

1 BEFORE THE FEDERAL ENERGY REGULATORY COMMISSION
2 Commissioner-Led Reliability Technical Conference

3 Docket AD15-7-000
4 Thursday, June 4, 2015
5 Washington, DC
6 Hearing Room 2C
7 888 First Street N.E.
8 Washington, DC 20426

9 The Commission met in open session, pursuant
10 to notice, at 10:00 a.m., when were present:

11 COMMISSIONERS:

12 NORMAN C. BAY, Chairman
13 TONY CLARK, Commissioner
14 CHERYL A. LAFLEUR, Commissioner
15 PHILLIP D. MOLLER, Commissioner

16 FERC STAFF:

17 MICHAEL BARDEE, Director, OER
18 ROBERT CLARK, OGC
19 JONATHAN FIRST, Special Reliability Counsel
20 EDWARD "TED" FRANKS, Deputy Director
21 JOE MCCLELLAND, Director, OEIS
22 ROGER MORIE, Deputy Director
23 LARRY PARKINSON, Director, OE
24 ARNOLD QUINN, Director, OEPI
25 JAMIE SIMLER, Director, OEMR

1 PANEL I: 2015 State of Reliability Report
2 Gerry W. Cauley, NERC
3 Tom Burgess, NERC
4 Vice Chairman Asim Haque, Public Utilities
5 Commission of Ohio
6 Allen Mosher, American Public Power Association
7 Prof. Massoud Amin, Chairman, Board of Directors
8 Texas Reliability Entity
9 Peter Fraser, Ontario Energy Board
10 Prof. Ian Dobson, Iowa State University
11 David Boguslawski, Eversource Energy
12 PANEL II: Emerging Issues
13 Mark Lauby, NERC
14 John Moura, NERC
15 Peter Brandien, ISO New England
16 Thomas J. Galloway, North American Transmission
17 Forum
18 Prof. Anjan Bose, Washington State University
19 David T. Zwergel, Midcontinent Independent
20 System Operation Corporation
21 Mark Rothleder, California Independent System
22 Operation Corporation
23 Warren Lasher, Electric Reliability Council
24 of Texas
25 John E. Shelk, Electric Power Supply Association

1 PANEL III: ERO Performance and Initiative

2 Gerry W. Cauley, NERC

3 Sonia Mendoza, NERC

4 Scott Henry, SERC Reliability Corporation

5 Angela Sheffield, Georgia Transmission Corporation

6 Dr. David Ortiz, U.S. Department of Energy

7 Sylvain Clermont, Hydro-Quebec TransEnergie,

8 on behalf of the Canadian Electricity

9 Association

10 Steve Wright, Chelan Public Utility District

11 William J. Gallagher, The Transmission Access

12 Policy Study Group

13 Jeffery Gust, MidAmerican Energy

14 on behalf of Berkshire Hathaway Energy

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22 Court Reporter: Kim M. Brantley, Ace-Federal

23 Reporters, Inc.

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

2 (10:00 a.m.)

3 CHAIRMAN BAY: Good morning, everybody.

4 Welcome to today's reliability conference.

5 Today's conference examines three different
6 issues: one, the state of reliability, second,
7 emerging issues, and finally ERO performance and
8 initiatives.

9 I won't take up too much time with
10 opening remarks because we have a very full
11 agenda, but I would like to take a moment to thank
12 all the panelists, and we have three panels today,
13 for coming here today to share their views with us
14 on these very important reliability issues.

15 I'd also like to thank the Office of
16 Electric Reliability for organizing today's
17 conference, specifically Mike Bardee and Ted
18 Franks along with the team, Robert Clark, Lodi
19 White and Mark Bennett.

20 Finally, as a housekeeping matter, I'd
21 like to remind the panelists that we are somewhat
22 time constrained, so we'd like to limit individual
23 statements to three minutes.

24 The clock will be at the table, and it
25 isn't a hard stop, but in the interest of hearing

1 from all the panelists and allowing time for
2 discussion, I'd ask that you highlight the major
3 points for your statements today, rather than
4 leading statements.

5 And with that, I will ask my colleagues
6 if they have any remarks.

7 COMMISSIONER MOELLER: Thank you, Mr.
8 Chairman. I'm glad we're holding this conference.
9 We have done a number of these in the past few
10 years as regular accountability and in oversight
11 of the process and I look forward to hearing from
12 you today.

13 CHAIRMAN BAY: Thank you, Phil.
14 Cheryl.

15 COMMISSIONER LAFLEUR: Welcome again.
16 This is a day I really look forward to because
17 it's an opportunity -- is this working?

18 It's an opportunity to take a deep dive
19 into how the electric reliability organization,
20 NERC, and the regional entities are doing and how
21 FERC is doing in our oversight.

22 Just a couple of things that I noticed
23 in the testimony, the first was that Steve Wright
24 noted that it's five years just about exactly
25 since our first of these conferences, but Alan

1 Mosher went even further back. It's the ten-year
2 anniversary of the passage of Section 215 in the
3 Energy Policy Act.

4 So it does seem like an appropriate
5 time to look at how we're doing in some of the
6 emerging issues and I look forward to the day.

7 CHAIRMAN BAY: Thank you, Cheryl.

8 Tony?

9 COMMISSIONER CLARK: Just good morning
10 and welcome. It's another good opportunity to
11 talk about reliability, which is at the heart of
12 everything that we do here at the Commission, and
13 so I'm looking forward to the testimony today.

14 Thanks for all the efforts of everyone
15 to be here.

16 CHAIRMAN BAY: Thank you, Tony.

17 Ted?

18 PANEL I: 2015 State of Reliability Report:

19 MR. FRANKS: Good morning, everyone.

20 Welcome to rainy DC. I was hoping somebody on the
21 panel would be from the Pacific Northwest so I
22 could tell them to take the weather back with
23 them.

24 So let's get started on the first
25 panel. I'll just go through introductions and

1 then we can start...

2 From the North American Electric
3 Reliability Corporation, we have Gerry Cauley and
4 Tom Burgess.

5 From the Public Utilities Commission of
6 Ohio, we have Vice Chairman Asim Haque.

7 From the Ontario Energy Board, Peter
8 Fraser.

9 Chairman of the Board of Directors for
10 Texas Reliability Entity as well as on the board
11 for Midwest Reliability Organization, we have
12 Professor Massoud Amin.

13 From Iowa State University, it will be
14 Professor Ian Dobson.

15 From American Public Power Association,
16 Allen Mosher.

17 And from Eversource Energy and
18 representing Edison Electric Institute, David
19 Boguslawski.

20 Did I get it right?

21 MR. BOGUSLAWSKI: Very good.

22 MR. FRANKS: Okay. So let's get
23 started.

24 Gerry...

25 MR. CAULEY: Thank you and good

1 morning, Chairman Bay, Commissioners and fellow
2 panelists.

3 I really do want to thank the
4 Commission for holding this conference as they do
5 on an annual basis. It's very helpful.

6 I do remember I testified at the first
7 conference and it was actually February 8th of
8 2010. It was thirty-nine days into my job and I
9 thought, is this a welcoming committee, or you
10 know, where is this taking us?

11 I think we have learned a lot and
12 developed a lot in the relationship and with the
13 ERO at that time.

14 I came to that meeting you know, it was
15 a conference on prioritizing reliability
16 priorities, and thought, well what are they? So I
17 had to create a memo on January 26th, which was a
18 few days before the conference, and fortunately
19 everybody said, "These look really good. Let's go
20 do these things on relay misoperations and
21 situation awareness and things like that".

22 But we've come a long way I think and I
23 think what we will learn today is our development
24 in terms of an expert, analytic organization, and
25 the data of analytics that we're able to do really

1 help us prioritize in a much more authentic and
2 legitimate way and to really focus on the matters
3 that we need to address.

4 We created this State of Reliability
5 report three years ago. It was something, a piece
6 that was missing. We have our forward-looking
7 reliability assessments looking at emerging issues
8 and future adequacy and so on.

9 But we were kind of missing this
10 backward view and we created this State of
11 Reliability report that we've done now three
12 times, just published last week, which looks at
13 past performance over the last five or so years
14 and says, "What is the data telling us in terms of
15 performance"?

16 And we are able to take both the
17 forward-looking assessments and the State of
18 Reliability report and build those into our plans
19 in terms of three-year strategic plan as well as
20 an annual business plan that we submit.

21 We have a tremendous amount of data
22 resources from the Transmission Availability,
23 Generator Availability, Relay Misoperations
24 Database, and now we're building an event analysis
25 database, and we're building a trust with the

1 industry that we can take this data and use it for
2 the analytics and produce prioritization of things
3 we need to focus on and where we need to get
4 response from them.

5 Hopefully in this process of building
6 this analytic base and event base that we are
7 building trust with the Commission as well in
8 terms of the confidence and expertise.

9 We have a number of learnings from the
10 recent State of Reliability report, and I'm going
11 to leave those to Tom to cover next, but I think
12 we're able to take what we're learning and turn it
13 back into improved standards, improved focus on
14 our RISC-based compliance, reduced registration,
15 which you've seen, and getting industry to focus
16 on cost-effective things.

17 And one of the challenges I've noted,
18 thought, and this will take just a second or two
19 longer than my three minutes...

20 One of the philosophical challenges is,
21 is reliability improving in general? And I think
22 that the things that we have stoppled, which are
23 the largest, most significant events, the largest
24 hundred, hundred and fifty events, technically we
25 are actually seeing a positive performance

1 improvement.

2 The challenge is ninety percent of
3 events that effect customers really are weather
4 related and distribution related.

5 So we're able to capture and report
6 those. We're able to identify the impacts, how
7 much load is lost. But the challenge is how do we
8 address those weather-related events and the
9 issues that result.

10 Thank you.

11 MR. BURGESS: Thank you very much. My
12 name is Tom Burgess, Chairman and Commissioners,
13 it's a privilege to be here and provide some
14 insight about this year's State of Reliability
15 report.

16 In my capacity as vice president of
17 Reliability Assessments and Performance Analysis I
18 oversee both the backward look as well as the
19 emerging issues and the forward look of the
20 assessments.

21 We use that to identify trends and try
22 to enact between the things that we see in the
23 databases and the analysis of them and link that
24 with emerging issues that we see ahead of us.

25 This report represents our independent

1 view. It's an objective analysis of the state of
2 reliability, and it's a very integrated view. So
3 I hope to touch on many of the key findings that
4 we presented in that report.

5 It serves as a key input to work that
6 we do in prioritizing activities, a strategic plan
7 of the ERO, as well as standards and other
8 initiatives that we've launched to try to make
9 sure that we improve reliability and mitigate
10 risks or refine them.

11 So, really it's a message about
12 connections between the findings that we have in
13 this report, the actions that we have taken, and
14 the measured performance results that we have seen
15 occur.

16 The first key finding is that we really
17 see sustained high performance on the Bulk Power
18 System. That's a composite view about generation,
19 transmission and reliability performance, and that
20 demonstrates continued positive results.

21 Most of the activity is centered around
22 generation and transmission kinds of events and
23 incidents, and increasingly we're seeing that
24 weather is a major contributor to these events .

25 So we think that it's important to

1 begin to look at whether controllable bits of
2 weather so we can initiate some action that would
3 be beneficial for reliability.

4 The second key finding has to do with
5 security. For the first year we had introduced
6 security measures to try to provide a perspective
7 about what our security posture is in the
8 industry. There were no reportable cyber or
9 physical events that resulted in a load loss to
10 the BPS.

11 So that is the benefit of standards
12 that we have put in place, that ES-ISAC, working
13 effectively, but we still believe that there are
14 further methods that are needed.

15 Transmission outage severity continues
16 to improve. By that I mean we are seeing positive
17 trends. The severity is lessening. So that's a
18 continued performance because of focus that we
19 have put placed on miss operations and failed AC
20 commitment.

21 We have also seen a significant
22 decrease in unplanned transmission outages that
23 result in loss of load. In the decade starting in
24 2002, we have an average of ten of those per year,
25 and the last three years it has averaged four per

1 year.

2 That's the result of standards that we
3 have put in place and effective event analysis
4 work that we've done.

5 We have also focused on frequency
6 response in the intersections, and it has remained
7 stable, and it's a key measure of the balance
8 between the resources and the loads.

9 So, we will continue to monitor these
10 trends, especially those instances where the
11 frequency response falls below the interconnection
12 frequency response obligation.

13 Protection system miss operations are
14 improving, the rates are improve, however they
15 continue to escalate risk where they are
16 associated with an event, and so we've got a
17 series of focused actions to try to address them
18 and issue lessons learned to try to improve that
19 further.

20 Finally, the use of EEA-3s, emergency
21 energy alerts, continues to decline. It's the
22 lowest level recorded and it reflects better
23 management of the Bulk Power System and
24 infrastructure additions.

25 Lastly, I would just conclude by saying

1 that this report allows -- it's a reflection of
2 the insights that we are able to gather, the
3 trends, performance behavior and it allows us to
4 anticipate emerging risks that may affect the BPS.

5 So I thank you for your attention and I
6 look forward to your questions.

7 MR. HAQUE: Chairman Bay, Commissioners
8 and Staff, thank you for inviting me to
9 participate in today's technical conference.

10 As Ted said, my name is Asim Haque. I'm
11 the Vice-Chairman of the Public Utilities
12 Commission of Ohio and I'm also one of two state
13 government sector representatives elected in
14 NERC's member representative committee.

15 My comments this morning reflect two
16 core themes. First I continue to assert that cost
17 should remain part of the NERC standards
18 discussion in meaningful ways.

19 Second, I believe that serious
20 consideration should be given to establish a
21 formal proactive collaboration between FERC, NERC
22 and the states to understand and plan for
23 reliability challenges that could arise as our
24 nation's energy policy evolves and our generation
25 continues to transform.

1 I'll address cost first. The costs
2 associated with NERC reliability standards will
3 always be a concern for state commissions as these
4 costs are eventually passed through to our
5 consumers.

6 Cost concerns should not be evoked at
7 the expense of critical reliability. However,
8 cost should be considered to ensure the consumers
9 in our respective states are being protected from
10 either unnecessary costs or costs that are
11 extraordinary in exchange for minimal reliability
12 gains made.

13 And while NERC has not adopted
14 officially a cost evaluation mechanism in standard
15 development, I am encouraged that NERC has at
16 least implicitly attempted to incorporate costs in
17 standard implementation.

18 Two initiatives in particular: The
19 Reliability Assurance Initiative focusing on the
20 highest risk reliability issues, as well as
21 RISC-based Registration, which really tries to
22 pair the appropriate facilities with the
23 appropriate standards, should have a positive
24 impact on controlling consumer cost.

25 In analyzing the latest State of

1 Reliability report, I think there may be another
2 opportunity to discuss costs in the NERC standards
3 process and that's potentially through compliance
4 metrics. I provide some detail around that
5 concept in my comments. I'll be happy if you have
6 any questions associated with that.

7 The state federal partnership. So
8 identifying potential reliability concerns appears
9 to be the easy part. At least NERC makes it look
10 easy. The hard part is finding concrete
11 solutions.

12 As regulators, we are collectively
13 faced I think with a few daunting questions that
14 we don't have definite answers to at this time.
15 Those questions are, will there be an actual
16 reliability problem in the future due to
17 retirements in a radically changing generation
18 resource mix; and do we have remedies that can be
19 implemented in a timely fashion to address a
20 reliability problem if it arises.

21 If we can agree that we don't know with
22 certainty whether we will have grid reliability
23 problems going forward, we should be ready to
24 vigorously address grid reliability problems in
25 the event that they arise.

1 The difficulty with addressing these
2 potential reliability problems is that FERC and
3 the states have their own jurisdictional domains
4 that could impact reliability, and they don't
5 necessarily have a planning bridge between them to
6 ensure that these authorities are used
7 intelligently to maintain grid reliability.

8 The disconnect between FERC and the
9 states is evident in some recent state attempts to
10 incent construction of new generation, new gas
11 pipelines, support existing generation... I call
12 these sort of federal sidesteps that I think
13 states are attempting in order to try and preserve
14 perceived reliability ills. And with the final
15 Clean Power Plan expected in the coming weeks,
16 really time is of the essence.

17 So in order to be proactive, I think we
18 have to look at other avenues to meet our shared
19 duty to ensure delivery of adequate and reliable
20 power to our consumers.

21 So in my comments I lay out a
22 suggestion... I suggest the Commission consider
23 convening the unique state federal partnership
24 that is made up of representatives of this
25 Commission, of NERC and the states, the type of

1 reliability claim and counsel.

2 Counsel would meet formally on a
3 regular basis to respond to this changing
4 generation resource mix, identify reliability
5 concerns and then chart out a path utilizing our
6 respective jurisdictional authorities to maintain
7 a reliable grid in every pocket of this country.

8 I fully understand this concept would
9 take some development, but I think it is
10 appropriate in order to utilize our collective
11 regulatory authority to cure potential reliability
12 issues going forward.

13 Thank you for your time.

14 CHAIRMAN BAY: Thank you, Vice Chairman
15 Haque.

16 Mr. Fraser...

17 MR. FRASER: Morning, Chairman Bay,
18 Commissioners and fellow panelists. Thank you for
19 inviting me back to give a Canadian regulatory
20 perspective on the issue we're discussing today.

21 I'll focus on three areas:
22 International regulatory activity on reliability,
23 our desire to reach a steady state on standards
24 development, and the NERC report on EPA's Clean
25 Power Plan.

1 On international regulatory activity
2 there is engagement by Canadian regulators going
3 on at three levels... First with NERC, we are
4 encouraged by NERC's efforts to ensure the ERO
5 functions effectively as an international body and
6 works to engage Canadian regulators.

7 To that end we have appointed a
8 Director of Canadian Affairs, Laura Hussey, that
9 we worked with in the summer meetings, usually in
10 Canada, the Organizer Regulators' Lunch as an
11 opportunity to engage with Canadian regulators on
12 reliability issues.

13 This year's program in Toronto will be
14 on cyber security and will involve both Canadian
15 authorities and the NERC staff.

16 Second, we engage with each other, of
17 course, in that Trilateral Reliability Working
18 Group made of Canadian regulators, FERC, and a
19 representative of the New Mexican regulator. It's
20 a good venue for exchange of information and views
21 and for communication with NERC.

22 Third, reliability is also getting the
23 attention of the politicians in Canada. This July
24 the focus of the annual federal Conventional
25 Energy and Mines Ministers' Conference will be on

1 energy security and electric reliability. We are
2 involved in the preparation of a paper on the
3 topic which will be made public for the
4 conference.

5 Now about the steady state... As I
6 outlined in my written remarks, most provinces
7 adopt NERC standards either when they are approved
8 by the NERC board or by a decision of the
9 appropriate government authority.

10 Not all the new standards have been
11 approved. We regulators in Canada are as keen as
12 the industry in reaching a steady state of regular
13 periodic review of the standard.

14 There's still more churn in the
15 standards than we would like to see. The COM-001
16 standard is a recent example.

17 Finally, about the NERC report on
18 potential reliability impacts of the EPA's
19 proposed Clean Power Plan... I suggest you pay
20 attention you to Canada. As coal plant
21 retirements appear to be a big part of the plan,
22 Ontario might be a good example for you to
23 consider.

24 In fact in Ontario we closed all our
25 coal plants, which amounted to about a quarter of

1 our generation capacity. To pull that off and add
2 a lot of renewables at the same time, we have had
3 to bring back some of our nuclear plants,
4 investing in gas-fired generation and made
5 significant transmission upgrades as well. We
6 have also had to make market rule changes to
7 require intermittent resources, namely wind, be
8 dispatched.

9 Another reason to pay attention to
10 Canada is that the report assumes a three-fold
11 increase in electricity imports from Canada. In
12 my written remarks I know that concerns have been
13 expressed about the assumptions behind that big
14 increase.

15 I understand that earlier this week
16 NERC has in fact met with the Canadian industry to
17 discuss this further and we will consult with them
18 more closely in subsequent iterations of their
19 analysis.

20 I thank the Commission for the
21 opportunity and look forward to any questions.

22 CHAIRMAN BAY: Thank you, Mr. Fraser.

23 Dr. Amin...

24 PROF AMIN: Good morning, Mr. Chairman
25 and distinguished Commissioners, fellow panelists

1 and Staff, and colleagues at NERC and the audience
2 in the room.

3 I'm really honored to be here, and
4 thank you for your leadership and keeping an eye
5 on the reliability of our most critical
6 infrastructure that underpins everything else
7 within our society.

8 As a board member at Texas RE and MRO,
9 I have had the privilege of working closely with
10 an impressive group of people from MRO, Texas RE,
11 regional entities, NERC, FERC, and other agencies,
12 and I'm really grateful for the progress that we
13 have made in the last ten years, especially in the
14 last five, six years.

15 I quote from Mr. Dan Scarf that today's
16 regulations support and sustain the state of
17 reliability mindfulness across the industry as
18 encouraging investments and innovation.

19 So we have done a good down payment on
20 that, but the future is very uncertain, and things
21 are changing. So I'm going to focus mostly on the
22 present and on the future, the next year, next
23 five years, maybe beyond.

24 The good statistics that you read in
25 the report as well as metrics such as the Event

1 Trending Index show that both the frequency and
2 severity of events has declined since the
3 mandatory standards began in 2007; fewer, less
4 severe outages.

5 The Compliance Trending Index similarly
6 in both of the regions that I'm on, including
7 Texas RE and MRO, show that the severity level of
8 the violations peaked in 2011 and as a result of
9 the SIP standards, and they have steadily declined
10 since then. Our industry has undergone quite a
11 bit of change evolution in the last five years,
12 but a lot more is yet to come.

13 I'm going to share with you in my view
14 one man's view of the top ten drivers of what I'm
15 seeing...

16 1) The acceleration of basic
17 improvements to overall device and overall grid to
18 make it less lossy is one.

19 2) Energy intensity is dropping about
20 two percent a year.

21 3) Distributed generation and DG and
22 DERs are becoming more widespread use.

23 4) More cities are interested in
24 charting their own future. Microgrades at the
25 city level are neighbors with them.

1 5) District system combined heat and
2 gas, combined with smart group.

3 6) Electrification of transportation.

4 7) EPA regulation such as the
5 greenhouse gasses we have read about and know
6 about.

7 8) Demand response and third-party
8 dealing with the data, a creation of data on a
9 large scale as well as on a local.

10 9) Combined heat and power plus heat
11 recovery and waste.

12 10) Increasing interstate and even
13 transnational nature of utilities, including
14 contractors, too, and that leads to some concerns
15 because of the security.

16 So when we look back and look forward
17 in the next five years, we are going to see three
18 things that are needed to be done.

19 In my written remarks, especially in
20 the addendum, I shared with you what we recommend
21 on behalf of the I Triple E and the quadrennial
22 review that we provided to the DUE and the White
23 House. So there are more details in it.

24 First we need to integrate better
25 feedback groups into the standards and close those

1 groups.

2 Second we should develop our focus
3 toward more resiliency and restoration in the
4 future, including cyber physical attacks.

5 Third, we have a great system. It's
6 safe and it's working, however, quadrennial
7 framework is keeping us locked in a 20th century
8 model, as has been pointed to before, and we need
9 to reform to see how do we really spread out the
10 modernization of the grid.

11 A lot of that is highlighted within the
12 report that I shared with you and this
13 infrastructure has a huge potential to underpin
14 our 21st century economy.

15 Thank you again for the opportunity.

16 CHAIRMAN BAY: Thank you, Dr. Amin.

17 Professor Dobson...

18 PROF. DOBSON: Good morning, Chairman
19 Bay, Commissioners and Commission Staff. I'm Ian
20 Dobson from Iowa State University, and thank you
21 very much for the opportunity to speak with you.

22 The Bulk Electric Power System is
23 highly reliable and there is continuing progress
24 towards maintaining this reliability.

25 However and at the same time historical

1 data shows that blackouts of all sizes do occur,
2 small, medium and large. That is, the large
3 blackouts are rare but not vanishingly rare, and
4 the distribution of blackout sizes is a heavy
5 tale.

6 The largest blackouts typically involve
7 cascading outages. These are long, complicated
8 chains of dependent outages that propagate outages
9 over a wide area.

10 Load loss caused by cascading outages
11 is a significant reliability issue with
12 substantial risks, even though it's rare.

13 In my opinion, the heavy tail or
14 pattern of reliability can be entirely consistent
15 with a well run grid. However, considering that
16 the grid and its generation mix are changing
17 rapidly, it would be very undesirable for large
18 blackouts to become more frequent than they have
19 been historically. Therefore we need to monitor
20 and mitigate cascading outages as we move forward.

21 As to the cascading, there is an
22 initial outage and then propagation of further
23 outages. The cause of the initial outages and the
24 multiple factors governing the propagation are
25 quite different and so we need to treat them

1 differently.

2 It's not always appropriate to
3 attribute the entire cascade to the cause of the
4 initial outage. There's also the multiple factors
5 that need to be mitigated in how much it
6 propagates.

7 The initial outages are well handled by
8 current approaches. There's been a lot of
9 progress. An emerging approach shows you could
10 also measure the average propagation from
11 available data.

12 Now the heavy tails, the rare but not
13 vanishingly rare large blackouts...

14 Conventional statistics can fail due to
15 the heavy tails. For example, annual load loss,
16 although often small, fluctuates randomly and
17 sufficiently wildly that it does not indicate grid
18 reliability.

19 This has consequences for looking at
20 trends on indicators based on load loss. Load
21 loss inherently fluctuates a lot because of the
22 nature of the statistics, and so therefore I would
23 recommend assessing this problem and its impact on
24 the Severity Risk Index using historical data. We
25 can figure out how much of a problem this

1 variability is from the data itself without
2 models. And so I would urge caution in looking at
3 trends of highly variable data.

4 The research, industry and regulatory
5 community is starting to quantify and mitigate the
6 risk of cascading outages by modeling,
7 simulations, and data analysis.

8 In this process the systematic
9 collection of detailed reliability data by the
10 industry and regulators is extremely valuable in
11 the foundation. The data shall be used for
12 validation, so the tools provided to the industry
13 are useful and credible.

14 Reliability data is indeed sensitive,
15 but nevertheless, allowing qualified researches
16 suitable access to some detailed reliability data
17 is a key necessity for progress.

18 I'm optimistic that if we have the
19 data, the current state of the art can be extended
20 for the monitoring and mitigation of large
21 cascading outages.

22 I would like to thank the Commission
23 for this opportunity to participate and I look
24 forward to discussions.

25 CHAIRMAN BAY: Thank you, Professor

1 Dobson.

2 Allen....

3 MR. MOSHER: Good morning, Chairman
4 Bay, Commissioners and Staff. I'm going to try
5 see if I can do this in less than three minutes.

6 As Commissioner LaFleur had noted, it
7 is ten years since the passage of EPACT, and it's
8 a good time to take a look and reassess where we
9 are right now.

10 In terms of the basic needs of what
11 NERC does, in terms of the blocking and tackling,
12 we have actually made a lot of progress. There's
13 a lot of downward trends and overall performance
14 problems where we really are mitigating those
15 measures.

16 There's a long list of things we
17 covered in the Executive Summary of the State of
18 Reliability report. We've got no load loss with
19 the cyber and physical events, a decline in
20 average transmission outage severity, decreases in
21 unplanned transmission outages, stable frequency
22 response, a downward trend in protections systems
23 misoperations, and declining use of Level 3 energy
24 emergency alerts.

25 So we are implementing these basic set

1 of measures to do, you know, the day-to-day
2 things.

3 What you really have to worry about are
4 the big events, the changes in overall industry
5 performance that could come from sort of
6 structural changes that effect the industry, and
7 I'd like to highlight three or four.

8 Massoud actually had a longer list,
9 which I would fully endorse and love to sit and
10 talk about, but we can really think about sort of
11 the EPA Clean Power Plan, variable energy
12 resources, the cyber and physical threats that
13 we're facing, and infrastructure resilience and
14 that sort of state change kind of variables in the
15 days going forward.

16 If we have a window of opportunity
17 right now, because the load is relatively flat,
18 not growing, we've got a good stable set of
19 resources, an expert staff. The companies have
20 actually figured out how to comply with NERC
21 standards. We've got RISC-based reliability
22 standards. We are reworking the Compliance
23 Enforcement Program to be RISC-based and
24 right-sizing the clients to be RISC-based. All
25 that creates resource space for us to refocus.

1 NERC's done some really cool work on
2 reliability metrics in a variety of things.

3 Massoud, I'm looking over at you. Your
4 graduate students have gotta love this. This is
5 big data. We can use this to analyze a lot of
6 important things. If you spend all your time
7 looking at the big data, you are maybe not
8 focusing on those big emerging issues.

9 We've got a window of opportunity to
10 get a handle on them. I have said more in my
11 prepared statement on these points, but I think we
12 really need to grasp it right now, get ahold of
13 infrastructure issues to figure out how we're
14 going to integrate all these renewable resources,
15 rework the business models for to fuel the
16 distributed energy resources at the retail level,
17 and really think about infrastructure reliability
18 systematically here.

19 If the electric infrastructure doesn't
20 work, society doesn't function. We are I think
21 most critical of all of the infrastructures in the
22 United States, with the possible exception of
23 water. But if you don't have water you can't
24 live. You can live for some period of time
25 without electricity, but electricity makes the

1 entire -- all of your infrastructures work.

2 So, thank you very much. I look
3 forward to your questions.

4 CHAIRMAN BAY: Thank you Allen.

5 David...

6 MR. BOGUSLAWSKI: Morning, Chairman
7 Bay, Commissioners and Staff, and fellow
8 panelists. We welcome the opportunity to be here.

9 I'm David Boguslawski of Eversoft
10 Energy, formally known as Northeast Utilities and
11 representing EEI and its member companies.

12 In short, we support the findings of
13 the NERC state of reliability reports, not only
14 this time but the last time, as well.

15 We think that Gerry and his team have
16 done a lot of good work and want to thank them for
17 that. We think that the organization, NERC
18 organization has matured. We think their
19 listening to stakeholders has improved quite a
20 bit. We think we're getting there over time.

21 Let me go off strip a little bit and
22 just say, you know, what I am constantly looking
23 at in my company is, we want to comply. We want
24 to be perfect in compliance. But at the end of
25 the day, perfect compliance is not where it's at.

1 It's important, but what's really important is
2 continuous improvement in operations.

3 I think one of the things Gerry's done
4 a good job of is sort of finding some gaps,
5 starting a process to close those gaps performance
6 in the industry, and I think what we've got to
7 next focus on is okay, who should take on that
8 role going forward?

9 There's a lot of committees out there.
10 There's a lot of as task forces out there.
11 There's overlap with the forum. It's hard, even
12 for a company as large as mine, to keep up with
13 everything.

14 I think Gerry's and NERC's grid act
15 drills are great. There was a definite gap there
16 and he's filling them.

17 I'd like to just briefly touch on three
18 areas, and they're overlapping with Allen's...

19 1) The changing resource mix. I think
20 we've got some good things identified. NERC's
21 independent assessment role is really key, and I
22 emphasize that word "independent".

23 2) FERC's involvement, and, you know,
24 trying to get to a safety valve and a monitoring
25 and systems process, it really helps. I think

1 we're going in the right direction there. We've
2 got to keep our eye on that and stay focused.

3 With respect to sip and cyber security,
4 I think more than anywhere else that's where
5 RISC-based really matters. Let's figure out what
6 we're trying to do, not how we're trying to do it.
7 Let's not focus on the "how". Let's focus on the
8 "what we're trying to accomplish", and once we've
9 got the standard written, let's drive toward it.

10 Because at the end of the day there's
11 going to be something new that comes along, and
12 we don't want to be nimble. Nimble focuses on the
13 what, not the how.

14 3) And lastly, I can't emphasize it
15 enough, let's stay focused on RISC, R-I-S-C.
16 They've helped identify the priorities. Let's
17 stick to those.

18 Thank you.

19 CHAIRMAN BAY: Thank you, David.

20 So I have just a few questions. You
21 know, Gerry and Tom, I was very impressed with the
22 positive news in your State of Reliability report
23 and the way in which you used data and analytics
24 to identify some encouraging signs.

25 Was there anything based on your

1 examination of the data that was perhaps subject
2 to concern, or maybe you saw areas where we would
3 have to basically focus more on potential issues?

4 MR. CAULEY: I would say for me the
5 data highlight that there's still a lot of
6 opportunity in some basic blocking and tackling
7 types of areas.

8 Equipment maintenance seems to be an
9 area right to reduce the number of severe events,
10 particularly around circuit breakers where you end
11 up with a stuck or failed breaker and we're seeing
12 outages that are larger than they need to be.

13 These are not things like new, better
14 breakers, or more breakers. It's simple things
15 like we fix the twerking and tightening bolts on
16 the flash pressure inside a certain class of
17 breakers, and we went from those breakers, you
18 know, ten or twelve times over a two-year period
19 to zero. We fixed the problem.

20 Another sort of mundane issue is just
21 the maintenance of breakers. In terms of the
22 lubricants, we're finding some companies are
23 mixing, using solvent instead of a lubricant or a
24 regular lubricant. When a breaker operates,
25 there's like twenty metal-to-metal moving parts,

1 and if they fail, that creates a failure and it
2 really spreads. It clears the whole substation
3 and puts people in the dark.

4 So I think, you know, that kind of my
5 reaction initially is, there's more things that
6 are fairly low cost, focused things around
7 maintaining in that area as well as readiness
8 operations where we can get a lot of bang for the
9 buck without changing infrastructure. It's just
10 making sure we focus on the narrow areas that are
11 causing the big problems, and I think there's more
12 opportunity to continue that for the next couple
13 of years.

14 MR. BURGESS: Yeah, if I could just
15 supplement that or add on to that.

16 I think, you know, misoperations is an
17 area where we have done a lot of work, put a lot
18 of focused attention on trying to take those
19 generator operators and transmission operators
20 that are performing at a very high level, taking
21 those lessons learned about those practices and
22 applying them more broadly. So that's an area
23 that I think is beneficial.

24 I think in some of the points that some
25 of the other panelists have raised about looking

1 forward in some of the emerging aspects are an
2 area where I think we can continue to make sure
3 that we're paying attention and focusing.
4 Frequency response would be a good example of that
5 where we begin to see the changing resource mix,
6 we get into affect the frequency response
7 behavior.

8 So I think there's an opportunity to
9 tie the assessments that we use, looking forward
10 with the State of Reliability and begin to
11 formulate those kinds of measures to anticipate.

12 CHAIRMAN BAY: Thank you.

13 Dr. Amin, one of the comments you made
14 was very interesting. You said that you thought
15 that the regulatory framework was locked in the
16 20th century even though now of course we're in
17 the 21st century.

18 I was wondering whether you could
19 explain a little bit more about what you meant by
20 that.

21 PROF. AMIN: Absolutely. Thank you,
22 Mr. Chairman.

23 In my appendix or addendum that I
24 shared with you, I go deep into that, and I share
25 those on the docket, two articles that I've

1 written for public utilities fortunately recently.

2 The divide between the federal
3 jurisdiction and local jurisdiction, PUCs, has
4 been one source of uncertainty. So the question
5 is how do we reduce uncertainty in every aspect.

6 In investment, in future planning,
7 expansion, in all the assessments that we have
8 done there is a need. If we truly want to enable
9 the modernized grid, we need to add about nine
10 percent more transmission line to the backbone,
11 and that's about forty-two thousand miles of high
12 voltage transmission lines.

13 That would enable us to integrate about
14 forty percent of power coming from wind. We could
15 offset a lot of what we do currently with fossil
16 fuels with gasoline, with that increased import.

17 So, going back, we can look at the way
18 we can close the gap between federal and state to
19 create a partnership.

20 MIS has been doing similar things that
21 I can talk about in more detail to create a
22 partnership, public, private, NERC, FERC, as well
23 as the local entities. And maybe DOE, and in the
24 briefings that we prepared for the White House on
25 behalf of the I Triple E and for the Department of

1 Energy, we highlight that.

2 So, I'm not sure whether I sent my
3 remarks on time, but they're already in the
4 addendum, the required reading that I provided
5 before the Chair can examine that. But it's all
6 there.

7 The other part that is important, the
8 game has changed. We are not talking, not the
9 20th century flow from big generators coming to
10 the customers, but we are having two-way flow.
11 More and more we are seeing that in Hawaii,
12 Flagstaff, Arizona, you know, back in San Diego,
13 in Japan.

14 We are having the challenge that the
15 distribution system has been affecting more and
16 more the high voltage system.

17 So I agree with Professor Dobson, use
18 of rare events data, this is no longer our
19 grandfather's Oldsmobile that we are operating.
20 We need to look at how to modernize it so it's
21 really prepared for the new demands and new
22 changes we are putting into it.

23 So I can go into more detail, sir, as
24 you wish, but there is a lot that we can do. And
25 actually, it's not too hard to do. So in my

1 addendum I put some of the really low hanging
2 fruits that are not contentious, that are built on
3 a lot of wisdom from across the community that we
4 can include. And I will be happy to dig into any
5 areas that you wish.

6 Thank you.

7 CHAIRMAN BAY: Thank you, Dr. Amin.

8 I was struck by the comments from a
9 number of panelists today, not only the panelists
10 in today's panel, but also in the comments
11 submitted by other panelists on the desire for
12 greater access to data, and the things -- the
13 useful analytics that other researchers could make
14 of the data.

15 And so my question is for NERC, and for
16 you, Gerry. Is there a way for NERC to allow
17 greater access to some of the data that you have
18 so that a professor like Professor Dobson or Dr.
19 Amin could use that data to do their own studies,
20 studies that might be very helpful for other, you
21 know, very informed, very I think smart people to
22 do their analysis, and to make recommendations,
23 both to the NERC or to FERC or to industry.

24 MR. CAULEY: Thank you, Chairman Bay.

25 I think it's a really good question and

1 one that I continue to grapple with, and I think
2 it's part of the maturation process of what we're
3 developing. We get data from many sources and it
4 comes in under different umbrellas.

5 So some data, like the transmission
6 availability, every single transmission on
7 transformer lines comes into us. It's required
8 reporting but it's confidential reporting. We're
9 not allowed to disclose it. It's the data that is
10 owned by the entities.

11 So that's how the legal framework of it
12 is. You're required but they keep it confidential
13 in the generator database and in the transmission
14 availability database.

15 In areas like the event analysis, we're
16 actually studying an event that has recently
17 occurred, and it's still both under the
18 confidentiality arrangements with the entity as
19 well as potentially compliance implication. So
20 there's some confidentiality around that.

21 So, first of all we're very unfortunate
22 and I'm very appreciative that we've been able to
23 build up the trust and confidence of industry to
24 share what really we might consider a wealth of
25 data, and I think it helps us be very confident

1 and effective, as in the ERO, to burrow down in
2 some of these risks and have this data.

3 But we also are getting the data from a
4 highly regulated industry who is concerned about
5 compliance risk as well as reputational risk and
6 other risks, and there is a great hesitancy to
7 show the details.

8 So what we are showing in our reports
9 and in the data releases we do are what
10 percentages of total relay operations are
11 misoperations, and, you know, what percentage of
12 misoperations lead to bad events.

13 So we're sharing the answers but the
14 industry is very sensitive about the specifics of
15 that for compliance reasons, for proprietary
16 reasons, and I think in some cases even for
17 security reasons.

18 So I think you've asked a fair question
19 and I think what I would encourage is that we have
20 a dialog going forward with the Commission and
21 Staff and ourselves and with industry, you know,
22 as to how do we overcome some of the barriers to
23 the actual route data, itself, the actual
24 proprietary data that's owned by the entities.

25 I would think that that would be good

1 for, you know, our public role in reliability, but
2 I don't have the authority at this point to turn
3 around and just open up all that data to
4 academics. In some cases I don't have the
5 authority to turn it over to the Commission unless
6 you order us to.

7 So, the challenge is the
8 confidentiality of the data. That's really how
9 it's being controlled.

10 CHAIRMAN BAY: I can certainly
11 sympathize with that challenge, but I'm wondering
12 whether if the data were masked so that the
13 identity of the entity were not revealed, and
14 maybe in a case of academics, if they signed some
15 sort of nondisclosure agreement, so that they
16 would not be reporting on any single event but
17 rather presenting some sort of analysis that
18 essentially looked at the data as a whole, whether
19 that could mitigate some of those concerns.

20 MR. CAULEY: It's a good suggestion. I
21 think we can go back and look and work with
22 industry.

23 At the top of my list, I would hate to
24 go back five years and get to a point where I can
25 only get the information under a demand and it's

1 perceived as a significant compliance risk,
2 because I think what we'll end up is we won't get
3 the right set of data that is important to us,
4 which is really helping us.

5 I think, you know, maybe in addition to
6 talking about what do we want to do long term and
7 how do we get there, that's a very pragmatic
8 approach that we will take back and work with
9 industry; how can we de-attribute it to the point
10 where they're comfortable with it being released
11 where somebody can't reverse engineer it and
12 figure out which station that was and which
13 equipment and which customers that affected and
14 whether any liabilities will come out of that.

15 CHAIRMAN BAY: Thank you.

16 Phil.

17 COMMISSIONER MOELLER: Thank you, Mr.
18 Chairman.

19 I'm glad you asked the question about
20 data. Thank you all for being here, the effort it
21 takes.

22 I was reflecting on our first
23 conference, which I guess was in 2010, but it
24 seems longer than that, and I asked Mr.
25 McClelland, who at the time was head of the Office

1 of Electric Reliability, "What are the three areas
2 you're most concerned about," and his answer was,
3 "Trees, tools and training".

4 I think that we, for the most part,
5 kind of grappled with those three areas, although
6 if you have any other reactions to that, please
7 let me know.

8 I was able to look at the testimony
9 coming back on an airplane yesterday, and the
10 three themes that kind of jump out at me were,
11 number one, this issue that we are going through a
12 transition in fuel supply, but a little bit more
13 desperate urgency to focus on variable generation
14 and how that's going to impact, and kind of a plea
15 for NERC perhaps to become more active on that set
16 of issues.

17 The implication, again, in reading the
18 testimony is that this could be honest before we
19 realize it and create some real problems that will
20 be hard to unwind.

21 The second theme was kind of this
22 jurisdictional challenge of the fact that FERC,
23 and NERC through FERC regulate the Bulk Power
24 System but the majority of the events occur at the
25 distribution level, a frustration that we try and

1 work through with our state colleagues,
2 particularly on cyber, but on other issues on how
3 to get essentially better information and analysis
4 of the problems on the distribution side when
5 that's really not in our jurisdiction.

6 The third issue was kind of this data
7 issue that the professors both brought up.

8 So I guess my two questions, first, if
9 you have any comments on that, what I just said,
10 great, but do we need to focus a little bit more
11 urgency on the challenges related to integrating
12 variable resources, and I'll put that to both Mr.
13 Cauley and Mr. Burgess to begin.

14 MR. BURGESS: Yes, thank you,
15 Commissioner. Those are important themes.

16 I will say that one of the priorities
17 that's been identified by the RISC committee, the
18 Reliability Issue Steering Committee, has been
19 change in the resource mix. So we have focused a
20 fair amount of attention to understanding it both
21 from a fuel supply side as well as from the
22 integration side at different forms of VERs, or
23 variable energy resources.

24 So we've put quite a bit of effort into
25 developing a better understanding about the

1 reliability behavior of what we refer to as the
2 essential reliable services, and so I think that
3 is the important effort that we have keyed our
4 attention to to help us understand it so then we
5 can put into place measures that are appropriate
6 or relevant to making sure that we have a reliable
7 bulk power supply.

8 That can include a whole range of kinds
9 of things from technology additions, adjustments,
10 interconnection agreements. It can be market. It
11 can be NERC and reliability types of standards.

12 But the interesting part of that, at
13 least for me, is beginning to understand how to
14 tackle the things that we are hearing on the
15 distribution system. I'll call them DG, or
16 distribution generation, rooftop solar, those kind
17 of additions on the system. Where they begin to
18 materially affect the Bulk System is a challenge
19 for us to number one, understand it, have some
20 transparency and think about what are the right
21 mechanisms to manage that, so that we support bulk
22 reliability while trying to accommodate that.

23 So that would be an initial reaction.

24 COMMISSIONER MOELLER: Okay. Any other
25 reactions?

1 Allen?

2 MR. MOSHER: Yes, I think it's a
3 combinations of all of the things that I outlined,
4 but we're basically headed toward an unstudied
5 state. We don't know how the network is going to
6 perform because we have too many changes going on
7 at once.

8 What makes this set of changes quite a
9 bit different than the ones that have come before
10 us, before we have added resources, and then the
11 existing resources have been retired for economic
12 reasons, or operational reasons. Now we're going
13 to take a hundred thousand megawatts of coal off
14 of the grid and inject all these other changes.

15 So the operator's assumption about how
16 the grid's going to perform just aren't likely to
17 hold up. We have already seen that in Hawaii, and
18 we certainly see it in California with the peak
19 shifting off of the mid afternoon to the early
20 evening. Nobody was forecasting that, or at least
21 nobody that I know was forecasting that. It's
22 driven about economic incentives and rate policies
23 and a variety of things.

24 Well, the operators have to deal with
25 it. And so as Tom pointed out, they're being

1 confronted with changes in loads that they aren't
2 forecasting, and I think it's going to get
3 substantially bigger as we go from power plant and
4 other changes and various economics.

5 So if we can get some really good
6 forecasting based on the data we have gotten
7 today, or at least some scenario analysis, that
8 will help us grapple with it.

9 Because right now I don't think NERC or
10 regulated entities can tell their state
11 commissions, much less the Commission, what to do,
12 because they don't know yet. It's hard to
13 predict.

14 CHAIRMAN BAY: Mr. Dobson...

15 PROF. DOBSON: Thank you.

16 I think this highlights the need --
17 well, first of all, I think that NERC is doing a
18 lot of good stuff getting better indices and more
19 RISC-based and moving forward better indices.

20 But if we can really monitor the
21 performance annually, for example, as we go
22 forward with better indices, we have, as Allen
23 mentioned, this big data opportunity.

24 If we can automatically collect data,
25 automatically process it and do it in a smart way,

1 then we can monitor the situation, and if the
2 reliability starts to decrease, we're in a much
3 better situation with good indices in order to be
4 able to mitigate it.

5 COMMISSIONER MOELLER: Yes, professor.
6 Dr. Amin...

7 PROF. AMIN: I echo our colleagues in
8 that area, actually Commissioner Moeller, my only
9 addition is that it's imperative that we
10 understand the complexities of the whole system,
11 and often when we focus on just one or the other
12 priorities, those couplings of interdependencies
13 are missed.

14 I quote H.L. Mencken, the Oracle of
15 Baltimore, since we are not too far from
16 Baltimore, that "For every complex problem there
17 is a single solution that is simple, neat and
18 wrong".

19 So that's the dilemma we have had, and
20 that's what I meant we are focused on the 20th
21 century systems and regulations and not well
22 positioned to be progressive in looking at this
23 brave new world we live in.

24 So we got to be insistent, be forward
25 looking, looking at how do we keep the ship going

1 forward as we are upgrading it, as we are
2 modifying it. What new capabilities do we want to
3 build? How do we build partnerships in that area?

4 There is a lot of things that I have
5 shared with you within the few pages in the
6 docket, but I agree with our colleagues that
7 focusing on one -- if it is urgent, we are fire
8 fighters. We do that.

9 But the data you asked about, there is
10 huge opportunity, and I alluded to it, closing the
11 loops we have never closed before.

12 With the TMUs can actually help
13 modernize the grid. Instead of doing annual
14 report on reliability, I'm going to share with you
15 a crazy idea. Why don't we have real time or near
16 real time in five to ten years with that vision
17 that actually we know how the ship is doing and
18 have a shared common vision that goes with the
19 need to know and make it very hard for adversaries
20 and attackers not to get into it and be able to do
21 that.

22 Even compliance then becomes easier.
23 You're getting close to a threshold if you're
24 empowering the utilities' control center saying,
25 "Well, you know I'm getting close to violating

1 this. How do I improve that? What do I do to
2 improve that from occurring?" And then to do it
3 at the level that is not just Bulk Power System,
4 from critical nodes that affect visa versa
5 interdependencies.

6 So there's a lot we could do, and these
7 are the things that are not pipe dreams. We have
8 shown in the last eighteen years it can be done,
9 and the money spent on that, we get two point four
10 to six dollars per dollar spent in that economic
11 activity.

12 COMMISSIONER MOELLER: Gerry...

13 MR. CAULEY: Thank you, Commissioner
14 Moeller.

15 I'd like to answer a couple of the
16 other questions you asked when addressed, you know
17 trees, tools and training. I think it really
18 knocked a couple of those out of the park. We got
19 vegetation really well managed. I fly into every
20 airport and I just go, "Wow. Those are really
21 clean" they also do that, but it's a well-managed
22 risk. And the training has come a long ways

23 We're still working on tools. We're
24 finding out with the vendors there are some, you
25 know, reasons that we're still oozing EMS's and,

1 you know, SCADA systems for a period of time, so
2 we're working with the vendors as to how do we
3 deal with those.

4 But I think your more important
5 question was about the jurisdictional challenge.
6 I'll going to kind of go out on a limb, because I
7 don't know that I have my board's backing or even
8 the stakeholders' backing, but just sort of a
9 thought, and I think the thought is planted by
10 Chairman Haque's suggestion about a consult.

11 Because I think, you know, it would be
12 very difficult to change the jurisdictional
13 boundaries. It was well provided and well thought
14 out, long-time reasons why the construction and
15 investment and ratemakings at the state, and bulk
16 reliabilities at the national level.

17 But I think it would, at least from my
18 simple opinion, help to be able to coordinate on
19 what do we believe are the important reliability
20 metrics that affect customers; what are the
21 priorities, and how do we allocate among do we fix
22 the circuit breakers on the high voltage system,
23 or do we do something to affect better performance
24 during weather or recovery or things like that.

25 So I think just that the suggestion of

1 this council and coordinating better across the
2 boundaries would be very insightful, and I think
3 as part of that you can do what David Boguslawski
4 suggested is, not just talk about it, but who
5 should really take that on. You know, is it
6 industry issues, a transmission forum, is it a
7 NERC standard issue? That we kind of have that
8 dialog. I think that's really missing today from
9 how we prioritize the whole landscape.

10 COMMISSIONER MOELLER: Well, thank you.
11 That's a good discussion. I think of the DC Plan
12 to spend a billion dollars over the next twenty
13 years to underground about I think forty or fifty
14 transmission lines, and hopefully that was a good
15 value judgment. But, you know, we'll be paying
16 for it. And again a closer interaction with our
17 colleagues at state might make us all feel better.

18 I had another question, but I'll wait
19 my turn, if there's extra time, otherwise I won't
20 ask it. But I just do have this gut feeling that
21 partly based on this study from about five years
22 ago, Joe, on the Eastern Interconnect related to
23 the amount that the Eastern Interconnect absorbed
24 variable resources, I'm just really nervous, again
25 based partly on a lot of your written testimony

1 that this could get on top of us before we're
2 ready. So I'm hoping that that will get some
3 urgency from my perspective.

4 Thank you, Mr. Chairman.

5 CHAIRMAN BAY: Thank you, Phil.

6 Cheryl.

7 COMMISSIONER LAFLEUR: Thank you,

8 Norman.

9 My first question really is prompted by
10 Gerry's comments on the state of reliability and
11 some of the others, particularly Dr. Amin.

12 I do think this year's report shows the
13 level of process we have made, particularly on the
14 blocking and tackling and in many ways the initial
15 agenda of this whole enterprise was set by the
16 blackout of 2003, with the tree trimming and the
17 relays and so forth, and I absolutely agree with
18 Gerry, we need to continue to push forward on all
19 of those.

20 But then I think, you know, so are we
21 confident we have done what we need to do. There
22 will never be another blackout? I've been trained
23 to think the minute you ever have that thought is
24 when some new thing is coming. As Professor
25 Dobson I think said, it's rare but not vanishingly

1 rare. And when I think about the things that
2 really keep me up at night, it's the less well
3 understood challenges, the cyber security, the
4 high-impact, low-frequency things where the
5 metrics are not as defined. I'm not as confident
6 that the metrics are saying that we're meeting
7 tomorrow's challenges, because we don't know them.

8 So I'm just trying to think outside the
9 box of where should we be going from here to
10 address those high-impact, low-frequency, to
11 address the new challenges, and I'm wondering
12 whether -- a lot of these standards we have had
13 over the last ten years have been behavior based,
14 do this, do this, trim this much, set the relay
15 this way. Whether we need to think collectively
16 about how we build the system, at a time we were
17 putting so much money into it anyway, more
18 standardization of voltages and equipment, so we'd
19 have more resilience, more -- I know I've been
20 harping for years on specs for high voltage
21 transformers that had more resilience built into
22 them that were consistent so we could make all of
23 the new sparing and sharing ideas more robust.

24 The second thing is derisking the
25 system by building in more redundancies so you

1 have fewer critical nodes, or somehow you're
2 taking advantage of all the new technologies, you
3 just have to spread the risk a little so the
4 system would be less cascadable.

5 I don't know if it means -- I'm not at
6 all an electrical engineer myself -- whether it
7 means the N -1 is wrong, or how you would do that.

8 I just would like to ask, is there
9 something here that's the next wave, and if so,
10 what's the role of NERC and this enterprise in it?
11 Because that seems to be the best way to get
12 standardization.

13 For example, I was talking to Andy Ott
14 at PJM, and they're doing a lot of thinking on
15 some of these things, but they're just doing it
16 for their footprint. This is the only one that
17 covers the continent.

18 So I just wanted to throw that out
19 there for comment.

20 MR. BOGUSLAWSKI: My thinking shifted
21 as you spoke more, and I would say that the most
22 immediate thing in front of us perhaps -- well,
23 let me start by saying, I think the focus on
24 misoperations is really key, and that is
25 important. If the protection systems works, you

1 start mitigating and preventing widespread
2 cascading. But I think the immediate issue ahead
3 of us is gas supply -- and you know, New England's
4 facing it -- and extreme contingency planning
5 around where are we most vulnerable.

6 You know, at least when I think of
7 low-impact, high-frequency, beyond fuel supply, I
8 start thinking more extreme. So I would start
9 focusing on extreme contingencies that are sort of
10 maybe nearer to us and start working those.

11 And one more comment, you know, in the
12 physical security area, one of the things we are
13 doing, besides identifying critical stations, is
14 we're doing an electrical analysis to figure out
15 whether instead of physically protecting we could
16 electrically vacate. That gets pretty pricey as a
17 general matter. Very few and far between cases I
18 think are going to be electrically mitigatable for
19 the same price tag.

20 COMMISSIONER LAFLEUR: But isn't it
21 less pricey if you are building the substation and
22 build it in -- in other words, there is like what
23 do we do to retrofit what we have out there, and
24 then there is everything that we are building with
25 all the lines and all the, you know, remote

1 renewables and so forth. Is there an opportunity
2 to --

3 At least that's my question.

4 MR. MOSHER: Commissioner LaFleur, the
5 difficulty with transformers in particular is
6 these are really long-life assets. But what
7 you're about is standardization and also about
8 making any one asset less critical. It certainly
9 should be part of our long-term planning
10 philosophy.

11 We get a philosophy that we build this
12 redundancy into the system, so say that we could
13 withstand an N -2 or N -3 set of events on a
14 regular basis, even under extreme circumstances,
15 you know, then we would meet this objective of
16 building resiliency in the system.

17 Now we have to have a conversation
18 about how much the American public is willing to
19 afford, and I think the data really shows us that
20 the next billion dollars probably ought to go to
21 the distribution system rather than into the
22 electric system.

23 But better design standards that reduce
24 the criticality of any one substation, for
25 example, or of any one control center, that's

1 certainly a worthy goal.

2 PROF. DOBSON: Yeah, I would comment
3 that as we go beyond component reliability and N
4 -1, and I certainly support the N -1 attribute. I
5 think it works. But as we move towards more
6 complicated events, we have to take a more
7 probabilistic view, you have to take a more
8 systems view.

9 I mean, NERC is doing this, looking at
10 common mode and, you know, combinations of a
11 couple of events, and this is the way forward.
12 But as you look beyond two events you have to take
13 a more probabilistic view, different measures,
14 different interactions. It's not just component
15 reliability any more. We need to be able to look
16 at in a much more probabilistic way what are the
17 important interactions.

18 You can't do N -3, you know,
19 deterministically. You can't have deterministic
20 standards unless we're going to spend, I don't
21 know how many trillions it is. My colleagues can
22 tell me, but it's a lot of money.

23 So we need to do prudent things based
24 on probabilistic assessments of these interactions
25 in addition to pursuing all the good work on

1 component failures and deterministic N -1. We
2 need to progress towards more statistical
3 probabilistic kind of concepts to guide the
4 investments so that the American public gets the
5 bang for the buck that they deserve.

6 COMMISSIONER LAFLEUR: Dr. Amin.

7 PROF. AMIN: Thank you. I concur with
8 your question and with the analysis you mentioned,
9 Commissioner.

10 I want to share three points: One is,
11 in the last twenty years complexity has increased
12 a lot. I know every generation says that, around
13 the last twenty years or fifty years, and it's not
14 going to get any easier.

15 So, also considering how different our
16 systems are across the country, not every region
17 is identical to the other one.

18 So, the very good news is we have
19 developed expertise, thanks to you, thanks to
20 NERC, thanks to regional entities to manage these
21 and to improve the quality of the system and
22 performance.

23 However, the next you few years we are
24 going to need to do a lot more, a lot more
25 differently, such as when you think about how do

1 we assure performance, frequency response, as
2 showing the reliability on longer term systems and
3 horizon.

4 We need to look at beyond horizon
5 events and develop scenarios and don't fall in
6 love with those scenarios, but use them as a way
7 of bringing the community together, not
8 necessarily to take action on the scenarios, but
9 use them to do what-if's and to do the why and
10 what the changes are, where they are going to go,
11 why we are doing it, to anticipate this beyond a
12 horizon environment.

13 And we need ambidexterity, not only to
14 handle short term, which we are often focused on,
15 but ambidexterity to also monitor and detail
16 possible long term beyond the horizon events and
17 map out a procedure in response to this wisdom
18 that we gain from it.

19 I can go on and on, but in my briefing
20 that I've shared with you I talked about metrics,
21 best practices, road maps, and how to help
22 potentially -- a leader organization would be DOE
23 to bring to facilitate the connection between
24 NARUC, FERC, NERC and state areas .

25 NERC does a great job the way they

1 train ongoing people who operate the grid. Such a
2 training program can be used, for example, as a
3 model to do the scenario analysis and scenario
4 planning, but I would recommend not to do it on an
5 existing type of patterns, but look at what's
6 coming, where the things are.

7 This is not new, by the way. My old
8 job at EPRI, during 9/11, post-9/11, they did
9 that. They actually turned software agents loose
10 to attack the system and we developed
11 countermeasures to protect them, and many of the
12 barriers or many of the areas that we noticed
13 actually became the root cause for 2003 blackout.
14 That central portion within the midwest was that
15 corridor that we had identified and shared.

16 So it's not just scenarios but gaining
17 insights to that. And we can do that. We have
18 the technology to do it. So the question long
19 term is do we want to have anticipatory response?
20 Do we have a look-at-it capability within our
21 system that projects where the system is going,
22 and fend off or sectionalize problem areas to
23 avoid them.

24 So it's not just N -1, N -2. It's a
25 whole new way of using the computational power

1 sensors to predict where the system is going, with
2 a band of probability around that, uncertainty
3 around it. And the answer is we could do that.
4 We have the tools.

5 Thank you.

6 COMMISSIONER LAFLEUR: Thank you,.
7 Gerry...

8 MR. CAULEY: Commissioner LaFleur, I
9 think your question really suggests part of a
10 strategy going forward.

11 So since I've been at NERC we have
12 taken a different view on reliability than
13 traditional reliability distribution metrics, and
14 we're in the business of preventing big events,
15 big cascading events, big, large "CNN events."

16 For some of those we have a lot of
17 data. We can see the data. We can get the
18 causes. We can fix those. And that's the work
19 that we've been doing. And then you're pointing
20 out that there's other types of events that we
21 don't have the data.

22 We have anecdotal data of how many
23 intrusions there are, how many break-ins are there
24 and, you know, to defenses and thefts and so on.
25 But we don't have data about very significant

1 system failures and customer outages because of
2 cyber physical attacks and GMD attacks, very few
3 numbers.

4 I think we have done the prudent thing
5 of laying a base of prevention through standards
6 in those areas. We have given a lot of attention,
7 a lot of awareness building, a lot of focus in the
8 industry.

9 But really that's only going to temper
10 a portion of the risk, because it's such a huge
11 potential bad thing that could happen, that did
12 you spend enough, did you do enough.

13 And that's the problem that I have is,
14 how do you compare the risks that we know and that
15 we're managing to the unknowns, which could be
16 very catastrophic?

17 I think that's where your suggestion
18 comes in where at some point you have to stop
19 spending on preventing and you have to figure out
20 over a wide range of really bad things how do you
21 mitigate the consequences and the ability to
22 recover. And that gets into resilience issues and
23 recovery equipment and so on. And I think that's
24 going to have to be part of our strategy going
25 forward.

1 A couple of suggestions that I heard
2 here were really good. One is we can help our
3 cause by getting better data. Sensors on GMD
4 behavior, so if we know how it's behaving, we
5 could know how severe GMD events could get,
6 potentially.

7 If we're monitoring, if we have sensors
8 monitoring cyber activity, then we could feed that
9 back into the ISAC or elsewhere and do analytics.
10 We could see, well, how bad could it be, and I
11 think the smarter we get with data over time will
12 help us make those judgments.

13 I think that's an area, that kind of
14 research is an area where the academics really
15 could help us, help us understand the severity,
16 the potential severity and frequency of very
17 severe group chaotic kinds of events. We have a
18 hard time doing that because we don't have the
19 data.

20 COMMISSIONER LAFLEUR: Well, thank you.
21 I think you said it better than I did, that we
22 can't prevent everything, so we have to be ready
23 for things in the way we design, at least. And we
24 can't let the fact that we can't retrofit
25 everything to a system keep us from building the

1 future differently on the edge as we build.

2 I have one other question and a little
3 more here and now, but I want to pick up on Vice
4 Chairman Haque's suggestion of the council that
5 Commissioner Moeller also spoke of.

6 Commissioner Moeller and I, with state
7 colleagues, cochair the FERC/NARUC, whatever it
8 was called, Task Force I think it was called on
9 the environment and reliability, mostly focused on
10 the Mercury and Air Toxic Standard and the Clean
11 Power Plan.

12 I thought that was a useful exercise
13 because of its focus and because it built on the
14 existing NARUC meeting schedule, so to Dave's
15 point, we didn't create another committee and
16 another organization where we had to fly around
17 the country. We did it when we were already
18 there.

19 And I liked your idea very much until
20 you started talking about the examples, the
21 thought of talking about who decides where
22 generation goes and how the capacity markets work
23 and could kind of take in everything we have
24 pending, everything going on.

25 So I think it would be important if we

1 did this to have a definition of what it is, what
2 problem are we solving and what's the focus going
3 to be.

4 So I'd invite you or any of your
5 colleagues to talk about what would be the mission
6 of this in a clear way so that we would then staff
7 it and set it up? And could we do it do you think
8 as part of NARUC, or are those days just so full
9 that you can't jam in one more committee?

10 MR. HAQUE: Sure. So, thank you
11 Commissioner LaFleur. Let me comment on what I
12 think I can comment on it.

13 So the reason for, you know, the
14 genesis behind this council is I really do think
15 we're dealing with, you know, four truths, and
16 these truths I think are not the same truths that
17 existed when the match rule was promulgated. Some
18 of them are, but I think, you know, truth number
19 one: Reliability is a shared mission between
20 federal and state, from power generation all the
21 way down to delivering to the consumer, okay.

22 I think truth two is that, despite
23 FERC's mission to maintain reliability of the Bulk
24 Power System, you cannot mandate the construction
25 of generation and transmission, okay.

1 I think truth three: We're starting to
2 see states, and again I'll call them, what I'll
3 call them is federal sidesteps, being very
4 concerned about reliability, whether justifiable
5 or nonjustifiable, and starting to take action on
6 their own.

7 Some of those issues have made it up to
8 court, some of them have not yet, and so I think
9 that is something that is another truth that
10 you're dealing with right now, is that states are
11 starting to take matters into their own hands.

12 And I think the court, which I think
13 has been recognized by this Commission,
14 reliability, because of the Clean Power Plan, is
15 going to be placed in the state's hands. What I
16 mean by that is that the state's submit these
17 state implementation plans, and then what is sort
18 of the strategy from there?

19 We are, "we" being NERC -- again I'm
20 here in my capacity as part of the member
21 representative committee of NERC -- is the
22 strategy from there to then be reactionary to
23 these state plans.

24 And so then Chairman Bay submitted a
25 letter to Deputy Administrator McCabe basically

1 saying, you know, "I was hear testifying about the
2 reliability component of the Clean Power Plan as
3 well. Do you have this potential reliability
4 assurance mechanism that you are hopeful that the
5 state plans will be reviewed prior to them
6 actually being approved by the U.S. EPA?" But how
7 do you get there? How do you create solutions if
8 reliability issues are identified?

9 Of course, you can hope. There are two
10 things that have to happen. One, states have to
11 mandatorily submit their plans to NERC, to FERC.
12 Okay, so somehow that has to happen, and then the
13 other component of this is, let's say reliability
14 issue is identified. So what? What do you do
15 with that? How do you get there?

16 And I do think that because so much is
17 going to be placed in the hands of the states that
18 this type of collaborative effort is necessary.

19 Okay, so that's the background
20 component of why I think this is relevant today,
21 specifically.

22 Now, how would it work? So in my mind,
23 I think that the best -- and just starting from
24 origin and then building out. I think that the
25 best path is for really the engineers, for NERC to

1 tell states, "Here is where your problems will lie
2 unless there is a remedy," okay.

3 Now, what can be discussed within the
4 confines of that counsel? I'm a "recovering
5 lawyer". I have not done that legal analysis. At
6 this point in time my hope was that we could talk
7 about infrastructure development, my hope is we
8 could talk about markets, and then the third
9 component is my hope is that we could talk about
10 this issue that Gerry mentioned, the delivery of
11 data associated with distribution, which seems to
12 be a gap between NERC and the states. Okay, so
13 this is my hope.

14 There would have to be I'm sure
15 confines that surround what we can and can't talk
16 about, but I think that in my mind the best place
17 to start is with NERC telling states and FERC,
18 "Here are going to be your problems. It is up to
19 you, regulators, from a regulatory perspective, to
20 solve them".

21 So I hope that that at least somewhat
22 sort of informs kind of the structure of this.
23 But as I said in my comments, I do think that this
24 will take some development surrounding the
25 potential legality.

1 COMMISSIONER LAFLEUR: Well, thank you.

2 That was very helpful.

3 I think definitely, as several people
4 have pointed out, the bulk electric system doesn't
5 reach the customer, and there has to be a
6 connection between both parts of reliability,
7 especially with more distributed resource as they
8 impact each other. We just would have to think
9 through how we best structure it.

10 There is an issue of pending cases
11 before FERC. That's usually soluble by somehow
12 working around them.

13 I also just wonder whether we want to
14 have this forum be like a forum on are the
15 competitive markets working, or are the states
16 doing workarounds. That gets to a pretty broad
17 mandate. It might be worth talking about, but
18 it's a little bit beyond the NERC reliability, so
19 we would have to think that.

20 MR. HAQUE: Yeah, and I think so the
21 assessments that NERC puts out, so the Summer
22 Reliability Assessment, the Summer Reliability
23 Assessment is no longer on the table, right. We
24 talked about that.

25 So the Summer Reliability Assessment

1 says in severe weather conditions, both PJM and
2 MISO may have some difficulty. Okay, that's what
3 the Summer Reliability Assessment says.

4 So these are the engineers telling the
5 states in PJM in MISO and telling FERC, "Here is
6 the situation," okay. And so to me it is really
7 NERC telling us, "Here are the problem areas" and
8 us trying to create solutions; as opposed to us
9 sort of saying, "Well, in the first session we're
10 going to talk about markets and in the second
11 session, we're going to" -- so it is problem
12 solving driven is sort of my visions.

13 COMMISSIONER LAFLEUR: Thank you very
14 much.

15 CHAIRMAN BAY: Thank you, Cheryl.
16 Tony...

17 COMMISSIONER CLARK: Thank you and
18 thanks to everyone for being here.

19 I have a couple of really discreet
20 questions, and I'll start out with Mr. Fraser and
21 would ask either Gerry or Tom to maybe follow up
22 on this.

23 There are a couple specific things in
24 your testimony that I caught when you read through
25 and you highlighted them again today which had to

1 do with I think as much as anything information
2 sharing between Canada and the U.S. and with NERC,
3 and I wanted to dig down a little bit deeper into
4 that.

5 One is you've raised a specific concern
6 about the NERC report and certain assumptions that
7 they may be making about retirements and some
8 other things that are going on in Canada, and I
9 just wanted to see if you wanted to put any more
10 flesh on the bones of that, and then ask Tom or
11 maybe Gerry to see if this has been accounted for,
12 if you have heard this is a concern or is there a
13 communication issue that needs to be resolved.

14 MR. FRASER: Well, it certainly was an
15 issue in that the Canadian industry, when they saw
16 the report, when they saw the level of imports
17 from Canada, did react quite publically I believe
18 at a member representatives committee meeting
19 saying, "Well, where did you get this assumption
20 from"?

21 As I mentioned in my remarks this
22 morning, I understand that couple of days ago NERC
23 was meeting with the Canadian Electricity
24 Association and going through the report with them
25 and explaining how they came up with this, and

1 also, I know they can speak to it, but certainly
2 in the next iteration of this that they would be
3 involving the Canadian side much more, and I think
4 I'll let NERC explain a little bit more about
5 that.

6 COMMISSIONER CLARK: Great, thanks.

7 Tom, if you could provide something of
8 an update.

9 MR. BURGESS: Yes, and Peter is exactly
10 correct, that we did have a conversation with them
11 to try to walk through what the questions were and
12 how to best understand what their concerns are. I
13 think we pretty well addressed them.

14 Just from a starting point, the
15 baseline that we were using in our analysis is
16 really driven from the long-term reliability
17 assessment materials, and so all of those
18 assumptions were North America based and they're
19 based on the best information that we can gather
20 from the regions and the entities that are in
21 those regions about their expectations for the
22 period of time we were looking at. So mostly
23 that's the long-term environment.

24 We did include some planned
25 transmission and additions into the grid. At the

1 same time one of the things that we explained was
2 that we were taking a relatively conservative
3 first-cut look at the question of interchange
4 capabilities, and that was fervent look at that.
5 So we know and recognize that there are many other
6 aspects that govern and surround how effective or
7 how much transport can be accomplished.

8 And so, going forward, we anticipate
9 we're going to need to do more analysis once a
10 final rule is present and gives us better insights
11 about in particular one of the aspects that I know
12 that the Canadians have commented on is about what
13 is the benefit of the credit or the value, if you
14 will, of Canadian imports in thinking about
15 compliance plans in the United States under the
16 EPA CEB plan.

17 So those kinds of analyses, those kinds
18 of clarification, as the rule gets finalized, will
19 help shape how we want to look at that and how we
20 need to look at that, and we welcome the presence
21 of Canadian members on our advisory group to help
22 make sure that we get it right. We want that
23 information. We want those insights. So that's
24 the gist of our conversation.

25 MR. CAULEY: Can I just add something

1 short, Commissioner Clark?

2 COMMISSIONER CLARK: Sure.

3 MR. CAULEY: There might have been some
4 error, and we didn't actually assume the exports
5 would come in from Canada. We actually loaded
6 what is, what the current data is on the system
7 from our LRTA and we ran economic analyses.

8 All we were saying in the report was,
9 you know, given the price of gas, given
10 retirements, given all the factors that are
11 modeled here, this is what the algorithm in the
12 program is telling us would happen.

13 COMMISSIONER CLARK: Mm-hmm.

14 MR. CAULEY: We're not trying to model
15 political or business decisions that individual
16 states or promises might make different from that.
17 We were just running an economic model. So we're
18 not assuming the three thousand megawatts of
19 imports. It was something that got spit out of
20 the computer program.

21 So hopefully that helped clarify that a
22 bit, but I think having the Canadians involved in
23 that process will be beneficial.

24 COMMISSIONER CLARK: Great. Thanks
25 Gerry.

1 And a follow-up question relating to
2 the comments, Mr. Fraser, about in some cases, as
3 the standards work their way through the
4 governmental processes in Canada, some provinces
5 maybe haven't adopted all of the standards. You
6 may have it would appear a bit of a gap, either in
7 terms of what may be required of specific
8 utilities, vis-a-vis what jurisdiction they're
9 under, and I'm wondering, is there concern about
10 that or is it an acceptable gap?

11 I mean, there may be certain gaps that
12 we can live with. There might be some that expose
13 DES to a wider concern. I'm not pointing any
14 fingers at any other provinces or government.
15 It's just a reality that we maybe do something
16 that's not synching up across the border, or two
17 provinces may be doing something that isn't
18 synching up together. I'm wondering if this is
19 all within the margin of error that we can live
20 with, or is there something that we should all be
21 more focused on that might be a greater concern
22 here?

23 MR. FRASER: Well, certainly, I believe
24 it's something that we can live with. The comment
25 was more about, well, we were getting to the end

1 of one standard and some of the problems wouldn't
2 have adopted it yet, and yet we already have an
3 SERO on the new version of the standard, and that
4 was more of the point.

5 So certainly there is a question about
6 there are going to be, with all these different
7 jurisdictions, some difference in terms of the
8 timing of the option of these standards.

9 I do think the situation has actually
10 improved quite a bit over in Canada over the last
11 few years. So I think it is something we can do.

12 COMMISSIONER CLARK: Okay, thanks.

13 A little bit more general question, and
14 it's something that I've read about a bit in the
15 trade press, and I'll address it first to Gerry,
16 because I think it's you I heard quote it over the
17 last week or so. It's nothing bad. I'm curious
18 about it.

19 You know I heard strains of it I think,
20 and maybe Dr. Amin will talk to me about this as
21 well, which is the tension between modernizing the
22 grid, bringing more real-time information into the
23 grid, more devices at the edge of the grid into
24 the network, which can be helpful from a
25 reliability standpoint, but also carries with it

1 risks in terms of opening up the number of -- I
2 think you called it the playing field, sort of
3 something like that. There is a PAC avenues that
4 make themselves available when you have that much
5 more information coming in from the edge of the
6 grid.

7 Could you talk a little bit about that
8 tension that exists and any advice you have for
9 the Commission in terms of coming to terms with
10 it?

11 MR. CAULEY: Well, you know, I think
12 those statements can sometimes be in reaction to
13 what I hear in the media and in public
14 conferences.

15 You know, one message is, you know,
16 it's the aging infrastructure that's ready to
17 crumble and fall apart. I don't really believe
18 that. I think we've been building and
19 reinforcing. I think that there are issues of
20 aging infrastructure, but it's not the epidemic
21 proportions that you hear about.

22 I think the other issue is always
23 seeing that the grid is the center of the
24 bull's-eye and, you know, we're in a crisis state.

25 And sort of the solution is, well if we

1 have distributed resources, or if we have, you
2 know, people go off grid and have their
3 distributor generators and so on, life would be
4 just perfect.

5 And there's actually a reality around
6 that, and that is that every one of those devices
7 is based on electronics and digital and
8 communications, and a lot of that communication is
9 actually wireless. Some of it may even be on the
10 Internet, but certainly it's wireless and there is
11 a lot of communications.

12 And my concern is that, you know, while
13 it does what Commissioner LaFleur said earlier, it
14 can distribute the risk and make it great
15 redundancies, I think that's advantageous.

16 But if you look at the attack surface
17 of say a common tool like Microsoft Office, you
18 say, well, it's only one laptop, it's only one
19 desktop computer. But if the bad guys can figure
20 out how to affect one point five million of those,
21 whether it's a meter or a distributor generator,
22 because of a common vulnerability that they can
23 exploit, that's my concern. It doesn't make it go
24 away.

25 Because there's different ways to

1 attack. You attack one big substation as the
2 transformer breakers, or do you attack, you know,
3 five million common devices that came from one
4 manufacturer using a common kind of
5 communications. It doesn't make the problem go
6 away it just shifts the problem and you still have
7 to deal with those kind of vulnerabilities as
8 well, maybe even more so.

9 COMMISSIONER CLARK: Dr. Amin...

10 PROF. AMIN: Thank you. In our society
11 unfortunately we often fall under the false
12 choice, false dichotomy, "Do we do this or do we
13 do that?" We say, "Can we put more sensors, more
14 automation, more controls, more IT-enabled
15 systems, real-time IT into the system, or do I
16 keep it that way?"

17 That's not a question of "or." It's a
18 question of "and."

19 And from the very beginning sir, from
20 1998 when I first proposed smart self-healing
21 secure grid presentations online, security's a key
22 part of design. So, from everywhere from chip
23 level that we are not doing today, chips in
24 critical equipment, as well as in the
25 communication, in the protocols, those have to

1 have security designed as part of its designed;
2 not glued on or sprinkled on, afterwards as an
3 afterthought, what we ended up doing before Y2K
4 and post-9/11.

5 So in the recommendations that I shared
6 with you that went to the White House DOE -- and
7 this is not new. We have been pushing for this
8 for the last seventeen years that security is a
9 part of design of the devices, protocols,
10 communication, architecture.

11 By doing that, you actually increase
12 the security of the system. Why? Because you
13 have multiple layers. You have defense layers
14 that you can validate and stop potential hackers.
15 You are not going to do what we did incorrectly in
16 the '80s and '90s, use Aftershock software,
17 Microsoft software to run a critical
18 infrastructure.

19 So, with all due respect to Gerry, that
20 is not what we are doing and what we are
21 proposing.

22 Many of you may have seen on the news
23 the buggy meters that were sold. The buggy
24 meters, smart meters that were sold six, seven
25 years ago, it would have cost a vendor fifty

1 cents, less than fifty cents per meter to remedy
2 that. They didn't do that. That's why we need to
3 bring in vendors as part of the partnership to
4 actually use smart grid, use the modernization as
5 a way of enhancing the security and resilience,
6 and not the opposite.

7 If we don't do it as a part of as I
8 mentioned earlier, we do it haphazardly and leave
9 it open absolutely. You're going to create a lot
10 more nodes and a lot more vectors of attack from
11 domestic as well as international organizations.

12 But there is a lot of good news in that
13 area, and it connects back with what Chairman Bay
14 asked earlier. We can use NISC's smart grid
15 collaboration model or NARUC's smart grid
16 collaboratory as models to bridge within
17 jurisdictional gap from federal, state, local and
18 bring the vendors in, bring NERC in to actually
19 address those issues.

20 But the fear you're hearing is a
21 reaction to saying that the grid is falling apart,
22 it is rusting up and we need to modernize it.

23 And there are the two extremes. In
24 reality we can modernize it, increase the security
25 and resilience. And we have done it by the way.

1 It's not a question of can. It has been done.

2 Thank you.

3 COMMISSIONER CLARK: And then just a
4 quick follow-up for Tom or Gerry.

5 Do we have, "we" meaning FERC, NERC
6 through our process, the tools to be able to do
7 that, or is there something that we should be
8 looking at that we currently don't have at the
9 table to address those regulatory gaps that exist?

10 MR. CAULEY: Are you talking about the
11 in the distributed resources, distributor area?

12 COMMISSIONER CLARK: Right, because
13 we're getting so far further and further away from
14 the EPS --

15 MR. CAULEY: Yes, we don't have really
16 much -- I feel we don't have much in terms of
17 tools or jurisdictions. I think we can be an
18 advocate, you know, and a voice to, you know,
19 remind folks.

20 COMMISSIONER CLARK: Coordinating more
21 probably the NISC-type processes.

22 MR. CAULEY: Right, the coordinating
23 council that I'm a part of, and a number of
24 industry CEOs are a part of, fortunately their
25 scope is not the limited to bulk power. So the

1 coordinating council looks at security from both
2 the bulk power distribution and the entire
3 electricity sector.

4 So to the extent that it becomes an
5 issue that needs to be dealt with, I think that's
6 a good plan that that be taken care of.

7 COMMISSIONER CLARK: Great, thanks.

8 Question for Vice President Haque. I
9 too was intrigued by your comments of the forum
10 that you're recommending be set up. Because it
11 really does get to what is one of the great
12 unresolved questions of the Federal Power Act,
13 especially post-EPAC '05, which is this tension
14 between the resource adequacy, which was left at
15 the state level, and Commission authority over the
16 bulk electric system reliability and its
17 traditional authority over wholesale markets.

18 I'm wondering how much of this is
19 really related to specific markets, however, as
20 opposed to concerns nationwide? And the reason I
21 ask that is it seems like most of the concerns
22 that I hear, and emerging concerns that I hear at
23 this nexus of federal policy and state
24 workarounds, which I think is a good way of
25 putting it, seem to be very focused on regions of

1 the country that have two attributes: One is
2 restructured markets from the state level; two is
3 operating in eastern markets that have capacity
4 markets.

5 We have some pensions and disagreements
6 and issues that arise in other parts of the
7 country, but when you really want to get down to
8 where we're hearing the most consternation, most
9 complaints are from FERC, most lawsuits that go
10 before federal court is restructured states and
11 capacity markets seem to be the common theme...
12 Would it be possible to address some of the
13 concerns and issues that you have by focusing in
14 on that particular issue, understanding it could
15 be very difficult from an ex parte standpoint and
16 everything else to work through some of these
17 things, and it's understandable from a number of
18 complaints that we have.

19 How much is that particular issue
20 versus a nationwide issue?

21 MR. HAGUE: Yeah, so that's a very fair
22 question. I, of course, am immersed in PJM, being
23 from the state of Ohio. We are a restructured
24 state, and so fair enough that a lot of the issues
25 that I hear are states that shared the attributes

1 that you just mentioned.

2 A few thoughts... One thought is that
3 those states that share those attributes
4 potentially, as the transformation of our
5 generational resource mix evolves, could
6 potentially be advantaged or disadvantaged. I
7 don't know the answer to that.

8 Okay, and so then you have fully
9 regulated states that are sitting out there that
10 could be part of the solution.

11 And so what I would say is, first of
12 all, that, you know, we all know the nature of the
13 grid, and that if there are problems, again, how I
14 would envision this is that the problem
15 identification would come from NERC, and so if
16 there are regions that are not impacted by NERC's
17 problem identification, then those regions are
18 exempt from that particular council meeting. So,
19 that's the first component of this.

20 Then the second component of this is
21 that, despite those states having those
22 attributes, sort of having the gravest, most grave
23 concerns right now, there are other states that
24 could actually act to potentially ameliorate some
25 of those issues.

1 So I think that there is space, I guess
2 I would say, for all states to be at the table.

3 COMMISSIONER CLARK: Okay, thanks.

4 I don't know that I have any more
5 questions. This probably falls more into the
6 bucket of commentary, and I don't expect any of
7 you to react to it because it wasn't an issue that
8 we teed up in particular but an area that I'm very
9 interested in exploring. It's a little bit
10 separate from our topic here today, but definitely
11 focused around reliability, is that we talk a lot
12 about the schtick related to reliability
13 enforcement, which is NERC-type enforcement and
14 all that we have been dealing with through the
15 NERC/FERC process and compliance activities and so
16 and so forth. That's the schtick.

17 I continue to be intrigued whether
18 there is a carrot that's available out there that
19 the Commission could be exploring as well. From
20 time to time we have talked about
21 performance-based ratemaking for Commission
22 process. I'm very interested in seeing if that
23 has some potential. That may be the carrot that
24 we can use to encourage reliability.

25 A number of states have utilized this

1 on the distribution side where it takes a lot of
2 time to get it right. I have some experience in
3 my own home state of going through it. It takes
4 time to get the performance metrics nailed down
5 and to get the performance metrics right and
6 sometimes they need tweaking as you go along.

7 But if you can get that level of
8 consistency in the expectations and the
9 requirements and you get the bandwidths right,
10 it's a very powerful tool for encouraging greater
11 reliability that in my mind is a way of enhancing
12 all that we're going doing on the compliance side.

13 So I don't know if any of you have
14 thoughts about performance-based ratemaking, but
15 it's an area that I am intrigued by and would be
16 perhaps looking forward to if those of us on the
17 Commission can look at over the next few years.

18 Allen.

19 MR. MOSHER: I actually think that NERC
20 within the confines of the rules is actually
21 headed that way. The RISC-based Compliance and
22 Enforcement Program really does focus on scoping
23 audits and scoping oversight based upon the risks
24 that a particular entity presents.

25 Now there's going to be a lot of

1 problems in the implementation. We're going to be
2 bitching and moaning as we talk about it, but
3 actually this program is exactly right. Because
4 if an entity has good internal controls and
5 manages its risk well, then NERC and the regions
6 are going to leave them alone and let them do it.
7 They're going to self-report their violations and
8 they're going to have them fixed at the same time
9 as they report them, unless there is some long
10 mitigation process.

11 Fundamentally that will free them these
12 resources to focus on things that are more
13 important. Entities that are less sophisticated,
14 they're going to have to scope that's the size of
15 the entity. That's a particular concern for VA
16 members, but it's still going to be scope based
17 upon risk and freed-up resources.

18 Ultimately that's it's own report,
19 because you're getting performance out of it, out
20 of the process.

21 Now the question is what can the
22 Commission do to buttress that. We have done the
23 necessary steps so far by getting NERC to
24 implement these programs, and I'll hope you'll
25 keep encouraging it.

1 But the part that comes with it is the
2 focus on education, on doing analytics and making
3 sure that those amenities and industries and all
4 the manufacturers actually respond to the
5 materials, the insights that we're gathering. I
6 think we're doing that well, but we have much more
7 to do.

8 My guess is that we've got a number of
9 topics that NERC has addressed over the last
10 couple of years that if they had come up eight
11 years ago there would have been a standard
12 authorization request submitted either by NERC or
13 by the industry or pressed by the Commission
14 staff. We're not always using the standards
15 hammer in the way that we have in the past.

16 That's actually good, because we can
17 have higher level standards, more performance
18 based to get the overall reliability objective,
19 and then get more flexibility on how you address
20 the particular circumstances of an entity.

21 So, we're headed that way, and whatever
22 you can do to buttress it, that would be great.

23 COMMISSIONER CLARK: Okay. Mr.
24 Chairman. Thank you.

25 CHAIRMAN BAY: Thank you, Tony.

1 Do any of my colleagues have any
2 questions?

3 Phil...

4 COMMISSIONER MOELLER: Yes, a couple of
5 quick follow-up. Thank you Mr. Chairman.

6 To Mr. Cauley and Mr. Burgess, we've
7 been talking at least in some focus over the last
8 three years, at least in my discussions with
9 folks, on focusing on the recovery aspect of a
10 successful cyber attack.

11 In your opinion is the industry doing
12 enough to be focusing on the recovery of such a
13 successful attack, and if not, what should we do
14 about it?

15 MR. CAULEY: There is a lot of work
16 going on. We have made significant progress. A
17 lot of that work is done around the Electricity
18 Subsector Coordinating Council and they have
19 technical routes that are working on various
20 issues, incident response and recovery.

21 I think a couple areas that are
22 continuing attention and focus is the recovery of
23 a major cyber event is very different than trucks
24 and chainsaws and moving large amounts of crews
25 and the logistics associated with that. It's

1 where are the cyber assets. They may not even be
2 at the headquarters. They may not be in
3 traditional locations. What kind of capability do
4 you need to recover vast amounts of cyber assets
5 and continue operations.

6 The other area of focus is on recovery
7 equipment, you know, special equipment that might
8 be difficult or a long-term replacement.

9 So a lot of that work is going on, and
10 I can't say that it's done and we're there. We
11 have made a lot of progress on the planning,
12 preparations, incident response, capabilities,
13 logistics, but we have those really two big ones
14 that are still focus area for a lot more work, is
15 recovery equipment and cyber recovery -- recovery
16 of cyber operations. If you had, say, ten
17 thousand computers wiped out, as Sanny Remco had
18 close to thirty thousands computers wiped out and
19 shut down their operations, how do you recover
20 from that particular type of event.

21 COMMISSIONER MOELLER: That's all I
22 want to talk about on that.

23 The last quick question is again toward
24 NERC, one of the main focuses of the testimony
25 from Mr. Boguslawski and I'm guessing Mr. Mosher

1 would endorse it as well, is kind of a fatigue
2 element to the standards process, an enormous
3 amount of staff time put into it.

4 I know you're aware of it, but I would
5 kind of like your reaction to it.

6 MR. CAULEY: Well, I think it's a valid
7 statement and it's a valid issue. I'm fatigued.
8 I just love it and I have so much fun with it that
9 it doesn't bother me.

10 But I think the good news in standards
11 is that we are hitting the inflection point
12 meaning from the 2010, March 2010 orders and all
13 the original startup, it took way longer than I
14 think anybody imagined, but we are getting to the
15 inflection point of getting to a steady state of
16 standards and focusing on quality improvement and
17 the feedback on the risk and to the standards.

18 So I think that we're anticipating the
19 volume of the standards would be changed, which
20 would affect that sort of fatigue issue as well as
21 the cross-border issue with Canada to get a more
22 stable set of standards.

23 I think the payoff on the compliance
24 side is going to be a bit of time to get, because
25 we're reoriented toward focus on controls and risk

1 analysis and, you know, how do we call out the
2 things that are most important.

3 So people will be grappling on how do
4 we prepare for that, how do we approach that, and
5 I expect it will be a year or two before we start
6 seeing some of what happens there.

7 And I hear this dozens of time every
8 year. There's only so many things we can do at
9 once, so we're really trying to take that apart
10 and prioritize our business planning and limit the
11 number of initiatives and new things we start up
12 and get some things done before we start new
13 things.

14 So we're really trying to focus on that
15 and we understand the issue.

16 CHAIRMAN BAY: Thank you, Phil.

17 Cheryl? Tony? Staff, any questions?

18 Well, we will adjourn for now, or take
19 a recess now five minutes before noon and we will
20 resume at 1:00. Thank you.

21 (Whereupon at 11:55 a.m. a luncheon
22 recess was taken.)

23

24

25

1 A F T E R O O N S E S S I O N

2 (Whereupon at 1:00 p.m. the State of
3 Reliability Technical Conference resumed.)

4 PANEL II: Emerging Issues:

5 CHAIRMAN BAY: Well, good afternoon,
6 everybody. First let me thank our panelists for
7 coming here today. Not to put any pressure on
8 you, but I hope this panel is as interesting and
9 as thoughtful as our last panel.

10 You will be discussing a very
11 interesting issue, which is to say emerging
12 issues, and I will let Ted now take over from
13 here.

14 MR. FRANKS: Good afternoon everyone.
15 I hope everyone enjoyed their lunch, so for the
16 panelists...

17 From the North American Electric
18 Reliability Corporation we have Mark Lauby and
19 John Moura.

20 From ISO New England, Peter Brandien.

21 From the North American Transmission
22 Forum, Thomas Galloway.

23 From Washington State University,
24 Professor Anjan Bose.

25 From the Midcontinent Independent

1 System Operator, David Zwergel.

2 From the California Independent System
3 Operation Corporation, we have Mark Rothleder.

4 From the Electric Reliability Council
5 of Texas, Warren Lasher.

6 And last but not least, from the
7 Electric Power Supply Association, John Shelk.

8 Thank you, and Mark, whenever you are
9 ready...

10 MR. LAUBY: Thank you. Good afternoon,
11 I'm glad to be here. Good afternoon Chairman Bay,
12 Commissioners, Staff and fellow panelists.

13 My name is Mark Lauby and I'm NERC's
14 Senior Vice President and Chief Reliability
15 Officer. John Moura and I have filed a joint set
16 of comments which we're here to kind of expound
17 upon both of those in that set.

18 I will provide a high-level view and
19 discuss essential reliability services, while John
20 will review the results of our periodic and
21 seasonal assessments. And we will both be
22 available of course for taking any kind of
23 questions.

24 From a strategic point of view, there
25 are three key thematic emerging trends: First the

1 changing nature of reliability with the new
2 yardstick being measuring reliability increasingly
3 through resiliency to extreme events; second the
4 changing nature of the grid as the historical grid
5 structure and resource mix is in the midst of a
6 swift transformation, and of course then the
7 increased focus on physical and cyber security.
8 You heard about some of that all ready in the
9 first panel and you'll hear about some more of it
10 in the next panel.

11 Further, NERC's Reliability Issue
12 Steering Committee, or RISC, has annually
13 identified emerging risks, most of which have been
14 incorporated in NERC's activities for what we're
15 pursuing in 2015, and that includes a changing
16 resource mix as I mentioned before, extreme
17 physical events, cyber security preparedness,
18 protection system misoperations, human
19 performance, and extreme weather preparedness and
20 resiliency.

21 By identifying and quantifying the
22 emerging reliability issues from trend analysis
23 and scanning the horizon, NERC can deploy its
24 extensive toolkit using a multidimensional
25 approach to select mitigating activities based on

1 their effectiveness, the seriousness of the risks,
2 and the desired measurable improvement.

3 For example, NERC has been assessing
4 the changing resource mix for a number of years.
5 A substantial amount of conventional generation is
6 now projected to retire due to marketing
7 conditions and environmental regulations, some of
8 which will be replaced with asynchronous variable
9 generation resources.

10 NERC has identified two reliability
11 building blocks which are frequency and voltage
12 support that are sustained by essential
13 reliability services inherently provided by
14 conventional resources.

15 To quantify existing essential
16 reliability services, five measures are now being
17 piloted with industry, and based on the results of
18 this pilot, guidelines, tutorials and potentially
19 changes to NERC reliability standards may result,
20 along with enhancement to NERC's assessment
21 activities.

22 The primary goal of this effort is to
23 assure that the future systems will have
24 sufficiently essential reliability services to
25 ensure that they operate reliably. For example,

1 one solution may be that a portion of the variable
2 energy resources be integrated into the Bulk Power
3 System to be equipped with smart controllers
4 providing them with the necessary capability to
5 supply essential reliability services.

6 Policymakers and regulators may need to
7 adopt policies that support the installation of
8 these smart controller technologies.

9 In conclusion, NERC continually scans
10 the horizon to identify, quantify and use our
11 reliability of toolkit to mitigate risk. NERC's
12 unbiased assessments of industry's plans for
13 maintaining Bulk Power System reliability is
14 grounded in our independence and solid
15 engineering.

16 I appreciate the Commission's focus on
17 these topics and look forward to working with you.

18 CHAIRMAN BAY: Thank you, Mr. Lauby.
19 Mr. Moura...

20 MR. MOURA: Good morning, Chairman Bay,
21 Commissioners and fellow panelists. Thank you for
22 the opportunity to provide my testimony to you
23 this afternoon.

24 Again my name is John Moura. I lead
25 the ERO statutory obligations of conducting

1 long-term independent reliability assessments of
2 the Bulk Power System, and as you know NERC annual
3 evaluates the liability, provides early warning
4 indicators of potential reliability concerns and
5 emerging issues through its long-term seasonal
6 special reliability assessments.

7 Also, while we're on the topic of
8 anniversaries, I should point out, NERC has been
9 conducting these assessments for fifty years.

10 By identifying and analyzing emerging
11 reliability issues, NERC is able to provide a
12 technical platform for important policy
13 discussions on challenges facing the
14 interconnected Bulk Power System. NERC's
15 assessments help us improve resource and
16 transmission planning methods, develop operating
17 and planning guides, and enhance NERC's essential
18 reliability standards, if needed.

19 My testimony will cover a broad
20 waterfront of emerging reliability issues,
21 specifically why these issues are challenging the
22 reliability of the BPS and wondering what we can
23 do to address them.

24 First and foremost, I think it's well
25 understood that the electric industry is

1 undergoing a massive and fundamental change.
2 These changes include retirements of base load
3 generation, increase of gas fire generation, the
4 rapid expansion of wind, solar and commercial
5 solar PB integration, and of course more prominent
6 use of distributed energy resources and demand
7 response, which is growing at an enormous rate and
8 remains a growth market.

9 With that in mind I want to discuss
10 three key findings of the 2014 long-term
11 reliability assessment...

12 The first key finding of course is that
13 declining reserve margins were highlighted over
14 the past several years. ERCOT's and MISO's
15 reserve margins have slowly declined and NERC has
16 put a spotlight on those assessment areas.
17 Improvements have been made in ERCOT and they have
18 increased the amount of resources in that area and
19 reserves appear sufficient.

20 However, NERC is concerned with some
21 resource adequacy conditions in MISO as the area
22 has already seen a large amount of clean air
23 retirements and additional retirements loom in the
24 future.

25 Transition in key finding two is around

1 existing and potential environmental regulations.
2 Really the continuing primary driver is the
3 ongoing retirements. NERC projected about
4 forty-two point two gigawatts of retirements by
5 2024. You should know that that does not include
6 the effects of the CPP or any retirements that
7 have not occurred or been announced quite yet.

8 In April of this year, we issued a
9 phase one report which reviews resource and
10 transmission adequacy considerations. The major
11 key finding from that assessment was that industry
12 needs more time to develop coordinated plans.

13 Finally NERC's third key fund in the
14 LTRA called for enhanced measurement and
15 approaches used for future reliability
16 assessments. Reserve margins are core to NERC's
17 assessments. They provide a well-suited
18 measurement and provide excellent measure of
19 reliability, particularly when the resource pool
20 is predominantly controllable, dispatchable and
21 capacity based.

22 However new system behaviors require
23 new system measurements for reliability. We can't
24 measure tomorrow's system with yesterday's
25 metrics. That's really where the Essential

1 Reliability Services Task Force comes in. I'll be
2 happy to answer questions around that.

3 In closing I just want to express
4 NERC's appreciation to FERC in recognizing the
5 important contribution NERC makes in comprehensive
6 reliability assessments. NERC is going to
7 continue to assess reliability implications and
8 changing federal policies as parts of its general
9 reliability assessment efforts, and accordingly
10 NERC would be pleased to coordinate with FERC on
11 reliability assessments of rules that pose real or
12 potential challenges to resource adequacy for
13 reliability of the Bulk Power System.

14 It's clear from my vantage point that
15 there is a hunger for more independent assessment
16 and the work accomplished by the staff, the
17 regions the ERO overall and the stakeholder
18 community are important ingredients to the broader
19 policy debate.

20 Thank you for the opportunity to
21 address the Commission. I look forward to your
22 questions.

23 CHAIRMAN BAY: Thank you, Mr. Moura.

24 Mr. Brandien.

25 MR. BRANDIEN: Good afternoon, Chairman

1 Bay, Commissioner Moeller, Commissioner LaFleur,
2 Commissioner Clark.

3 I think you'll find this panel more
4 interesting than the first one. A number of us on
5 this panel have to deal with a lot of the issues
6 that we're talking about. We're actually out
7 there planning and operating the power system and
8 monitoring the metrics that come up, and we have
9 to deal with that.

10 You know, public policy in technology
11 is really driving the change in the resource mix.
12 I think that's the number one issue we're dealing
13 with, because there's a lot of emerging issues
14 that are very related to the changing resource
15 mix.

16 Whether it's the combined cycle gas
17 turbine technology that's replacing some of the
18 older fossil steam units, changes in the gas
19 industry with directional drilling and fracking,
20 and changing the economics of the fuel of choice,
21 or the desire to clean up the power sector and
22 getting wind generation, solar, storage, having
23 demand play into the market more, that all changes
24 where we're going to get the essential reliability
25 services that we've taken for granted in the past

1 that came from the synchronous machine that was
2 interconnected to the system.

3 We heard a lot this morning about, you
4 know, the changing resource mix and the impact of
5 the type of changing resources that we have.
6 We're going to have to really change the way we
7 look at planning, understand where we're getting
8 these essential reliability services, design the
9 system to ensure that the operators have the
10 resources, whether it's power electronics or
11 whatever to ensure that we could operate the
12 system reliably.

13 And the complexity of the system needs
14 to be taken into account. I didn't hear much of
15 that this morning, but as we add more power
16 electronics on the system, whether it's the
17 controller for wind, STATCOMs, HVDC links, we have
18 to understand how each one of those controllers
19 are interacting with each other and if the
20 protection systems are going to be designed
21 properly so that we don't have any inadvertent
22 operations on the system; much more complex in the
23 future.

24 Then finally, I think the change in
25 resource mix is that we have to modify the power

1 system. It does give us an opportunity -- one of
2 the panelists this morning mentioned that cost
3 being a factor. We need to look into how we
4 design the system and make sure that we're
5 spending the money prudently and look at the
6 resilience of the system.

7 Take gas for instance. If you take the
8 smaller gas pipe out of the right-of-way and put a
9 bigger gas pipe and then hang five thousand
10 megawatts more of generation on that pipe, what
11 have we have done for the resiliency of the
12 system? We really have to think about how we're
13 going to design the system.

14 With that I'm closing my remarks and
15 I'm open for questions.

16 CHAIRMAN BAY: Thank you.

17 Mr. Galloway.

18 MR. GALLOWAY: Mr. Chairman,
19 Commissioners, FERC Staff and other guests, thank
20 you for the opportunity to participate in today's
21 panel on emergency industry issues.

22 My name is Tom Galloway and I'm the CEO
23 of the North American Transmission Corporation.
24 The forum's mission is to promote excellence in
25 the reliable operation of North America's electric

1 transmission system. So this panel's topic on
2 emerging issues is directly on point with our
3 focus.

4 The scope and pace of change impacting
5 the electric system is without precedent. These
6 impacts include but aren't limited to changing
7 resource mix, heightened emphasis on system
8 resiliency, regulatory changes, industry work
9 force demographics, and grid modernization,
10 including increasing use of advanced technologies.

11 Others on this panel are likely better
12 positioned to comment on the specific assets of
13 these changes, like essential reliability
14 services, reserve margins and natural gas use.
15 So, instead, I'm going to take a slightly
16 different slant on my comments.

17 I'm going to focus on three topics
18 worth some continued focus in the context of these
19 larger grid impacts. Those topics are the
20 criticality of effective knowledge transfer, the
21 importance of human error reduction, and limiting
22 security risks with adoption of new technologies.

23 First the criticality of effective
24 knowledge transfer. The energy work force is
25 aging and the replenishment is not keeping pace.

1 Many workers in critical positions including
2 operators, engineers and technicians are
3 approaching retirement. And given the potential
4 significant loss of industry expertise, continued
5 focus is needed to capture institutional knowledge
6 and operating procedures establish effective
7 pipelines for new personnel to provide requisite
8 training with emphasis on critical positions. The
9 forum is focused on these elements through a
10 variety of means including our system operations
11 and training practice groups.

12 Next, the growing importance in human
13 error reduction. Human error is significant both
14 as an event initiator and towards increased event
15 consequences. Techniques to reduce the frequency
16 and consequences of human error are our key focus
17 areas. We're sharpening our focus on error
18 reduction in particular in emerging areas such as
19 setting digital protection relays and modification
20 design and testing.

21 The forum is in the unique position to
22 help our members improve on this important topic
23 as there is no simple one-size-fits-all answer to
24 human power production. Instead, with the broad
25 range of maturity on our members' performance

1 programs, we're focused on creating a continuum of
2 our members to improve from whatever starting
3 point they are in terms of performance of their
4 duties.

5 And lastly, limiting risks associated
6 with adoption of advanced technologies. Advanced
7 technologies offer tremendous reliability benefits
8 such as digital protective relaying, more precise
9 load management, and various grid diagnostic
10 tools. But those benefits are not without risk.
11 For example, some recent security reports indicate
12 the number of SCADA cyber attacks roughly doubled
13 from 2013 to 2014.

14 The forum is focused on helping our
15 members reap the benefits of these new
16 technologies while limiting the cyber security
17 risk through its changing security policy.

18 That concludes my comments. I welcome
19 any questions.

20 CHAIRMAN BAY: Thank you Mr. Galloway.

21 Mr. Bose.

22 PROF. BOSE: I'm Anjan Bose from
23 Washington State University and I thank you for
24 the opportunity to address you.

25 Just because we were talking about the

1 tenth anniversary of when FERC took over, it just
2 turns out that in late 2005 I spent six months
3 here in FERC as an advisor to Bill Headerman and I
4 came here to learn about markets. The day I
5 walked in the door, the Energy Act passed and I
6 ended up spending most of my time I think with Joe
7 McClelland instead.

8 But talking about issues of generation
9 mix, I think NERC has done a tremendous job of
10 actually identifying most of the issues, so I
11 don't think there's any point in talking about the
12 issues so much as what are we going to do about
13 the issues.

14 I have some comments on my written
15 testimony, but I just want to zero in on, because
16 of the time limit, in operations. Because if we
17 don't do our job right as planners, the operators
18 are going to see more instances of emergencies. I
19 mean, they are the firing line. The buck stops
20 with the operators.

21 So the question that I raise is are we
22 providing them with the right tools and procedures
23 to handle more and more emergency operations that
24 will result? I think hear also NERC has made
25 quite a bit of headway talking about ancillary

1 services, for example, and how to measure the
2 ancillary services, the essential reliability
3 service measures and so on.

4 But let's drill down a little bit.
5 It's not just ancillary services and matching
6 generation to load. Its also what the
7 transmission is there, and the analytical tools on
8 the transmission side are even more elementary in
9 the sense that we can do N -1 contingency
10 analysis, but we don't have much else. We don't
11 tell them if there is not enough transmission what
12 they're supposed to do. They usually go with
13 written procedures at that point. We don't have
14 analytical tools that do it.

15 Now the question is, I'm not suggesting
16 as an academic, you think I'm suggesting a lot of
17 R&D, which I ought to do, but I'm not. I'm saying
18 let's look at what we have today and what we can
19 do and we need to put this into place right now,
20 but it needs to be part of the regulation. It
21 needs to be part of the standards as to what tools
22 are needed.

23 I know that NERC has taken the position
24 always that they're not prescriptive. The
25 standards stand by themselves and we let everybody

1 do their things. But this is not open to
2 interpretation. Whether you have an N -1
3 contingency analysis program or not, but you have
4 one, not only that, the models have to be right
5 and the answers have to be right. Somebody's got
6 to say this. It's not enough to say "I have one.
7 I bought one five years ago, and it's somewhere in
8 the computer, but we met with our operators and
9 never used it". Then that's no good.

10 So, I think the time has come and we
11 are moving in that direction where we're willing
12 to say a little bit more as to what these
13 regulations, what these standards actually mean in
14 practice.

15 Thank you.

16 CHAIRMAN BAY: Thank you from Professor
17 Bose.

18 Mr. Zwergel.

19 MR. ZWERGEL: Good afternoon, Mr.
20 Chairman and Commissioners. Thanks for the
21 opportunity to address you.

22 I am David Zwergel, Senior Director of
23 Regional Operations with MISO. MISO is a
24 fifteen-state regional operator and part of
25 Manitoba. We're focused on three tasks: One being

1 funding a reliable grid. That's our job one, and
2 being an operations guy, I'm keenly interested in
3 the reliable operations; second, bringing value to
4 our customers of facilitating reliability through
5 efficient energy markets; and third, planning the
6 transmission system for a cost-effective way to
7 deliver that energy.

8 So, with these changing times that
9 we've been talking about, the three big things we
10 see going on are the environmental changes and the
11 coal retirements naturally, the changing fuel cost
12 and how that's going to impact our heating
13 commitment and dispatch, and the variable energy
14 resources and integration of those resources.

15 So, I'd like to talk about two areas
16 that we should focus on to help solve those, one
17 being regional solutions and the other operating
18 tools.

19 First regional solutions. As we plan
20 the system and operates it, the more resources you
21 have to manage, the better, the more flexibility,
22 the more resiliency you have to be able to solve
23 the operating issues. This is particularly
24 important as we look at the Clean Power Plan rule
25 that we're concerned that the grid could get

1 revulcanized, and looking at the operations, how
2 we would do that, that would be very difficult,
3 having to go step back and not operating over a
4 large area or using all the resources together.
5 So I think the regional coordination, the
6 interregional coordination and the operating grid,
7 that way it would provide us a continued
8 reliability.

9 With that we're doing a lot of work on
10 Order 1000, planning the grid interregionally, and
11 so we need to take advantage of that and operate
12 that way.

13 I think the two previous panelists that
14 talked about tools, I think we need to securely
15 advance our tools in a secure way so that we can
16 get the most out of our resources and grid, and
17 the changing times, and for unplanned events,
18 extreme events, weather events, so we know what's
19 going on and give the operators good procedures
20 and tools. And many are using advanced
21 applications, but we need to do that more
22 comprehensively and push it further.

23 So with that, I'd be happy to answer
24 any questions on my marks that I made.

25 CHAIRMAN BAY: Thank you, Mr. Zwergel.

1 Mr. Rothleder...

2 MR. ROTHLEDER: Chairman Bay,
3 Commissioners, thank for the opportunity to
4 address the Commission today on this important
5 subject.

6 I'm Mark Rothleder. I'm the Vice
7 President of Market Quality and Renewable
8 Integration at the California ISO.

9 In California I think we have a unique
10 set of changes going on at this point. The
11 combination of mix of additional solar production,
12 wind production, but also we've got retirements,
13 potential retirements of fuller resources on the
14 cost, and we're are dealing with currently a
15 drought condition which is affecting our hydro
16 conditions in California.

17 I think all these changes are
18 highlighting the fact that the system is becoming
19 more variable; not just around variable resources,
20 but just the variability of the range of
21 conditions that the system is going to see. And
22 in that regard what I work on and what I remember
23 continuing working on, in conjunction with NERC
24 and others, is looking at the study methodologies
25 and assessment capabilities to ensure that the

1 methodologies are robust enough to consider a wide
2 range of conditions, knowing that the historical
3 conditions are not necessarily what the conditions
4 are going to be of the future.

5 We participated in the NERC Central
6 Reliabilities Services Task Force. I think that
7 was a productive discussion, and it allowed us to
8 discuss across reliability organizations the
9 methodologies and what kind of assessments. And
10 they're not all the same, and the same schools are
11 not necessarily equal across all areas. Different
12 problems exist in different areas.

13 So I support and recommend continuing
14 efforts in identifying new methodologies and
15 assessments.

16 The second thing I recommend is that,
17 knowing that the system is changing and knowing
18 that some of the conventional resources that
19 provide the historical reliability services are
20 potentially retiring or potentially are at market
21 economic risk, we need to find ways of ensuring
22 that the essential reliability services are made
23 available, including looking at interconnection
24 requirements and market incentive to incentivize
25 those essential reliability services, including

1 frequency responsiveness, voltage support and
2 active power controls on new types of resources.

3 Lastly, I think certainly regional
4 coordination is one of the solutions, one of the
5 many solutions and we look forward to continuing
6 our efforts in California looking at how to
7 leverage and maximize regional coordination.

8 One of the issues that we'll address
9 probably in further comments is ground over
10 generation. How do we meet the essential
11 reliability services without increasing the burden
12 on over generation that has to be absorbed across
13 the system, and that means how do you get to lower
14 minimum loads, how do you get to manage and
15 minimize that potential.

16 So I look forward to further comments
17 as part of the question and answer.

18 CHAIRMAN BAY: Thank you, Mr.
19 Rothleder.

20 Mr. Lasher...

21 MR. LASHER: Thank you, Chairman Bay,
22 Commissioners. My name is Warren Lasher. I'm the
23 Director of System Planning with ERCOT down in
24 Texas.

25 I have to admit I feel a lot of kinship

1 with my colleague from California because a lot of
2 my comments seem to mirror his and some of the
3 other comments on this long panel. So I apologize
4 in advance for any repetition.

5 In ERCOT it was interesting to me, some
6 of the questions asked about changes that are
7 coming to the grid or will come to the grid. I
8 think a lot of these changes are already here. We
9 certainly, similar to California, we certainly
10 feel some of these issues in Texas today.

11 With thirteen thousand five hundred
12 megawatts of wind on the system in ERCOT, our
13 expectation, based on construction schedules of
14 over sixteen thousand four hundred megawatts by
15 the end of this year, we certainly are seeing some
16 of these issues.

17 Increasingly resources in ERCOT can be
18 characterized as one or more of the following...
19 Either a synchronous, a variable to some extent
20 non-dispatchable, and either much more distant
21 from large urban centers than Legacy generation or
22 much, much closer to customers in the case of
23 distributed generation.

24 These are changes that have to be
25 addressed and it seems as though environmental

1 regulatory changes will accelerate this basic
2 change. So I wanted to give you three current
3 examples of some of the impacts of these changes
4 on the grid down in ERCOT.

5 First, resource adequacy. Increasingly
6 scarcity conditions on the grid are not directly
7 tied to hours of peak customer demand, but rather
8 they're tied to hours of high customer demand, but
9 hours in which there's limited output from
10 variable generation resources.

11 So these sorts of occurrences then need
12 to be appropriately incorporated into
13 probabilistic reliability studies, they need to be
14 incorporated into operational planning, and they
15 also need to be incorporated into reliability
16 criteria appropriately, one example.

17 Second example, I think the gentleman
18 from New England mentioned this before, the
19 prevalence of asynchronous generation is creating
20 a need for more detailed analysis of the actions
21 and interactions of power system electronics on
22 the grid. That certainly is something that we're
23 seeing down in ERCOT. We were working on a study
24 today with industry consultants on a way to
25 incorporate a hybrid approach looking at more EMTF

1 type analysis with a more traditional transient
2 stability analysis, in order to tease out what
3 some of the implications of these interactions
4 might be on grid reliability.

5 The third example, similar to comments
6 from Mark here, is the changing fleet is driving a
7 need to reassess ancillary service products,
8 ancillary service definitions. ERCOT is currently
9 working with market stakeholders to reassess our
10 ancillary services in order to ensure that in the
11 future we can ensure reliability in a
12 cost-effective manner.

13 Again I very much appreciate the
14 opportunity to be on this panel and I look forward
15 your questions.

16 CHAIRMAN BAY: Thank you, Mr. Lasher.

17 Mr. Shelk...

18 MR. SHELK: Good afternoon and thank
19 you for the opportunity to participate in the
20 panel. As others have done, I'll have three
21 issues in three minutes.

22 First and foremost, from our
23 perspective the most critical emerging issue at
24 this time is one you have heard us speak to
25 before, which is getting correction from the

1 Commission to the RTOs on reforms regarding energy
2 price formation. Simply stated, reliability
3 requires resources, resources take revenues,
4 revenues in the RTO markets are determined by
5 prices. These reforms are urgently needed now
6 because investment decisions are being made as to
7 existing and new plants, and those decisions this
8 year and next year will reflect reliability for
9 decades.

10 Extensive record in the Commission's
11 price formation docket demonstrates that
12 improvements can and should be made.

13 As I happily told the House Energy and
14 Commerce Committee just this morning, the
15 Commission and its staff should be commended for
16 accomplishing a great deal in the past two years
17 on this topic, but respectfully now is the time to
18 make it a priority, to take concrete public steps
19 in the next few months leading to timely
20 improvements.

21 As indicated in the joint letter we
22 sent this past March, EPSA is working closely with
23 EEI, NEI, NGSa and ANGA. So you can see this is a
24 multi-association, multi-sector, multi-fuel
25 effort.

1 The critical reforms we've identified
2 include pricing more actions taken in the name of
3 reliability and market prices, greater
4 transparency around operator actions so the causes
5 of uplift can be identified and market solutions
6 developed, lifting or changes to outdated energy
7 offer caps, sub-hourly pricing to better reflect
8 actual market conditions which will help with the
9 ramping issue we discussed a minute ago, and an
10 intraday offer flexibility where it does not now
11 exist.

12 Let me take a minute to add something
13 that was not in our prepared statement because it
14 came out since then, but that is to their credit,
15 the RT-ISO Council just in the past week put out a
16 third-party survey of investors, and their
17 sentiment about investing in the power sector that
18 was done by a third-party group was very well
19 done. I recommend it to you to read it, because
20 as they surveyed investors, they found these
21 actions were sort of out-of-market actions, the
22 opaqueness, the lack of transparency were all
23 things inhibiting the investment in the sector at
24 a time when capital is available if in fact a
25 risk-adjusted return is commensurate with what is

1 needed.

2 The second issue has really only been
3 spoken to on essential reliability services and I
4 would simply add that we have been involved in the
5 task force. NERC has done great work. No offense
6 to engineers. I'm neither an engineer or an
7 economist, so I can deeply offend everyone. The
8 engineers seem reluctant to talk to the economists
9 or talk to the market participants about what
10 revenues will be needed or what new products are
11 necessary. I think you've heard about that and
12 that's important.

13 On the gas electric reliability, we're
14 simply saying that we look forward to the
15 follow-up that's coming from the RTOs in response
16 to your resent order and we're urging them to
17 speed up processing times on the day-ahead market
18 if they can.

19 Last but not least we submitted as part
20 of our testimony a new report of the Clean Power
21 Plan and aspects of it that might interfere with
22 markets and EPA and the states. And with that I
23 thank you for the opportunity to address you.

24 CHAIRMAN BAY: Thank you, Mr. Shelk.

25 I just have one question, and it's for

1 the panelists who have not yet had the chance to
2 do this or who have not yet done this. Could you
3 identify what you regard as the top emerging
4 challenge and what you think NERC or FERC should
5 do about that challenge.

6 MR. BRANDIEN: In the absence of
7 anybody else, I mentioned that the change in the
8 resource mix is really impacting the way we get
9 those essential reliability services, and the
10 Essential Reliable Service Task Force has done a
11 good job of identifying what those issues are. I
12 think we need to take that into account when we're
13 planning the system going forward.

14 One of the concerns I have is making
15 sure that the planners study the interaction of
16 all these power electronic controllers, whether or
17 not it's the controllers for the wind, the STATCOM
18 SBCs. I'm not sure we've all done enough to look
19 at the system broadly under a wide spectrum of
20 systems disturbances to see whether or not those
21 controllers -- and I would include power system
22 stabilizers on generators in that as well -- begin
23 to fight each other or some react too fast because
24 it was set fast for some other type event. I
25 think we really have to do some focus in that area

1 to make sure we have a reliable system going
2 forward.

3 CHAIRMAN BAY: Thank you.

4 Mr. Rothleder...

5 MR. ROTHLEDER: I don't want to repeat
6 what I said in my opening statement, but I think
7 in a little more detail, I think FERC should
8 continue to ask questions regarding the robustness
9 of the study methodologies, and I think you should
10 question is the existing resource adequacy
11 mechanisms or resource planning mechanisms
12 sufficient.

13 What I mean by that is, those methods
14 are traditionally looked at on peak capacity
15 availability, and I think what we're finding is,
16 it's not just about peak capacity availability.
17 It's also about where that capacity is
18 geographically relative to transition system,
19 which has been generally taken care of through the
20 traditional transmission planning process, but
21 it's also now what characteristics do those
22 resources bring to bear on the variability on the
23 system.

24 In California, through our Resource
25 Adequacy Programs from the CPUC, we are able to

1 get a idea of a three-hour ramping capability
2 recognized as part of the resource adequacy
3 mechanism. I'm not saying that's perfect or
4 addresses all the issues, but I think it's a move
5 in the right direction in asking questions does
6 the fleet, looking out in the future, will it
7 remain capable of providing all those essential
8 reliability services, and how do you ensure that
9 in a planning horizon that it does so.

10 So asking those questions from FERC's
11 perspective, from NERC's perspective, I think
12 those are things that are important.

13 From more of an action oriented
14 perspective, I think when things come to you in
15 terms of essential reliability services or
16 proposals to essentially require or incentivize
17 some of the essential reliability services, take a
18 look though seriously including whether it be as
19 part of interconnection, if you don't build it
20 into the system as part of interconnection, you
21 may not have it there for day-to-day use, or even
22 be able to incentivize it for market use on a
23 day-ahead or real-time basis.

24 And then along with that is look and be
25 open to new product leads. Certainly the idea of

1 the energy being the revenue stream for ensuring
2 reliability may not be the only revenue stream
3 necessary. We're looking at flexibility revenue
4 streams that go along with these more essential
5 reliability services. How are we sure that we're
6 paying for what we need in incentivizing those
7 capabilities. And I think you'll see from
8 California, I think the renewing effort and
9 proposing new products and new mechanisms to
10 recognize that as the revenue streams change at
11 the energy level.

12 Thank you.

13 CHAIRMAN BAY: Thank you.

14 Professor Bose... (36:05)

15 PROF. BOSE: I think we have focused in
16 on the right problem here about the generation
17 mix. I think one way to solve it is what Mark
18 said is, get the planning right, do the planning
19 right. But the thing that is ultimately needed is
20 what do we do online, what do the operators do.

21 I think what NERC has already suggested
22 is the data needed to actually find or keep track
23 of the actual ancillary services that are
24 available at a given time, but we also need to
25 have the tools that that ancillary service can be

1 brought from wherever it is to wherever it is
2 needed. So the transmission has to be there, as
3 well, and that needs to be done in real time.

4 CHAIRMAN BAY: All right, thank you.

5 Phil...

6 COMMISSIONER MOELLER: I'm happy to
7 defer to Commissioner Clark and Commissioner
8 LaFleur and then I'll go last.

9 CHAIRMAN BAY: Cheryl...

10 COMMISSIONER LAFLEUR: Well, thank you.

11 I have a couple of questions. The
12 first thing, listening to the comments of the
13 different panelists it really brings to mind that
14 reliability is such a broad topic, and even
15 looking at the part of reliability that this
16 Commission touches, it not just depend upon the
17 standards regime that we were talking about this
18 morning, but also the market mechanism and the
19 infrastructure that we permit or help get built.

20 With that in mind, I want to ask a
21 question about where standards fits into
22 everything we're talking about. So, John,
23 congratulations on your fiftieth anniversary. I
24 still think you've been writing the report since
25 then.

1 But, part of what NERC does is they do
2 these very valuable reliability assessments,
3 either of the entire system or of specific topics,
4 and as all of the things we have been talking
5 about, particularly the need for essential
6 reliability services, the need to potentially
7 think of reliability as affected by different
8 vectors, such as the availability of ramping
9 products or the availability of pipeline and so
10 forth that's been mentioned.

11 How do you see these changes in the
12 generation mix that we're talking about or the
13 resource mix affecting the standards regime? I
14 mean, do you see that there will need to be
15 evolution in the way we think about what we
16 require people to do? Because it seems like at
17 some level it would touch the planning standards
18 at least, but that's not usually the aspect we
19 talk about. Once we turn to this topic, we get
20 into other things. So I'm interested in that.

21 MR. LAUBY: Sure, well, thank you for
22 your question. I think it's very insightful.

23 In fact, you know, at NERC we've been
24 developing a host of different feedback groups.
25 Variable generation, we've been working on that

1 since 2009. We've got thirteen reports that
2 identify the specificity of interconnection issues
3 and all that and now we're actually getting to the
4 point of gathering data on some of the essential
5 reliability services. And the grid touches on a
6 number of issues. When it comes to reliability
7 assessments, of course, my colleague John Moura
8 can chat a little bit about this, around getting
9 beyond just reserve margins, and of course my
10 colleague Mark is talking about that as well.

11 Also, from a standards perspective, of
12 course, there can be adjustments there as well
13 that might result for example in this particular
14 area, essential reliability services. I don't
15 want to say that for sure because, you know, we
16 have to look at the different types of tools we
17 have in front of us. We have a number of tools in
18 our toolkit including guidelines, webinars,
19 alerts, you know, a host of different things.

20 But if it does get to a point where
21 we're working with industry, we believe there
22 should be a need for standards, certainly the PPL
23 standards can take an adjustment, so you ensure
24 that when you look at interconnecting the
25 resources that you have sufficient amount of

1 essential reliability services.

2 What is that amount going to be, and
3 what are going to be the expectations from the
4 operators? Again that's another thing to take a
5 look at. We can do some of that through
6 simulation, et cetera, as well as ongoing
7 experience, and we're learning, and there has been
8 a lot of coalition, learning and collaboration
9 between ourselves and the stakeholders, be it in
10 Cal-ISO or PJM or any one of our individual
11 stakeholders, to see, well, what have they
12 experienced for example in Texas, and what can we
13 then learn from that and adjust the standards.

14 If you were to look at some of the
15 reports, the thirteen reports I mentioned, we
16 actually got a matrix now on that. We're bringing
17 that to the planning committee I think next week
18 which identifies you know, standards, changes that
19 are required potentially, guidelines, webinars, et
20 cetera.

21 So you'll see more of that coming from
22 NERC as we build these feedback groups now that we
23 have kind of dealt with our regulatory obligations
24 and standards.

25 MR. MOURA: I'd like to add to that.

1 Thank you for that question, Commissioner.

2 There are a couple of aspects of the
3 changing resource mix I think are really relevant
4 to our standard. One in particular we've talked
5 about in the past, and it relates to the gas and
6 electric interdependencies. It also relates to
7 emerging variable resources, and so that's really
8 around most of our electrical contingency. It's
9 part of our standards, but we define it as an
10 electrical component contingency, it's a failure
11 of electrical component, circuit breaker, a
12 transformer, transmission line. We don't point to
13 the fact that it could be, you know, aggregate
14 wind facilities or multiple wind facilities. We
15 don't point to that it could be a pipeline.

16 I'm not necessarily saying that we plan
17 around that, that is your category A, for example,
18 but perhaps you study it, and you know what the
19 effects would be if you were to lose the
20 resources.

21 So that's an example of something that
22 came out of some of our assessments that could
23 transition into actions and standards.

24 COMMISSIONER LAFLEUR: Well, thank you.
25 I mean, I think it gets a little bit to

1 Commissioner Clark's comment on the carrot and the
2 stick, because the markets in a way are the
3 carrot. They're trying to set up an economic
4 scheme. And John you'll be happy to know I wrote
5 down your equation of reliability comes from
6 resources, comes from revenues, comes from prices.
7 But markets are supposed to attract investment
8 with money. That's how they work. But the other
9 end is the stick. If there is some ancillary
10 service, you know, that the market needs, that
11 there might be a minimum that has to be mandatory.

12 MR. MOURA: If I could, one of the
13 aspects of that has to do with having the right
14 measurement and making the right decision off of
15 that measurement.

16 So if we're talking about reserve
17 margin, and that's a trigger to build in capacity,
18 you better make sure that's the right reserve
19 margin, right, that you actually have that target,
20 because there are common mode failures that could
21 increase that requirement, as you increase
22 variable generation those target reserve margins,
23 to meet the one-day intend, those all increase.

24 So if you have kind of a flat standard,
25 let's just say a fifteen percent, and sometimes

1 that's the case and some states will require a
2 fifteen percent, well, have we adapted because of
3 the changing nature of the grid? Is it now
4 sixteen? Is it seventeen percent that you'll
5 need?

6 So that needs to be continuously
7 evaluated as to system changes.

8 COMMISSIONER LAFLEUR: Thank you.
9 Obviously there is always a trade-off with cost.
10 We don't want to be on the wrong side of being too
11 skimpy.

12 My second question is a little bit more
13 of a comment. I'm interested in reactions, but
14 it's something I've been thinking about for a
15 while.

16 Going to NERC meetings, MRC, regional
17 entity meetings when I have a chance to go, there
18 is always a lot of talk about the new technologies
19 and the new things coming in, changes it's making
20 on the grid, and I don't see a lot of
21 representation from the solar community, the wind
22 community, the demand response community, and even
23 the smart grid folks who were driving a lot of
24 that.

25 Now I know these meetings are open to

1 the public, so these people are not being
2 excluded, but I wonder whether we need to get more
3 people in the conversation if we are starting to
4 talk about requiring inverters and things and
5 broaden -- because traditionally back when I was
6 in business you'd send your smartest electrical
7 engineer to NERC, because that's what they mostly
8 did. But it's a bigger discussion. Now a lot
9 more IT folks are there, and whether we need more
10 of the new parts or our business involved. And
11 I'm interested in anyone's thoughts on that.
12 Because it's something I've just really noticed
13 that different meetings I go to have different
14 groups of people, yet they talk about a lot of the
15 same things. So I just throw that out there.

16 MR. BRANDIEN: I don't often come to
17 the defense of planners, but dropping back to your
18 previous question, it's difficult to plan the
19 system. NERC standards require that you plan ten
20 years out. What is the resource mix ten years
21 out? What are the sizes of those resources?
22 Where are they going to be physically located ?
23 It's very difficult to come up with a good
24 ten-year forecast and ensure that you're
25 developing a transmission plan, a ten-year-out,

1 that you could actually take and build from.

2 I think what we're seeing, and I think
3 it was Allen Mosher this morning that brought it
4 up where traditionally, you know, you built new
5 resources to replace the older, less economic
6 resources, and they came on and they brought the
7 same services that the off-going resources were.
8 Now were getting devices that supply electrons,
9 and, you know, where are they? How are they going
10 to be located?

11 We do need to bring more parties into
12 the discussion so that planners could understand
13 what the resource mix are, what those resources
14 are providing. Are they providing just
15 electronics? Are they providing voltage support?
16 Do we have the right interconnection for those to
17 ride through voltage dips on the system? We need
18 to know all those technical aspects and at least
19 at a minimum understand those technical aspects
20 that we could plan going forward.

21 A lot of that is driven by public
22 policy, so we have to stay close to the states in
23 which they're driving. In New England our
24 planning department does a very good job working
25 with the states, understanding what they're

1 investing in energy efficiency. So what is the
2 load going to be? What are they investing in
3 renewable type resources? What is the solar
4 forecast going to be? What is the state signing
5 up for for wind resources? Where are they signing
6 up those contracts? Can they be integrated into
7 the system?

8 So, you know, it's not just the people
9 that are necessarily providing those, but going
10 back to the panel this morning, that good
11 discussion between what the states are doing,
12 what's going on at FERC and markets and the
13 planning authorities all working together, so that
14 we get a good transmission plan going forward.
15 Otherwise we're just studying something that ends
16 up in the trash bin because it looks nothing like
17 what we're going to get in the out years, and we
18 may get caught short because we don't have time to
19 make those investments to ensure reliability. And
20 then we're implementing emergency procedures or
21 developing new emergency procedures to deal with
22 the real reliability issues that materialized
23 because we didn't have a forward look.

24 COMMISSIONER LAFLEUR: Thank you.

25 Mark...

1 MR. LAUBY: Thank you, and of course I
2 appreciate that strident defense for planners.

3 But in any event, I did want to mention
4 that especially the Integrated Variable Generation
5 Task Force included a number of folks from the
6 wind community and solar community. I know that
7 the advisor group that worked with us on CPP also
8 had some folks that are associated with the wind
9 and solar community. So we continue to reach out
10 to that group, especially at the working level, to
11 really kind of tackle some of these issues, and a
12 lot of the times it's educational for both sides
13 to learn from each other to understand what are
14 the system components and also for us to
15 understand the kind of language that each group is
16 using, for example, is it a wind farm or a wind
17 plant, I mean going through all of those kinds of
18 discussions and getting everybody on the same
19 basis. So we continue to strive to do that and
20 bring that expertise to bear.

21 COMMISSIONER LAFLEUR: Mr. Rothleder?

22 MR. ROTHLEDER: Thank you, and I think
23 you're observation is well taken.

24 I think what you're observing is that
25 the new technologies will be in the room in the

1 discussion when they are knowing that the
2 discussion is affecting their business case, and
3 that could either be how does it effect their
4 revenues? How does it effect their
5 interconnection requirements? How does it effect
6 what requirements they need to meet?

7 In reliability sometimes, they may view
8 reliability as "well, reliability occurs," but if
9 they knew that there was a discussion about
10 reliability and how they need to meet the
11 reliability needs, and that may have some impacts
12 on their interconnection or the requirements going
13 forward, I think they would be in the room.

14 There is an example. We held a couple
15 meetings on storage and breaking down barriers of
16 storage. We attracted over two hundred people in
17 the room who had interest in storage development.

18 So there are a lot of people out there
19 that have an interest, and I think it's a matter
20 of making sure that the discussion is targeted how
21 they need to be engaged in those discussions.

22 COMMISSIONER LAFLEUR: I think that's
23 exactly right, that if people realize that we're
24 having discussions that are going to effect them,
25 then everyone will want to be there.

1 John?

2 MR. SHELK: Just briefly. It's an
3 excellent observation and question in light of the
4 hearing on Capitol Hill this morning, because one
5 of the questions that the panel was asked was
6 about the changing resource mix and whether or not
7 the existing statutes, the existing authorities,
8 the Commission, federal versus state jurisdiction,
9 does Congress need to do something? And with all
10 due respect to the folks at the end of North
11 Capital Street, I think if we start legislating in
12 this area too prescriptively then what actually
13 happens is each of the new technologies we
14 mentioned, everybody goes off to their own little
15 piece of it, but we all know and the folks on the
16 panel know better than I do, this is all one
17 interconnected grid that you all recognize as
18 well. So, I think somehow we're getting them to
19 the table.

20 It was sort of contradictory this
21 morning, to be fair. If you recall what happened,
22 some of these groups, including those with the new
23 technology, said there are just too many meetings,
24 just too many things to go to, and we can all
25 appreciate that on one level. But on the other

1 hand, if they don't participate, as we know from
2 what you're hearing now, not every megawatt is the
3 same, and so it all needs to work together.

4 These folks have a tough job, and
5 somehow getting them to the table, making it
6 easier, making sure they see that it's necessary
7 for them to be there. Frankly it's almost like
8 the price of admission. If you want to get in
9 this business and be part of the grid that's
10 interconnected. They always say, "We're not going
11 to leave on a Friday night and come in to work on
12 Monday and have the new world upon us". This is
13 going to happen over time and the lights have to
14 stay on. The economy has to roll on while these
15 new technologies are being recorded.

16 CHAIRMAN BAY: Professor Bose...

17 PROF. BOSE: So, I think I'd be remiss
18 if I didn't bring in the R&D community into this.

19 The point I want to make is this: With
20 all the new technologies coming in, I think
21 everybody sort of feels, yes, if you bring a lot
22 of batteries then we can do a lot more renewables.
23 But somehow all of this has to reflect into the
24 tools that we use, whether that be planning tools,
25 whether that be operational tools. There's

1 modeling involved. There's algorithms involved.

2 And if those are not working, you know, your power

3 electronics is going to sit there and nobody's

4 going to use them.

5 So, I think there's a place for the

6 mathematicians and the computer scientists, the

7 data people, all of that.

8 COMMISSIONER LAFLEUR: Well, thank you

9 very much.

10 Chairman...

11 CHAIRMAN BAY: Thank you, Cheryl.

12 Tony?

13 COMMISSIONER CLARK: Thanks, and thanks

14 to everybody for being here.

15 My question is this: Are there

16 specific areas of recommendation that you have for

17 the Commission in areas where we can be proactive

18 or where the Commission itself should be doing

19 something in relation to some of the issues that

20 you've highlighted.

21 I note both through the NERC report,

22 which I suppose is only natural, but also in a lot

23 of the comments that we have heard here today, a

24 lot of it is the Commission reacting to industry.

25 So NERC comes up with a report and the NERC puts

1 together recommendations and forwards something to
2 the Commission, but it's often in the context of
3 the Commission reacting to a particular filing.

4 Is there something that the Commission
5 itself should be doing to get the ball rolling on
6 some of these issues, something that we're not
7 doing now that we should be doing?

8 I heard from Mr. Shelk, there are a
9 number of things with regard to the price
10 formation. The Commission has been very active in
11 that area. There are some things I'm sure you'd
12 like us to take action on a little bit sooner than
13 we have, but I'm curious about that line of
14 thought. I mean, are there gaps that the
15 Commission should be acting and just hasn't yet,
16 and what would your recommendation be, as opposed
17 to just waiting for a filing to come in from you
18 all.

19 Mr. Zwergel?

20 MR. ZWERGEL: Thank you.

21 So one topic I mentioned in my prepared
22 remarks is with the Clean Power Plan, continued
23 leadership from the Commission on the
24 implementation and compliance when the rule comes
25 out, perhaps a series of meetings to exchange

1 ideas of how to work together and comply and
2 implement that rule would be something that would
3 be very helpful.

4 COMMISSIONER CLARK: Thanks.

5 John?

6 MR. MOURA: Great. One of the things
7 that's been front and center for many of the
8 assessments and is of growing concern,
9 particularly in the New England area, is of course
10 the gas interdependency issues. So there's been a
11 lot of work in the Commission on that and I think
12 there is a lot of sentiment that thinks that
13 that's a good path forward, but there are some
14 physical things that are needed to maintain
15 reliability, like pipeline.

16 You know, the two industries operate
17 under different regulatory frameworks.
18 Reliability is really front and center within the
19 electric community and the electric regulated
20 industry. It's not front and center in the
21 natural gas pipeline industry. It's really about
22 meeting firm customer demands and building
23 pipeline based on contracts.

24 I'm not necessarily recommending a new
25 approach for that, but it is something that

1 does -- that those industries do butt heads, and
2 we're not recommending a solution, but it is
3 something that is a continuing concern within our
4 assessments.

5 COMMISSIONER CLARK: Along that line,
6 are we doing enough working with each of the
7 regions to encourage the kind of modeling that I
8 think you were talking about with the previous
9 answer to Commissioner LaFleur regarding the
10 contingencies that happen when you have a whole
11 bunch of generation strung out on one particular
12 pipeline, and other regions are beginning to do
13 some of that, but is there more that should be
14 done?

15 MR. MOURA: I think the carrot approach
16 and showing that there's value in doing those
17 types of assessments and bringing the true risk of
18 the system to light, I think that only achieves a
19 better recognition of where the system actually
20 is, and so can make better informed RISC-based
21 decisions.

22 So any kind of pressure to do those
23 types of analyses, I think that would be more than
24 helpful.

25 COMMISSIONER CLARK: Anyone else?

1 Mark?

2 MR. LAUBY: Thank you. John has hit it
3 on the head and of course NERC itself is looking
4 at improving its reliability assessments which
5 include looking at, you know, these pipeline
6 constraints.

7 I would also like to add to what I said
8 in my earlier comments, and really I know my
9 colleagues have chatted a little bit about the
10 coordination of controllers and doing the
11 transience stability and electromagnetic
12 transience program analysis on that, and clearly
13 that's something that needs to be done, but what
14 I'm referring most importantly is when folks start
15 talking about the addition of all the renewable
16 resources and variable resources that they ensure
17 that, you know, study is done on identifying what
18 are going to be the essential reliability services
19 that we're going to be counting on those resources
20 to provide and ensure that the controllers are in
21 place.

22 It's not just, you know, we're going to
23 have thirty-percent energy. That's certainly a
24 laudable goal, but policymakers and regulators
25 need to understand that there is addition -- you

1 know, you have to add to that equation, which is
2 essential reliability services that can be
3 provided by the variable generation if we have a
4 smart controller.

5 So the incentives have to be in place
6 as well as the way we'll look at it from a
7 standards perspective, as Commissioner LaFleur is
8 indicating, to ensure that we have sufficient
9 amount of resources.

10 COMMISSIONER CLARK: VERs have been
11 brought up a number of times on this panel.

12 I'm curious, if you had to rank
13 concerns with the reliability of the grid compared
14 to variable resources that are connecting on, is
15 your greater concern do the utility-scale type
16 projects -- large wind farms, solar farms, those
17 types of projects -- or does it tend to be on the
18 distribution side where you have rooftop solar and
19 all sorts of new technologies connecting it at the
20 distribution level that we may not have visibility
21 into that we had in the past, or is it something
22 that depends on the region?

23 I know California, they're both big
24 issue, maybe not so much in other regions. But
25 I'd be curious if you had a sense for which is the

1 greater challenge right now in which we may be
2 further ahead on and which one we have more work
3 to do.

4 MR. MOURA: So, I don't think either
5 one is more important than the other. I think
6 they're both really challenging. And to Mark's
7 comments from Cali, so, I think it really depends
8 which region you're in.

9 One of the types of state incentives
10 that are bringing on perhaps more distributed
11 resources, those areas that are bringing a lot of
12 that on, we're seeing that even over here in the
13 northeast, New Jersey and such, ease incentives
14 for distributed energy sources, not so much
15 utility-scale renewable. So in that area it might
16 be a DER issue.

17 DERs are particularly important from
18 both the planning and operations perspective on
19 the Bulk Power System, because you just don't have
20 the visibility, the observability, or the
21 controllability of that, and you just have to
22 respond to that.

23 With utility grade you have a little
24 more control to standards. So it's a little bit
25 more -- you can put controls around that, whether

1 it be standards or guidelines, et cetera.

2 So they kind of have two different
3 challenges, two sets of challenges, but I think it
4 really depends on the area and different areas are
5 going to have different challenges.

6 COMMISSIONER CLARK: Sure.

7 Mark?

8 MR. ROTHLEDER: Yes, I think I'd agree
9 with that. There really are two different
10 challenges, in some regards two differing
11 resources, kind of reliability has numbers and you
12 get small resources distributed over a wide area,
13 and a single point of failure is not going to
14 occur to take a lot of it out, even the
15 variability of the fallout cover, it's kind of
16 mitigated because of that distribution.

17 That said, the tradeoff is you don't
18 have the visibility and the controls. How do you
19 make that up in either forecasting techniques,
20 improved forecasting techniques or aggregation of
21 control? Can you aggregate distributed energy
22 resources up, and there is at least some
23 controllability at an aggregate level for the
24 transmission operator. That's a potential
25 solution.

1 I think regardless of whether it's grid
2 or distributed energy resource, I think there is,
3 when you're in this steep integration phase,
4 there's an opportunity and probably an opportunity
5 missed. If you don't get the technologies up
6 front with the right capabilities to start
7 displacing the other conventional resources, the
8 ability to go back to those resources later on and
9 integrate those services is going to be much more
10 of a challenge than doing it up front.

11 So, when you're in this steep change
12 phase, I think you need to think about making sure
13 that those capabilities are there up front, and if
14 you do that, the cost of doing that, the
15 incremental cost of having that capability,
16 specifically aggregate power control, controllable
17 power and stuff like that is not huge, at least
18 from the feedback that we're getting, but if you
19 want to do it after the fact it is going to be a
20 heavy lift.

21 COMMISSIONER CLARK: Thank you.

22 Any other thoughts? Peter...

23 MR. BRANDIEN: Just building on that,
24 Massachusetts is really invested heavily in solar,
25 and we're trying to understand where is

1 penetration of that behind-the-meter solar in
2 making sure the state has the right, going back to
3 Mark's point, that they have the right
4 interconnection requirements so that we don't have
5 a fault on the system and they don't have the
6 capability for the local drive-through all of a
7 sudden to lose a lot of behind-the-meter
8 generation.

9 So, it's just another point to what you
10 already heard. So it is important that we
11 understand what's being connected, what the
12 characteristics of those things are, so that we
13 could take into account, and all of a sudden we
14 have a disturbance on the system, and all of a
15 sudden we see the load jump up because something
16 fell off, and then we could a reliability problem
17 there.

18 COMMISSIONER CLARK: Thanks.

19 Anyone else? All right. Thank you.

20 CHAIRMAN BAY: Thank you, Tony.

21 Phil...

22 MR. MOELLER: Thank you, Mr. Chairman.

23 I echo thanks for all being here, particularly the
24 legendary Professor Bose. It's not easy to get
25 here from there since, I know, since I grew up

1 there.

2 The question I have was kind of
3 previewed in Mr. Moura's answer to Commissioner
4 LaFleur's question. About two years ago our
5 office ministered with the Interior, this was led
6 by Robert Ianowskus (phon), whether historical
7 looks at reserve margins were getting stale
8 because of the lookback over from years, things
9 have changed, peaks have changed. The conclusion
10 I think we came out of that is that we were a
11 little uneasy about historical projections going
12 forward for a number of reasons that are
13 exacerbated by any of the resources coming into
14 the mix.

15 So if anybody has any comments on that,
16 in particular I'd like Mr. Moura to elaborate on
17 that, and if there is a vulnerability there, how
18 should we address it?

19 MR. MOURA: I'd be happy to elaborate.

20 So one of the things that many don't
21 understand around the education piece that we want
22 to bring front and center is that the reserve
23 margin target, you know, when I say I have to meet
24 a fifteen-percent reserve margin target, that is
25 based on a couple of different things. It's based

1 on historical weather and the uncertainty around
2 that. It's also based on the performance of your
3 generator units.

4 So if you have a real reliable set of
5 generator units, if you're in Quebec for example,
6 the hydro units up in Quebec are very reliable,
7 very low forced outage rates. If you're in an
8 area where there is a lot of variable resources,
9 there might be older coal units that have higher
10 forced outage rates, or maybe older units with
11 higher forced outage rates, that's going to
12 significantly impact the reserve margin targets.

13 So as you increase variable generation,
14 that increases general uncertainty within your
15 resource pool. That increases the reserve margin
16 targets, so you meet that one-day intend.

17 And so, if that's happening but a
18 policy is set for fifteen percent and a flat fee
19 type of target and it's not being adapted in
20 recognition of the changing resource mix, then you
21 might be underestimating or overestimating how
22 reliable you are.

23 So you have to go back and make those
24 points and also project forward. If I have a
25 forward-looking projection of how generators will

1 act in the future, perhaps there's a certain
2 forced outage rate that is increasing and you can
3 do that analysis.

4 And, so, you really have to understand
5 the specifics and the performance of generators in
6 order to get to that rate, target rate.

7 MR. MOELLER: Somebody has a Blackberry
8 on, and I don't have mine with me, so I know it's
9 not me, so hopefully we can turn those off.

10 MR. LAUBY: Can I add to that?

11 COMMISSIONER MOELLER: Yes, please do,
12 Mr. Lauby.

13 MR. LAUBY: And I think, you know, John
14 touches on this as well, and it in itself -- I
15 think he called it a reserve margin. It's a
16 metric of a past, not necessarily of a future.
17 Certainly it's an important entry point and a
18 point we need to continue to measure, but then
19 there are other types of margins to start thinking
20 about as we start finding that more and more of
21 that capacity is being made of asynchronous, you
22 know, variable generation, how much of the
23 essential reliability services are they going to
24 provide, how much are we going to plan for, how
25 much do we need to operate, so that we can take

1 that metric and start peeling back and you have
2 kind of a multidimensional set of metrics that you
3 need to plan for, not just one.

4 COMMISSIONER MOELLER: Are you
5 comfortable that we're moving in that direction?

6 MR. LAUBY: I think we are. John?

7 MR. MOURA: Yes.

8 COMMISSIONER MOELLER: I think our
9 motivation initially was concern over the number
10 of plants that were going to be retired under the
11 MATS rule and that looking back through the
12 averaging of whether it was perhaps
13 underemphasizing extreme weather, particularly in
14 the summer and the concern that that fifteen
15 percent going backwards was not going to be
16 adequate.

17 Well, thank you. I certainly hope that
18 that discussion continues not only for what were
19 originally really our core interests, but, again
20 as I said, are exacerbated by the amount of
21 variable generation reliability on the grid.

22 Leading to that, my second question
23 goes to Mr. Rothleder. You mentioned a number of
24 things that the ISO is looking into to address the
25 challenges of a three-hour ramp was the one

1 suggestion, that you had a number of them, and
2 having just met with a couple of the members of
3 the CPUC last week and some of the utilities, it's
4 fresh on my mind.

5 Can you generally give us a timetable
6 with some of those products that you're talking
7 about presumably bringing to us for our
8 consideration?

9 MR. ROTHLEDER: Sure. I think in terms
10 of the real-time market yield, you will probably
11 see some migration from our current flexibility
12 constraint to a flexibility product probably in
13 the next year, year and a half.

14 We are looking at developing a
15 contingency constraint and compensation for a
16 thirty-minute capability in response to a
17 transmission contingency. That is also probably
18 in the one- to two-year timeframe.

19 We are working with the CPUC to evolve
20 the three-hour ramp as part of the resource
21 adequacy. That one comes through the Commission,
22 but will be needed to be evolved as part of the
23 resource adequacy capability, and what we're
24 looking for there is looking for a more durable
25 flexibility requirement that both recognizes the

1 ramping capability but also what I referred to
2 earlier, the minimum load burden, because you're
3 getting into that space where we're conflicted
4 between trying to have ramping capability but
5 we're trying to do so with resources that have low
6 minimum load burden so that we don't exacerbate
7 over generation. So that's something that will
8 play out at the CPUC.

9 So I think that's probably in the next
10 one to two years view of what you may see.

11 COMMISSIONER MOELLER: Okay, good.
12 Well, I think to some extent we should be looking
13 at you and also to wisely dealing with this,
14 although they're nonjurisdictional, as a preview
15 of some of the issues and perhaps market-based
16 products that can help us through this transition.

17 MR. ROTHLEDER: I should have mentioned
18 that you'll probably also see related to voltage
19 support a combination of an interconnection
20 requirement, but also some kind of mechanism for
21 compensating for voltage report.

22 We may also eventually look at active
23 power controls and bring that back to the
24 Commission as well.

25 COMMISSIONER MOELLER: Okay. Thank

1 you.

2 Mr. Chairman.

3 CHAIRMAN BAY: Thank you, Phil.

4 Let me thank all the panelists for your
5 very thoughtful remarks. We appreciate your
6 participation and your competence and your
7 assistance today.

8 Thank you and we'll take a break and
9 we'll resume at 2:30 for the third panel.

10 (Recess taken.)

11 CHAIRMAN BAY: Well good afternoon
12 everybody. Last but not least we have our third
13 panel on ERO performance and initiatives. And
14 just a reminder, if you have a cell phone, please
15 turn it off, at least if you're sitting in the
16 front of the room at the table.

17 Ted...

18 MR. FRANKS: All right, good afternoon
19 everyone. Welcome our final panel. You guys have
20 a lot to live up to. I thought the first two
21 panels were excellent. So I'll to get started
22 here.

23 From the North American Electric
24 Reliability Corporation, Gerry Cauley. Welcome
25 back, and Sonia Mendoza. I got it right.

1 From the U.S. Department of Energy, Dr.
2 David Ortiz.

3 From the SERC Reliability Corporation,
4 Scott Henry.

5 From Georgia Transmission Corporation,
6 Angela Sheffield.

7 From Hydro-Quebec TransEnergie on
8 behalf of the Canadian Electricity Association,
9 Sylvain Clermont.

10 From Chelan Public Utility District,
11 Steve Wright.

12 From the Transmission Access Policy
13 Study Group, William Gallagher.

14 And finally, from MidAmerican Energy on
15 behalf of Berkshire Hathaway Energy, Jeffrey Gust.

16 CHAIRMAN BAY: Thank you.

17 Mr. Cauley...

18 MR. CAULEY: Thank you again and good
19 afternoon. Very glad to be here.

20 I'm going to leave remarks about the
21 program effectiveness to our Assistant General
22 Counsel and Vice President of course Ms. Sonia
23 Mendosa.

24 I wanted to spend my couple of minutes
25 just on the sever risk type of events. We touched

1 on it a little bit earlier in the previous panel.
2 I think this area has obviously gotten a lot of
3 attention and it's really the most difficult part
4 of our job and of my job is to understand the
5 risks around cyber physical security EMD and EMP
6 and others, and how do we prepare for those.

7 They have some interesting
8 characteristics. One of them is you could spend
9 an infinite amount of resources trying to prevent
10 them and stop them and you still wouldn't quite
11 get there. We don't have a lot of experience
12 dealing with severe consequences and how do we
13 understand them better and model them and do that.

14 If you look at the Department of
15 Energy's quadrennial review report, you see the
16 idea of resilience and hardening becoming more of
17 a theme, and I think we saw that out of Hurricane
18 Sandy and other recent storms in terms of the need
19 to really focus on resilience and strengthening of
20 the grid to make it more resistant to those kinds
21 of disasters.

22 In each of the areas that are of
23 concern, I look at security and there's some good
24 news and some tough news. So the good news is
25 that the State of Reliability Report said in 2014,

1 and really not in recent history, have we had an
2 event in cyber security, and that has caused a
3 loss of load outage or anything like that to the
4 Bulk Power System. And I think we have a lot of
5 good things in place. The standards has brought a
6 lot of attention. Regardless of the merits of the
7 standards themselves, it's brought a lot of focus
8 on the right practices and building in the
9 protections and measures and so on.

10 There's an issue that I look at these
11 severe risks with a third term is always the
12 probability of them happening and the
13 consequences. The third term that I think about
14 is the latency. What is the data, the
15 information? What is the world telling us about
16 the chance of this really happening? In terms of
17 latency for cyber right now, we see a lot of
18 activity of the serious actors who can actually do
19 things to the grid in terms of surveillance and
20 looking around the grid, probing and checking, but
21 I don't wake up every morning and say is there
22 going to be an attack today from this country or
23 that country. The latency is there, but it's not
24 overly strong. So we need to work while we have
25 this period of, you know, the grid -- it's not

1 like the imminent danger tomorrow of a
2 catastrophe, but we have time to work on this with
3 that latency.

4 So I did want to mention that
5 coordinating counsel, which I mentioned earlier,
6 commissioners in the past, and I presume
7 potentially the Chairman, will be participating on
8 the government counsel side. It's an opportunity
9 to talk about coordination between industry and
10 government and how do we work together in
11 partnership focused on incident response, tools,
12 technologies and severe event recovery and those
13 types of things. We also have a very strong ISAC
14 information sharing.

15 If I could say what can we do that
16 we're not doing now in security, in cyber security
17 would be to continue to ratchet up our ability to
18 do information sharing, including installation of
19 sensors in the electronics, in the grid, so we can
20 actually see what's happening moment to moment and
21 be able to -- we have a bit of that. We have
22 shared some technology from the Department of
23 Energy from one of the labs where we've been able
24 to place some sensors in the grid. We have more
25 of that, and to be able to get quicker response,

1 in some cases even computer-to-computer response
2 where we can alert other systems about a danger
3 and we can, you know, isolate or quarantine
4 problem areas. And I think we also have to focus
5 on the major cyber event recovery issue.

6 On physical security, I think we have
7 also made a lot of progress in terms of the
8 physical security standard and we're well underway
9 to the implementation there. I think it's the
10 right approach on the standard.

11 But once again it is a severe threat.
12 It's probably my deepest concern in terms of a
13 severe threat to the grid in terms of the
14 potential for long-term physical damage to
15 equipment. I just feel a sense of heightened
16 worry more about the physical attack. Because the
17 technology to implement that is lower, I just feel
18 that the threat could be more severe there.

19 What else should we do then to deal
20 with physical security? I think we need to build
21 in a broader awareness beyond just the standard,
22 but how do we, as we include security thinking
23 throughout our entire operations, how do we secure
24 our generators and substations and critical
25 assets, just more on a day-to-day basis? There's

1 technologies out there and we need to just make it
2 a natural part of the business to build that in.
3 And I think the other area of security is focused
4 on equipment reserves and spare equipment for
5 critical equipment that might be damaged.

6 The third area and finally I want to
7 mention is just GMD. Once again the Commission
8 has done what I think is its responsibility of
9 noting a risk to the public, a risk to the nation,
10 and it's really in the public interest to deal
11 with these, and so now we've got a standard that's
12 moving into place.

13 We've done a lot of technical work and
14 background development. We've got great resources
15 internationally and from Canada. A lot of the
16 experts are in Ontario and Quebec who helped us
17 really kind of understand this problem.

18 I think going forward the to-dos
19 include getting a lot more of the ground current
20 sensors in place, building up the models and data
21 to support what are we seeing. The good thing
22 about GMD, if there is a good thing, unlike cyber
23 and physical security, is we actually get to see
24 them on a fairly regular basis through the years,
25 so can we start to model and understand the

1 behavior of the grid and what is a really sever
2 event that we might see and so on.

3 So those are my thoughts and I'd be
4 happy to answer any questions you might have.

5 CHAIRMAN BAY: Thank you, Mr. Cauley.

6 Ms. Mendoza...

7 MS. MENDOZA: Thank you Chairman Bay,
8 Commissioners, Staff and fellow panelists. I
9 appreciate the opportunity to be here to talk
10 about the RISC-based Compliance Monitoring
11 Enforcement Program.

12 NERC is committed to promoting a
13 culture of reliability excellence through the
14 RISC-based compliance monitoring enforcement
15 processes, and we very much appreciate the
16 Commission's support and the approval of these
17 processes in our recent order.

18 We have also committed to providing
19 regular updates, and you may have seen some of
20 that in our recent compliance filing, but we will
21 continue to bring those at every opportunity.

22 Very briefly, I'd like to talk about
23 how we're doing and what we're seeing as the
24 impact of these new processes. With respect to
25 how we're doing, the first quarter of 2015 we have

1 seen an increase in these rates for all of the new
2 processes. So we have more compliance exceptions,
3 more entities self-logging, more inherent risk
4 assessments and internal control evaluations being
5 performed. And we have a lot of detail on the
6 NERC.com website on that, and in the interest of
7 time I won't go into that right now, but we have a
8 number of implementation-related measurements that
9 we were tracking on a regular basis and on which
10 we are reporting, and those are really intended to
11 give us visibility to ensure that the program is
12 being properly implemented.

13 We're also interested in tracking the
14 impact of the program in reliability performance,
15 and we're doing that in a number of ways. This
16 fairly early obviously to perfectly understand the
17 correlation, but in the State of Reliability
18 Report that came out recently, we referenced two
19 new metrics that relate to the evolution of the
20 risk of violations of reliability standards, so
21 tracking how the risk has behaved over time and,
22 as you may have heard me say before, the vast
23 majority of the violations of reliability
24 standards pose a very low risk to the reliability
25 of the Bulk Power System. That doesn't mean that

1 they don't have to be mitigated, tracked and
2 analyzed, but in that context it's very helpful
3 that we have now different mechanisms to address
4 them, which are based on this.

5 The other metric referenced in the
6 State of Reliability Report deals with the impact
7 of violations. So, that is also a very
8 interesting data point that will allow us to see
9 very few violations reliability standards have a
10 natural impact on the Bulk Power System, but it's
11 important to continue to understand how that
12 progresses.

13 We're also looking at violations
14 related to the risks that have been identified in
15 the implementation plans to see what's the impact
16 of calling something "an area of focus," right, on
17 compliance.

18 Over time those metrics will allow us
19 to have a better understanding of the impact of
20 the compliance and enforcement program, or
21 reliability performance and we will continue to
22 bring you updates on these analyses as they are
23 performed.

24 And with that I would be happy to
25 answer any questions.

1 CHAIRMAN BAY: Thank you.

2 Dr. Ortiz...

3 MR. ORTIZ: Thank you Chairman Bay and
4 Commissioners for the opportunity to participate
5 in today's technical session. I want to thank
6 also the FERC Staff for attending as well as my
7 fellow panelists.

8 My name is David Ortiz. I'm a Deputy
9 Assistant Secretary of the Office of Electricity
10 Delivery, Energy and Reliability at the Department
11 of Energy. OE drives grid modernization through
12 research and development, planning, policy and
13 emergency response. My role at the department is
14 to coordinate research programs at national
15 laboratories, universities and industry to improve
16 electricity and integrative energy system planning
17 and operations through system measurement,
18 modeling and risk analysis. This includes
19 synchronous research development, which has been a
20 topic of conversation.

21 The department continues its strong
22 support for the ESCC and we thank them for being
23 strong partner in that and for also adopting the
24 CRISP system for warning and measurement of cyber
25 threats.

1 I also want to note that it is
2 important for the ERO to maintain as processes for
3 updating standards to reflect the available
4 science. For example the area of GMP is one of
5 continual evolution in the science area and
6 keeping an open book so to speak in this is an
7 important activity.

8 I'd like to focus my comments on the
9 collection and analysis of information regarding
10 events on the bulk electric system. After all, if
11 we're going to use events as a measure of which to
12 make decisions we need to make sure that data are
13 accurate and complete.

14 My office manages collection of
15 something called the OE-417, which is an emergency
16 incident response report. We use this form to
17 inform our response functions as a sector-specific
18 agency for energy. This form requires entities to
19 report within a specific time events that lead up
20 and to a loss of load and also suspected physical
21 and cyber attacks. We publish monthly and annual
22 summaries of the data in this form.

23 As the ERO, NERC also collects event
24 reports through event reporting from notice EOP-4.
25 NERC ceased publication of data from this form in

1 2009.

2 Having two incident reports, one
3 nonpublic, creates additional burden on the
4 industry for reporting and impedes transparent
5 decision making. Let me give two examples... In
6 2012 researchers at one of our national
7 laboratories performed a historical analysis of
8 event data and noted that, based on these two
9 forms, the record of events was incomplete and
10 there were discrepancies between the two forms.

11 To fulfill the responsibilities under
12 the Federal Power Act the Commission needs a
13 validated and verified record of events. Second,
14 disturbances that occurred in the bulk electric
15 system provide key inputs to the research
16 community and decision makers regarding challenges
17 that date the system. Let us provide one example.
18 We have recently produced a set of risk profiles
19 and energy for states. We found the NERC data
20 quite useful in putting together these risk
21 profiles, however the data end in 2009.

22 Therefore if we are to believe from the
23 comments in this panel as well as the prior panel
24 that the threats-basing system were different, the
25 risks that we poll, that we report in our

1 pamphlets which inform state decision makers
2 should reflect the latest available knowledge
3 regarding what the threats are.

4 We would welcome to work in partnership
5 with the Commission, the ERO, to harmonize data
6 collections regarding events as well as general
7 system planning. Because of the critical nature
8 of the bulk electric system information collection
9 regarding events starting with these two forms
10 must be efficient, low in burden, comprehensive,
11 transparent and the analysis needs to be performed
12 with public interest in mind.

13 I thank the Commission for the
14 opportunity and look forward to answering
15 questions.

16 CHAIRMAN BAY: Thank you, Dr. Ortiz.

17 Mr. Henry...

18 MR. HENRY: Thank you, Chairman Bay,
19 Commissioners, Commission Staff and fellow
20 panelists. I appreciate the opportunity of being
21 here today.

22 My name is Scott Henry. My day job is
23 president and CEO of SERC Reliability Corporation.
24 I moonlight as the 2015 Chair of the Regional
25 Entity Management Group, which is a group of all

1 the most senior executives for the eight regional
2 entities. My comments that are filed as well as
3 those today are to reflect a regional entity view.

4 My verbal comments, if you blink too
5 much you're going to miss them. I've got five
6 statements I'm going to make. That's five
7 statements I'll make with liberal utilization of
8 compound sentencing, but I don't want to be gonged
9 by the gong buzzer, so let me finish.

10 Statement number one, the proof is in
11 the pudding. This relates to ERO performance, the
12 proof is in the pudding. Bulk electric system
13 reliability is improving, especially in those
14 areas where the ERO is focused.

15 Statement number two related to
16 RISC-based compliance monitoring and enforcement,
17 we're on the right path forward. All regional
18 entities are working to implement. 2015 is the
19 transition year. There's a high level of
20 commitment amongst regional entity executives for
21 consistent implementation, and we hear very
22 positive feedback on the progress already being
23 made.

24 Point number three related to the
25 ES-ISAC, indeed rapid and accurate information

1 flow is critical for both security and
2 reliability, and we are working towards regional
3 entities being able to fully share and participate
4 in ES-ISAC activities.

5 Point number four and point number five
6 relate to CIP Version 5 implementation.

7 Point number four, the ERO enterprise
8 has engaged in an unprecedented amount of outreach
9 related to CIP Version 5, but even with that
10 tremendous amount of focus and outreach, industry
11 concerns continue to be expressed.

12 The fifth point, arising out of that
13 observation, the ERO model does provide for both
14 establishment of continental reliability
15 requirements and within the parameters of the
16 continental requirements more local implementation
17 opportunities that could work with individual
18 entities to address their individual concerns.

19 Thank you for the opportunity to
20 participate, and I look forward to the questions
21 and answers.

22 CHAIRMAN BAY: Thank you, Mr. Henry.

23 Ms. Sheffield.

24 MS. SHEFFIELD: Good afternoon. I'm
25 honored to be here today with all my fellow

1 panelists.

2 My name is Angie Sheffield. I am the
3 Vice President, General Auditor and Chief
4 Compliance Officer for Georgia Transmission.
5 We're a transmission-only cooperative. We serve
6 the thirty-eight distribution EMCs in the State of
7 Georgia.

8 I'm a bit of a unique animal on this
9 panel. Commissioner LaFleur a moment ago
10 mentioned bringing in different types of people to
11 talk about reliability. I have a background in
12 internal audit and risk management, and probably
13 eight years ago you wouldn't have seen someone
14 like me on a panel talking about reliability.

15 I think bringing folks with different
16 types of backgrounds into the discussion is a very
17 good thing, and I've been heavily involved with
18 NERC in the development of the guidance documents
19 and the rollout of the RISC-based Compliance
20 Monitoring Program as part of the REI advisory
21 group, and I think bringing folks with different
22 skill sets is a very valuable thing.

23 GTC continues to be a very strong
24 supporter of RISC-based Compliance Monitoring and
25 Enforcement, but we've come a long way in the past

1 few years from NERC's initial concept papers that
2 were released back in 2012 to the rollout of the
3 guidance last year and the implementation of the
4 processes this year.

5 We were audited as GTC back in 2008,
6 and then we were audited again in 2014. We were
7 one of the pilot companies for the RISC-based
8 model. The audits looked very different. The
9 audit in 2014 was much more risk focused. It was
10 much shorter in duration and fit the high-risk
11 areas that the company poses to the grid. So it
12 was an obvious transition from 2008 to 2014
13 working with SERC in that audit.

14 The most critical factors we see in the
15 continued rollout of these processes are to
16 ensure, one, that the auditor's enforcement staff
17 are fully trained and competent in these new
18 methods, that the regions are consistent in their
19 implementation, and there's an appropriate level
20 of transparency so that industry can understand
21 what to expect and can learn from others.

22 We believe this is necessary in order
23 to instill industry confidence in these
24 processes, and we believe NERC is taking the
25 appropriate steps to ensure successful

1 implementation.

2 We have to remember, though, we're only
3 in the sixth month of implementation of a
4 significant change of monitoring enforcement
5 methods. And it's going to take time. It's going
6 to take time to see how these processes work for
7 the wide variety of sizes of registered entities
8 and the eight regions.

9 So I hope we continue this conversation
10 around the implementation of these processes and I
11 would love to see this panel discuss this topic
12 again next year when we're a little further down
13 the road.

14 In the area of registration, we're very
15 pleased with the reforms that have been made. We
16 have reduced the number of distribution
17 cooperatives on the NERC registry from over a
18 hundred to about sixty, and we believe this is a
19 more appropriate reflection of the risk these
20 smaller entities pose to the Bulk Electric System
21 and we thank the Commission for their focus and
22 action on these issues.

23 With my short amount of time left, I'm
24 going to say on the feedback loop to standards
25 continued emphasis on that feedback loop is

1 critical. We need to understand what's going on
2 with high violation rates as well as normal risk
3 violations, and making sure that we use that data
4 to feed back into the standards to ensure that we
5 are continuously improving the standards.

6 Thank you for your time and I welcome
7 your questions.

8 CHAIRMAN BAY: Thank you, Ms.
9 Sheffield.

10 Mr. Clermont...

11 MR. CLERMONT: Good morning, Mr.
12 Chairman, Commissioners. It was suggested to me
13 that I shouldn't deliver my remarks in French, but
14 allow me (speaking in French).

15 Thank you for the opportunity today to
16 speak with the Canadian view, if you allow me.
17 CEA is grateful that the Commission continues to
18 extend invitations to industry and government or
19 representatives from Canada to participate in
20 these conferences.

21 As the Commission is aware, while there
22 are a diverse amount of models across Canada and
23 further to this morning's discussion, my company
24 and all Canadian stakeholders share a common
25 vision with our U.S. counterparts about effective

1 international electric reliability regime. In
2 fact CEA members have a strong stake in the
3 success of NERC and are deeply engaged in all
4 aspects of the NERC enterprise, and this dialog
5 working with NERC has been very productive and we
6 believe is giving great results.

7 A good example of this engagement is
8 GMDs. In the views of several factors, power
9 systems across Canada are among the most
10 susceptible in North America to the effects of
11 GMDs, as my company knows very well from past
12 experience.

13 The GMD-related experience and
14 expertise of the Canadian utilities is probably
15 amongst the most advanced in the sector, as was
16 referred earlier by Mr. Cauley. Our members'
17 understanding of the impacts of GMDs continue to
18 grow, though, through a variety of efforts,
19 including a lot of real time monitoring equipment,
20 simulation of tools and enhancement of models.

21 Canadian utilities have undertaken a
22 mix of strategies in order to effectively or
23 trying to effectively mitigate the effects of GMD
24 on their system. And each of these strategy is
25 they were specific characteristic needs and

1 exposure of each of these systems. So consistent
2 with that approach, we urge all applicable
3 governments of authority to base their approach on
4 firm technical grounds and experience learned
5 through a couple of these events.

6 A word on the SEC. Given the
7 integrated nature of the North American DPS, no
8 surprise. Reliability and security cannot be
9 achieved in isolation. Protecting the grid
10 requires a coordinated approach between Canada and
11 the U.S., and to that regard we believe that the
12 SEC yields important benefits in that regard. We
13 continue to see value in ensuring there's a robust
14 Canadian voice in the SEC as now, and we look at
15 them inclusive and effective for all ES-ISAC.

16 Finally, on our reliability standards,
17 a few words, if you allow me. Like many other
18 stakeholder, CEA views the impending achievement of
19 city/state as a marking milestone, and we really
20 look forward to a more deliberate and predictable
21 base of work focus on continual improvement
22 through periodic reviews.

23 Before concluding I would like to
24 invite you, all the Commissioners and Staff to the
25 MRC and board meeting that is in Toronto this

1 summer as we know in August, and you will have one
2 more opportunity to see how Canadian and U.S.
3 entities are working together.

4 This concludes my remarks and if you
5 have any questions I'll do my best to answer.

6 COMMISSIONER BAY: Thank you.

7 Mr. Wright...

8 MR. WRIGHT: Thank you. Steve Wright
9 from Chelan County Public Utility District
10 representing the --

11 I want to make three points today.
12 Five years ago I participated in a similar panel
13 then as the Reliable Power Administration
14 administrator, and I can say that the process was
15 not working well. There were a lot more people in
16 this room and there was a lot more tension in this
17 room at that point than there is today. The tone
18 and tenor of the discussion is substantially
19 different and deservedly so.

20 We agree with Gerry Cauley that the
21 standards process is approaching steady state
22 where we seek continuous improvement, but not in a
23 crisis mode, and I want to say thank you to the
24 Commission and to NERC.

25 The tone at the top matters. The

1 Commissioners have spent substantial time in
2 forums like this and at the NARC. Your efforts to
3 collaborate to resolve these issues have paid off.

4 Kudos to Gerry Cauley and his team for
5 emotionally rationalizing the standards
6 development audit and enforcement process. NERC
7 has provided an effective bridge between industry
8 knowledge and FERC has envisioned by the rafters
9 of the law.

10 The second point I want to make is,
11 even five years ago I think there was a strong
12 sense that the prospective standards process was
13 not the end state. A RISC-based approach is very
14 exciting because it holds the potential of moving
15 away from one-size-fits-all standards that are
16 particularly problematic in a diverse reliability
17 environment.

18 Today that is within sight. We are
19 very supportive of the goals described by NERC as
20 transforming, to be forward looking, focused on
21 areas that represent a high risk in Bulk Power
22 System reliability, and reducing the
23 administrative burden on registered entities.
24 Also the conceptual framework that's been
25 developed seems sound and deserving of applause.

1 But we don't get the efficiency goal
2 right away. For at least a while registered
3 entities are going to be living in two worlds.
4 Currently there are hints but a lack of clarity
5 around a reduced administrative burden that will
6 result from successfully adopting the RISC-based
7 paradigm.

8 Within the LPPC community I found those
9 who believe an investment in a RISC-based approach
10 will transform and reduce the administrative
11 burden while others are not so optimistic. I
12 would ask that we seek to do more to clarify the
13 oasis in the desert that we're seeking.

14 In my written testimony I suggest a few
15 actions that could be taken that would increase
16 the clarity around the potential workload
17 reductions that can approve the registered
18 entities who embrace a RISC-based approach. I
19 also hope that collaboration will result in
20 increasing trust in the commitment of individual
21 registered entities willing to commit to effective
22 risk management that can be translated then into
23 administrative efficiency.

24 My third point is to say, I agree with
25 many of the earlier comments that the biggest

1 reliability issues have to do with the way we are
2 transitioning power supply in this country. I
3 managed the process on the Bonneville Power
4 Administration System of adding four thousand
5 megawatts of wind in about a five-year period, and
6 then during my sabbatical between jobs I worked
7 with the five largest utilities in California on
8 the higher renewability portfolio standards.

9 My simple perspective on this issue is
10 twofold. There is no reliability problem I have
11 come across that cannot be solved with time and
12 money. But understanding there are legitimate
13 reliability concerns that could have implications
14 for scheduling cost should be part of the public
15 dialogue.

16 It's hard not to notice dichotomy with
17 respect to the risk we are taking with substantial
18 changes to our generation fleet, compared against
19 the risk we are willing to take in the standards
20 making process.

21 My advice, as someone who has run a
22 large organization and been involved in the
23 federal decision-making process is this: When
24 engaging a meeting where important public policy
25 issues were involved, I tried to look around the

1 room to make sure the appropriate voices were
2 there that had the core competency to ensure that
3 we could make a sound decision that best served
4 the public interest and that they had the time to
5 be prepared to address the issue.

6 Reliability is a core public interest.
7 It needs to be represented at the table when key
8 decisions are being made. We are fortunate to
9 have an organization like NERC with the core
10 competency to address reliability and a regulator
11 that has developed a core competency to provide
12 oversight.

13 It's critically important that FERC and
14 NERC need to be at the table when key decisions
15 are being in order to have and push sound public
16 policy. FERC and NERC as the national reliability
17 conscience should lean forward to assure that
18 public interest is fully served through adopting
19 strategies to assure that you are at the
20 decision-making table.

21 With that I look forward to your
22 questions.

23 CHAIRMAN BAY: Thank you, Mr. Wright.

24 Mr. Gallagher...

25 MR. GALLAGHER: Thank you, Mr.

1 Chairman, Commissioners. My name is Bill
2 Gallagher. I too was a part of the original
3 series of conferences back five years ago. It's
4 hard to think we've come so far.

5 I just wanted to touch on a few things
6 from my prepared statement. RISC-based CMEP,
7 formally RAI TAPS, has been a strong supporter of
8 this moving away from a zero tolerance approach in
9 which all possible violations are treated as
10 enforcement matters.

11 The RISC-based CMEP is intended to
12 prioritize and customize compliance and
13 enforcement resources based on risk rather than
14 continuing a one-size-fits-all approach. We think
15 that this is an essential maturation of the whole
16 enterprise that will enable it to effectively and
17 efficiently perform its role in FDA Section 213.

18 We're not small systems who mainly make
19 up the TAPS membership. We won't be a part of the
20 initial rollouts, so we reached out to NERC and
21 actually had a small entity exercise that was put
22 on back in February. We had people there from the
23 regions, from NERC staff and a series of selected
24 entities, small entities of three hundred
25 megawatts or less, to hopefully get a better

1 understanding of how these small entities should
2 be looked at when applying the CMEP approach. We
3 think that was very helpful. We still have to
4 wait to see how it all works out and we'll begin
5 to have the IRAs and the ISUM provided to us.

6 We were able to give a lot of concrete
7 examples, which we think are very important as we
8 move forward. The importance of the feedback loop
9 that the standards development, we agreed with the
10 Commission's observations. The REI ordered that
11 the adoption of the streamlined REA programs,
12 process lower risk compliance suggested that there
13 may be provisions of reliability standards that
14 provide little protection to the reliable
15 operations of Bulk Power System and we support
16 your acceptance to identify such provisions for
17 proposed retirement.

18 We think it's important that even
19 though we believe we reached somewhat of a steady
20 state that we continue to review the standards.
21 There are a lot of factors that are really very,
22 very low in risk, and it would be better for all
23 of us if we were to retire those so that we could
24 concentrate on the things that really are most
25 important.

1 On the CIP Five transition, we share
2 the concern you heard about NERC's unilateral
3 issuance of the guidance, the inconsistency in
4 that versus what we thought we were voting on. We
5 have a concern that the guidance would move the
6 entities from low to medium impact with
7 significant impact regarding the April 2016
8 compliance deadline.

9 We understand that work is being done.
10 We hope that the VTAGS will continue to meet and
11 that the new committee put together will be
12 successful. But time is running out. We think a
13 consensus can be reached. Guidance may be the
14 most efficient approach to assure the consistent
15 operation of the standards.

16 But if you can't do that, I had
17 mentioned at the last NRC meeting the possibility
18 of looking at the formal standards interpretation
19 process, that has the good points it can be done
20 in a hurry at NERC. That point is sometimes the
21 Commission review of that takes a long time.

22 And the other thing is continuing to
23 look at the changing standard if it's necessary.
24 But given the timing issues the unilaterals may
25 need to be employed and to get us where we need to

1 go.

2 On the low impact part of this, given
3 experience with the CIP Five Version 5
4 implementation for medium-high impact assets, it's
5 imperative that NERC establish a CIP 5 Version 5
6 low-impact asset sooner rather than later. We
7 understand that work is beginning.

8 This continues to be an important
9 concern for the TAPS members and we also have a
10 concern that the NERC February petition regarding
11 CIP 3-6, 3 Version 6, has not been acted upon
12 positively by the Commission. We don't believe
13 we've seen a NOFR yet. It's important that we get
14 that going. The small entities -- we'll be
15 looking at a number of smaller entities that are
16 going to be brought into areas that we've marked
17 and to do a compliance review.

18 Thank you very much.

19 CHAIRMAN BAY: Thank you, Mr.
20 Gallagher.

21 Mr. Gust...

22 MR. GUST: Good afternoon, Chairman
23 Bay, Commissioners and Staff. My name is Jeff
24 Gust and I appreciate the opportunity to
25 participate in today's conference.

1 I am vice president of Compliance and
2 Standards for MidAmerican Energy Company.
3 MidAmerican is wholly owned by Berkshire Hathaway
4 Energy which also owns MV Energy and Pacific Corp.
5 My written comments reflect the views of these
6 three companies of Berkshire Hathaway. Today I
7 would like to highlight a few points from these
8 written comments.

9 First Berkshire Hathaway supports the
10 compliance processes and procedures developed
11 today by the Midwest Reliability Organization and
12 view them as offering a successful template to be
13 used by other regions. For example, registered
14 entities in this region are performing quarterly
15 reviews of targeted NERC standard requirements
16 that correlate well with the NERC 2015 Risk
17 Element Guide. This new approach should result in
18 less time and money spent on three-year audits.

19 Regarding feedback to the standard
20 development process, we envision that patterns of
21 enforcement issues might inform discussions in the
22 peer audit review process on the nature and extent
23 of potential reliability gaps, for areas of
24 language with certain requirements might be
25 modified to clarify performance expectations.

1 Third, the Electricity Subsector
2 Coordinating Council as structured is an excellent
3 example of public/private coordination. Berkshire
4 Hathaway's three U.S. utilities have all
5 participated in energy-specific threat briefings
6 with federal and state law enforcement partners in
7 the last month. Furthermore, MidAmerican held a
8 transformer transport security table top exercise
9 earlier this year to determine strategies to
10 reduce security risks in the movement of spare
11 transformers. Berkshire Hathaway strongly
12 supports the strategic review now taking place
13 under the sponsorship of ESCC.

14 Finally, working with the Electric
15 Power Research Institute, the Sunburst Program in
16 Iowa State University, MidAmerican will be
17 gathering and receiving valuable data and
18 information on current surface magnetic fields in
19 and around a transmission system. We believe this
20 will greatly increase our understanding of future
21 geometric metric disturbance impacts.

22 In closing, we appreciate the
23 Commission for holding this important technical
24 conference and look forward to answering your
25 questions. Thank you.

1 CHAIRMAN BAY: Thank you, Mr. Gust.

2 I have just a questions. One is that,
3 my sense is that the physical and cyber security
4 reliability standards are obviously very important
5 and they create a baseline that you want every
6 utility to meet.

7 But beyond those standards, what
8 interests me is whether there are ways that NERC
9 and FERC could help promote best practices in
10 industry, so that industry is truly achieving a
11 robust form of physical and cyber security.

12 So I'm interesting in hearing the
13 thoughts of the panelists in terms of whether or
14 not they have any ideas or if you have any ideas
15 on what NERC and FERC can be doing in that regard.

16 MR. GUST: So I'll go ahead and start.
17 We agree with you. Our company wants to operate
18 with operational excellence rather than compliance
19 excellence, and so we do things that go above and
20 beyond the standard, and we work with either
21 government agencies or other utilities, or even
22 with NERC on some of these -- for example, some of
23 these exercises. We think the grid acts as a
24 great exercise, but we do our own also. I
25 mentioned the table top exercise on the

1 transformer, moving a large transformer. We
2 actually had one fail, so we took that opportunity
3 to do the table top exercise as if it was
4 attacked.

5 So we think doing those kind of things
6 goes above and beyond the standard and are great
7 opportunities to learn.

8 CHAIRMAN BAY: Yes, Dr. Ortiz?

9 MR. ORTIZ: I want to mention a couple
10 of activities at the department, some of which
11 have been adopted already by industry members.
12 One is the cyber security capability maturity
13 model, which is a sort of best practices that was
14 developed by the department, in collaboration with
15 the industry and the ERO, and has been a good
16 model for firms to look forward to and we also
17 intend to develop an analogous physical capability
18 maturity model, as well.

19 These types of documents are only
20 voluntary but provide key inputs in the kind of
21 decision making that we have to make in a very
22 complicated area.

23 CHAIRMAN BAY: Ms. Sheffield.

24 MS. SHEFFIELD: Thank you, Chairman
25 Bay.

1 As we're implementing our plans at GTC,
2 we're working very closely with the North American
3 Transmission Forum to identify some superior
4 practices associated with physical security, cyber
5 security, resiliency. Some of the noteworthy
6 efforts coming out of that group are some recently
7 completed guides specifically around physical
8 security on how to do risk assessments,
9 evaluations, develop physical security plans, and
10 my understanding is upon the Transmission Forum's
11 board's approval there's going to be an open
12 distribution of some of these documents.

13 I guess my point is NATF continues to
14 be a very valuable forum for us for collaborating
15 with industry peers and working together with us
16 to establish superior practices.

17 CHAIRMAN BAY: Gerry?

18 MR. CAULEY: Thank you.

19 I think, Chairman, there are a number
20 of activities as you've heard that I would call
21 best practices. I just saw the news article today
22 about the grid X exercise as the world's largest,
23 grandest cyber and physical exercise. I never
24 even called it that myself, but it's a best
25 practice. And you know I think some of the

1 information sharing we're promoting in the ISAC on
2 a voluntary basis is a best practice, and, you
3 know, we're getting accolades as being one of the
4 better of the sixteen sectors and the activity in
5 the ESCC. I also see a lot of best practice in a
6 number of individual companies where I can look at
7 what they're doing in terms of their control
8 center protection and their physical asset
9 protection.

10 So I think my suggestion is we think
11 about going along the lines of supporting and
12 encouraging these kinds of initiatives, because if
13 promoting best practice gets interpreted as the
14 list of the best things that each company should
15 do, there's an inherent fear of that then becoming
16 the standard, or that's what everyone's going to
17 be held to. And I have experienced this in the
18 last five and a half years, is when NERC thinks
19 something is a good thing to do, everyone goes,
20 "Oh, gosh. Now I've got to do it. It's not even
21 in the standard, but I've got to do it because
22 it's on the record as being best practices".

23 So that's the side that I think we have
24 to think carefully about. How do we promote the
25 best actions and sharing of best practices to do

1 things, things for people to do, without implying
2 that there is an obligation and then it's falling
3 into the regulatory arena.

4 So the only think I can think is take
5 it initiative by initiative and not create the
6 laundry list of the guides, the best guides, but
7 what new part of the problem we solved through the
8 initiative and then work with people to do that.

9 CHAIRMAN BAY: Mr. Wright...

10 MR. WRIGHT: Just based on some of the
11 history of processes I've been through in the
12 past, I think that there could be more done that
13 stops short of the concern that Gerry has, which
14 we would share, in terms of sharing what comes out
15 of audits.

16 So normally when you sit through the
17 types of interview for an audit process, you hear
18 the things that the auditor said, "We think you're
19 doing pretty good on this, and here are some areas
20 that were not so good". The audit itself tends to
21 only reflect the negatives, so the opportunities
22 for sharing positives are not as obvious, at least
23 historically they're not.

24 I think that will be particularly
25 important as we move into these controls

1 evaluation process that we're moving to, because
2 this is new, and we're still trying to figure out
3 exactly how do we do controls that will be
4 effective. There will be opportunities to learn
5 from others from that as well, so just sharing of
6 what's going on in the audit process would be
7 helpful.

8 CHAIRMAN BAY: Mr. Gallagher...

9 MR. GALLAGHER: Thank you, Commissioner
10 Bay.

11 One of the difficulties with trying to
12 do this from standards in a regulatory standpoint
13 is you're always reacting because the stuff moves
14 so quickly that by the time we get the standards
15 out there and in place and everybody is up to
16 speed something else has come along. We used to
17 think the iPhones were safe and now they can be
18 hacked.

19 So it's difficult without having some
20 kind of an ongoing process of identification,
21 notification. The S-ISAC certainly plays a role
22 there, but I think it's very difficult to just
23 look at this in the old way of standards. You
24 have to look at a hybrid versus this.

25 CHAIRMAN BAY: So, I've gotten some

1 pretty good feedback on the ESCC from industry,
2 but I have to say from some members of industry I
3 have heard some concerns about the ES-ISAC. In
4 fact it was reflected in some of the comments that
5 we received today in the prepared testimony.

6 So I'm wondering whether any of the
7 panelists have views on the ES-ISAC and whether
8 there are things that should done to improve its
9 usefulness to industry.

10 MR. CAULEY: I don't want to answer for
11 industry, but I could answer what we're doing with
12 the ESCC in terms of a strategic review that's now
13 been ongoing for several months.

14 This has never really happened and DOE
15 designated us as the ISAC back in 1988, and we
16 just said, "Oh, that's a job. We'll do it," and
17 we just thought, "You know, what does it entail?"

18 Well, we created a post-it center to
19 share information and we talked to the government
20 to see if there is anything in there we should
21 post, and we kind of went along with that thought
22 for more than a decade. But the ESCC a year ago
23 basically said we need to commit as an industry to
24 have a single place where we clear security
25 information and make this more sort of the center

1 of the universe around that. Because to that
2 extent the capabilities need to be upgraded.

3 So this strategic review, which has
4 been led by the ESCC and industry folks, and we've
5 been a participant but not a director of it,
6 interviewed more than seventy leaders and
7 technology people and practitioners from industry.
8 We went and visited a number of the other ISACs to
9 see what kind of member model, how did they get
10 information, how did they share it, and we were
11 coming near to the end of that process and I think
12 we will have some recommendations on acquisition
13 of a richer set of information that we can share,
14 both the voluntary sharing from industry but as
15 well, as I alluded to earlier, some of the
16 automatic sensor-based and computer-based
17 acquisition of data.

18 Better controls, there is a very big
19 emphasis on the controls and security around the
20 data. If you can picture, we have a section of
21 one of our buildings where there's rooms and
22 computers where no one in there wants that
23 information to get anywhere. And, you know, we
24 just need to make sure we have the top notch
25 controls and security and procedures around that,

1 so we're working on that piece.

2 I think the most important piece that
3 we're working on in the strategic review is what
4 products does this industry really need in order
5 to mitigate this risk. We had sort of a NERC/FERC
6 mentality at first when we first thought of this,
7 because we got enough information, if there was a
8 problem, we would produce an alert, and it
9 required reviewing it with the FERC staff and
10 getting it out to industry, but it might take,
11 lightning speed would be half a day, and, you
12 know, normal speed would be a few days to get
13 these alerts out.

14 What we're finding is, if there is an
15 explosive device in a substation somewhere,
16 industry wants to know now. "Tell us what you
17 know now and figure out what the" -- the absolute
18 truth is, "When you figure that out, but tell us
19 what the problem is now". So we're having to
20 rethink our product delivery and what kind of
21 information and what people need.

22 So I don't want to speak for industry,
23 because there's a lot of users here. I'm sure
24 there are a lot of issues and opportunities, but
25 we have a very rigorous project underway to

1 evaluate that and set out a course of
2 recommendations and actions.

3 CHAIRMAN BAY: Mr. Gust?

4 MR. GUST: Yeah, so, first of all we
5 definitely support a strong ES-ISAC, and we also
6 support the strategic review.

7 I think our experience of the large
8 organization, we're hooked in other places to get
9 the information. You know, the information to get
10 from the ES-ISAC tends to be old. It's not
11 current, like Gerry mentioned.

12 So we do believe it should be a strong
13 organization. We want to use it, but today it's
14 just old information and not that helpful.

15 CHAIRMAN BAY: Mr. Henry? You made a
16 reference to the ES-ISAC and your entities, your
17 regional entities' ability to access that data?

18 MR. HENRY: Yes, Mr. Chairman.

19 First of all, let me say that I have
20 participated in briefings from the ES-ISAC and the
21 work that is going on there I think is very
22 vitally important. As I've indicated rapid and
23 accurate information flowed is really I think
24 critical for both security and reliability.

25 From a regional entity standpoint, the

1 regions have not only a compliance monitoring
2 enforcement delegative function, but we also have
3 delegative functions in the areas of both training
4 and education as well as situation awareness and
5 infrastructure security.

6 The regions are not asset owners and
7 operators. Full participation in the ES-ISAC
8 activities currently is limited to only asset
9 owners and operators. That's problematic for
10 regions from a couple of perspectives. One is it
11 deters our ability to execute on those delegative
12 functions related to this subject area.

13 Many of the regions, going back to your
14 earlier question, many of the regions have
15 critical infrastructure protection committees made
16 up of entities from their region. It's a forum
17 that particular smaller entities rely upon to
18 receive information, and regional entity staff is
19 not getting that information. So it inhibits our
20 ability for that.

21 Secondly, certainly the regions do not
22 have control systems and so there's not that type
23 of threat, but we do have data that's very
24 important and I think it's important for all
25 industry participants who could be at risk to have

1 access to grid information so that we could ensure
2 that all industry data is protected.

3 So that's I think my more microscopic
4 issue from a regional entity standpoint. The core
5 reason is the industry does not trust the regions
6 and maybe even NERC to utilize properly the
7 information, if there is a potential of mixing and
8 matching compliance enforcement with the ES-ISAC.

9 Some of the regions have indicated
10 willingness to consider similar protections that
11 NERC has to make sure that that type of
12 information flow doesn't happen, if that's what's
13 necessary. Our personal preference would be that
14 there would be sufficient trust built. None of
15 the regions is looking to go out and find ways to
16 catch people in a "gotcha" manner in that regards.

17 Thank you.

18 CHAIRMAN BAY: So the bottom line is
19 that your staff does not have full access to the
20 information in the ES-ISAC?

21 MR. HENRY: Well, full access. We do
22 have access. There are different levels of access
23 to the material. Actually this week we started
24 receiving some more data, me and my staff we
25 started receiving some more data, so I'm not sure

1 exactly what generated that, but my understanding
2 is we do not have full access, no, comparable to
3 that of asset owners and operators.

4 CHAIRMAN BAY: Phil?

5 COMMISSIONER MOELLER: Thank you, Mr.
6 Chairman, just a few comments, no questions. I
7 think my themes today have hopefully been
8 consistent of concerns over the integration of
9 variable resources, where we're going with reserve
10 margins, and the ongoing concern that we stay
11 focused on gas/electric coordination.

12 Similar to the last panel I want to
13 thank you for all coming, particularly my good
14 friend Steve Wright who I've known for a long
15 time, who's from right in the middle of the State
16 of Washington, which makes it challenging to get
17 to the District of Columbia. But I'm glad you're
18 here.

19 And I think we've been doing an
20 increasingly better job of including our Canadian
21 friends as part of these discussions and I
22 certainly hope that will continue.

23 I will note that I met our new
24 counterpart from Mexico in Chicago, as Francisco
25 has now moved on, and you know, there's some great

1 things happening in the Mexican energy markets,
2 and they're looking to expand more international
3 trade with us in the electric sector. So they may
4 be one in the future that we may want to spend
5 increasing amounts of communication and
6 cooperation with as they hopefully expand their
7 energy economy in ways that can be mutually
8 beneficial.

9 Thank you, Mr. Chairman.

10 CHAIRMAN BAY: Thank you, Phil.

11 I understand that Mr. Clermont had a
12 response on that question regarding the ES-ISAC.

13 MR. CLERMONT: Yes, thank you. And I
14 totally agree with your assessment. I think we,
15 and in Canada also have been doing a better job at
16 talking to each other and at finding forums where
17 we can make ourselves aware of the difficulties we
18 may have with different regulations and different
19 frame works, and that flows very well into what I
20 wanted to say on the ESSC, ES-ISAC.

21 As I said briefly in my remarks, the
22 grid is integrated. There is no border for the
23 electric grid. We have been a strong supporter of
24 the ESSC and the ES-ISAC. Although there are
25 difficulties with fuels, as you know there are a

1 couple of systems that Canadian government doesn't
2 like that much. But the key of thinking here is I
3 think we've been working together. We
4 participated actively into the ES-ISAC review and
5 I guess the bottom line is if we talk to each
6 other there are solutions. They may be a little
7 more difficult and if we were all in the same
8 family or in the country, but there are always
9 solutions, and when we talk to each other, which
10 we have been doing, we always find a solution to
11 make sure that this integrative nature of the
12 activity of the grid is reflected and taken into
13 account.

14 Thank you.

15 CHAIRMAN BAY: Thank you, Mr. Clermont.

16 Cheryl?

17 COMMISSIONER LAFLEUR: Well, I think
18 this has been a great panel. I frequently have
19 the experience that my colleagues asked a question
20 I was about to ask, but in this case I was ticking
21 off questions as you were speaking so you have all
22 ready covered a lot of what I'm interested in.

23 I have one rather broad question and
24 then a couple of specific questions. Broadly some
25 of you, certainly Gerry and others, have heard me

1 talk about that all of the work of the electric
2 reliability organization, broadly, is like a
3 longer reliability cycle, identifying priorities,
4 setting the standards, training, compliance, and
5 then learning from reality, metrics and monitoring
6 and event analysis, and then that goes into the
7 priorities and you go along.

8 And I would say in the first couple
9 years that I was involved on the Commission level,
10 a lot of the energy and attention was around
11 priorities and the standards, too many priorities,
12 a standards process was taking too long, too many
13 directives, too much backlog.

14 The last couple of years the emphasis
15 has been a lot of it around compliance and audit
16 and how do we streamline and make that process
17 more RISC-based, and I'm tempted to say now we
18 should be looking at monitoring and metrics and
19 data and how we learn from it, but I want to hear
20 from you.

21 Gerry, as you look out now, where do
22 you think the big push is going to be in your
23 leadership, you know, looking forward to the next
24 chapter of, you know, NERC's life?

25 MR. CAULEY: I think what you described

1 is very closely aligned. I mean, it's really
2 about getting better metrics and analytics and
3 they kind of go hand in hand. And part of it is
4 the metrics and assessment about what we have
5 accomplished and in the blocking and tackling type
6 of things, relay maintenance and equipment
7 failures and those kinds of things, and the
8 quality of standards. But some of it is about
9 getting a better standard of risk in complex areas
10 that we have not been before, like new resources
11 used in different ways to provide reliability
12 services and how will they all add up, and the
13 risks like cyber and physical and GMD that we
14 really don't have that experience that is sort of
15 quantifying the risk of setting a bar of
16 expectation performance and those types of things.

17 So in the past year we've spoken
18 internally with our board and in our planning
19 about the need to continue to develop this
20 monitoring metrics and analysis to shape the
21 picture of the reliability.

22 COMMISSIONER LAFLEUR: Anyone else?

23 Steve?

24 MR. WRIGHT: So startup organizations
25 are inherently inefficient, and this is what this

1 has been. It's been a startup organization for a
2 number of years, and now we have got to figure out
3 how to get the efficiency out of it.

4 So this translation of inherent risk
5 assessment from the national/regional down to the
6 national entity level is really important to
7 figure out how we understand and tailor
8 reliability assessment for individual
9 organizations and then drive the efficiency
10 through that to making sure that we're focused on
11 the things that are actually important that each
12 one of us has registered and contributes to the
13 Bulk Power System.

14 I think it's easy to be candid for that
15 be to lost track of here, that there is an
16 efficiency goal that we're trying to achieve in
17 doing this tailoring process, and that we actually
18 keep driving towards making sure we get really
19 great reliability in an efficient way. That's
20 what our public inspection was.

21 COMMISSIONER LAFLEUR: So if I
22 translate what you said and cross a different
23 dimension, maybe we started talking about
24 priorities in 2010 and the timeframe you talked
25 about, but that driving priorities through the

1 whole process, to make sure the right things are
2 being focused on is being driven down to, whatever
3 the CM -- I used to know REI right now, whatever
4 CME stands for. Compliance monitoring, and it's
5 not evaluation -- enforcement, as well as
6 RISC-based registration, driving that same
7 prioritization into the kind of DNA.

8 MR. WRIGHT: Sort of my perspective
9 2015 and 2016 are really critical years for
10 actually making this translation where we're doing
11 tailoring of reliability standards as opposed to
12 one size fits all.

13 COMMISSIONER LAFLEUR: Sylvain?

14 MR. CLERMONT: And maybe we should also
15 consider that there is -- it's probably a
16 different perspective, but there is a different
17 view that can occur within the forums. I think
18 the forums are a great platform for people to
19 openly share things you're not necessarily totally
20 sure if you should be doing that. So maybe it's a
21 parallel loop to the one you described, but I
22 think the value of that loop is also feeding into
23 the other loop of making us better and more
24 effective and more focused on what really matters.
25 And I don't think they're parallel. I think one

1 feeds into the other.

2 COMMISSIONER LAFLEUR: Dr. Ortiz?

3 MR. ORTIZ: And I'd also emphasize the
4 fact that this is a time for enormous genealogical
5 change for the industry and there is going to be a
6 lot of evolution with respect to how standards
7 compliance and other operational activities are
8 managed.

9 I can point to a couple of good
10 examples that I think indicate the ways in which
11 both the ERO as well as the industry is moving
12 forward in this area related to synchronies, or
13 employment flows data.

14 In particular in one area, synchronies
15 are able to help me the NERC modeling standards in
16 ways that are entirely automatic and far more
17 accurate than traditional methods typically have
18 been. And then in another area or an emerging
19 area of application for these data is to
20 understand equipment misoperations that are far
21 more detailed at a systematic level than would be
22 the case if you had to wait 'till something broke,
23 you know, dismantle it, try to figure out what
24 happened and then try to get lessons learned. You
25 can actually learn at a systematic level over time

1 what failures you equate.

2 It's just a couple of examples of ways
3 that are extra regulatory but provide key inputs
4 into the process. And having an open process and
5 sharing information about that and making sure it
6 stays as an open process and one that is not
7 necessarily compliance focused is very very
8 important.

9 COMMISSIONER LAFLEUR: Thank you.

10 Dr. Ortiz, I was going to direct a
11 specific question to you. I just didn't want to
12 leave your observation in your written and your
13 spoken testimony about the two incident reports,
14 the parallel or overlapping reports of the DOE and
15 NERC.

16 Is there something you're looking for
17 us to do, for NERC to do? I mean, is there an
18 action item here or a discussion? And I give
19 others a chance to comment, because it really
20 hasn't been taken up.

21 MR. ORTIZ: So let me comment first and
22 then I'd appreciate a dialog with my fellow
23 panelists as well as the Commission on this. I
24 didn't bring examples of these forms. I didn't
25 want to get into the arcana of such a thing, but

1 the OE-417 event and incident report form, as well
2 as the EOP-4 form are very, very similar.
3 They're used for somewhat different purposes and
4 the reporting timelines are a little bit
5 different, but they're so similar in fact that the
6 Commission issued a rule I think last year, or
7 maybe the year before, indicating that it would
8 accept an OE-417 form in lieu of an EOP-4 form,
9 and in the renewal of our form in January, our
10 Office of Management and Budget administrator
11 noted that, while there would be an approval of
12 this at this point, that there was a need for the
13 department to work with the Commission and the ERO
14 to figure out a way to harmonize these data
15 collections.

16 One of the areas of issue that I noted
17 in my written testimony as well as in my comments
18 today have to do with the fact that we publish
19 monthly summaries of the data that are collected
20 and NERC has stopped publishing a monthly summary
21 of the data for reasons that I'm not exactly sure
22 with, and I should have coordinated better with
23 NERC on this. But, you know, if we harmonize
24 these, the department has certain obligations with
25 respect to reporting and we can't let those go

1 away, so that's just one issue that would have to
2 be on the table.

3 I think it's required that the
4 Commissioners as well as the department, ERO and
5 the energy information administration get together
6 and work out far in advance of any OMD guidance a
7 plan to move forward in this area.

8 MR. CAULEY: Thank you for the
9 opportunity to respond.

10 I think, you know, many aspects of data
11 sharing are difficult and sometimes it might seem
12 even intractable, but, how do I resolve these
13 dilemmas, but I think this is not one of those.

14 In fact we had previous initiative to
15 look at trying to unify the equivalent of the
16 EOP-R reporting form and the OE-417 form, and I
17 actually don't know the reason why it didn't get
18 to the end. It was a project we had, and I think
19 it's something we should go back and look at,
20 because this is not the data of the root cause or
21 on specific equipment. It doesn't have that level
22 of detail. It's a two- or three-page form. It's
23 high level. You know, how many customers were
24 impacted, you know, what was the nature of the
25 event and that kind of thing.

1 So I think there is an opportunity. I
2 would actually welcome that. If we could go back
3 and simplify it. It seems like it would be an
4 opportunity to simplify it for industry. I would
5 want us to have industry stakeholders at the table
6 in that conversation, because I want to understand
7 what their concern is that prevented this hundred
8 percent unification before.

9 So I think I can commit today that we
10 need to have a project to get together to see if
11 we could unify that event reporting form.

12 COMMISSIONER LAFLEUR: Sylvain?

13 MR. CLERMONT: I can't disagree with
14 unifying of an event, except that we need to be
15 careful. Reporting from a Canadian entity to an
16 international organization like NERC is one thing.
17 Reporting the same day to the DOE or to someone
18 else may be more problematic.

19 Now if we're just talking about having
20 a form that is different or unified for U.S.
21 entities, fair enough, but just be cautious that
22 we must respect the line of reporting, and for us
23 reporting to NERC is okay, but reporting to DOE,
24 it may depend on the data we're talking about.

25 COMMISSIONER LAFLEUR: Well that might

1 suggest that if the form was harmonized there
2 would be a continuing vitality of the form for
3 NERC, for you. It sounds like some possibility of
4 progress.

5 MR. CLERMONT: Absolutely and that
6 would work for sure.

7 COMMISSIONER LAFLEUR: That leads to my
8 final question, just picking up on the discussion
9 of the ISAC and so forth. I know Congress has
10 several times taken up information sharing
11 legislation with respect to cyber security. Is
12 there a need for legislation? I believe it
13 foundered in part around liability protections for
14 people that shared information. One of them was
15 privacy issues. I haven't followed every cut and
16 thrust. But for those of you who are struggling
17 with trying to get all the information in the
18 right hands, is there something we're looking for
19 a legislative solution or do we have the tools
20 already and it's just a matter of working it out?
21 If anyone wants to step into these waters.

22 MR. CAULEY: I would say mostly we can
23 do most of what we need with what we have, and
24 it's about encouraging, setting up the structures
25 for information sharing. It's setting up the

1 leadership as we are and coordinating counsel.

2 And I've testified to this before, so I
3 kind of just repeat that if there were to be
4 legislation, which I'm not saying you would
5 actually have to have, but if there were, there
6 should be some incentives and encouragement for
7 open sharing of information among the asset owners
8 and operators.

9 It's very challenging. There has been
10 many reasons quoted to me why that's difficult,
11 you know, the common one being at NERC is, "We
12 don't want it to fall into compliance hands". But
13 it's really difficult in terms of reputational
14 risk, corporate liability. There's a number of
15 risks associated with sharing information.

16 Sometimes I read an article about
17 whether some health agency or some organization
18 had a major cyber breach and all this information
19 was released, and then you read further and it's
20 like, oh, it was last August. It's like, why is
21 it just coming to the news now? Because most
22 companies would prefer not to share this
23 information and have it fall into hands that could
24 be used. It's damaging and it's reputationally
25 difficult, and usually why that information gets

1 out is because it got found out.

2 So any incentives that we can create to
3 share among responsible entities at the government
4 and among industry to eliminate those risks and
5 damaging outcomes would be helpful.

6 The other area where we've testified is
7 in the use of emergency powers and true national
8 severe event. I think if we didn't have
9 legislation, my sense is the White House would
10 take charge and tell us all what to do, and that's
11 probably the closest to reality. But if there
12 were legislation on that, it should be clear
13 authorities. It should be based around how do you
14 overcome obstacles to respond in a way you need to
15 now? It's not really about emergency demands and
16 emergency requirements and standards. It's about
17 getting people to save locations. It's about does
18 putting the power back trump law enforcement
19 investigation of sites?

20 There are a number of questions that
21 have to be answered in an emergency state, and
22 somebody needs to be able to make those decisions,
23 so we would support those efforts.

24 COMMISSIONER LAFLEUR: Well, thank you.
25 I hear your comment on reputational harm from

1 information sharing, which I do understand. I've
2 also been more focused on potential security harm
3 and making sure if things get out, making sure
4 there are the right protections with the Freedom
5 of Information Act, if that's something that needs
6 to be, and that's something we will continue to
7 follow closely.

8 Thank you.

9 CHAIRMAN BAY: Thank you, Cheryl.
10 Tony.

11 COMMISSIONER CLARK: I just have one
12 question and I think it's probably best addressed
13 to Ms. Mendoza or Mr. Cauley or Mr. Henry, which
14 is this...

15 In talking with certain organizations
16 that have NERC compliance obligations and may have
17 a footprint that implicates them of a number of
18 different regions, the concern has been expressed
19 that, well each region may not have wholesale
20 interpretations of different compliance
21 obligations, or maybe they may see things just a
22 little bit differently in some ways, and it causes
23 them some concern about which way are they to
24 interpret a particular rule or standard.

25 I'm wondering if you have heard this

1 concern, number one, number two is there any
2 legitimacy to it, and if there is, is there
3 something that we should be doing different to
4 lessen the potential for having one entity having
5 to listen to two different masters?

6 MS. MENDOZA: Thank you for the
7 question.

8 I'll say that we have heard that I
9 guess at a high level, right, without specifics,
10 and, you know, alleged I guess supplements, but
11 now we have the tool where you can plug in
12 specific information on an anonymous basis if you
13 wish, that with respect to lack of consistency and
14 problems created by lack of consistency, you know,
15 among other areas, with respect to monitoring and
16 enforcement of reliability standards.

17 So I do encourage when I hear anecdotes
18 about, you know, this a problem because this
19 region is doing this, this region is doing that,
20 to bring that into the tool at the website. There
21 is a link on the NERC.com page, because that is
22 tracked, reviewed and addressed. And they have a
23 number of issues that have come in through the
24 tool and have been considered by ERO, by the
25 enterprise and reviewed and addressed.

1 So that is a more I guess disciplined
2 way of addressing those issues, because it allows
3 us to understand what exactly is happening, you
4 know, sometimes you have different factual
5 circumstances that can justify different outcomes,
6 you know, in other cases you have just, you know,
7 differences in processes. So there is a range of
8 possibilities when you're talking about
9 consistency.

10 The other thing that we are working on
11 is a structured process for streamlining the
12 interface with ERO Enterprise for entities that
13 are located in more than one region, and that's
14 how you make up for the multi-region registered
15 entities. Yes, the name of the program is
16 Coordinated Oversight Program, but, you know, most
17 people refer to it as NRE.

18 And that is an agreement -- that is
19 optional for the registered entities to be
20 registered. We have just reopened the application
21 period on June 1st, and registered entities,
22 they're all located in multiple regions either
23 because of their corporate structures, single
24 corporate entities, or if you have multiple
25 affiliates throughout the ERO Enterprise can

1 apply, and the main benefit is that you have the
2 assignment of a lead regional entity. That is
3 your primary interface. It doesn't mean that the
4 other agencies involved are not participating,
5 particularly in your compliance monitoring and
6 enforcement. They are participating but then the
7 coordination job becomes the job of the ERO
8 Enterprise, not of the registered entity that has
9 to figure out, you know, should I send this here?
10 Should I send this there? How are all of my
11 different circumstances and issues going to be
12 addressed by multiple agents?

13 So I think those two things will be
14 very helpful in highlighting situations where we
15 need to address consistency issues and in bringing
16 more consistency to those types of entities.

17 COMMISSIONER CLARK: Thanks.

18 Mr. Henry?

19 MR. HENRY: Thank you, Commissioner
20 Clark. Excellent question.

21 To supplement what Sonia was saying of
22 the thousands if not ten thousand decisions that
23 are made by the field personnel, only I think
24 sixteen or eighteen items have been reported in
25 this consistency tool since we initiated it some

1 six or eight months ago. So I think that's a
2 point worth noting. I'm sure there's some degree
3 of folks not knowing about it, and word hasn't
4 gotten out there, although it was publicly
5 announced at a NERC board meetings, within various
6 publications of regions and NERC.

7 With that aside, I think what I'd say
8 is you're posing a really model question, elements
9 of a model question that I think we will need to
10 think about. The registered entities have been
11 calling for consistency, more and more
12 consistency. If you take that to the ultimate
13 forum, we get back to a checklist which becomes
14 zero tolerance.

15 As a matter of fact, if I recall, after
16 reading the panelists' testimony here, there's one
17 I think at least that indicated had a call for the
18 ERO needs to be flexible in its implementation,
19 because possibly people don't like the guidance
20 that's given.

21 When NERC has to issue guidance, then
22 it has to consider implementing that across all of
23 north American, and by definition it may not meet
24 everybody's desires or needs, and in some cases it
25 may be appropriate for it not to meet it. People

1 may need to adjust.

2 So, there's a dichotomy that is being
3 created by this call for consistency, and that is,
4 how far do we take it, and at point do we say
5 there needs to be some at the regional level, with
6 the field practitioners who are doing the field
7 work on compliance monitoring and enforcement.

8 By definition, if you allow flexibility
9 there, there will be different decisions. It's no
10 different than EPA's regional offices or NRC's
11 regional offices. So there could be opportunity
12 for FERC and NERC in regions to sort of look at
13 some other models around this to try to understand
14 how that's then handled.

15 At this point, the regions are fully
16 committed to consistent implementation of
17 compliance monitoring and enforcement. All seven
18 of my peers, all eight of us are fully committed
19 and we have defined that as utilizing common
20 methods and processes and to the extent available
21 tools to carry out our duties.

22 So when there is guidance, we're
23 committed to following that, but in the absence of
24 guidance then we have the parameters in which
25 we're supposed to be working, the guardrails in

1 which we're supposed to be working.

2 We have mechanisms in place even though
3 we may have the ability to have guardrails and
4 work within those guardrails. The regions and
5 NERC have staff groups in place where we do
6 coordinate. We make efforts to inform each other,
7 but there are cases where the end result may be
8 different from one to another, because I would
9 submit that very rarely are the fact circumstances
10 exactly the same for any two cases.

11 So that's the policy-level question I
12 think we're going to have to think about from a
13 model standpoint.

14 Thank you.

15 COMMISSIONER CLARK: Thank you for the
16 comments made.

17 I appreciate that balancing act and
18 flexibility and some level of consistency, having
19 to hear about I guess the hotline of sorts that
20 you now have open, and I'm interested in hearing
21 if that continues to work.

22 Again the concerns that I heard
23 expressed were probably at a similar level that
24 you hear, not a specific complaint about a
25 specific call that had been made, but more sort of

1 general anecdotal concerns about potentially lack
2 of consistency, probably not dissimilar to the
3 sorts of things that FERC's own Office of
4 Enforcement deals with, as we see particular cases
5 in particular regions and there may be good
6 reasons why what appears to be a similarly
7 situated entity is treated a little bit different
8 region to region, but we certainly seek to
9 maintain some level of consistency in our
10 enforcement actions as well, so thanks for the
11 response.

12 Mr. Gallagher?

13 MR. GALLAGHER: I'm probably going to
14 miss my plane for this, but I can't let this go.

15 TAPS represents mostly the smaller
16 entities. We serve all the footprints. We have
17 been a stickler for the consistency approach.
18 Scott had had some side conversations with me and
19 agreed to go back and rethink some of these
20 things. The way we look at it is you can't have
21 the IRS office in Atlanta administering the tax
22 code differently than the IRS office in Boston.
23 There has to be the consistency. You may get a
24 different outcome as a result of the whole
25 process, and we're not even sure about that, but

1 you can't have flexibility when it requires that
2 the standard is the standard is the standard.

3 So beyond that, we're willing to talk
4 about flexibility, but we can't have entities in
5 the ROC footprint that are being penalized when
6 entities in SERC, and we like the way SERC does it
7 most of the time, but I think that's the
8 difficulty that we have here.

9 Thank you very much.

10 COMMISSIONER CLARK: Thank you.

11 Are you aware of your members who had
12 the ability to access the protocols that Ms.
13 Mendoza had illustrated? Has that worked or not,
14 or it's just too early to tell?

15 MR. GALLAGHER: You know, when you
16 become a whistleblower, even though it's, quote,
17 unanimous, you are very much concerned about what
18 might happen when they audit you. So I wouldn't
19 put much stock in the use of that tool. I don't
20 think it's going to be effective down the road.

21 MR. HENRY: If I may.

22 CHAIRMAN CLARK: Yes.

23 MR. HENRY: I just want to make sure, I
24 don't want there to be a bad light put on the
25 tool. The tool utilizes a service of the

1 third-party compliance monitoring company that
2 provides really hotline reporting on an anonymous
3 basis. So it's using a third-party vendor who
4 customized their application for our use here.

5 So I do think we had tried to provide
6 to the folks who feel like they might be penalized
7 if they provide information, and we're providing
8 as much protection as you all probably provide
9 your employees. You all probably have some
10 hotline company you all pay for.

11 I do appreciate folks like Angie, I
12 think feel pretty comfortable giving us feedback
13 and I don't want notice to be taken out on them,
14 so we do get that as well.

15 COMMISSIONER CLARK: Thank you.

16 CHAIRMAN BAY: Thank you, Tony.

17 I again would like to thank staff for
18 putting together this conference, and again, I
19 want to thank all of the panelists for making this
20 such a successful, such an informative,
21 interesting conference.

22 Steve, did you have something to say?

23 MR. WRIGHT: I would like to say one
24 quick thing, to Mr. Franks. If he could package
25 that ring, I'd be happy to take it back to

1 Washington State.

2 But I did want to make one serious
3 comment. Probably I've worked with Commissioner
4 Moeller longer than anybody else in the room. I
5 met him when he first came to Washington, D.C. at
6 least twenty-five years ago, and we worked
7 together off and on, and this will probably be the
8 last time I'm in a public session and I wanted to
9 say thank you for him.

10 He's always been incredibly prepared in
11 all the places he has performed duties, been great
12 to work with and he's been a great public servant
13 and I thank you for your public service.

14 (Applause)

15 COMMISSIONER MOELLER: Thank you.

16 CHAIRMAN BAY: Colleagues, any closing
17 remarks? Cheryl?

18 COMMISSIONER LAFLEUR: Well I was going
19 to say something at first, but I felt compelled to
20 say, this better not be the last time I'm in a
21 public session with you, so I'll save my thunder.
22 But I think we all agree with what Steve said.

23 I just was going to say, when I
24 testified last year with Sue Kelly on reliability
25 and securities, she said FERC was on NERC because

1 they were new and it was, as you said, it was only
2 in the first few years, you know first several
3 years of operations, was just transitioning from
4 childhood into pimply adolescence which somehow
5 stuck with me as the process was maturing, and I
6 think we can declare ourselves fully in young
7 adulthood, and I think that's good because we are
8 going to be dealing with some pretty adult
9 problems with security risks and all the changes
10 in the resource mix, and I am just happy to be a
11 part of it and thank you all very much.

12 CHAIRMAN BAY: Thank you, Cheryl.

13 Tony?

14 COMMISSIONER CLARK: Today demonstrated
15 one of the reasons I really, really like FERC,
16 which is that you get a lot of very high-level,
17 technical expertise, and if you look at the
18 biographies of everyone who testified in front of
19 us, it's folks who are engineers, who have been in
20 the control rooms, who have an in-depth, firsthand
21 knowledge of what's actually going on.

22 I sometimes chuckle a little bit in
23 this town, and you'll see seminars and things that
24 are all over town, and they'll talk about
25 something like reliability, and then you'll look

1 at the lineup and there won't be a single person
2 on there that has a technical background and has
3 actually run some of these particular programs.

4 But we don't suffer from that. Here at
5 FERC we really do get the best of the best to
6 testify. In front of us you provide us very
7 detailed information from a firsthand knowledge
8 standpoint. So thank you for participating in
9 that.

10 CHAIRMAN BAY: Phil?

11 COMMISSIONER MOELLER: First of all,
12 Steve, Mr. Wright, thank you very much for your
13 comments, and thank you to the staff for putting
14 this on, and obviously our panelists.

15 But also to the public who were here,
16 and on the webcast having a civil discussion of
17 issues can be quite productive, and we want to
18 celebrate the civility of this crowd.

19 Thank you, Mr. Chairman.

20 CHAIRMAN BAY: Thank you, Phil. Thank
21 you everyone.

22 (Whereupon at 3:57 p.m. the technical
23 conference was adjourned.)

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25