as we
7 wind through the weeds.

8 So first, the NIST process. Congress, the
9 administration and industry executives have repeatedly
10 stressed the urgency of establishing standards for the Smart
11 Grid because without standards, there's a potential for new
12 technologies that are now being implemented with sizeable
13 public and private investments, to become prematurely
14 obsolete, or be implemented without adequate security.

15 In April of 2009, NIST announced a three-phase
16 plan to carry out its EISA responsibilities. In May 2009,
17 the Secretaries of Commerce and Energy convened a meeting of
18 nearly 70 top executives from the power, IT and other
19 involved industries. The executives expressed their
20 organizations' commitment to support the NIST plan.

21 The NIST plan had three phases. Phase 1, which
22 ran from April of 2009 to January 2010, engaged stakeholders
23 in a participatory public process to develop a Release 1
24 standards framework. Phase 2, beginning in November 2009
25 and ongoing, established a public-private partnership called

1 the Smart Grid Interoperability Panel or SGIP, to drive
2 longer-term progress. Phase 3, which is also ongoing, is
3 developing a testing and certification framework.

4 The NIST Release 1 framework was published in
5 January 2010, just about a year ago. This document
6 describes a high level reference model and identifies 25
7 standards that are relevant and important to achieve Smart
8 Grid interoperability. The five IEC standards which are the
9 subject of today's conference, were among those 25.

10 This document was drafted through an open public
11 process that included three public workshops in which more
12 than 1,500 individuals representing hundreds of companies
13 participated. NIST employed two additional means to seek
14 broader stakeholder input. Public comments were sought
15 through three separate Federal Register notices, and NIST is
16 also using a web-based collaboration site on which all
17 working documents and outputs are publicly available, and
18 through which anyone can comment at any time.

19 All comments received on the standards were
20 considered and addressed in finalizing the NIST Release 1
21 framework, and I would note that the preponderance of
22 comments on the standards was positive, and there were no
23 comments proposing removing any of the 25 standards from the
24 framework.

25 In order to provide a more institutionalized

1 ongoing process to evolve the standards, NIST established a
2 Smart Grid Interoperability Panel. During its first year of
3 operation, the SGIP has focused on establishing processes
4 and procedures for its work, overseeing the priority action
5 plans to fill gaps in the standards portfolio, developing
6 cybersecurity guidelines, and developing a testing and
7 certification framework.

8 The SGIP is also developing a process to maintain
9 a catalogue of standards that will be helpful to the broad
10 Smart Grid community, including regulators, in understanding
11 the applications, maturity and limitations of the standards.
12 The process for developing and maintaining this catalogue is
13 still under development, but the catalogue will be an
14 important element of the NIST process going forward when it
15 is in place.

16 Another critical aspect of the ongoing process is
17 cyber security. The SGIP process requires each of the
18 standards in the NIST framework to be assessed by a Cyber
19 Security Working Group. CSWG assessments of the five IEC
20 standards have been completed.

21 When we posted them in October, and modifications
22 that need to be made to those standards were documented, the
23 cyber security assessment process will evolve and continue
24 as we gain experience and broaden the base of cyber security
25 experts willing to volunteer in these assessments.

1 I'd like to make one additional comment about the
2 SGIP process in relation to the representation of various
3 stakeholder categories. In designing the SGIP, NIST has
4 sought to ensure broad representation by all categories of
5 stakeholders under a governance structure that ensures
6 appropriate balance of interests.

7 A fundamental difference between the Smart Grid
8 and the legacy grid is that the Smart Grid involves two-way
9 interaction and information exchange between the utility
10 systems and systems on the customer side of the meter.

11 Thus, the Smart Grid impacts everyone, including
12 the various categories of electric utilities, grid suppliers
13 from many different industries, consumers, both residential
14 and industrial, electric vehicle industry, appliance
15 manufacturers, building automation providers, among others.

16 In designing the SGIP governance structure, NIST
17 listened carefully to the views of the utility industry,
18 that its critical mission required that it play a super-
19 ordinate role in decision-making in the SGIP. NIST also
20 heard the views of other industrial sectors, that they
21 should also have strong influence in the process, and that
22 the utilities lacked necessary expertise that their sectors
23 brought to the table.

24 NIST designed a governance structure in which
25 seven different segments of the utility industry each have a

1 seat on the governing board, as well the opportunity to run
2 candidates for the three at-large seats. This gives the
3 utility industry a minimum of seven and potentially as many
4 as 10 seats on the 25-person governing board.

5 We continue to hear concerns from the utility
6 industry that they're under-represented on the board, but we
7 also hear concerns by the other sectors that the board is
8 dominated by the utilities. This is probably an indication
9 that we've struck a reasonable balance.

10 The governing board has established well-defined
11 mechanisms to introduce improvements to the SGIP structure
12 and processes as it gains experience, and continuing
13 improvement is an essential part of the process, and we
14 encourage stakeholders to contribute their suggestions to
15 the governing board and the improvement processes that it
16 has established.

17 But now I'd like to discuss the five standards
18 and why we picked them to start this process. The
19 development and adoption of standards for the Smart Grid is
20 a daunting undertaking, and nothing like this has ever been
21 done before. There are no relevant historical parallels and
22 no cook book on which NIST and FERC can draw, to tell us how
23 to implement the respective responsibilities that Congress
24 assigned our agencies.

25 I would note that few if any interoperability

1 standards have ever been adopted into regulation for our
2 other national infrastructures. Considering the adoption of
3 Smart Grid standards will involve significant and complex
4 policy questions. Since deployment of Smart Grid
5 technologies is already underway, with significant
6 investment of public funds, it's urgent to begin
7 consideration of these policy questions now.

8 NIST's intent in identifying the five standards
9 as ready for consideration was to allow FERC to begin
10 considering the policy issues involved in moving from the
11 development of standards into regulatory adoption.

12 NIST chose its words carefully. We recommended
13 that the Commission begin consideration, and I would note
14 that we are not necessarily recommending that the Commission
15 adopt these standards. The IEC standards provide a starting
16 point for the complex issues that evolved.

17 NIST picked these standards to start because they
18 are important to interoperability, they're mature, they have
19 strong consensus for inclusion in the NIST framework,
20 they're being used in deployments, and had undergone a cyber
21 security assessment by the CSWG.

22 Interoperability in the Smart Grid requires a
23 common language of data models and identifiers, to enable
24 communication across systems and applications, and these
25 standards play an important, although not exclusive role, in

1 filling this need. I refer to the presentation made by
2 George Bjelovuk, Secretary of the SGIP, and an executive at
3 American Electric Power at the November technical
4 conference, in which he said "AEP selected the well-
5 established IEC standards as the basis for many of its
6 system deployments. NIST's selection of the five IEC
7 standards are among the mature in the industry."

8 Everyone understands that these standards are
9 just the tip of the iceberg, and a small part of a very
10 large set of standards that will ultimately be needed. For
11 example, there are two other suites of standards called DNP-
12 3 and Multispeak, that are included in this framework, that
13 provide alternatives to some of the functionality in the
14 five IEC standards.

15 The NIST framework allows these standards to co-
16 exist, serving different marketplace needs and as
17 established priority action plans to develop mappings
18 between them so they can interoperate. But NIST did not
19 include DNP-3 and Multispeak in the initial set for FERC
20 consideration, because the CSWG had not yet done cyber
21 security assessments of these standards. However, these
22 assessments are scheduled.

23 I'd like now to comment on the concepts of
24 consensus, adoption and how they relate to EISA. EISA
25 directed NIST to "coordinate the development of

1 interoperability standards, soliciting input and cooperation
2 from private entities and other stakeholders."

3 EISA also directed FERC to "institute a
4 rulemaking to adopt such standards as may be necessary to
5 ensure Smart Grid functionality and interoperability, after
6 NIST's work has led to consensus in the Commission's
7 judgment."

8 Consensus on standards needs to be determined at
9 two levels. First, consensus on what standards should be
10 included the NIST framework, and second, consensus on the
11 technical content of individual standards.

12 Consensus on what standards should be included in
13 the NIST Release 1 framework, because those standards are
14 relevant and important to achieving Smart Grid interoperability
15 was clearly established through the process I described
16 earlier. The ongoing work of the SGIP will establish
17 consensus on additional standards to be added in the future.

18 Consensus on the actual technical content of the
19 individual standards is determined by the standard
20 development organizations that produced them. NIST requires
21 that all standards included in the NIST framework be
22 produced by SDOs, with a robust consensus process consistent
23 with the principles of the National Technology Transfer and
24 Advancement Act.

25 This does not mean that the standards are

1 perfect. All standards have flaws and need to be improved.
2 But the SGIP processes provide requirements to the ongoing
3 evolution and improvement of the standards.

4 A more difficult question to answer is whether
5 the Commission should adopt some of these standards because,
6 in the words of EISA, this may be necessary to ensure Smart
7 Grid functionality and interoperability.

8 The consensus standards process cannot answer
9 this question; only the Commission's process can, and
10 although this question is not the subject for today's
11 conference, it is really the question that everyone has in
12 mind, and it is difficult to separate from the subjects that
13 we will be discussing today.

14 Industry has legitimate concerns that if
15 standards are adopted in regulation, they may become
16 mandated and that would be bad. This would not allow
17 industry enough flexibility and may have costly unintended
18 consequences. In general, industry has a strong preference
19 that standards not be adopted in regulation.

20 This concern will naturally motivate many
21 industry participants to cite reasons why FERC should not
22 consider adopting these or other standards, even though
23 those participants participated in and supported the NIST-
24 coordinated process, are participating in the development of
25 these standards in SDOs, and in many cases already use these

1 standards on a voluntary basis.

2 Industry's desire will be for FERC to do nothing
3 at all with these standards, because industry in general
4 does not wish to be regulated.

5 I would note that United States standards policy
6 and practice generally acknowledge and reflect industry's
7 concern, and as someone who has spent over 30 years in
8 industry, I'm very sympathetic to this point of view.

9 The vast majority of standards are accepted by
10 the market on a purely voluntary basis, without any
11 regulatory action or consideration. However, standards are
12 sometimes adopted through regulation when policymakers
13 decide this is necessary to accomplish some policy
14 objective.

15 The provision in EISA that directs FERC to
16 consider adoption of Smart Grid standards clearly indicates
17 that Congress believed that implementation of Smart Grid
18 standards might not occur if left entirely to the market.

19 This reflects a very significant policy choice,
20 because if we look at the other infrastructures in this
21 country, such as the telephone system or the Internet, there
22 are very few, if any, interoperability standards that have
23 been adopted in regulation.

24 So what is different about the Smart Grid? For
25 one thing, the electric grid has a tradition of using many

1 proprietary customized systems, and there has never been a
2 need for information systems on the utility side of the
3 meter to interact with systems and devices on the customer
4 side.

5 Implementing the Smart Grid requires a movement
6 away from proprietary systems to interoperable systems based
7 on open standards. Cyber security considerations also mean
8 that the grid needs to move away from the past practice of
9 security by obscurity, to systems incorporating best current
10 practices in cyber security.

11 With 3,200 electric utilities and hundreds of
12 suppliers from industries that have never had to work
13 together before, the provisions in EISA reflect the desire
14 by policymakers that this transition take place in a timely
15 manner, which may not happen if left entirely to market
16 choice.

17 So in considering how to use its regulatory role,
18 it will be important for the Commission not to become bogged
19 down in the weeds, and to keep in view this overarching
20 policy issue. The central issue that I believe the
21 Commission must seek to understand is whether the Smart Grid
22 standards will be adopted by industry in a timely way, or
23 whether it is necessary for the Commission to use its
24 regulatory authority to encourage their use.

25 The Commission has clearly stated on a number of

1 occasions that it does not believe EISA gives it the
2 authority to mandate or enforce Smart Grid standards, so I
3 infer that the Commission's intent is not to micromanage
4 decisions best left to industry, or to enforce compliance
5 with individual standards. I infer that the Commission's
6 goal is to provide forward-looking guidance.

7 A procedural question the Commission must decide
8 is whether to do rulemaking on individual standards or
9 families of standards, as it does today with NERC and NASB.
10 I strongly believe this would not be the right approach for
11 the Smart Grid.

12 By the time the Commission adopts rule on the
13 many individual standards that are needed under the NIST
14 framework, which could take years, significant investments
15 in grid modernization will already have occurred, and there
16 is the danger that a lot of the investment will continue to
17 be made in proprietary systems that do not support Smart
18 Grid interoperability.

19 I recommend that the Commission take a different
20 approach that is higher level and provides more forward-
21 looking guidance. The question that I believe the
22 Commission should focus on is whether regulatory adoption is
23 needed to ensure timely use of the standards needed for the
24 Smart Grid that the industry is developing through the
25 consensus process.

1 For example, the Commission might request
2 information on industry's road maps and plans for
3 implementation of the standards in the NIST framework.
4 Based on the information received, the Commission could
5 ascertain whether industry use of the standards will
6 naturally occur in a timely way, and when regulatory
7 adoption and encouragement may be needed.

8 The Commission might consider adopting the
9 interoperability standards at a more macro level, and adopt
10 policies that provide motivations for their use. If
11 encouragement is needed to move towards the adoption of
12 interoperable standards for the Smart Grid, it must be
13 provided soon if it is to influence the billions, many
14 billions of dollars of significant investments in grid
15 modernization that will occur over the next several years.

16 Thank you for the opportunity to provide these
17 opening remarks, and I look forward to hearing the
18 discussion.

19 MS. SIMLER: Thank you very much. With that,
20 we're going to -- thank you. We're going to move to our
21 first panel, which is a panel focusing on looking at the
22 process that was used to get us the first five standards,
23 and we have, I believe, Mr. Daniel Asanti or Thanos, excuse
24 me, is the first one up, and he is right there on the left.
25 Great. That worked.

1 MR. THANOS: Well, I want to start by thanking
2 Chairman Wellinghoff, Commissioners, officials and all
3 supporting staff. Special thanks to the SGIP governing
4 board, the CSWG, my co-panelists, all of whom I have a very
5 high regard for, my organization, GE, for all its support.

6 While she's not here, my wife, who is at home,
7 patiently awaiting the birth of our first child and son,
8 who's actually was due yesterday. So if you see me checking
9 my Blackberry with a sudden look of elation, and then
10 followed by possible panic, you'll understand the reason why
11 and why I also have to cut my participation short.

12 Also, I have my videos coming to you over the
13 Internet. I ask for your patience if there's any loss of
14 image. My audio will continue over the bridge. I want to
15 thank the FERC IT staff especially for working to facilitate
16 my remote participation. They were very patient in the
17 process and very innovative to get this done.

18 I want to start by stating the views I will
19 communicate are my own, as a professional in the field.
20 They do not necessarily represent those of my organization.

21 For the sake of time, I will not go over all of
22 my written statement, but instead get the -- get into
23 focusing on what I think is important for this conference.
24 As such, I'm here to try to accomplish three core things. I
25 very much want to preserve and represent the hard work of

1 the CSWG that went into the development of the NIST here,
2 and our other continuing initiatives.

3 I want to make sure the reputation and good
4 standing of all the stakeholders in this process continues,
5 by trying to ensure we are acting on clearly informed
6 thinking and work. I want to keep a solution focused in
7 this process, while ensuring the end results of all of our
8 work will be something that is secure, but also something
9 that can work on a future-forward basis and preserve
10 continued innovation.

11 That is a critically important point in my mind,
12 and something that I believe we should spend some time
13 discussing in this conference.

14 My perspective largely comes from someone that
15 has to actually build the technologies that these standards
16 infer, and it comes from someone that, you know, is
17 responsible to make sure that all of these technologies can
18 be reliably operated on a global basis in Smart Grid and
19 other critical infrastructure industries.

20 So my views are aligned to making sure different
21 other evaluation and acceptance process is going forward,
22 take a few important things into account, hoping we are --
23 what we accept is absolutely technically correct, can indeed
24 be implemented without ambiguity.

25 All industry stakeholders clearly understand what

1 acceptance means, to ensure that the process, what this
2 process represents is actually technically feasible and
3 sustainable.

4 In critically evaluating the CSWG standards and
5 review process thus far, I want to start by saying it was
6 taken up by very dedicated and hard-working volunteers, who
7 we should all thank, as they were asked to perform
8 considerable amounts of work under aggressive time lines.
9 My views are in no way meant to detract from their
10 dedication and work.

11 However, I do have concerns with declaring the
12 review work as final and sufficient for acceptance of all
13 the standards involved for the following reasons. The
14 review work did identify issues that need to be addressed,
15 and basically acceptance without a solution for correction
16 would cause confusion, and I think it would impact the trust
17 and reputation that has been invested by all organizations
18 involved.

19 There are fundamental security errors in the
20 standards and confused concepts when trying to give
21 informational backgrounds for various security technologies
22 and terms. There is a need to update the standards to
23 reflect the work of the NIST, or the special attention paid
24 to cryptography.

25 There are many other things, but time does not

1 allow me to go through all of it, and I understand we don't
2 want to get in the weeds. As all technical parties involved
3 are aware, I also touched on some of these things in my last
4 FERC technical conference presentation.

5 In general, there is an awareness that the review
6 process has to improve and evolve, and that is being worked
7 on. But we still need to firm up the criteria and process.
8 Yet if we accept these standards, it would not make sense if
9 not done consistently under a widely accepted review
10 process. We kind of have to, you know, kind of go back and
11 probably review or kind of do a gap analysis, depending on
12 what will be the final acceptance criteria that we come up
13 with.

14 In general, we do need to work on the following
15 things, I think, in the review process. We still need to
16 have a more broad and open analysis of the standards in
17 question, especially by members of the security community.

18 Also, the underlying process and criteria that
19 reviews are done under need to be improved and more
20 formalized, to allow for less interpretation and stricter
21 evaluation against the NISTR that was actually developed for
22 that purpose.

23 Standards that are going through this process in
24 general have a lot of normative references to other
25 standards, which in turn may reference other normative

1 standards. It is not clear how detailed these references
2 have been reviewed, if at all. That should cause us to
3 pause and kind of think of what the implications around that
4 is.

5 There are instances where, you know, the best
6 most current reference standards are not being used, and
7 this also needs to be addressed. Also very importantly,
8 there needs to be a better functional and system context by
9 which these standards are evaluated.

10 That also means that adoption, what adoption
11 means by FERC needs to be more clearly defined at a
12 technical level, so that -- and what's going to be
13 alternate, you know, work product in that process. What
14 does adoption mean? What is it ultimately going to look
15 like from a technical perspective?

16 MS. SIMLER: Mr. Thanos.

17 MR. THANOS: That is very important in order to
18 have that context and in order to do a good review and
19 understand what the review process truly has to be about
20 from a technical perspective. What is important to
21 emphasize is that none of these problems are intractable,
22 and the main thing I want to recommend for working towards
23 acceptance of the current IEC standards is the developing of
24 an overriding security addendum that must be adopted along
25 with the standards.

1 I believe this would address all the concerns.
2 The addendum would correct all errors, reference the most
3 current and secure standards, and provide any needed
4 modifications that meet the NISTR requirements. The
5 addendum should be developed under an open process, and
6 should be reviewed by all needed technical experts.

7 Alternatively, we would require the standard
8 development groups to revise the standards per addendum
9 before it is accepted. But this may be a considerably
10 longer process. I am interested in trying to keep us, you
11 know, moving forward, keep industry moving forward.

12 Parallel to addendum development, the standard
13 review process needs to improve and introduce more phases
14 and rigor, to give better assurance of clarity, consistency
15 and broad acceptance. I look forward to discussing these
16 and other topics with the panel.

17 MS. SIMLER: Thank you very much, Mr. Thanos.
18 We're going to move then to Mr. Darren Highfill.

19 MR. HIGHFILL: Good afternoon Chairman
20 Wellinghoff, Commissioners and staff of the Federal Energy
21 Regulatory Commission, and thank you for this opportunity to
22 speak to the issue of Smart Grid interoperability standards.

23 While my clientele includes investor-owned
24 utilize and the U.S. Department of Energy, I'm here today as
25 an independent consultant, serving in several industry roles

1 relevant to Smart Grid standards.

2 Specifically, I'm the chair of the Smart Grid
3 Security Working Group within the UCA International Users
4 Group, a member of IEC Technical Committee 57 Working Group
5 15, the group responsible for IEC 62351, and an active
6 participant and subgroup lead in the NIST Smart Group
7 Interoperability Panel Cyber Security Working Group.

8 Today, I will speak to two primary issues, the
9 process for achieving consensus on the five IEC standards
10 recommended by NIST to FERC, and considerations for
11 implementation of technical standards through regulation.

12 NIST has led our industry through some remarkable
13 accomplishments since the passage of the Energy Independence
14 and Security Act of 2007. Most importantly under NIST
15 leadership, we have established a quorum for all
16 stakeholders to discuss and resolve issues.

17 However, our processes were not wholly and
18 perfectly conceived, and we must continue to learn and adapt
19 as we move forward. While the process used to achieve
20 consensus on the five IEC standards was sincere, it was also
21 informal and to some degree affected by pressures to start
22 producing answers to our interoperability standards
23 questions.

24 In short, we built the process we need to use for
25 establishing consensus in parallel to selecting an initial

1 group of standards for recommendation, in the interest of
2 saving time. As a result, we sacrificed understanding
3 within the industry about the process that was used, and
4 what its implications would be as we sit here today.

5 Regardless, designation of consensus on these
6 standards did not follow the current SGIP process. Even
7 today, this SGIP process still needs some refinement,
8 however, particularly in regards to the weighting of the
9 stakeholder representation model. Currently, our process is
10 structured such that someone who decides to open a one
11 person business as the same vote as a utility that is
12 responsible for safely, reliably and cost-effectively
13 serving millions of customers.

14 Yet it is this very process that will most
15 directly determine the future of our utility systems. The
16 entrepreneur plays an important role in this ecosystem, but
17 we must also recognize the importance of wisdom, experience,
18 responsibility and accountability.

19 Ultimately, the industry needs a publicly visible
20 process that delineates each step along the way, from
21 nomination of a standard all the way to rulemaking. If we
22 are to understand the implications of our decisions at each
23 step along the way, we must be able to trace the lines out
24 through the end and back around to the beginning.

25 The processes established in the SGIP represent a

1 worthwhile first attempt to address a slice of this cycle.
2 While these processes need refinement, even more importantly
3 we need to understand what happens after the SGIP.

4 In light of the questions raised by FERC for this
5 conference, we would do well to consider the meaning of the
6 terms "consensus" and "adoption" in this environment.
7 Specifically, we need to ask the question "consensus to what
8 end?"

9 The five IEC standards recommended by NIST are
10 extremely detailed, highly prescriptive technical
11 specifications, down to the point of directing which bytes
12 go where in electronic packets on the wire. Standards at
13 this level of specificity have their own challenges in
14 maintaining currency, especially in cyber security.

15 As an example, some of the cyber suites specified
16 in IEC 62351 already need to be updated to reflect recent
17 changes in the cyber security landscape. These and other
18 issues were actually identified by selected members of the
19 NIST Cyber Security Working Group in its review of the
20 standard.

21 Binding utilities to a frozen snapshot of an
22 evolving standard will ultimately hobble innovation an force
23 systems to expose vulnerabilities. Therefore, references to
24 cyber security standards must allow these standards to
25 evolve with advancements in technology.

1 I recommend the Commission carefully consider
2 certain questions prior to making any decision about
3 implementation of the five IEC standards recommended by
4 NIST. What are the implications of mandating this level of
5 prescription through rulemaking? What happens when we
6 mandate a standard that seems adequate today but needs an
7 immediate update tomorrow? Who owns the process for
8 updating a standard?

9 We need engagement between those that understand
10 technical law and those familiar with the implementation of
11 such standards in the real world. We need a transparently
12 defined process that illustrates how detailed
13 implementation-specific standards can be updated within the
14 context of regulation.

15 I further recommend the Commission work with NIST
16 and industry to produce a detailed life cycle depicting the
17 process for industry engagement, achieving consensus,
18 relevant rulemaking and subsequent assessment.

19 In summary, the five IEC standards recommended by
20 NIST to FERC are helpful and powerful in their own right,
21 but potentially dangerous tools in the context of regulation
22 if not implemented properly. Both industry and the
23 standards must invest the time and effort to come together
24 on technical issues, cultivate fair and transparent
25 processes, converge on appropriate use and implementation,

1 and find a way to evolve and change together.

2 Thank you again. I look forward to supporting
3 the work of the Commission moving forward, and would be
4 happy to answer questions or participate however is required
5 for us to find success.

6 MS. SIMLER: Thank you, Mr. Highfill. Mr.
7 Sorebo?

8 MR. SOREBO: Thank you members of the Commission.
9 I just, in addition to echoing what Daniel and Darren have
10 said in their comments, I want to note unlike them, I've
11 been less involved directly in some of the processes of NIST
12 and other groups, and have been working more with individual
13 customers, with more than a dozen utilities, writing cyber
14 security plans, helping them understand some of the
15 requirements that they have to meet. So some of my
16 perspective comes from this, and again, like Daniel, I'm
17 speaking for myself, even though I'm an employee of SAIC,
18 and working with a lot of different utilities.

19 First to caveat, my comments are around cyber
20 security and I don't intend to really address
21 interoperability issues. Others, I know, will cover those
22 as well, and I suspect some of the same concerns will be
23 raised with those as well.

24 My concern is largely, and rather than get into
25 the details of the individual standards and where the errors

1 are, and some of the points have already been made, I want
2 to talk about what this really means to the overall process
3 going forward.

4 Moving forward with 5 of the 25 standards, which
5 seem to be somewhat, I don't know if they're necessarily
6 random, but certainly there are issues with going forward
7 with these. Some utilities have remarked about what they
8 should interpret any action by FERC or NIST to mean in terms
9 of what they should do.

10 There's a larger concern, I think, about the lack
11 of overarching guidance, about how to incorporate the
12 standards that are being adopted, in a way that makes sense
13 to them. Utilities have come to get used to requirements
14 like NERC CIP and others, that provide broad-based guidance
15 in terms of how they should implement their cyber security
16 program.

17 While there certainly is a need to implement
18 detailed standards for things such as substation automation
19 and inter-control center communications, there is also the
20 need to provide context for those standards, which I don't
21 see present.

22 Perhaps other people have written, but I would
23 strongly encourage the Commission, before they move forward,
24 to provide guidance that provides some of that context, to
25 be able to understand where they fit, which parts of the

1 Smart Grid should they apply to.

2 We're dealing with lots of utilities, some of
3 which are very sophisticated, large independent-operated
4 utilities. Others are small municipalities and coops that
5 don't have necessarily the skill and may not even have the
6 budget to spends the thousands of dollars that these
7 standards cost to be able to figure out whether they apply
8 to them.

9 So providing the guidance such as what NIST has
10 done for like the Interagency Report 7628 with respect to
11 cyber security, like has been done with NERC CIP and other
12 standards, certainly should be the first step in moving
13 forward, and I encourage the Commission and SGIP to consider
14 whether it might be more appropriate to move forward with
15 adoption after more of the standards are ready and they can
16 be put in a larger context.

17 Many of these standards have been in existence
18 for decades. Protocols such as ICCP that are being proposed
19 have been used as a standard process for many control
20 centers. So the argument that they need to be adopted now
21 because they're ready to move forward with Smart Grid
22 doesn't really seem to make sense, and certainly the other
23 ones mentioned such as DNP-3, which have security problems
24 of their own, have been around for a long period of time as
25 well.

1 So my biggest concern, and like I said, I don't
2 want to delve into the details and where the flaws are,
3 because I know other people will do that, is to really to
4 consider what it really means to adopt these. Only one of
5 these, of course, deals with cyber security, IEC 62351 that
6 covers the other standards in any great depth.

7 But really, the guidance needs to be provided to
8 utilities to help them understand how this fits into a
9 larger framework. Some have asked do I include 62351 in my
10 cyber security plan, without any context to knowing well
11 where should it apply, should they do that. There's a lot
12 of utilities out there that are very sensitive to any
13 movements by FERC or NIST on these.

14 After the initial Suite 16 came out about a year
15 and a half ago, proposing standards that really came out of
16 a few working groups, with very little consensus or thought,
17 utilities were jumping on them and saying well, I guess this
18 is what we have to do, even though they were very
19 preliminary and we had to urge that to them.

20 So it's important that people understand the
21 actions that FERC and other organizations take. As George
22 indicated, this is a first time, and so interpreting these
23 things the wrong way can leave a bad message and create a
24 sort of panic in some ways, in terms of what people should
25 do in response to that, causing additional expenditures and

1 so forth.

2 So I strongly encourage a process that provides
3 all these in context, when more of the standards have been
4 adopted or at least reviewed, and provides an overarching
5 document, possibly a procurement guidance document, rather
6 than specifically standards are just thrown to utilities to
7 adopt.

8 I think that would be a much better process, and
9 I'm sure that there's others than can get into some of the
10 individual details of some of the deficiencies in the
11 standards. But even if those were corrected, I think it's
12 important that people understand those overarching concerns,
13 and address those first, things such as NERC CIP and others,
14 rather than trying to individually produce standards that
15 then have no meaning in the context of the larger Smart
16 Grid. Thank you.

17 MS. SIMLER: Thank you very much. Mr. John Lucas
18 with the Southern Company.

19 MR. LUCAS: Thank you very much. Southern
20 Company appreciates the opportunity to be here before the
21 Commission and Commission staff today on the Smart Grid
22 interoperability standards. Our overall concerns break down
23 into two pieces.

24 One, I guess the first, Southern doesn't feel
25 that an appropriate level of consensus has been reached on

1 the five families of standards that have been presented to
2 the Commission.

3 I guess secondly, we would also have a concern
4 that there's a need for further review of those standards
5 with respect to the reliability and implementation readiness
6 before they're considered by the Commission in a rulemaking.

7 Our concerns break down beyond that into three
8 main areas: transparency, consensus and the process and
9 participation, and then I'll close with a few
10 recommendations that we think will help move things along.

11 On transparency, the NIST effort, as we would
12 view it, to identify and provide the standards to the
13 Commission, has to get to be a more transparent process.
14 There's got to be broad and documented industry consensus as
15 to exactly which standards are going to go up to the
16 Commission. One concern we have is that we remain unclear,
17 and I think the industry's unclear, as to how, when and
18 which of the other 70 standards or families of standards
19 identified by NIST will get to the Commission.

20 Turning to our concerns about consensus, the
21 current pace and the broad scope of the process is in our
22 view inconsistent with establishing true and informed
23 industry consensus, as you would find in the NERC process
24 for setting a standard or the NASB process for establishing
25 a business practice standard.

1 To the best of my knowledge, regulated electric
2 utilities in the U.S. have had limited involvement in the
3 IEC process for the reference standards, and that's mainly
4 because of the sheer size and the volume of the standards
5 and the associated subparts.

6 This was a point too in terms of consensus-
7 building. Past consensus on a voluntary standard for one
8 purpose does not constitute consensus that set standards
9 that are now ready to go to the Commission for a rulemaking.

10 I guess on consensus, I'd close with the limited
11 number of industry subject matter experts and the
12 significant associated expenses that are involved, the
13 industry has got to have number one, a clear outline of
14 exactly which standards will be delivered to the Commission,
15 and secondly, the time frame, so that the industry can
16 organize its resources and conduct a thorough review and
17 comment on those in an efficient and effective manner.

18 Turning then to the process and participation
19 issues that NIST has used to get these standards to the
20 Commission, while we cannot deny there is diversity in
21 stakeholder participation in the process, we don't feel that
22 stakeholders interests have been properly balanced.

23 For example, investor-owned and publicly-owned
24 utilities form one category, as well as state and local
25 regulators a second category. Each of those has one

1 category in the 25 SGIP governing board seats, and we just
2 feel like that's under-representation in the process,
3 especially when each of those categories has an equal vote.

4 Turning now to a few recommendations that we
5 would tender to the Commission to consider before you adopt
6 these in a rulemaking, I think there needs to be a NERC
7 formal review and a reliability impact assessment of these
8 standards. That needs to be prerequisite before the
9 Commission looks into that under rulemaking.

10 Each of the standards, including these existing
11 IEC standards, and the procedures. So the standards and the
12 procedures that have been adopted by the SGIP and the PMO
13 and other work groups to get to consensus, that needs to be
14 subject to review, comment and approval by the entire SGIP,
15 pursuant to some sort of balanced voting process.

16 With respect to that balanced voting process that
17 you've heard me refer to, I believe NASB has a standard-
18 setting process that could be looked to for guidance, and
19 I'll have some additional thoughts I can share on how we
20 might achieve that in the Q and A session.

21 I'll just close with what do we do now at this
22 juncture? At this crossroads, where do we go with the five
23 families of standards. I guess I'd say it doesn't make
24 sense to start over, in our view. But what I would suggest
25 is I think we should look strong, and I think this is a

1 suggestion and a recommendation that will come by others and
2 perhaps on the second panel as well.

3 And Southern would support this, that we
4 establish a reliability and implementation review council,
5 and that council would be focused with industry reps who
6 have the primary responsibility for safety, operation and
7 reliability of the grid.

8 The emphasis of the council would be on
9 reliability considerations, implementation readiness, cyber
10 impacts, stranded costs and impacts on legacy systems. With
11 that, I'll await your questions later in the discussion.
12 Thank you very much.

13 MS. SIMLER: Thanks, John. Dr. Andrew Wright.

14 DR. WRIGHT: Thank you Commissioners, ladies and
15 gentlemen, colleagues. I have been working with the Cyber
16 Security Working Group since its inception. I co-lead one
17 of the subgroups and helped develop Section 7 of the NISTR.
18 So my expertise is a cyber security background.

19 It is my opinion that the five standard families
20 are not ready for adoption by FERC, and I will offer four
21 points to support that. The first is what consensus
22 process? I've been involved in this whole effort, yet I was
23 never aware of the initiation of any public consensus
24 process that would lead to a posting of standards for FERC
25 consideration.

1 I recently asked about a dozen colleagues, also
2 working in the general area of cyber security for the Smart
3 Grid, and excluding NIST employees, none of them knew about
4 any consensus process either.

5 Number two. There are serious cyber security
6 problems with the standards, as has been mentioned by
7 several speakers already. The cyber security reviews
8 performed by the CSWG identified a number of problems.

9 Some of them are due to uses of outdated
10 cryptography, per the recommendations from NIST. Some of
11 them are due to references to outdated IETF, Internet
12 Engineering Task Force standards, and many of them appear to
13 have been outstanding for several years, based on earlier
14 drafts.

15 So even if the standards can be fixed, this
16 leaves the problem of how do we update them as security is a
17 continually moving field with the targets and the threats
18 moving. That has again been already raised by a previous
19 speaker.

20 So point number three. The standards under
21 consideration have significant limitations to access,
22 primarily in the form of costs and license requirements.
23 These limitations to access discourage open review that
24 might otherwise uncover cyber security vulnerabilities.

25 Designing algorithms and protocols that operate

1 correctly and are free of undiscovered flaws is difficult at
2 best. There is general agreement in the security community
3 that openly published and time-tested algorithms and
4 protocols are less likely to contain security flaws than
5 those developed in secrecy, in part because their
6 publication enables scrutiny by the entire community.

7 Limitations on access to standards may pose
8 challenges to smaller commercial entities, such as mine.
9 However, that is not the concern that I wish to raise here.
10 The concern is that these limitations to access may
11 discourage inspection and review by academics, grad
12 students, security researchers and other interested parties,
13 and may therefore, thereby increase the risk that Smart Grid
14 standards contain security vulnerabilities.

15 The standards under consideration are open, in
16 the sense that anyone can gain access to the standard, but
17 they are not nearly as open or freely accessed as the IETF
18 and W3C standards that can be downloaded free of cost and
19 restrictions from many websites.

20 The NIST standards, the standards that NIST has
21 recommended, the IEC standards, must be purchased from the
22 Switzerland-based IEC organization, and a complete
23 electronic set of these standards cost 10,738 Swiss francs,
24 or a little over 11,000 US dollars. Furthermore, that gets
25 you access to a copy that is restricted to use by one

1 person.

2 NIST recognizes that these financial costs alone
3 would impose a significant barrier to NIST's own review, and
4 negotiated special access through a web portal for a limited
5 number of people within the Cyber Security Working Group, in
6 order to review the standards.

7 The IEC standards became available through that
8 portal about May of 2010, but they became unavailable in
9 October of 2010 in the transition to a new portal. The new
10 portal only had those standards posted to it some time last
11 week. So consequently, any member of the Cyber Security
12 Working Group whose interest was elevated in looking at
13 these standards, due to the recommendation to NIST, has been
14 unable to look at them until last week through that access.

15 My final and fourth point, there has been
16 insufficient consideration of relevant cyber security
17 standards, technologies and best practices from outside the
18 realm of power system standards. The standards under
19 consideration do address cyber security. However, they
20 don't provide comprehensive coverage.

21 There are a number of common IT standards,
22 technologies and best practices that could contribute to use
23 of these standards in a more secure manner. NIST's own PAP-
24 1 effort identified a number. These time-tested standards,
25 technologies and best practices are in wide use today to

1 secure corporate desk tops, the Internet, eCommerce,
2 Internet banking and so on, and where applicable can yield
3 significant cyber security benefits to the Smart Grid.

4 Many of them are essential, in fact, to converted
5 Smart Grid networks, where Smart Grid traffic is carried on
6 in the same network infrastructure as other kinds of
7 traffic, as we might see with Fiber to the Home, where the
8 meter is connected at the home for an example.

9 So with the exception oif PAP-1, the NIST and
10 SGIP processes have largely neglected these common IT
11 security standards, technologies and best practices, and a
12 FERC rulemaking that were to push forward Smart Grid
13 standards without addressing, in a more comprehensive way,
14 the cyber security that can be provided by those standards,
15 would potentially risk reducing the reliability of the grid.

16 So in summary, my four points, no public
17 consensus process, serious cyber security problems with the
18 standards put forth, limitations on access to those
19 standards, and inadequate consideration of standards from
20 outside the realm of our systems. Thank you.

21 MS. SIMLER: Thank you very much. Mr. Beroset.

22 MR. BEROSSET: My name is Ed Beroset. I'm with
23 Elster Solutions. I'm the Director of Technology and
24 Standards. Just by way of background, I've been an embedded
25 systems engineer with Elster for about 13 years now. I've

1 been involved with the NIST process here since its
2 inception.

3 I've been a chairman of a number of the standards
4 groups, including the NCC 1222, IEEE 1703. I've been a
5 participant in several IEC working groups, and today, I'm
6 here before you to help answer questions.

7 So with the understanding that we don't want to
8 get into the technical details, what I'd like to do is to
9 say what our concern is at Elster. So first, Elster has
10 about 170 years of experience making utility meters in North
11 America. We have manufactured over 200 million Smart meters
12 in the past ten years. We have deployed over five million
13 two-way Smart electric meters here in North America, and so
14 we are deeply interested in the topic of both cyber security
15 and interoperability for such devices.

16 With that said, the five standards that have been
17 brought before you so far tend to be standards that are for
18 the back end system or for realms outside of what's called
19 AMI, the Advanced Meter Infrastructure.

20 My concern is that the standards that are
21 currently available to you don't actually address that vital
22 realm, and that while it may be clear to regulators at the
23 federal level, that not all of the state commissions will
24 have the technical expertise available to them to be able to
25 distinguish which standards are and are not applicable in

1 certain portions of the Smart Grid.

2 In addition to that, there is a question about
3 whether or not adopting standards today in the context of
4 both interoperability concerns, that evolve over time, and
5 also security concerns that evolve over time, it's difficult
6 to nail down a particular standard and to assure that as
7 threats evolve, as new features and desires for the Smart
8 Grid operations evolve, that regulation, if it freezes a
9 particular standard in place, would be able to adapt in that
10 kind of context.

11 Finally, there are a number of other standards
12 that are also in the pipeline that are coming to you. Over
13 70 are in process. Some of those are more relevant to our
14 business, frankly, than the ones that you have before you
15 today.

16 So for that reason, we're concerned that if these
17 five were made as part of the rulemaking, that the
18 distinction between standards that are applicable at the
19 head end systems, versus standards that are applicable to
20 the systems that my company produces, might not be clear to
21 those who are not sitting around the table today.

22 That concern is that the applicability of such
23 standards might be forced into realms for which they are not
24 adapted. So at the risk of giving you acronymese, there is
25 a -- IEC 61968 Part 9 deals with the Smart Grid. It's

1 basically a data model for electric meter data.

2 But what it isn't is an actual communications
3 protocol. Now with that said, there are actually
4 applications protocols and data models for actually getting
5 the data from a Smart meter to the head end, but those are
6 not among the ones you've received so far.

7 Our concern is that distinction, that nuance,
8 will not be -- will be lost in the course of regulation, and
9 as a result there will be an attempt to jam a square peg
10 into a round hole, perhaps having an unintended impact on
11 further AMI deployments throughout North America. I'd be
12 glad to answer any questions when we get to that portion.
13 Thanks.

14 MS. SIMLER: Thank you, and the last panelist for
15 this panel is Frances Cleveland.

16 MS. CLEVELAND: Thank you. Sorry. Thank you
17 Chairman, Commissioners and all the other stakeholders who
18 are interested in these IEC standards. Just a quick
19 background. I have been involved virtually from the
20 beginning in the development of all five of these standards,
21 and I am the convener of the cyber security working group in
22 the IEC, as well as the chairperson of the CSWG Standards
23 Review subgroup. So we're the ones that did the standards
24 review of these standards.

25 So what I want to do is jump into the real

1 question, which is do these five IEC standards have
2 sufficient consensus for adoption by FERC? I won't go into
3 a lot of the details, which I agree with what the other
4 panelists have said, but first I'll start by saying that as
5 George Arnold said, these five IEC standards are rightly
6 seen as the key development of the Smart Grid for their
7 areas, and but on the other hand, there has not been enough
8 functional review of these standards.

9 We did a cyber security review. We did not
10 clearly do a functional review, which means saying what its
11 area of expertise is, what it should be used for, what it
12 should not be used for. Also, its level of maturity, its
13 degree of testing, interoperability testing, conformance
14 testing, deployment out into the arena of the Smart Grid.
15 So that level of assessment has not been done on any of
16 these standards.

17 I've also said that the term "adoption" is
18 unclear, but I think we all realize that. This is a new
19 area. So what I'm going to do is jump into what I think
20 could be a useful approach to this assessment. So what does
21 it mean to be adopted, and what I suggest is that there be a
22 framework associated with adoption.

23 So there would be different adoption categories,
24 so that it wouldn't be a black and white one-size-fits-all,
25 you know. It's either adopted or it's not adopted. What we

1 can do is establish categories of adoption, so that people
2 looking at it would know what they're getting into.

3 Some of the criteria could be maturity of the
4 standard. how mature is it? Is it solidly done? Has it
5 been implemented before? Has it been tested? Defenders
6 support it. Do utilities support it? Do the different
7 stakeholders really support it?

8 Another criteria would be the scope, which Ed was
9 mentioning. Let's make sure they're only used for the
10 areas that they're supposed to be used for. Another issue
11 is that these standards, although we say that they're five
12 standards, are really made up of lots of different parts.

13 So we've got to be clear which parts we're really
14 assessing, and which ones have the maturity and which don't.
15 I spent last week in Denmark creating a whole new standard.
16 Well believe me, it's not ready for adoption, but it's a
17 61850 standard. But you know, I wouldn't suggest that it be
18 adopted right away.

19 So I suggest that there be different categories.
20 I've made a list of possible ones. Adoption Category 0
21 would be for parts of a standard that are just purely
22 informational. Useful, maybe guidelines even, but just
23 informational. Category 1 would be potential adoption. The
24 work I just did last week is probably under potential
25 adoption. It's good stuff; it's 61850.

1 Category 2 would be that the specification has
2 been complete, that the standard is solidly complete. A lot
3 of standards are not quite there yet. Category 3 would be
4 conformance testing certification, so that vendors have
5 actually implemented this part of the standard, and have run
6 conformance testing against the standard.

7 Now that means it's just conforming to the
8 standard. It doesn't mean it's interoperable with other
9 standards or other implementations of the standard. So
10 Category 4 would be interoperability testing certification.
11 So now you'd have multiple vendors actually implementing and
12 working together, so that it would be truly interoperable.

13 Category 5 would be cyber security certification.
14 We might even break that down into more, because I think it
15 is more complex. But nonetheless, I think that it's only
16 once you get all of the rest of these levels, categories
17 done, that we can really assess the cyber security, which
18 has to be end to end.

19 It cannot be just this tiny little piece. Like
20 62351 just is the cyber security for a tiny piece. We need
21 it end to end, from user, source to solution. So that's my
22 suggestion, and thank you very much for listening to me.

23 MS. SIMLER: I'd like to thank all the panelists.
24 It's been very informative, and I'd like to see if the
25 Chairman or Commissioners have any questions before staff

1 starts.

2 CHAIR WELLINGHOFF: I've got a couple of
3 questions, or actually have one question that has three
4 parts, for each one of the panelists, and some of you gave
5 very specific answers to this, but I'd like to make sure I'm
6 clear and I want to make sure I get an answer from each one
7 of the panelists.

8 The first question is whether or not you believe
9 the work of NIST has led to sufficient consensus for this
10 Commission to proceed to rulemaking, yes or no.

11 The second question is if no, what do you suggest
12 should be the path that should be undertaken to get to that
13 point, and how long do you think that will take? That's the
14 three-part question. So if we could start with our first
15 panelists, Mr. Thanos?

16 MR. THANOS: I think there's definitely been a
17 good attempt at making consensus, but you know, with what
18 especially other panelists have said, I think there's
19 definitely more work that needs to be done there. Even in
20 my statement, I talked about having to, you know, needing
21 more outreach in the security community, and especially in a
22 technical perspective. You can't see something has like a
23 broad consensus and acceptance unless what you're reviewing
24 has a very low barrier such that anyone can openly review
25 it, and you don't have to go through any process such as

1 join a group or do anything else to get a portal to review
2 something.

3 So to go along with Dr. Wright's statements, you
4 know, addressing that issue is also important than kind of
5 trying to build technical acceptance around something. In
6 terms of how long something like that could take, I think
7 I'm wise enough to know that I wouldn't know until we sit
8 down and analyze all of the factors involved and kind of how
9 you reform the process or how you refactor the process to
10 take all of these things into account.

11 I don't think it's something that I have take on
12 in the order of years certainly. But I do think we, you
13 know, there has to be a little more active outreach. People
14 have to be a little bit more aware of things, and then I
15 think these things will tend to kind of take care of
16 themselves.

17 But I really do think we have to work on the
18 criteria here. And also again, I have to go back to my
19 original point. We really do have to understand what
20 adoption is, because you know, what is the ultimate end goal
21 of adoption? What does that mean, and if we don't address
22 that, I think that we don't have the correct context around
23 how to do any of this and how to evaluate any of this, and
24 how to have a sound process. That would be my statement on
25 the issue.

1 CHAIR WELLINGHOFF: Thank you.

2 MR. HIGHFILL: Thank you, Commissioner. First
3 off, let me start off by saying I think NIST should be, as I
4 said in my opening remarks, should be commended for doing
5 what they have done. In my mind, they chose about the
6 fastest path possible to simultaneously do a review of these
7 standards, and put a more formal process in place on a
8 parallel track, fundamentally by --.

9 These can't be seen in black and white. Have
10 they achieved sufficient consensus? I would say no. But I
11 think we are close. I think we could take these standards
12 and run them through an expedited version of the process
13 that we do have in place now, which while I have some nits
14 and picks with, I think fundamentally the process is right.

15 So I think we could, you know, we could run it
16 through an expedited version of that process, and that
17 exercise, I think, would probably, could probably be done on
18 the order of months. The question that I still have though
19 is what then? Because to me, for me being a technical
20 resource that has to answer are these standards ready for
21 adoption, I need to understand what adoption is.

22 I need to understand how they're going to be
23 used. I need to understand what the rulemaking process is
24 going to be, and I recognize that that's not necessarily a
25 fair question to lay entirely and wholly at FERC's feet.

1 I would like to offer up that this is an
2 opportunity for us to continue to work together, and tog et
3 the people that understand the rulemaking process,
4 understand technical law, to get them in the same room
5 working shoulder by shoulder with the folks that understand
6 what it means to put a standard like this in place, and
7 let's figure out what this looks like, so that we can have
8 an ultimate picture that says okay, once you've said yes,
9 they're ready for consensus, here's what we go through and
10 here's how it all falls into place.

11 MR. SOREBO: I would also say that there isn't
12 sufficient consensus, but I think from a different
13 perspective. The consensus, I'm not sure we agree on what
14 consensus means and what the overall, you know, objective
15 should be. I mean it's one thing for a vendor to say, you
16 know, I believe that I can implement this in a product, and
17 there's consensus. But looking at it from the perspective
18 that FERC looks at it in the larger industry, do we have a
19 picture of how these things all fit together, as John
20 alluded to earlier.

21 I mean look at these 70 standards and putting
22 together a road map and a framework to simply say here's
23 where they all fit, and what Ed was saying about the AMI
24 factors and all these things, and say here's the big picture
25 of how these things fit together, and let's get agreement on

1 that and what's there. If we've got Multispeak, if we've
2 got IEC 61850 and other standards that are all fitting in
3 the same space, then at least people know okay, there's some
4 competing standards, and we know that they can get into that
5 space and argue their point.

6 We don't know if, in the future, somebody's going
7 to get excluded because of what's getting passed today, that
8 there's some new standard that people aren't even aware of
9 IEC 6350 or the CIM standard or some of the other ones are
10 going to displace anything that's out there. People just
11 assume that their standard will get their chance to get
12 adopted, and then we'll just have sort of a whole set of
13 standards, some of which may conflict with each other.

14 There doesn't seem to be anybody that's putting
15 together the entire road map to say here's where they all
16 fit. So maybe that would take longer, but I think the first
17 step of getting those pieces together and getting consensus
18 on that needs to happen. You probably can do that in the
19 next year, of at least putting together a list of them and
20 showing where they fit, even on a diagram or a map, and then
21 move ahead with the process.

22 Whether you need to move on from there to
23 actually formally adopt each of these for the Commission to
24 adopt them? I'm not even sure that that needs to happen.

25 MR. LUCAS: Well, it will sound like a broken

1 record as I go through here, because I'll try to hit all of
2 your questions, Commissioner Wellinghoff. No, I don't think
3 we feel like the NIST work has led to adequate consensus. I
4 was pretty clear on that in my remarks, and I had a couple
5 of thoughts.

6 If not, what do you do? I think that the first
7 place we'd say focus is on balanced voting and better
8 transparency, on the process used to reach consensus on the
9 standards, and on the standards themselves in terms of is
10 there consensus on are these the right standards?

11 I don't know that we would take issue with these
12 being maybe the right standards to go forth in the first
13 batch, but a lot more work needs to be done, as you've heard
14 several of the panelists say. I think the big sort of
15 elephant in the room here may be the need from more insight
16 from the Commission on exactly what does adoption mean. A
17 big question there, and some have alluded to it on the
18 panel.

19 Because as you go through and review, I think you
20 need to know am I reviewing these in the context of they
21 might be formally adopted, with required compliance and
22 penalties for non-compliance?

23 I believe that is a big issue for the industry,
24 and you're going to find people come, a lot more people come
25 to the table and express an interest to get involved, if

1 they know the answer to that question.

2 They would argue about your answer to that
3 question, but I think they'll come forward and want to be
4 engaged. I think, to Dr. Wright's point, I think we've got
5 to get better and more simplified access to the standards.
6 He apparently got the discounted cost of obtaining those
7 standards.

8 I think at Southern, we went and downloaded them
9 in the past week, and rallied our subject matter experts to
10 say okay, we need you to look at these, and we need you to
11 look at the transmission and distribution impacts of these,
12 and what would they do. What kind of impact would that be
13 to the Southern Companies? Our cost was \$25,000.

14 We've certainly got to make the standards, at
15 least in their current form available, where we can get a
16 broad industry review, and review done by the companies that
17 would be most impacted with respect to service to a customer
18 or oversight by a regulator.

19 Or in terms of how long -- I'm sorry -- how long.
20 I do think that could be done in months. I think we're
21 measuring that in months. As having participated in the
22 NASB governance process, that governance takes a long time.

23 But I believe there are shortcuts that can be
24 taken. There are simplifications. You could set the rules
25 of the road in terms of what we're going to look at and how

1 we're going to establish the process before you just start
2 with a blank sheet of paper. So I'll stop there.

3 CHAIR WELLINGHOFF: Thank you.

4 DR. WRIGHT: I think I was pretty clear on my
5 answer about the consensus question. There hasn't been an
6 open consensus process I'm aware of.

7 I see us on this freeway, barreling down this
8 freeway, doing lots of good open work through the PAP
9 processes and the cyber security working group, and we hit
10 the toll gates. We hit the toll gates where everybody has
11 to stop and pay a quarter to get access to the standards.

12 So all this stuff right now funnels into these
13 standards development organizations that have the
14 limitations I spoke about. I think a key thing to do would
15 be to find a more open way to move forward that standards
16 process. The most farthest-reaching imaginative thing would
17 be to create a new standards organizations, something like
18 the IETF. That's probably unrealistic.

19 There may be other ways of getting towards that.
20 The IEEE 802 family of standards are available for free from
21 the IEEE. Not all the IEEE standards are available for
22 free, just that particular standard, the substandards that
23 describe Ethernet. So perhaps we could have a subset of
24 standards to describe, at the very least, cyber security,
25 although I would prefer to see more, that are more generally

1 available from classical SDOs.

2 Possibly some of the standards need to come
3 through the IETF itself or less likely the WC3, but one of
4 those organizations. And to the final point about time
5 horizon, I don't think that we are trying to win a battle
6 against time here. The Internet has been built slowly
7 gradually through an evolutionary process to get to where we
8 are. This Smart Grid is going to come in the same way.

9 There is going to be equipment that goes out in
10 the field, that is going to need firmware change out and/or
11 wholesale replacement to get to the next version, and then
12 that will happen again. I think there's no way around
13 having some equipment that goes out in the field that has to
14 be sunsetted, and that's -- so we just have to take, we have
15 to build the best process we can moving forward.

16 CHAIR WELLINGHOFF: Thank you.

17 MR. BEROSSET: Well, at the risk of maybe adding,
18 complicating your question some more, I guess one of the
19 questions that would be to your first one, whether there's
20 sufficient consensus, I think you've pretty clearly heard.
21 The answer is pretty much no across the board. But as a
22 nuance to that, one of the counter-questions may be
23 consensus for what exactly, and I think that uncertainty is
24 what you've heard a number of other panelists already
25 describing.

1 You just heard mention the Ethernet standards.
2 As an interesting bit of history there, they were actually
3 started out as a patented technology in the early 70's. I
4 took ten years for that patented technology to eventually
5 become a standard. It was many years after that that it was
6 very, very widely used.

7 Now as perhaps a lesson there, the Ethernet that
8 was originally invented and patented in the 70's is very,
9 very different physically from a transport layer. There are
10 all sorts of different characteristics that make it
11 completely not interoperable with the Ethernet that we use
12 today.

13 But the Ethernet that we use today is actually
14 very, very widely adopted, very, very useful, and
15 coincidentally perhaps, not mandatory.

16 CHAIR WELLINGHOFF: Thank you.

17 MS. CLEVELAND: So if you asked me are these
18 standards ready to be adopted wholesale black and white, I
19 would say no. But I also feel very strongly that we need to
20 keep the pressure on. We need to have a way, a very clear
21 way to move forward, so that they will become adopted in the
22 proper form.

23 So as I said with the categories, you can at
24 least spell out very distinctly which ones have met which
25 level of category, and then you can adopt those with those

1 categories. I think to just sort of pull back and say well,
2 we're not ready yet, I don't think that's the answer either.

3 I think we really do need to move forward, but we
4 need to have a process. We need to have a very clear
5 process, probably through NIST, where we do a detailed
6 functional analysis, so that we can come up with the
7 categories, if that ends up being how FERC would like to
8 move forward.

9 So I think that we need to keep the pressure on,
10 and we need to develop a really refined process, such that
11 NIST can bring it to FERC and have it known that this is
12 indeed what is recommended by NIST, and that then FERC can
13 take it, do its legitimate review, but then have much more
14 general consensus, that yes this is -- for this category,
15 this standard does work. So I think that would be my answer
16 to your question.

17 CHAIR WELLINGHOFF: Okay, thank you. Thank you
18 all very much.

19 MS. SIMLER: Thank you. I'm going to check my
20 colleagues here, starting with Jim McClelland, who's the
21 Director of the Office of Electric Reliability.

22 MR. McCLELLAND: Thank you, Jamie. The first
23 question I have is for Daniel Thanos. Daniel, you asked or
24 you recommended that the current standards be supplemented
25 with an addendum. The question I have for you is how would

1 the process function, to accomplish such a task? How would
2 an addendum be developed, and how could more of the security
3 community be involved in this process?

4 MR. THANOS: I think -- well, first of all, it
5 has to be definitely an open process. We could use NIST.
6 We could use other organizations such as Open SG, which
7 oddly enough Open SG was kind of a genesis point for the
8 61850 standards.

9 There is no shortage of the organizations where
10 you have sufficient representation from multiple industry
11 stakeholders, and in terms of attracting, you know, the
12 right type of people, I think that's going to be an issue of
13 outreach. We're going to have to, you know, kind of
14 advertise it across as many channels as we can, in both
15 private and public sector, to attract the right people.

16 We may also want to, you know, specifically
17 target some, you know, the individuals in each respective
18 community that have recognized expertise and formally
19 solicit them to come into some sort of group. We may want
20 to have a kind of a, maybe a small leadership board
21 overriding the addendum, and you kind of get people on that.

22 They work together with volunteers, through an
23 open process, which will have a comment period and
24 everything that's needed to get acceptance and get adoption,
25 you know, and come to the development of that addendum.

1 That would be, you know, my starting advice on the matter.

2 MR. McCLELLAND: And how long might a process
3 like this take? Mr. Highfill, you also recommended that
4 there be some sort of a supplement, if I understood your
5 testimony and your comments correctly. How long would it
6 take to develop sort of a supplemental addendum to help with
7 the current standards?

8 MR. HIGHFILL: Well, to start at a little bit of
9 clarity here, I'm not certain that I was recommending an
10 addendum so much to the standards, as I was an addendum to
11 the, maybe call it an addendum to the process that the IEC
12 standards have gone through for review within NIST so far,
13 and it's more, you know, we've got a good process in place
14 now that NIST has built.

15 Let's see if we can figure out a way to
16 expeditiously run these back through that formal process, so
17 that we have a way to say, you know, okay, this is -- this
18 has actually received that attention now.

19 In terms of addendum to the standard itself, that
20 would be -- that's really a question of purview and
21 authority, from my perspective, simply because these are IEC
22 standards, International Electric Technical Commission
23 standards. So in my mind, it would be a question of who is
24 actually going to create that addendum? Under what
25 authority? In what context does it apply?

1 And I think, you know, it's certainly possible
2 that we could do that for, you know, for the jurisdictions
3 that we have authority over. We could do that, but at the
4 same time, we need to recognize that a trade off of doing
5 that is you've somehow or another created a blended
6 standard, to where now you've got an international standard
7 with some sort of national addendum to it.

8 MS. SIMLER: Mr. Highfill, I have a follow-up to
9 your response to Joe. When you were talking about kind of
10 running the current standards through the process, you're
11 referring to the new SGIP process?

12 MR. HIGHFILL: Correct.

13 MS. SIMLER: I thought in, and I hope I don't get
14 this wrong, but in your comments and I know in Mr. Lucas'
15 comments, there was some criticism about the weighting of
16 the SGIP board.

17 So would you be okay with the current structure,
18 and looking for evolution of that board going forward for
19 the future, in terms of trying to get consensus for reached,
20 to the extent that there has been consensus reached, on
21 these first batches of standards?

22 MR. HIGHFILL: Certainly. First, let me say that
23 the comment that I had in my opening remarks is actually in
24 regards to the broader SGIP or Smart Grid Interoperability
25 Panel. This is basically the broad representation of the

1 entire population involved in this process.

2 There are several hundred entities registered in
3 the SGIP, and that is the one that gives me pause, when me,
4 as a one person company, has the same level of vote as an
5 ILU (ph).

6 So I think that's something that we do need to
7 work on. The SGIP governing board is a separate issue, and
8 that's actually the one where we have 25 seats, and a
9 certain number of those can be filled by representatives of
10 the utilities. Fundamentally I think I would not say that -
11 - I'm not going to say this is broken. I'm going to say
12 that this, you know, we've got a process in place that
13 works.

14 I would like to see it, you know, to see it
15 tweaked and modified. I think that's something that we're
16 capable of handling as a community. But I think it's also
17 something that we need to have some attention brought to,
18 and it's something that I think needs to be rectified.

19 MS. SIMLER: Thank you. Joe, do you have --

20 MR. McCLELLAND: I have one more question,
21 particularly to Mr. Sorebo, although I would invite anyone
22 to comment on this.

23 You mentioned that the NERC CIP standards could
24 perhaps be used to provide some sort of an interface or a
25 template to run the standards through from NIST. How do you

1 see the NERC and NIST processes working together to provide
2 this interaction?

3 MR. SOREBO: Well, in some ways they already
4 have, because some of the newer NERC standards have borrowed
5 the NIST process, the NIST 853, for example, and others, as
6 the NERC has done and others. So there already is some
7 interaction or at least a serial interaction between them.

8 My comment about NERC in particular was a couple
9 of things. One that it is a broad-based standard that
10 applies to all aspects of the -- that can be applied, I
11 should say, to all aspects of the utility operation.
12 Obviously, right now it's applied to aspects of the bulk
13 electric system for a lot of jurisdictional as well as other
14 reasons.

15 But there's no reason it can't be, even as a
16 recommendation, and in fact some public utility commissions
17 may choose to apply NERC CIP to parts of the distribution,
18 to other parts that are not directly regulated by FERC or by
19 NERC itself. It's a standard that's been used for auditing
20 in a very detailed level, and while it's certainly not
21 perfect, it's something that can be started and then work in
22 some of these other standards.

23 So for example, when you talk about how you're
24 implementing a particular type of security or access control
25 within a segment of a utility, you can bring in things like

1 IEC 61850 or other standards that are designed to apply
2 specifically for them, and use that as a more detailed
3 checklist, to verify whether or not they've actually
4 implemented the standard, whether they've implemented the
5 security guidance associated with it.

6 So it can be an umbrella used to bring in some of
7 these other standards, in addition to things like the NISTR
8 7628. Of course, this is just with cyber security.

9 There's other aspects of it as well. But it
10 provides sort of an umbrella way, and at the same time it
11 allows criticism of the NERC CIP standard as well, which are
12 not perfect either, to be brought in by having that
13 interaction. I think it can be beneficial to both sides.

14 MR. McCLELLAND: Okay, thank you. Mr. Lucas, do
15 you have any comments about that? I know that that was part
16 of your testimony.

17 MR. LUCAS: I don't know that I do. You know, I
18 don't know that I could add anything. I think the NERC CIP
19 standards are, they're pretty well implemented, adopted.
20 They're going through some versioning.

21 I don't know that I would hold the NIST standards
22 up to that just yet, but I do think industry owes it to
23 itself, especially the utilities that would deploy these
24 assets, there needs to be a cyber review, and I know Dr.
25 Arnold referred to that. But that work group is a voluntary

1 work group. To me, there needs to be a little bit more
2 formality put that, in terms of the review that's done for
3 cyber.

4 MR. McCLELLAND: Okay, thank you.

5 MS. SIMLER: David, Kevin?

6 MR. MORENOFF: A follow-up to Mr. Lucas, folding
7 on Joe's question, another of your recommendations went
8 through the possibility of there being a review council.
9 Could you talk a bit about how you would see the
10 relationship between that review council and the consensus
11 process at NIST?

12 I guess in particular, given the constraints that
13 we've been discussing in terms of time and budget and so
14 forth, knowing that there would be this review council, does
15 that affect, do you think, the way and the extent to which
16 the people who would have a role in that review council
17 would want to participate in the consensus process?

18 MR. LUCAS: I would answer this question in sort
19 of two parts. I think if you're going to retain these five
20 families and keep them on the track moving towards some sort
21 of consideration by the Commission in a rulemaking, I
22 believe at a minimum you ought to deploy that review
23 council.

24 Now how do we set that up? I don't think we have
25 a lot of time, but I think we put formality into it and

1 accountability, and we lay out clearly here's what I want
2 you to do with these standards, and have that conclusion run
3 through a formal vote of the full SGIP.

4 Then I think going forward, for future standards,
5 you bake that step into the process, so that it doesn't
6 become, you know, well I'll just wait until it gets to this
7 review council. Now I think you need to do that all the way
8 along, and that would be baked into the overall process
9 before consensus was voted on, about whether the standards
10 are now ready to go forward to the Commission.

11 MS. SIMLER: If I can have a follow-up. We heard
12 from pretty much all the panelists of the evolutionary
13 nature of these standards. So how would that group work to
14 capture subsequent revisions to technology that's already in
15 place? What are your thoughts?

16 MR. LUCAS: Well, I'll jump out there, Jim,
17 because you kind of tacked it onto the end. But I didn't
18 intend it to be the group that would visit subsequent
19 changes to standards. I don't intend it like that. I
20 believe that's a whole new section or a component of the
21 NIST consensus process that's got to be designed, and that
22 is what happens when you need to do a change to a standard?

23 If you hold it up to the NERC process today, we
24 established the need for a standard, we established a
25 standard drafting committee, and it goes through that whole

1 process until it gets to a point where the NERC members vote
2 it out and then it goes to the board and onto the
3 Commission.

4 MS. SIMLER: Thank you. Mr. Highfill, did you
5 want to comment on that?

6 MR. HIGHFILL: I was actually going to offer up
7 that fundamentally, it's the originating standards
8 development organization that "owns" the standard. So if a
9 modification is going to be made to the standard, that would
10 be the organization where that started.

11 So and also, once a modification is made to a
12 standard, it usually does not fundamentally change the
13 nature of the standard. It's generally, you know, a tweak
14 or something. It's a modification. So I don't necessarily
15 think it would warrant, you know, running it all the way
16 through the whole gauntlet again.

17 You might simply have the ability for a group
18 within the SGIP to throw a flag and say wait a minute, this
19 revision doesn't align with what we originally approved.
20 But beyond that, you know, I think it would be up to the
21 question to FERC of how does FERC procedurally deal with
22 modifications.

23 MS. SIMLER: Thank you. Kevin, did you have a
24 question?

25 MR. KELLY: Yes. A common theme among many of

1 the panelists was whether you would support adoption or
2 whether you think there was sufficient consensus for
3 adoption. It depends upon what you mean by adoption. I
4 think what Mr. Lucas has said, that some utilities may have
5 supported the general concept of a standard in the NIST
6 process, but when it came to FERC for adoption, maybe they
7 wouldn't support it.

8 Ms. Cleveland laid out various types of adoption.
9 I've been thinking along these lines myself, and since I'm
10 not a Smart Grid, I created an analogy for myself. I want
11 to ask you if this is an apt analogy and how FERC should
12 treat it, and bear with me just for a moment.

13 I'm a home movie buff, so I wanted to replace my
14 DVD player with an HD player of some sort, but until two
15 years ago, there were two technologies, HD and Blue Ray. I
16 knew if I bought the wrong one, I couldn't buy any future
17 disks, because they'd only be making the wrong one.

18 So you can picture that Congress would tell NIST
19 to go select one and recommend it to the FCC and the FCC
20 would go adopt one, and then people could say either, okay.
21 We picked Blue Ray because it's the oldest and 70 percent of
22 the people are using it versus the other, and then if it
23 came to the FCC for adoption and instead of just Blue Ray
24 versus HD, it was presented as here are all the Blue Ray
25 specs.

1 Being the most widely adopted, it's the oldest,
2 and those specs were written eight years ago, and boy,
3 they're really out of date. They're not cyber security for
4 downloading updates and they don't take into account the new
5 3D technology on TV. So don't adopt them, because if adopt
6 them means we have to go back to where it was eight years
7 ago, that's no good.

8 So I guess the question for, and I'll direct it
9 to Mr. Lucas and Ms. Cleveland. I won't stop others from
10 answering, but just not force everybody to answer this.

11 If adoption meant pick this standard as the way
12 to go, recognizing it's got a lot of flaws, but we will
13 rally all the relevant industries around correcting those
14 flaws, would you be more in favor of adoption than if it
15 were taking the standard as written out in details
16 technically, some of which were written out I think as long
17 as ten years ago, and adopting those and mandating that all
18 utilities and manufacturers manufacture to that obsolete way
19 of doing things, then you wouldn't?

20 Does this analogy at all capture the debate
21 that's going on is my fundamental question, and how does it
22 affect your answer? So I'd maybe Mr. Lucas and Ms.
23 Cleveland to comment.

24 MR. LUCAS: I think it's a great analogy, Kevin,
25 and if I can appreciate how you were explaining it, I would

1 opt for the first option that you presented. If I can, I
2 guess, paraphrase it back to you, the industry has sort of,
3 I believe, rallied around those are a reasonable start to
4 five sets of standards that we can point to, and that would
5 get Smart Grid implementation sort of up to the first tier.

6 But the big caveat you talked to me about was but
7 we're also going to come to the table with that sort of, you
8 know, construct in mind, and say okay, now let's look at our
9 existing systems, our legacy equipment, and let's be sure
10 are those appropriate to implement with respect to our
11 existing systems. I think that would be the way that most
12 utilities would want to go forward with.

13 MS. CLEVELAND: Yes, I agree with that basic
14 approach. I think one of the things with my category
15 approach is that there would be pressure to move from one
16 category to the next, so that you get through, you know,
17 getting a complete spec. Then you get through the
18 conformance testing. That means at least one vendor has to
19 have implemented and he's conformant.

20 Then you get to interoperability testing, and
21 you've got more vendors, and that's where you find the
22 problems. That's where you go back and fix things. That's
23 when you get this. So if we get the pressure to keep moving
24 and moving up the categories, then and the testing is
25 particularly important, then I think we will come to sort of

1 general stakeholder acceptance of these standards, because
2 it will have gone through the whole process.

3 So if we can get the pressure on to get the
4 appropriate testing done at the appropriate level and
5 whatever that might be including, of course, the cyber
6 security, I think we'll have gone a very good distance and
7 will have gotten that focus of attention on those. So yes,
8 I agree with that.

9 MR. FRANKS: Ms. Cleveland, if you don't mind, I
10 just want to go back to your proposal for your categories.
11 How would it work or can the assessment or a functionality
12 or let's say when you're going through the process, how can
13 it be tied back to sufficient consensus, I guess is my
14 question?

15 MS. CLEVELAND: To sufficient what?

16 MR. FRANKS: Sufficient consensus.

17 MS. CLEVELAND: Oh, sufficient consensus.

18 MR. FRANKS: So when you come up through the
19 categories, how does it circle back to the SGIP process, to
20 determine whether there's sufficient consensus?

21 MS. CLEVELAND: Okay. Well clearly details will
22 have to be worked out. But I think the main idea would be
23 that if you take a particular standard and we say well, the
24 standard is complete. It's written down on a piece of paper
25 and it's there, and the standards group has gone through it

1 and said yes, we like it and it's gone through the IEC and
2 it's a standard.

3 However, nobody's implemented it, okay. So we
4 would have then the pressure to go on to the next step, and
5 we would then get consensus by having the pressure there to
6 say well, it's a new, let's say 61850 standard, and we have
7 gotten this far. We've gotten sort of the experts to agree,
8 but now let's get the consensus.

9 So we bring in maybe the whole SGIP group to take
10 a look at it, or at least those that are interested, and say
11 okay, which vendors are interested in at least doing first
12 conformance testing; which vendors then are interested to do
13 the interoperability testing, which takes more than one
14 vendor; which vendors want to be involved in the cyber
15 security assessment and implementation of it.

16 Because we're now outside the standards group,
17 the IEC, it's we're actually at a different level. We can
18 then bring back any problems back into say the IEC, and say
19 you know, please fix this. Great, you know. But the point
20 is that once outside, once it's become a standard that's out
21 there and available, whether it's \$25,000 or not but we'll
22 have to deal with that too, but at least it's out there, and
23 then we can really get the stakeholders involved in that
24 process, to move it up a categories list.

25 MS. SIMLER: I think we've got time for one last

1 question from staff, in order to stay on schedule. Ray,
2 Elizabeth, anybody?

3 MR. PALMER: I just had a follow-up question for
4 you, Frances, and that is, and actually I heard echoes from
5 a number of people on the panel about something other than a
6 binary situation, where you have a standard that's not
7 adopted or a standard that's adopted.

8 To me, I'm wondering if that ties in with what
9 Dr. Arnold said in his initial talk, when he was talking
10 about not necessarily looking to adopt individual standards,
11 but as I understood it, kind of blessing a process somehow
12 or other. Is that kind of where you're going?

13 MS. CLEVELAND: I would say that ties in very
14 well with it. Which is why I also said in relation to
15 another question, is that we need to keep the pressure on.
16 It's not just a question of adopting or not adopting; it's
17 saying these should be moving forward. We need to keep the
18 pressure on. We need to have the stakeholder attention,
19 vendors, utilities, other manufacturers all involved. So
20 yes, indeed.

21 MS. SIMLER: Thank you very much. We're going to
22 check with our Chairman and Commissioners.

23 CHAIR WELLINGHOFF: Just one quick question and
24 clarification for Mr. Lucas. Mr. Lucas in your testimony,
25 you recommend that there be a NERC formal review and

1 reliability impact assessment of a standard, as a
2 prerequisite before that standard would be referred to us,
3 to the Commission.

4 On the next page, you talk about a review
5 council, also consisting of representatives, whose primary
6 responsibility is for the safety and reliability of the
7 grid, to review and approve a standard before it's submitted
8 to us. Are those two consistent or are they the same? I'm
9 just confused there.

10 MR. LUCAS: Hopefully, they are consistent, Mr.
11 Chairman, and they are different. I think at a minimum --

12 CHAIR WELLINGHOFF: So there would be two
13 different things?

14 MR. LUCAS: There would be two different reviews.
15 It might be that you converge them into the same, but I
16 believe at a minimum, what we have observed is, and I
17 believe NERC would confess to this as well, I don't believe
18 NERC has consciously taken these five families of standards
19 and looked to see how do they contrast with our existing
20 standards, and are there any inconsistencies, or anything we
21 would need to start a standards modification to with respect
22 to our existing standards.

23 So I meant them as two different. I think the
24 NERC piece should be baked into the process for any
25 standards going forward. I believe that's a fundamental

1 thing that needs to be done.

2 To move these five forward, and I think, to what
3 Ms. Cleveland said, I believe if we establish that review
4 council to move these across the goal line, you could get
5 them to a point where you had industry consensus on many of
6 the categories she described, to where everyone would say
7 okay, we're ready for somebody to consider these five with
8 respect to adoption on our system. So I did see them as two
9 separate activities.

10 CHAIR WELLINGHOFF: Thank you, Mr. Lucas. Thank
11 you, Jamie.

12 MS. SIMLER: Commissioners? I apologize. I
13 think Annabelle Lee had a question.

14 MS. LEE: No.

15 MS. SIMLER: Nope, okay. So we're all good. So
16 we're going to adjourn then until three o'clock, and we'll
17 start with the second panel. I want to thank you all.
18 Other than Mr. Lucas, this is my first time of meeting many
19 of you, and I greatly appreciate all your perspectives. So
20 thank you.

21 (Whereupon, a recess was taken.)

22

23

24

25

1 MS. SIMLER: I would like to invite our panelists
2 to go ahead and take their seats. All right. Thank you
3 everyone. We are about to start our second panel, which is
4 looking at the identification and development process going
5 forward.

6 We have Mr. Michael Assante, hopefully, on video,
7 on web. There we go. Great. Mr. Assante, you ready?

8 MR. ASSANTE (By Videoconference): Good
9 afternoon, Chairman Wellinghoff, Commissioners, and staff.
10 I want to thank the Commission for convening this Technical
11 Conference on Smart Grid Interoperability Standards, and for
12 the opportunity to provide these remarks and participate via
13 VTC today. Thanks especially to the Department of Energy
14 Idaho Field Office and the FERC technical staff, and
15 individuals who made that possible.

16 My name is Michael Assante. In addition to my
17 experience as the Chief Security Officer at American
18 Electric Power, I most recently served as the first Chief
19 Security Officer of the North American Electric Reliability
20 Corporation.

21 I believe properly developed technical standards
22 will play an important role in establishing a strong
23 foundation for future electric system reliability and
24 security.

25 I also recognize the growing desire, as

1 significant investments have already been made, to adopt
2 standards that will shape Smart Grid technologies.

3 You must achieve these important goals, but I
4 caution against allowing haste to overcome a deliberate and
5 extensive review of these important guides. A successful
6 standard must demonstrate that, if implemented in a prudent
7 manner, it will result in outcomes that will not adversely
8 affect the reliability or cybersecurity of the system,
9 whether in part or in whole.

10 Thinking through the real-world outcomes of
11 proposed standards requires that many minds come to the
12 table, from those that design the technology to those that
13 implement and manage it, and those that must secure it.

14 The question whether there is sufficient
15 consensus that the five families of standards posted by NIST
16 are ready for the Commission's consideration and rulemaking
17 proceedings is therefore a very important one to ask.

18 I would like to recognize the contribution and
19 the active involvement of important segments of the power
20 industry, researchers, academics, and technology providers.
21 I am concerned, however, that an insufficient number of
22 experts in cybersecurity, control system security, and
23 utility operations were engaged in an informed manner
24 throughout the review process.

25 Even though the IEC process is well established

1 and technically sound, it like many other efforts is
2 struggling to address the dynamic nature of cybersecurity.
3 This is highlighted by identified gaps in security
4 principles that would benefit from greater clarity and even
5 correction.

6 NIST reviewed specifically the hard work of the
7 Cybersecurity Working Group's Standards Subgroup and did
8 identify several areas to be addressed.

9 Greater involvement by various domain security
10 experts would further highlight areas of concerns and gaps,
11 as well as offer potential solutions. Involvement by
12 individuals were constrained by the difficulty and cost
13 associated with reviewing these standards and the required
14 references, as Dr. Wright pointed out.

15 How can we achieve consensus with participants
16 that have not even read the standards themselves in their
17 entirety? These specific standards identify worthwhile
18 technology targets that will certainly enhance efficiency
19 and greater flexibility.

20 These benefits, however, also introduce security
21 concerns as critical functions and components would share a
22 common network, common naming, automatic point
23 configuration, rely on peer-to-peer messaging, and would
24 thus be more susceptible to data storms, setting changes,
25 and the malicious programming.

1 The benefits might be deemed to outweigh the
2 potential risks, but that conclusion requires greater
3 scrutiny and more formal participation to identify necessary
4 security approaches to manage those remaining risks. In my
5 opinion, the existing standards do not make sufficient
6 progress in establishing paths to enhance the security of
7 electric delivery systems.

8 In some instances these standards simply call on
9 system owners to implement undefined security features that
10 counter with an appropriate user and cost constraints
11 certain threats. For example, the IEC 61.850 family of
12 standards explain the need for confirmation of a control
13 message response, but does not identify appropriate security
14 to address integrity and confidentiality concerning the
15 actual response.

16 Another specific concern is a number of
17 identified ICCP flaws in current implementations. Adoption
18 of this standard would further submit those weaknesses into
19 being or at least start organizations off with issues that
20 would have to be addressed at greater cost and leave them
21 exposed until additional solutions were implemented.

22 Many engineers have characterized the standards
23 as being based more on experimentation than on
24 implementation of field experience, particularly in light of
25 low levels of adoption in the United States.

1 The lack of the implemented systems relative to
2 the number of design options certainly makes it difficult,
3 if not impossible, to gauge whether the standards will
4 result in outcomes that will not adversely affect the
5 reliability or cybersecurity of the electric power system.

6 If some cannot read the standards, then how might
7 consensus be achieved without something to measure or
8 observe? As a former asset owner, I would rather set a
9 higher bar for a system in the design and development phase.
10 It is far more effective and cost efficient to deal with
11 those security challenges such as those that have been
12 identified by the NISTR.

13 I also know all too well what happens when
14 insufficient standards are adopted and problems are created
15 in attempting to fix those standards while they are being
16 implemented. I will remain uncomfortable with the current
17 technical standards until model systems are tested in both
18 laboratory and field settings.

19 In conclusion, I don't believe a consensus under
20 the current process can be attained. We should continue to
21 seek progress, but also recognize the need to close the gaps
22 in software and system engineering foundations necessary to
23 ensure that the new Smart Grid functionality will be secure,
24 safe, survivable, reliable, and resilient.

25 I don't believe my concerns are insurmountable.

1 There are several approaches that could be considered to
2 improve the standards to include remanding the technical
3 standards until security is uniformly addressed through
4 greater informed participation, and consensus can be
5 achieved. Or, direct necessary addendums as suggested
6 earlier to address identified concerns and provide credible
7 security guidance along with adoption or design
8 implementation of the standards.

9 Again, I appreciate the opportunity to speak here
10 today and commend the Commission and NIST efforts to tackle
11 this important and growing issue. I will be pleased to
12 answer any questions that you may have.

13 MS. SIMLER: Thank you, Mr. Assante.

14 Mr. Ambrosio?

15 MR. AMBROSIO: Good afternoon. Thank you for
16 asking me to participate in the panel.

17 I believe my research activities in
18 interoperability and software frameworks and standards for
19 nearly 15 years, and my deep involvement in both IBM's and
20 the utility industry's Smart Grid activities over the past
21 decade will allow me to provide an informed perspective in
22 this area.

23 My technical background includes a combination of
24 embedded real-time systems and enterprise scale distributed
25 computing and how to bring those two worlds together--

1 interoperability. So I have extensive practical experience
2 in this topic.

3 Since the late 1990s I have been the working
4 party lead and editor of an ISO IEC Joint Technical
5 Committee One Standard Series on Interoperability for
6 Premises Automation. As a member of the Gridwise
7 Architecture Council since its formation in 2004, and
8 chairman over the past two years, I was part of the small
9 community who first identified and raised the industry's
10 level of awareness about the critical need for
11 interoperability in all dimensions. And I've been working
12 directly with NIST since January of 2008, and I'm the
13 current chairman of the SGIP Architecture Committee.

14 Involvement of a broad community of stakeholders
15 is essential. At the Spring 2009 meeting between FERC, DOE,
16 and NIST I advised that it was critical to have strong
17 industry and other stakeholder participation in the
18 governance of any process that would be defined to
19 facilitate both participation in the process and acceptance
20 of the results.

21 NIST took that idea and the observation of how
22 health care and other industries had used a similar approach
23 and eventually defined 22 stakeholder categories and a
24 governing board of representatives from those categories.

25 Such stakeholder participation and governance

1 continues to be an important part of the process in the
2 SGIP. There is also a recognition that there may need to be
3 new stakeholder categories added in the future as the
4 ecosystem Smart Grid matures.

5 The need for a transparent and inclusive process:
6 Transparency helps to mitigate the tension that might exist
7 between stakeholder communities with differing goals and
8 requirements. Closely related to transparency is the need
9 for inclusiveness, or at least the opportunity for
10 participation in activities that have an impact on the
11 stakeholder community.

12 I believe there is a proactive effort to make the
13 general SGIP process accessible to all interested
14 participants through web technologies and remote meeting
15 access. It is not perfect, but it is workable and it has
16 improved as the SGIP community and the SGIP leadership and
17 administrator have become more experienced in conducting
18 such meetings.

19 This requirement for transparency and inclusion
20 must extend all the way through to the end result of NIST
21 preparing recommendations to FERC.

22 One idea that has been put forward, and which I
23 support is to assure that NIST select only standards that
24 have been added to the Catalogue of Standards, thereby
25 assuring they have completed the SGIP life cycle and they

1 have documented stakeholder support.

2 The need for a living process that continues to
3 improve:

4 My experience to date has been very positive with
5 respect to the evolution of the SGIP internal processes and
6 their ongoing improvement through feedback from the
7 participants. For example, the Priority Action Plan life
8 cycle has matured and improved greatly. My observation is
9 that the SGIP leadership and the administrator have operated
10 with a spirit of continuous improvement in mind.

11 Stay focused on key interoperability interface
12 points:

13 The effort to coordinate the development of
14 interoperability standards should not expand to include all
15 standards related to Smart Grids at all points in the
16 system. Interoperability is about standardizing key
17 interface points within the Smart Grid system of systems.

18 At the first major workshop that NIST hosted in
19 late Spring 2009 I was immediately concerned as I visited
20 several of the sessions. It seemed that everything was
21 being put on the table for discussion, far beyond the scope
22 of interoperability interfaces.

23 I spoke to a number of my Gridwise Architecture
24 Council and NIST colleagues to assure there was consensus
25 with my observation, and then I met with George Arnold and

1 Dean Prahaska over lunch to explain the concern and
2 recommend that we quickly develop a conceptual model of the
3 Smart Grid that could be used to structure the subsequent
4 workshops and activities and get the community focused on
5 what needed to be accomplished.

6 This resulted in the formation of an ad hoc team
7 to create the first version of the conceptual model in time
8 for its use at the second workshop. This concern of staying
9 focused on standards for key interoperability interface
10 points remains.

11 It is easy for an activity of the scale and
12 complexity of the SGIP to drift beyond that core charter,
13 and I believe we need to be attentive to this issue. If
14 not, we may fall into the situation of overstandardizing
15 certain portions of the system that should be left more
16 loosely constrained to encourage innovation and open market
17 technology competition and evolution.

18 It should always be recognized that
19 interoperability is as much about enabling innovation to
20 continue with minimal impact on the system as it is about
21 getting the system running in the first place.

22 In closing, I continue to support the activities
23 of NIST and the value of the SGIP. While there are always
24 challenges with any undertaking of this scale, I strongly
25 believe that we are in a better position with the SGIP in

1 place than if we had not established it.

2 The importance of bringing all the stakeholders
3 to the table and facilitating a process to encourage
4 collaboration can't be overstated.

5 In our governance of this process we need to
6 continuously self-examine ourselves to assure that we stay
7 focused on the correct issues, and strive for an open
8 environment that achieves outcomes that can be supported by
9 all stakeholder communities affected.

10 We also have to fully consider the implications
11 of any actions resulting from this process, which can go far
12 beyond the technical realm and proceed with careful
13 consideration of all those factors.

14 Thank you.

15 MS. SIMLER: Thank you. Dr. Kube.

16 DR. KUBE: Thank you. As with my colleagues, I
17 would like to thank the Commission for allowing me to speak
18 today. I would also like to commend NIST for their
19 excellent work in developing the NISTR. There are 197
20 requirements aligned well with other frameworks such as
21 those offered by ISA, International Society for Automation,
22 or IEC 62443.

23 First I am going to go into, with respect to
24 content of the standards that have been recommended. The
25 five core standards are a good start, but as currently

1 written are neither comprehensive--they lack many obvious
2 security areas--nor do they provide any specifications for
3 security certification of products and services offered by
4 system and component suppliers.

5 A couple of the leading common shortfalls across
6 these five standards: As far as security goes, it was a
7 very selective threat analysis, and that led to missing
8 requirements.

9 For example, if you take a look at the standards
10 in detail, "insider threat" is not a strong consideration.
11 Supply chain vulnerabilities are not adequately addressed,
12 weaknesses introduced throughout the supply chain.

13 Working group tunnel vision leads to security
14 shortfalls. There's much focus on communication security,
15 data semantics, but little attention on information
16 security--that's data in transit.

17 Lack of metrics to quantify security
18 requirements. How do you quantify this? How do you measure
19 it? And the standard is not properly vetted by impacted
20 stakeholders. Again, the representation on these standards
21 that are being recommended. These are IEC standards with
22 the majority of the development happening over in Europe.
23 There's not a lot of large U.S. stakeholder presence in
24 those standards organizations. So the standards are--I
25 don't think there's good representation.

1 And I'm going to talk a little bit about a
2 contrast. There's a group called WIB. It's an
3 international instrument users association, and it coupled
4 vendor evidence requirements with a set of formal security
5 requirements, primarily driven by end users in the super
6 major oil and gas industries.

7 WIB vetting involved leading suppliers and
8 stakeholders to establish solid consensus of requirements,
9 as well as certification and validation, which improved the
10 process. I believe this approach is much stronger than the
11 approach used to choose selected experts to identify
12 families of core standards.

13 I am concerned that many important contributions
14 to design security into the Smart Grid infrastructure are
15 not addressed by the families of five core standards. They
16 are addressed, however, in other guidelines and recommended
17 practices--patching is the simple example.

18 These contributions may not use the same security
19 framework as 63251, but do provide adequate security for a
20 wider class of deployed Smart Grid components and systems.
21 We discovered this deficit when testing Smart Grid AMI
22 systems and services for security certification.

23 One possible solution may be to include these
24 additional guidelines as normative references, thereby
25 integrating them into the standards under consideration.

1 Another distinct advantage of the WIB approach
2 was successfully carried out in Europe and was the strong
3 asset owner operator buy-in as they were integral in the
4 development. As we know, security is a people issue. There
5 is a technology component, but it is a people issue.

6 So we have to look to the people who are
7 responsible for running these systems day in and day out for
8 security. So if they are not involved in designing and
9 creating the security requirements, how are we going to get
10 their buy-in to operationalize them?

11 This poll strategy WIB developed by having end-
12 users say this is what we want, this poll strategy resulted
13 from major electric utilities telling their suppliers that
14 to continue selling their products and services they must
15 successfully certify their policies and practices. In this
16 case, by the utility telling their PUC that Smart Grid
17 systems are secure, this strong security requirement
18 represents a commitment to the PUC.

19 So the approach offered by WIB: End-user driven,
20 certifiable, operational security requirements, has gained
21 serious recognition and momentum recently. Many vendors are
22 looking to provide products and services for the Smart Grid,
23 and they also participate in the WIB activity.

24 So just in conclusion, I would like to say that
25 NIST provided an excellent framework of Smart Grid security

1 requirements in NISTR 7628. The five core security
2 standards recommended are a great start. I would caution
3 mandating any standard, as it is effectively mandating a
4 technology.

5 Thank you.

6 MS. SIMLER: Thank you, Dr. Kube. Mr. Longcore?

7 MR. LONGCORE: Good afternoon, Chairman
8 Wellinghoff, Commissioners, and staff:

9 I am Wayne Longcore, the Director of Enterprise
10 Architecture and Standards for Consumers Energy. My
11 comments today also include my perspective as the Vice
12 Chairman of the Board of Directors of the UCA International
13 Users Group. This not-for-profit corporation has more than
14 7,000 users participating in collaboration teams that
15 actually are over top of several of the standards that you
16 are here to talk about today.

17 I am one of the members of the Gridwise
18 Architecture Council, and I am a Governing Board Member of
19 the Smart Grid Interoperability Panel. I am the Governing
20 Board Member's Representative to the Program Management
21 Office, a member of the Smart Grid Architecture Council, and
22 members of my team at Consumers Energy participate in many
23 of the PAPs and other organizations, including the CSWG, the
24 testing and certification committees.

25 I am here to discuss on the second panel the

1 evolving process for identifying and developing and
2 reviewing Smart Grid standards. That has evolved from the
3 process that was used by NIST to select the five standards
4 posted on October 6, 2010.

5 Based on the mandate of the ESA Act, NIST
6 embarked on a three-phase process. Phase one was the
7 identification of relevant standards, major gaps, priority
8 action plans, and a detailed conceptual model of which I was
9 a participant in the creation.

10 Late in 2009, NIST initiated phase two of the
11 plan and created the Smart Grid Interoperability Panel, a
12 single organization, as a focal point for identifying these
13 interoperability requirements and standards, and to build a
14 consensus moving forward.

15 NIST has developed a process for the standards to
16 be reviewed by the standing committees--the Architecture
17 Committee, the Cybersecurity Working Group, as well as the
18 Governing Board and the entire plenary, with websites used
19 as forums for documenting the NIST process, recording
20 meetings and other things.

21 The SGIP has developed a process for being able
22 to provide the ANSI standards as well as, just recently, the
23 five standards available to members of the SGIP so that
24 people can review those standards without significant
25 financial impact.

1 At last count there were 647 organizations and
2 1,681 individuals participating in the NIST Smart Grid
3 Interoperability Panel process. One should not take that
4 this number is only 1,681 people, when you look to some of
5 the Governance Board members such as Bob Seine, who
6 represents 900 rural cooperative utilities within that as a
7 single entity.

8 Establishing a mechanism for reaching consensus
9 amongst the variety of interests is a major challenge for
10 the standards process. NIST worked diligently to create the
11 SGIP governance model with many checks and balances to
12 ensure that the mechanism existed for all stakeholders'
13 voices to be heard, big and small, and to maximize the
14 ability to uncover new ideas, assess, and generate broad
15 consensus. I myself work for a utility but represent
16 professional societies, users groups, and industry
17 consortia.

18 The SGIP includes members of the utility
19 industry, including investor-owned utility stakeholder
20 groups, municipals, rural cooperatives, independent power
21 producers, transmission operators, and energy market
22 traders.

23 A Governing Board was created to equitably
24 represent the various stakeholder groups, no matter what the
25 stakeholder demographics are in the SGIP as a whole. The

1 Governing Board meets on a monthly basis, and there is a bi-
2 monthly meeting of the SGIP plenary.

3 The program management office reviews the various
4 PAPs and their standings to foster the carrying of standards
5 forward into what is now the Catalogue of Standards. No
6 standard as of yet has followed that process all the way
7 into the Catalogue of Standards.

8 As you heard on the previous panel, these five
9 standards were created and put forward at the same time the
10 process was being created, and the process that is being
11 created will continue to evolve into the future.

12 ESG and PAPs as projects were established by the
13 Governing Board to address standards gaps or overlaps, and
14 the PAP Working Groups are worked to address those gaps or
15 overlaps and develop a list of requirements necessary to
16 resolve the issues.

17 The same process that has been developed for the
18 Catalogue of Standards should be used for future standards.
19 Being in the Catalogue of Standards through this process
20 should be for what comes to FERC. So when the question of
21 what is the process going forward, the process of going
22 through the PAPs, or a DEWG, making it to the Cybersecurity
23 Working Group, through the Smart Grid Architecture Council,
24 making it to the Governing Board and to a vote of the
25 plenary will ensure sufficient consensus that it was made

1 through a proper process into the Catalogue of Standards.

2 On top of that, right now there is a missing
3 process, and that process should be, as was remarked in the
4 previous panel, that those who are responsible for the
5 safety, reliability, and economic viability of the Grid
6 should have a review process to understand the implications
7 of implementation of these standards. And I loved Kevin
8 Kelly's comments on Blue Ray. It is very important to
9 understand that you are mandating a direction as you look at
10 this, not that you are mandating a standard.

11 And standards, when implemented too purely, can
12 stop the evolution of what you are looking to create. So
13 advising on a direction towards a standard is more logical.
14 Advising on the base standards that should be used to create
15 an interoperability direction is more important.

16 It is important that you do not mandate that
17 these standards be implemented as they are today, just as if
18 we had mandated that Blue Ray would be locked in place at a
19 time when it had various concerns.

20 In conclusion, NIST should be commended for what
21 it has accomplished in gathering a very large stakeholder
22 community and developing an open process with significant
23 open status reporting.

24 I suggest the following possible next steps:

25 Require future proposed standards to FERC to be

1 in the SGIP Catalogue of Standards through an open,
2 transparent consensus process.

3 Assemble an implementation and roadmap working
4 group of those who are responsible for the equipment,
5 safety, and reliability, and cost effectiveness of the Grid.

6 Require phase three of the NIST plan to be
7 implemented, assuring testing and certification of
8 interoperability and conformance to standards.

9 Clearly define and articulate a process that
10 matches the standards coming through the Catalogue of
11 Standards process to show their relevance to the Grid, the
12 process of implementation, and the roadmap for their
13 implementation.

14 Adopt the five standards that were selected prior
15 to the current process being complete only when clear
16 implementation and roadmap issues are defined and
17 articulated.

18 MS. SIMLER: Thank you. Mr. Bochman?

19 MR. BOCHMAN: Thank you. Good afternoon,
20 Chairman Wellinghoff, Commissioners, staff, and all
21 involved:

22 I want to thank the Commission for convening this
23 conference, and for the opportunity to provide a few
24 remarks. I am Andy Bochman, a former Air Force
25 Communications and Computer Officer, veteran of several

1 cybersecurity startups, and today Energy Security Lead for
2 IBM's Software Group's Rational Division, which focuses on
3 making software tools. What we say is, here we work to
4 ensure that the software out of which the Smart Grid is
5 being constructed is itself secure. I note that my comments
6 today are my own and don't necessarily represent those of my
7 employer.

8 I have also been a blogger on energy topics,
9 energy and security topics, since 2004, including the Smart
10 Grid Security Blog, and the DoD Energy Blog. A lot of what
11 I know comes from my interaction with people in the social
12 media through blogs and other means.

13 I have also been a member of government and
14 industry working groups, including the CSWG and Gridwise
15 Alliance. And sometimes, though I wish it were otherwise, I
16 am a developing nontechnical.

17 With FERC poised to recommend these
18 standards--and I now see that "poised to recommend" is way
19 too strong--with us at this juncture looking at IEC 62351
20 and others for consideration, there is a distinct
21 possibility that state public utility commissions and other
22 regulatory organizations might quickly promote them to fill
23 what they see as a significant void in guidance.

24 I ask you to consider the activities that led to
25 the development of these draft standards, a thorough

1 learning and warmup exercise, that puts us in an excellent
2 position to now get it right.

3 Actually, this is my main point. As this panel's
4 task is to consider and comment on the future of these
5 processes, I suggest we allow enough additional time going
6 forward--and I realize I may be asked exactly how much--
7 enough additional time going forward to do two things:

8 One, to adjust how we do this job based on what
9 we've learned to date.

10 And two, to set future milestones that are
11 aggressive, but not so aggressive that they significantly
12 impact the quality of what we build that that quality
13 suffers.

14 I will touch on some of the topics that we were
15 asked to consider in our instructions.

16 How changes to the existing NIST processes for
17 identifying standards for consideration will promote
18 information sharing transparency and consensus development:

19 My experience with the standards development
20 process so far has been that it provides all three of these
21 desirable attributes in abundance. Community members--
22 excuse me, in abundance, with minor exceptions, including
23 the cost of the IEC standards and some others.

24 Community members generally have as much access
25 and as loud a voice as their time, energy, and experience

1 allow.

2 The role of the SGIP committees and working
3 groups in providing input for development and identification
4 of standards:

5 It seems to me that providing thoughtful input is
6 what these groups are all about. I have had direct
7 experience with the CSWG and some of its subgroups, have
8 participated in conference calls, and reviewed drafts, and
9 to me anyway it is amazing how dedicated these teams of
10 experts are at getting the standards fleshed out as quickly,
11 accurately, and comprehensively as possible.

12 We had a couple of miscellaneous points in a row
13 to consider, and I will just go right at them in a group.

14 The time and expert human capital required to do
15 this work well are substantial. The standards before us
16 today have not had nearly enough cybersecurity--in my
17 opinion--have not had nearly enough cybersecurity scrutiny,
18 as evidenced by the fact that experts and informed lay
19 persons alike have found glaring security problems with
20 them.

21 Lastly, my interactions with them reveal that
22 power industry security professionals have a wide range of
23 familiarity with the SGIP and other security-related
24 standards, with many dozens of highly skilled practitioners
25 leading the way at our larger utilities, but also with

1 diminishing expertise and capabilities in smaller
2 organizations.

3 In addition to these, here are three
4 cybersecurity-related issues relating to the five
5 foundational standards that I think merit greater attention
6 in the near term.

7 One is, implementation and measurement, or
8 metrics for cybersecurity--standards-based cybersecurity
9 controls across the Grid and the Smart Grid.

10 Another is greater emphasis on lab testing for
11 efficacy and adoption effects of new and updated products.
12 And as Stuxnet showed us, we need greater attention to
13 supply chain security issues.

14 Last, better forensics and preparations for
15 recovery from successful cyber attacks by utilities and
16 regional operators.

17 In summary, as we consider the status of these
18 foundational standards we need to remember that, while the
19 perfect is the enemy of the good; the not-good-enough must
20 also be avoided. But I also agree with Frances on panel one
21 that these standards that were born of urgency and
22 tremendous effort, that we need to keep the urgency up, keep
23 the pressure on.

24 Given more time, I believe we have in us,
25 collectively, the experience and expertise to craft guidance

1 and standards that will ensure very strong outcomes for the
2 Grid and the Nation, and FERC's willingness to hear from the
3 industry's developers is a good indicator that the results
4 will be positive.

5 I would be happy to answer questions. Thanks.

6 MS. SIMLER: Thank you, Mr. Bochman. And our
7 last panelist on this panel, or actually our last panelist
8 period, Jennifer Sanford. And thank you so much for being
9 available to substitute for Mr. De Martini.

10 MS. SANFORD: Thank you very much for including
11 Cisco. Good afternoon, Chairman Wellinghoff, Commissioners,
12 and staff:

13 Thank you for the opportunity to speak. My name
14 is Jennifer Sanford. I am the Senior Manager for Smart Grid
15 Policy for Cisco Systems. I am here representing Paul De
16 Martini, who is our Vice President of Strategy and Chief
17 Technology Officer for our Smart Grid Business Unit.

18 Unfortunately, Paul's travel plans were
19 unexpectedly and inadvertently changed, and he was unable to
20 join, but he has asked me to speak on his behalf today.

21 Paul is a member of the Governing Board for the
22 Smart Grid Interoperability Panel. He holds one of the at-
23 large seats representing a broad industry perspective.
24 Prior to joining Cisco last spring, Paul was the Smart Grid
25 development--he led Smart Grid development and standards at

1 Southern California Edison.

2 Incidentally, I also represented Cisco during the
3 formulation of the Energy Independence and Security Act back
4 in 2007 and its debate in Congress, and within the
5 stakeholder community. And I currently serve as Cisco's
6 voting member on the SGIP, and as co-chair, along with Duke
7 Energy, of the Gridwise Alliance Legislative and Policy
8 Working Group. Today we would like to focus on three
9 areas.

10 First, the consensus achieved on the five
11 standards for your consideration.

12 The standards life cycle and implications for
13 implementation and regulatory adoption.

14 As well as important considerations regarding
15 intellectual property rights in standards development and
16 adoption, which has been alluded to earlier by other
17 panelists.

18 In terms of the five standards, we feel that they
19 are a good starting point to enable the 21st Century Smart
20 Grid that would be interoperable and secure. These specific
21 standards represent not only the broad industry consensus
22 achieved in phase one of NIST's three-phase work plan, but
23 they are the result of rigorous long-term development within
24 the IEC itself, including extensive global technical peer
25 review and approval.

1 The strength of the SGIP process and that of the
2 IEC and other SDOs is their process for continuous
3 improvement. So with that in mind, Cisco supports the
4 SGIP's consensus and vetting process that resulted in the
5 five standards being selected as the first for regulatory
6 consideration.

7 We believe that FERC's consideration of these
8 five standards could move forward today even with the
9 understanding that material technical gaps would be
10 sufficiently addressed prior to implementation, and that in
11 the context of the standards' adoption life cycle
12 considerations would be taken into account because we
13 believe these are vital to ensuring effective
14 implementation.

15 In terms of life cycle, as challenging as the
16 process for identifying the standards and the SGIP process
17 is concerned, it is only one of several critical steps
18 toward ultimate adoption in the utility system.

19 The FERC, state commissions, and public power
20 boards also need to consider the state of maturity of any
21 specific Smart Grid standard, including the extent to which
22 there are established compliance and interoperability
23 testing regimes, products for multiple suppliers that are
24 widely commercially available, successful reference
25 implementations, and systems architectures and roadmaps

1 detailing the migration from a legacy system that also
2 ensures backwards compatibility.

3 So implementation of standards in products must
4 be tested for adherence to the standard as well as
5 interoperability and security. The testing needs to be
6 carried out by responsible organizations with recognized
7 testing protocols.

8 I think many of our colleagues walk through, you
9 know, the process for standards adoption in a process
10 itself, but also within the industry before it gets deployed
11 in the utility system.

12 From a regulatory standpoint, we believe that the
13 FERC, state commissions, and public power boards need to
14 consider the maturity of the utility adoption before
15 defining or requiring standards' adoption. In fact, in some
16 cases, the FERC may want to consider in its rulemaking that
17 these products that are standards' compliant, commercially
18 available, that there's an effective transition plan and
19 cost effective deployment.

20 With respect to intellectual property rights in
21 standards, FERC has asked the panel to address lessons
22 learned from other sectors.

23 One lesson that Cisco has learned by developing
24 and implementing interoperability standards in the
25 networking products we deliver, standards like Ethernet and

1 Wi-Fi, is the importance of transparency and predictability
2 of licensing terms for patents that are essential to
3 implement standards.

4 Implementing interoperability standards may
5 require licenses to dozens, or hundreds of patents per
6 standard. Standards development organizations have
7 intellectual property rights' policies that specify that
8 participants will license patents essential to implement
9 standards on reasonable and nondiscriminatory terms, so-
10 called RAND terms.

11 Unfortunately there's no consensus on what
12 licensing terms are reasonable. This leads to a situation
13 in which businesses developing products that implement
14 standards have very little visibility into licensing costs
15 and terms.

16 As the SGIP process continues, it is critical
17 that participants in that process include information about
18 IP licensing as part of their evaluation of which standards
19 to recommend for industry adoption.

20 Where we're considering the selection of an
21 existing standard, knowing as much as possible about the IPR
22 policy under which that standard was created will help
23 industry participants make intelligent choices about which
24 standards to select and regulate--that regulators should
25 adopt.

1 Where SGIP recommends the creation of new
2 standards, those standards should be developed under
3 policies that provide participants and implementers of those
4 standards with information about what patents will be
5 essential to implement that standard and the terms under
6 which licenses to those patents will be made available.

7 Regulators need to consider the implications of
8 the intellectual property rights within any standard under
9 consideration for adoption.

10 Thank you.

11 MS. SIMLER: Thank you very much.

12 Mr. Chairman? Commissioners?

13 CHAIRMAN WELLINGHOFF: Thank you, Jamie. You
14 probably all heard my question to the other panel. It
15 hasn't changed. Same question: Please indicate for me
16 whether or not you believe there has been sufficient
17 consensus on this suite of five families of standards for
18 FERC to move forward?

19 If your answer is no, please indicate for me how
20 you believe it would be appropriate to proceed to ultimately
21 move those forward to us? And how long do you think that
22 would take?

23 MR. ASSANTE (By Videoconference): Chairman
24 Wellinghoff, I believe that there is not sufficient
25 consensus. And I do believe as a change to the path to get

1 to consensus we need to consider broader participation on
2 the part of experts, not only from the cybersecurity
3 community and control system community, but operators from
4 utilities, as well.

5 I think we need to remove the hurdles, as
6 discussed in earlier panels, and some of my panel colleagues
7 today in terms of access and transparency to the information
8 to make informed decisions.

9 I also believe that we need to evaluate the
10 security practices in a more comprehensive and broad
11 fashion. We have an opportunity here to bring in the
12 brightest minds from other technology applications and
13 fields and put them towards a challenge that will equally
14 impact all of us in the society, and I think that it is our
15 obligation to do so.

16 I think we also need to consider more specific
17 criteria for evaluating these standards aligned with the
18 goals we have established here in the United States, the
19 goals that were established through not only FERC but the
20 goals I believe that has been established by the great work
21 that the NIST organization has been able to accomplish in
22 terms of what we want here in the United States out of our
23 systems.

24 That would include, in my opinion, a process to
25 take a look at the reliability, safety, and of course

1 security as these technical standards would play into
2 utility operations as discussed in the earlier panel as
3 well.

4 And as far as time length, I believe that some of
5 that reprocess engineering could, if we do implement a
6 concept of adoption in terms of graduated levels, you could
7 accomplish this in a matter of months. But if it is an
8 adoption in terms of a single hurdle to be passed for
9 regulators, I think it might take a year or beyond to make
10 those engineering changes and allow for adequate review and
11 broader participation.

12 CHAIRMAN WELLINGHOFF: Thank you.

13 MR. AMBROSIO: My opinion would also be that we
14 have not reached adequate consensus. So I agree with my
15 colleagues on both panels so far.

16 In terms of how to move forward on that, I think
17 part of it is that, as you have heard, these standards came
18 through sort of in parallel with the existing SGIP processes
19 that have evolved and are still evolving.

20 The suggestion of having a requirement that
21 standards be in the Catalogue of Standards before they be
22 brought forward may be one way to address this, because it
23 would cause us to go back and reinsert these standards, not
24 necessarily from the very beginning of the process, but at
25 some appropriate point, and they would then benefit from the

1 additional review steps that we've added. For example, just
2 in September making sure that the Cybersecurity Working
3 Group and the Architecture Committee that I chair are part
4 of the closeout process of PAPs.

5 The other thing that is in progress that I think
6 will be helpful, and is certainly going to continue this
7 evolution on the SGIP process, is work that is going on in
8 the Architecture Committee to move from the conceptual model
9 that we had developed for the workshops in 2009. For the
10 past five months we've been developing a much more detailed
11 conceptual architecture, high-level conceptual architecture.
12 That's going to be a tool for us to use in both assessing
13 the completeness of SDO work in Smart Grid architectures,
14 being able to assess GATs and compare the work of different
15 SDOs, including IEC where these standards are coming from.
16 And it also, combined with the Gridwise Architecture
17 Council's Interoperability Stack, will give us essentially a
18 two-dimensional tool for mapping where standards fit in the
19 overall scheme of things, and how they relate to each other.

20 Part of that conceptual architecture work--and
21 we're following a pretty traditional enterprise architecture
22 methodology called TOGAF, basically, was to begin with a
23 goals' analysis using all of the different goals' sources
24 that have fed into the SGIP process--national goals,
25 legislation reviews, things like that--and then develop

1 requirements from those goals. And then, basically winnow
2 those down to high-level requirements. And now we're
3 developing business services' interactions.

4 What that gives us is a tool that gives us
5 traceability back to the original requirements and goals, in
6 both directions, from the goals to particular business
7 requirements and system requirements, and eventually
8 standards, as we start to map the standards into the
9 conceptual architecture and the layers of the GWAC stack,
10 sorry, Grid Wise Architecture Council stack.

11 So I think a number of these things are going to
12 provide better tools for us to reach maybe a much more
13 comfortable level in the industry and in the SGIP on these
14 standards and others.

15 As far as how long will that take? The
16 conceptual architecture work is nearing its main development
17 completion in the next couple of months. We're beginning to
18 speak with SDOs on their architecture work. But there's
19 still quite a bit to do to make it into a usable tool,
20 perhaps mid-year. And then I think that may actually happen
21 in parallel with taking these standards and reinserting them
22 into the SGIP process at an appropriate point.

23 We still need to complete the development of the
24 process for getting things into the Catalogue of Standards.
25 So those can potentially happen in parallel. So perhaps by

1 mid-year we will be in a position to go back and take a
2 good, hard look at these and move forward.

3 CHAIRMAN WELLINGHOFF: Thank you.

4 DR. KUBE: As to the first question on sufficient
5 consensus, no, I believe consensus has not been reached.

6 And what can be done? I think step one would be
7 broader participation from the end-user stakeholders. I
8 think that is essential.

9 I think expanding the security scope to the
10 complete life cycle, not just the communications aspect.

11 I think establishing security metrics and a
12 minimum level technology independent for certification
13 criteria so these security controls can be verified.

14 And I think if the Commission decides to adopt a
15 graduated recommendation framework, I think that progress
16 can be made quite rapidly and I think we would be looking at
17 months rather than years.

18 Thank you.

19 CHAIRMAN WELLINGHOFF: Thank you.

20 MR. LONGCORE: So the question of consensus to me
21 is a multi-part thing. Is there consensus that the standard
22 is sound? Is there consensus that various parts of it are
23 relevant to parts of the Smart Grid? Is there consensus
24 that the standards should be implemented? And on what
25 timeline it should be implemented, considering stranded

1 costs and investment, vendor viability, conformance testing
2 and certification?

3 To those ends, I suggest that there needs to be
4 some form of an implementation and roadmap working group
5 that helps along those lines to reach another level of
6 consensus, but I do agree that standards need to go through
7 the now-evolved Catalogue of Standards process in order to
8 go forward.

9 What is the time frame for this? I don't believe
10 these standards are done, or will be done for a long time
11 period. As Frances mentioned, she just helped develop a new
12 portion of 61850. So this is an evolutionary process, and
13 it is important that a process be put in place to not think
14 that adoption means as of tomorrow all things must be this
15 standard. And I think that process could be created, and
16 portions of these standards could be fostered as the right
17 thing for utilities and implementers within the Smart Grid
18 to be using, to be basing product on, and to lead towards
19 conformance testing, this year.

20 CHAIRMAN WELLINGHOFF: Thank you.

21 MR. BOCHMAN: My response to the first question
22 is that we've not yet reached consensus to proceed. In
23 fact, it seems like we may have reached a consensus to not
24 proceed.

25 The second point is that--and some of this will

1 be echo--more security experts recommend more security
2 expertise be brought to bear, particularly with folks from
3 industry. Utilities' personnel have been doing a great job
4 for a long time, and also peers and experts from outside the
5 industry and other sectors, too.

6 I'll repeat that I think metrics to help us.
7 It's the old "you can't manage what you can't measure"
8 aphorism that we won't really know how we're doing, and we
9 won't really know whether the standards at any stage are
10 having the desired impact, why we're going this process in
11 the first place, if we don't have the mechanism to measure
12 what's going on in the field.

13 Lab testing, as mentioned in the previous
14 comments, could be an important part of that. We keep
15 saying to ourselves we're going to build security in this
16 time, or we're designing the system for security, and yet
17 we're here talking about standards that, like I said,
18 experts and lay people alike see as flawed from a security
19 point of view.

20 They're never going to be perfect, but I think
21 right now the consensus is that they are too far from
22 perfect, too far from very good to want to proceed for that.
23 And we have two audiences to persuade here, to convince.

24 We have first ourselves. You can imagine a
25 future meeting where we actually have the majority that says

1 they are ready, they are pretty good, and those gaps that
2 are there, it's within sight that we're going to close
3 them.

4 Once we convince ourselves, then we have the
5 public to convince by showing, not just by saying "don't
6 worry about it, it's all set, we've got it," but by actually
7 showing them to the extent it's reasonable what we've done
8 to make sure that the whole system, including their part of
9 it, is safe and secure.

10 And in terms of timeline, I'll say it's months.
11 It's a shot in the dark, but maybe it's 12 or 18 months.

12 CHAIRMAN WELLINGHOFF: Thank you.

13 MR. BOCHMAN: Thank you.

14 MS. SANFORD: Can I say "both," in different
15 ways? It strikes me that the rulemaking itself is a
16 process, and that in the legislation, and perhaps, you know,
17 being part of the legislative development process myself,
18 you know, the legislation, it seems to me, really points to
19 the fact that standards are a means to an end, not an end in
20 and of themselves.

21 And, that the rulemaking in my view is really
22 about this issue of ensuring interoperability and
23 functionality of the Smart Grid. And, given that that's our
24 end goal, it seems to us that we may be putting the cart
25 before the horse in the sense that we really need

1 architectural plans established to ensure that the
2 interoperability and functionality is there. Then, a
3 migration roadmap that will sort of be the rungs on the
4 ladder, if you will, that will then help the utility
5 transition, and all of us to help transition from a legacy
6 environment into a much more interoperable environment.

7 The standards are a means of getting us there.
8 And so to the extent that these standards provide, you know,
9 a platform to start back discussion around functional
10 requirements and needs of the Smart Grid, in my view that's
11 what--that's what the rulemaking, it appears, would cover.

12 And all of the standards in the NIST SGIP process
13 will require continuous improvement. Nothing will be set in
14 stone. It occurs to me that those sort of functional
15 requirements, what's the end-goal we're looking for, that
16 appears to be the most important element here. And the
17 standards is a means to achieve those goals.

18 So no, as a technical matter, clearly the
19 standards need to be improved, in and of themselves. I
20 think the process will continue to evolve as we get
21 information from those who are involved in it. And, that
22 the standards need to be put in the context of a broader
23 sort of architectural view and migration roadmap.

24 CHAIRMAN WELLINGHOFF: Thank you.

25 I think Commissioner Moeller has a question.

1 COMMISSIONER MOELLER: Thank you, Mr. Chairman.

2 This is a question primarily for Mr. Longcore,
3 although anybody who has any thoughts on it please feel free
4 to add them.

5 As a load-serving entity, and Consumers is
6 vertically integrated, I don't know the status of your meter
7 network but certainly there are utilities out there--I think
8 of a Southern California Edison putting 8- to 10,000 what
9 they would call "smart meters" in per day. And given that
10 the standards development process is going to take awhile,
11 it may be infinite in one sense, what do we do in the
12 meantime? Or what is the state of Grid security and related
13 topics while we search for standards, and in the meantime
14 the world is not waiting? Both through Stimulus funding and
15 other reasons, advanced metering is in some cases a pretty
16 aggressively--is being rolled out in an aggressive
17 fashion.

18 So again, as the LSE member of our panel, I
19 direct the question first to you, but open it up to anyone
20 who has relevant thoughts.

21 MR. LONGCORE: So standards will always evolve,
22 and yet it's interesting that when people look at Grid
23 reliability they look at the meter as the entity within the
24 Grid as we look at EMI on cybersecurity issues.

25 And yet if you look at the Department of Energy's

1 definition of what the Smart Grid is, it's the
2 digitalization of every form of generation down to every
3 form of consumption.

4 And if my iphone is growing more intelligent, and
5 other devices on my premises, whether commercial,
6 industrial, or residential are growing more intelligent, if
7 those devices can be aggregated by an entity, and their
8 energy usage can be significantly curtailed, whether through
9 the Internet or through the utility's Smart Grid system
10 through the meter, the energy flows of the Grid are affected
11 in the same ways.

12 So as we look at the one device, the meter on the
13 side of the home, many other digital devices--your Blue Ray
14 player now surfs the Internet for you to pull down NetFlix,
15 which in December was half of the Internet traffic.

16 As we move forward, that shift requires that we
17 look at evolving standards, whether for the utility's
18 device, the meter, the device that switches energy flows, or
19 other entities, the devices within the homes, all of the
20 participants within the Smart Grid, security is something
21 that we all must wrestle with and we all must continuously
22 evolve to get past those who can--are doing the same fight
23 on the other side of that dime.

24 Utilities understand that, and we face that every
25 day in many of our systems. But when we look at that larger

1 Smart Grid, the meter is not the only end point. It's only
2 one of many end points that will switch energy flows.

3 CHAIRMAN WELLINGHOFF: Commissioner LaFleur has a
4 question.

5 COMMISSIONER LaFLEUR: Thank you. I just wanted
6 to pick up on one comment of Mr. Ambrosio. One of the
7 things I found most troubling, or difficult, about this area
8 is just the sheer comprehensiveness and volume of the work.
9 I mean, we heard a lot about it today--you know, 3,500 pages
10 and \$25,000 just to look at them, and there's 75 more
11 coming.

12 And I was really struck by your comment I believe
13 in your testimony that we need to stay focused on the key
14 interface points and avoid mission creep. And I wonder if
15 you could comment. Do you think we have consensus on what
16 we should be working on? Is this conceptual architecture
17 the way to get there? Or do we need a process just--or is
18 the process that we're trying to address before we even
19 figure out how we're going to do it understood? Or is there
20 even a need to develop a consensus around that?

21 MR. AMBROSIO: Well the process is still
22 evolving. I think we will have to continually address
23 consensus on that process, or the pieces of it. You know,
24 this is going to be a living process. So I think that's
25 just something that will be part of our sort of business as

1 usual.

2 I think that the mission is understood, but I
3 think, as I said in my testimony it's very easy to sort of
4 creep past that. When we're talking about, you know, for
5 example the interface between the distribution system and
6 premises, you know, residential building systems, whatever,
7 the Gridwise Architecture Council had originally categorized
8 industrial to Grid, home to Grid, building to Grid, and the
9 original DEWGs were based on that categorization.

10 The reason that I said that we needed this
11 conceptual model, which is a very different purpose than the
12 architecture work we're doing now, it's sort of a much
13 higher level, sort of management and educational tool. So
14 that we don't go creeping into every place and trying to
15 basically--there are complete industries within each of
16 these domains, multiple industries in some of the domains,
17 especially the customer domain, and there's a lot of work
18 going on in those particular stakeholder communities to
19 address how the multiple products, the multiple technologies
20 co-exist.

21 We shouldn't allow this process to then add yet
22 another parallel community that is defining the same, or
23 dealing with the same issues. We ought to focus on the
24 interface between that premises and the Grid, as opposed to
25 mandating what should be inside of that premises.

1 If we do interoperability standards and design
2 correctly, we can allow multiple things behind that
3 interface. And we can allow technology--you know, what's
4 state-of-the-art today in communications is going to be old
5 in 10 years. We don't want to have to re-architect all the
6 application layers, which is really where a lot of the big
7 investment comes.

8 You know, you don't want to re-write the
9 solutions. So I think it's important to keep on revisiting,
10 you know, are we looking at the right things? And not
11 things that we ought to allow more competition, and allow
12 other communities to deal with.

13 COMMISSIONER LaFLEUR: Thank you.

14 CHAIRMAN WELLINGHOFF: Thank you.

15 MS. SIMLER: I'm got a question, and then I'll
16 turn to my colleagues.

17 Focusing again on the process going forward, I
18 think that I'm hearing from several panelists that if we
19 have a--if the process is right, then this process, the SDO
20 process, has the inputs of broad participation and is
21 transparent, that that helps us answer the question of
22 consensus. And so I wanted to see if I'm reading too much
23 into people's comments. So if you can go down the line and
24 answer that.

25 And then my follow-up question is: If people

1 agree with that, how would we go about ensuring the broad
2 participation in the process? As we heard George Arnold
3 speak at the beginning, they had a bunch of processes at the
4 beginning. And I heard yet some of our panelists say that
5 they were unaware of it, or that they didn't participate in
6 it. And so it seems to me that that is an issue that needs
7 to be corrected if we really want to rely on a process to
8 build consensus and be able to rely on that process for
9 bringing standards forward for this Commission's
10 consideration.

11 Mr. Ambrosio, would you like to try to respond to
12 that long-winded question?

13 MR. AMBROSIO: So the first part of your
14 question, I think you did hear correctly in my comments. I
15 do think that having a well-defined process for involvement,
16 participation, as well as transparency does help with
17 consensus. It does help mitigate I think some of the
18 problems. It doesn't solve it all, and it's still--
19 consensus is a hard thing.

20 The second part of your question, though, I think
21 part of the challenge--and now I will absolutely say I am
22 not speaking on behalf of my employer, these are my own
23 opinions--I think that part of the problem, part of the
24 challenge is that it is an investment to participate in any
25 process. You know, it's an investment to participate in

1 standards.

2 When I have somebody in my team that I want
3 participating in a working group in a standards body, my
4 recommendation is usually "assume 20 percent of your time,
5 if you want to have any real, significant involvement."
6 That is not cheap.

7 As well as NIST is doing, and the administrator
8 are doing a fantastic job of trying to make this as
9 approachable and inexpensive to participate, and minimize
10 travel by making things remote, it's still a lot of time
11 investment. And I don't think, especially in the regulated
12 utility business, they have the luxury of that investment.

13 So part of the problem may be that the
14 commissions have to give some thought to allowing rate
15 recovery, or whatever the right process is, to enable them
16 to participate more. And then encourage it. And that
17 encouragement could come from a combination of FERC and the
18 state commissions, perhaps. But I think that's part of the
19 problem.

20 DR. KUBE: Thank you. So I think your initial
21 question, I think you're reading into it quite correctly. I
22 think that there is the avenue for consensus.

23 I echo Mr. Ambrosio's point with resource
24 requirements. It's the 20 percent that's exactly the same
25 number that I estimate for our researchers to participate,

1 if they're going to be effective in these various groups.

2 Given that, I think the scope of this work is
3 very large, and I think that there's also a very steep
4 learning curve on how to organize it, and how to obtain the
5 right information in the most efficient manner.

6 So I think the original efforts and the
7 evergreening, if you will, of the processes from those
8 initial efforts, I think that will help refine the process
9 to a point where, instead of N groups, maybe there should be
10 N-2 groups with a more clear mandate as to what the output
11 should be, and really pay attention to scope creep, and
12 answer particularly the questions that the group that may be
13 in the main purpose of the group, again recognizing the fact
14 that from industry resources are limited. Security experts
15 are nontrivial to find. They take time to train. They take
16 experience in the field. And they are a highly valuable
17 commodity.

18 And so if I am going to allocate or commit
19 resources, staff, to these sorts of efforts, I want to make
20 sure that their participation comes with some degree of ROI.
21 That ROI does not have to be financial. It could be as much
22 as, there is an end to this process; it's not in perpetuity.
23 And so that's really kind of what I would feel.

24 Thank you.

25 MR. LONGCORE: So on the question of consensus in

1 the SSOs, first we must realize that this Smart Grid is such
2 a large entity that it is an amalgamation of standards from
3 the IETF, from the IEC, from many, many standards
4 organizations. Each of those organizations has a different
5 consensus process.

6 Changing ANSI's standards process to match the
7 IEEEs or some others would be a wholesale change to those
8 base organizations. So what consensus is likely in the
9 Smart Grid should focus back on the one organization, NIST,
10 and look for what is the consensus to reach the Catalogue of
11 Standards.

12 When looking out to all those other organizations
13 which are the SSOs which all have different consensus
14 process, how do we take those standards and bring them to a
15 cohesive consensus process that their standards are relevant
16 for the Smart Grid, and then that they are ready for
17 implementation and a roadmap for change within the Smart
18 Grid.

19 As far as resources, I echo Ron's comment. As a
20 utility, it is very difficult to view things as the needs of
21 the many outweigh the needs of the few. And when you are
22 spending resources to make sure that the needs of the many
23 are taken care of, sometimes it's not understood by various
24 commissions.

25 So I am lucky I have a good commission. Not all

1 utilities face that, and find it difficult to bring
2 resources into this needed work.

3 MR. BOCHMAN: Without debating what "consensus"
4 is, I would just say I think we'll know it when we see it.
5 As I said earlier, this example today is an example of
6 consensus, it's just the other one, the precursor to the
7 future consensus where we feel like we've made significant
8 progress and we're ready to plow forward, plowing in with
9 the five foundational standards and others that are built
10 upon them. So that's my feeling about consensus without
11 getting too theoretical about it.

12 In terms of process improvements, this may be the
13 feel-good answer but it seems like more of this--not
14 necessarily exactly like this--but more of this, moments
15 amid the fury in incredible amounts of work, moments of
16 reflection and introspection, self-analysis about what do we
17 have right, what do we have wrong, and maybe get some people
18 involved--and maybe they are--people involved who aren't
19 part of it.

20 It's crucial to have people who are right in the
21 center of it be involved, but sometimes it may be hard to
22 see what's going on when you're too close to it, too. So
23 more of this.

24 And then ever since I've been involved in the
25 Smart Grid and Smart Grid security movement, initiative, I

1 always--I've noted, and now here it's stated here, that I
2 would always like to see more utility involvement. The
3 utilities I work with are spread so thin--everybody is
4 spread thin, but they're spread really thin, and their voice
5 needs to be as loud as possible when we're doing work like
6 this.

7 Thanks.

8 MS. SANFORD: Changes to the process. We feel
9 that SGIP and the NIST process itself should give preference
10 to those standards that are developed in an open and
11 transparent process with their IPR policies in particular,
12 what I was referencing before.

13 If not, we could end up in a situation where
14 there would be things like patent holdup, and other sorts of
15 anticompetitive behaviors that could in the end delay
16 implementation of some of these vital technologies that
17 could get Smart Grid functionality going down the right
18 road.

19 In terms of ensuring broader participation, my
20 sense from a regulatory perspective, as I handle regulation
21 and policy, it strikes me that FERC indicating how it
22 intends to use the standards. The legislation wasn't very
23 specific about--I mean, the rulemaking, obviously FERC has
24 very broad authority in terms of what a rulemaking could
25 entail. And so, you know, would FERC just adopt standards

1 and say these are important for the, you know,
2 interoperability and functionality of the Smart Grid?

3 My sense is that FERC may want to take the
4 rulemaking process a little broader than that, as others
5 have been saying, and what are these standards being used
6 for? What type of value are they delivering?

7 And that looking at this from a more sort of
8 architectural and roadmap point of view of how the standards
9 then fit into sort of advancing those roadmaps I think might
10 be a valuable exercise for the Commission to consider. And
11 if it were to put the standards in that kind of context, it
12 may drive participation in the standards process. Because
13 organizations under the FERC's authority would have the
14 broader context to understand why they would need to be
15 involved in the standards development process, because it
16 would relate to FERC's authority in meeting their
17 requirements under the Energy Independence and Security Act.

18 MS. SIMLER: Thank you. Oh, Mike Assante.

19 MR. ASSANTE (By Videoconference): I'm sorry,
20 being the virtual member of the panel--

21 MS. SIMLER: I apologize.

22 MR. ASSANTE (By Videoconference): I think you
23 have that right. That's okay. I think you have that right,
24 and I do believe that the efforts to manage to consensus as
25 it relates to measuring the alignment of the technical

1 standards, specifically with U.S. Smart Grid goals as stated
2 by FERC, NARUC, also as stated I think through the good work
3 of NIST, I think there are certain things that we can do.

4 One, we talked about the removal of hurdles to
5 allow more open access to experts so that there's no up-
6 front cost to be involved in the process.

7 I think you're heard from the utilities in
8 particular, and others, that having a clarity around the
9 implications of adoption of these technical standards and
10 what that means from a regulatory standpoint is a very
11 important element that will drive greater participation of
12 especially those having interest in having to manage through
13 those implications.

14 I also believe that we need some outreach efforts
15 to new partners. That would include in the discussion here,
16 we heard earlier from Southern that participation by the
17 partners such as NERC in the process in a more rigorous
18 fashion is an industry around reliability and cybersecurity
19 is probably warranted and needed.

20 And I also believe that if you look at
21 cybersecurity experts outside of this industry, those that
22 you want to attract to this initiative to look at these
23 technical standards and provide thoughts and solutions, we
24 might even have to have resource valuations based on the
25 criteria we just discussed in terms of alignment with

1 goals.

2 Without that, it will be very difficult to assume
3 that these busy people in the cybersecurity domain would
4 stop what they're doing and focus needed attention on what
5 is really a society challenge.

6 So I would suggest that further reflection on how
7 we could attract that type of talent to this problem set
8 would be well warranted.

9 MS. SIMLER: Thank you.

10 MR. McCLELLAND: I think I will pass this time
11 and allow more time for staff questions.

12 MR. MORENOFF: This is mostly a question to
13 Dr. Kube and to Mr. Longcore. I think that both of you had
14 noted the concern that there needs to be a part of the NIST
15 process in which the ultimate end user utilities that are
16 going to be primarily responsible for implementation have an
17 adequate opportunity to do vetting, and so forth.

18 Do you see that need as primarily related to a
19 problem in the existing process that is preventing it from
20 happening? Or more resource oriented as some of the
21 responses were indicating in response to Jamie's question?

22 MR. LONGCORE: I think the current process is
23 focused around finding a standard that is technically viable
24 and should be used. It is not focused around, as of yet,
25 what the implications of that standard are in

1 implementation. And as George Arnold mentioned, the third
2 phase of NIST is the implementation of that testing and
3 certification of conformance and interoperability.

4 For the utilities and consumers and others who
5 will implement devices within the Smart Grid, it is that
6 phase of testing and conformance, understanding the
7 implications of that roadmap to stranded costs, to, you
8 know, the costs within a utility, a consumer, or others,
9 that is going to enable that expenditure.

10 I don't think FERC or any state commission wants
11 to mandate something that is going to mean early
12 obsolescence of all equipment within utilities, and therein
13 I think it is incumbent upon us to look at the cybersecurity
14 concerns, to look at the implementation concerns, and
15 understand how do we implement this roadmap towards the
16 future of interoperability.

17 DR. KUBE: Thank you. With respect to
18 participation, I think participation comes down to
19 understanding the value proposition. What are the
20 implications?

21 So if the implications are understood, then the
22 appropriate stakeholders will get involved. I think that
23 just comes together.

24 With respect to why greater participation from
25 stakeholders, end-user stakeholders needs to exist is

1 primarily because, like I alluded to earlier, they are
2 responsible for operationalizing the security and
3 maintaining strong security posture over time.

4 So as far as the key information that these end
5 users can bring, and we've seen it again successfully in oil
6 and gas and other industries that we work in, is really what
7 are their requirements? What are their policy requirements?
8 What are their patching requirements? What qualification
9 criteria do they need to ensure from the supply chain? How
10 can they ensure that the solutions they're buying are in
11 some ways future-proof? That they're not deploying already
12 obsolescent technologies.

13 And so I think it is very important to get their
14 perspective. Again, the folks who are left kind of holding
15 the bag at the end of the day.

16 MR. MORENOFF: Just following up on that, I
17 assume that NIST would agree with everything you just said
18 on the second part. And yet you said that there's not
19 adequate participation. So I guess I would ask again, do
20 you see a--what is the obstacle, do you think, to that
21 participation?

22 DR. KUBE: Well understood implications.

23 MR. MORENOFF: Thank you.

24 MS. SIMLER: Annabelle?

25 MS. LEE: A follow up question to all of you. In

1 talking about revising the process, and I appreciate that
2 the SGIP and the Governing Board are spending time to really
3 look at the process and make revisions to it, but this is
4 almost "who is watching the watchers?"

5 Who should be involved in developing the process,
6 and then vetting it to ensure that it meets everybody's
7 needs? You have not only--you talk about the utilities--but
8 the regulators, the implementers, and the vendors. Once
9 that process is revised, who is going to bless it? How is
10 that going to go forward so that people will accept then the
11 results that come out of that process? And who is going to
12 help develop the criterion to vet all of that?

13 MS. SIMLER: Michael, do you want to go first?

14 MR. ASSANTE (By Videoconference): Well I was
15 hoping that time I would go last.

16 (Laughter.)

17 MS. SIMLER: To keep you on your toes.

18 MR. ASSANTE (By Videoconference): That's right.
19 I think it's a very good question. Annabelle. I believe
20 that the stakeholders as defined by the governance structure
21 of the Smart Grid efforts to date reflect the ultimate
22 review of whether we get this right.

23 There is a combination of the public, major
24 stakeholders like the Department of Defense as a major user
25 of electricity, the utilities themselves, the public utility

1 commissions that help to look after the public. I think all
2 of those are the body that has oversight to whether we have
3 gotten this process right.

4 I think this dialogue today has suggested that
5 there's some elements that are missing. I do believe and
6 trust in both NIST working with FERC and other partners that
7 they can go back and take a look at these comments and
8 figure out how to engineer the process to remove some of
9 these hurdles and to seek consensus.

10 Ultimately I believe having another one--at each
11 step where we make a decision, FERC as a Commission has a
12 very open public process to help inform the Commission on
13 decisions. So these are the opportunities to see if we got
14 it right. So I believe we have those engineered into the
15 system as it exists.

16 One last element I would like to suggest is that
17 being a former asset owner and working with FERC as part of
18 NERC on the process of placing requirements on the users of
19 technology in order to gain and achieve system security as
20 one of our Smart Grid goals, it is very important to
21 recognize that this process give us a tremendous opportunity
22 to send an important message, which means we are sharing the
23 burden of security across the entire life cycle of
24 technology and we must set expectations on those who
25 actually design, develop, provide, and integrate this

1 technology in what will be a future society system.

2 And I think that is exactly what we are doing
3 here today, and I just want to thank the Commission for that
4 opportunity.

5 MR. AMBROSIO: So I think the pat answer,
6 Annabelle, is we all have to be looking at this. And I
7 think to some extent that's what's happening.

8 The first responsibility is with George's team
9 and NIST, and with the SGIP Governing Board. You know,
10 assuming that it's been formed with broad stakeholder
11 participation and representation, it should not be a biased
12 body. That's certainly the intent.

13 The process for providing input is--you know, in
14 my opinion, has been very open. And so I haven't had a
15 concern about will this process continue to evolve and get
16 better. I believe it will.

17 I think the real heart of your question is, okay,
18 once we have something that has gone three, four more
19 notches in maturity, you know, what's the other set of eyes
20 that go and look at it? And I think it is NIST, FERC, DOE
21 who are the real core triumvirate on the federal side.

22 But, you know, I think it's very easy for anybody
23 to provide input and opinions, one way or the other, because
24 it's all very open.

25 DR. KUBE: A tough question. I think that the

1 processes that are currently in place, I think many folks
2 have iterated areas of improvement. I think those areas of
3 improvement will result in a stronger set of processes
4 across the board.

5 I think the Governing Board of SGIP I think will,
6 given a accurate or more reflective membership participation
7 of folks, I think that that is key.

8 And then I also think that the continued
9 interaction with NIST, FERC and, as you mentioned, DOE, to
10 provide a set of kind of checks and balances, if you will,
11 once the processes have come to a set of recommendations, I
12 think that that would be a powerful solution.

13 So I think my--not to dodge the question, but
14 time, and iterative improvement. Thank you.

15 MS. SIMLER:

16 MR. LONGCORE: So I wish I could dodge the
17 question. I think if I look at the EISA Act of 2007 it says
18 that NIST is responsible to reach that consensus, and
19 FERC--paraphrasing--is responsible to be a check and balance
20 to assure that that consensus was reached.

21 I would say, therefore, that it is incumbent upon
22 the two organizations to work together because you have to
23 be the check and balance to assure that NIST has reached
24 that. And it is incumbent upon NIST to put in place
25 something that looks at what those life cycle and roadmap

1 implications are for these standards.

2 Taking out of that, then, also Ron's comment, I
3 think all industry participants on all side of the Smart
4 Grid, and literally that means unfortunately almost
5 everybody on this planet, needs to be concerned when
6 somebody asks, well, how do you get more people involved.

7 We have to be careful that this doesn't become
8 such a large consensus group that it doesn't get anything
9 accomplished. So as those of us who are concerned might
10 help, I think it is incumbent upon your two organizations to
11 achieve that process.

12 MR. BOCHMAN: Yes. It's like a
13 point/counterpoint. But if we have too many people as part
14 of the process, it gets diluted and there is no ownership
15 and we will be having these festivities for a long time.

16 My colleague, Ron Ambrosio, is really smart. I
17 think we should let him decide.

18 (Laughter.)

19 MR. AMBROSIO: Thanks, Andy.

20 (Laughter.)

21 MR. BOCHMAN: A single point of failure.

22 (Laughter.)

23 MS. SANFORD: What was the question again? About
24 changes to the process itself, who should promote that? My
25 sense is that there is an established process to make

1 changes to the bylaws for the SGIP. I think NIST could
2 develop a proposal that would go to the SGIP membership for
3 their consideration and a vote.

4 I think as others have said, FERC has, through
5 the legislation, its ability to define what they feel is
6 meant by a consensus. And I think there's also possibly a
7 role for Congress in its oversight function to also, you
8 know, see how this is working, if it's working. And if the
9 right procedures are in place and we're achieving the
10 outcomes that they intended under the law.

11 MS. SIMLER: I think we had one last staff
12 question, and then we will proceed to invite George Arnold
13 back up to the table for a wrapup, unless our Commissioners
14 have anything.

15 MR. KELLY: I had a quick question for
16 Ms. Sanford on your comment a short time ago that it would
17 be helpful if FERC would indicate how it intends to use the
18 standard.

19 Since you participated in the NIST process a lot,
20 do you think it would be feasible for the NIST participants
21 to indicate what uses the standard is ready for, like
22 generation adoption, or general direction versus detailed
23 adoption of every element of the standard?

24 And I ask because there's not only how FERC might
25 use the standard. There's how state commissions might

1 mandate adoption, how utilities might be making purchasing
2 decisions as they implement their Smart Grid funding
3 authorization, and as manufacturers make decisions about
4 what standard to manufacture to. It seems that it's more,
5 and that might be helpful to FERC to know what uses you had
6 in mind as you put a standard up for posting, and help other
7 people decide, too.

8 MS. SANFORD: I think that makes a lot of sense,
9 and actually that dovetails on what Ron was suggesting
10 around the interface points and the overall architecture
11 where the standards--what functions they would perform and
12 in which domains.

13 So I think that's the right way to think about
14 it.

15 MR. KELLY: Thank you.

16 MS. SIMLER: With that, I would like to thank our
17 panelists. I appreciate it very much.

18 And, George, if you wouldn't mind coming up to
19 the table, that would be great, and have a wrapup--I'm
20 sorry? You're welcome to stay. Otherwise, George, please
21 have a seat. Thank you.

22 MR. ARNOLD: Thank you. Well, it's been a very
23 interesting day.

24 As I stated at the beginning, NIST's purpose in
25 its October transmittal was not necessarily to recommend

1 that these five standards be adopted by FERC, but to begin
2 the discussion of the policy questions of how do we move the
3 standards coming out of the process into regulation. And so
4 we've certainly I think today seen how complex this is.

5 I have a couple of observations based on the
6 comments that have been made today. One observation is that
7 it seems to me that this question of what adoption means is
8 really critical, and it would be very helpful in moving
9 forward for the Commission to clarify what its intent is
10 with adoption.

11 If adoption means that the standards adopted by
12 FERC become mandatory, my--and that, by the way, in
13 listening to the comments, almost everyone assumes that
14 that's what it means; that "adoption by FERC" means the
15 standards are mandatory, there's compliance, there may be
16 penalties if they're not used.

17 We've also heard that we have an evolving process
18 here, and one of the elements with the SGIP and the
19 Catalogue of Standards is that there would be some formal
20 action taken by the SGIP to decide to put things into the
21 Catalogue.

22 We've also heard that the process for that is not
23 yet in place, right? And so my prediction is that if FERC
24 says that the intent is to make the standards mandatory, we
25 will have no standards in the Catalogue.

1 It is impossible to expect a voluntary standards
2 process to decide what standards a regulator should mandate;
3 and if that is the course that we take, we will basically
4 stop progress in the consensus standards process.

5 So I think this really needs to be carefully
6 thought through.

7 The other observation I would make is that if the
8 route that we're going is mandating and checking compliance
9 with the standards, that puts FERC's role in this looking in
10 the rear view mirror, because then we will be checking what
11 the utilities, the appliance manufacturers, the EV
12 manufacturers have actually built and deployed and whether
13 it meets the standards.

14 We have \$4.5 billion of public funds that are
15 going to be spent over the next three years on Smart Grid
16 elements. They're not waiting for this process. That money
17 is being--the plans for how that money is spent--and by the
18 way, \$4.5 billion, when you count the private investments,
19 it's really \$11 billion. And so do we want to, you know,
20 use the regulatory process in the rear view mirror to check
21 at the end how that money was spent? Or do we want to use
22 the regulatory process to provide guidance, forward looking
23 guidance, on how the money would best be spent to achieve
24 Congress's objectives in EISA.

25 So I think it would be helpful to all concerned

1 if the Commission could think about this and provide
2 guidance to the community on how it intends to view the
3 concept of adoption.

4 By the way, I infer from statements that the
5 Commission has made, and I may be incorrect in this, but I
6 think the Commission has said on a number of occasions that
7 it does not believe that EISA gives it authority to mandate
8 or enforce standards. So my inference is that the
9 Commission's view of this process is to be forward looking
10 and provide guidance, as opposed to checking on what has
11 been done. But apparently nobody here has heard that
12 message.

13 The second question that I think is important for
14 the Commission to think about is: Whether in dealing with
15 these standards it wishes to deal with individual standards,
16 or families of standards, as has been the practice with NASB
17 and NERC? Or whether there is some higher level approach to
18 dealing with this.

19 We do have at least a start, a release one
20 conceptual architecture. This is all evolving, but based on
21 the discussion today, when we did get down into the weeds on
22 these standards, if the Commission does rulemaking on
23 individual standards or families of standards, our
24 grandchildren will be here dealing with these issues and
25 we'll have just barely scratched the surface.

1 If our goal is to provide forward-looking
2 guidance to how \$11 billion if partially funded taxpayer
3 money is going to be spent on the Smart Grid, we just do not
4 have the time to wait to spend years to deal with the
5 individual standards.

6 I really liked Kevin Kelly's analogy to Blue Ray
7 versus HVDVD in that in the purpose of this is to provide
8 that guidance, you don't really need to know all the details
9 of the bits and bytes and the individual standards provided
10 that you have assurance there's a robust process that is
11 taking care of that. And, that what you can do is look at
12 the standards at a higher level in terms of are they moving
13 us towards an objective, policy objective that Congress has
14 laid out in EISA?

15 So my final thought on this is that in looking at
16 the language in EISA, I note that it directs FERC to adopt
17 standards as may be necessary to assure interoperability in
18 the Smart Grid. And I think we often overlook the word "as
19 may be necessary."

20 As I indicated in my opening, we've built the
21 telephone system, we've built the Internet with virtually no
22 standard having been adopted in regulation. And, you know,
23 the Internet doesn't work securely, that's a problem
24 clearly. We have to not do that. But I would recommend
25 that the Commission think about where are the areas of this

1 vast infrastructure where it is really necessary to adopt
2 the standards.

3 And to that, I would be--if I were on the
4 Commission, I would be very interested in understanding if
5 the utilities and others are not using standards that are
6 being identified through this process, and we have
7 \$11 billion of money that's being spent over the next three
8 years, what are they using? And is it going to head us
9 towards the interoperable Smart Grid that EISA directed us
10 to develop?

11 So I would suggest, just a suggestion, that
12 requesting information about how the utilities plan to use
13 the standards might be a useful way of informing the
14 Commission's judgment as to where does it--is it necessary
15 to adopt standards?

16 So listening to the discussion today, I know
17 there will be more comments coming in, but that is sort of
18 my thought on the information that we've heard today.

19 Thank you very much.

20 MS. SIMLER: George, thank you very much for that
21 wrapup. And, again, for all the panelists' participation.
22 I want to make sure our Commissioners have no further
23 questions for George?

24 (No response.)

25 MS. SIMLER: In the interests of time, maybe we

1 can close early. But I do want to remind people that
2 initial comments are due by March 2nd. Reply comments, by
3 March 16th. The Commission may issue a further supplemental
4 notice asking people to comment on specific things that we
5 heard today, in addition to anything that they want to
6 comment on.

7 And with that, I believe that we are adjourned.
8 Thank you, again.

9 (Whereupon, at 4:41 p.m., Monday, January 31,
10 2011, the technical conference in the above-entitled matter
11 was adjourned.)

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