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BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

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IN THE MATTER OF: :
CONSENT ELECTRIC, CONSENT GAS :
CONSENT HYDRO :
DISCUSSION ITEMS :
STRUCK ITEMS :
- - - - -x

1043rd COMMISSION MEETING

Commission Meeting Room
Federal Energy Regulatory
Commission
888 First Street, N.E.
Washington, D.C.

Thursday, May 17, 2018
10:00 a.m.

1 The Commission met in open session at 10:02 a.m.,
2 when were present:

3

4 COMMISSIONERS PRESENT:

5 CHAIRMAN KEVIN MCINTYRE

6 COMMISSIONER NEIL CHATTERJEE

7 COMMISSIONER CHERYL LaFLEUR

8 COMMISSIONER ROBERT POWELSON

9 COMMISSIONER RICHARD GLICK

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12 SECRETARY KIMBERLY D. BOSE

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1 Discussion Items:

2 E-1: Geomagnetic Disturbance Reliability

3 Standard (RM18-8-000)

4 Presenter: Justin Kelly, Office of ZElectric

5 Reliability

6 At the Table: Matthew Vlissides, Office of the

7 General Counsel

8

9 Item A-3: 2018 Summer Market and Reliability

10 Assessment (AD06-3-000)

11 Presenter: Alan Haymes, Office of Enforcement

12 At the Table: Sedina ZEric, Office of Electric

13 Reliability; Alan Phung, Office of Electric Reliability;

14 Adam Bennett, Office of Enforcement; Jennifer Fletcher,

15 Office of Enforcement

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

2 (10:02 a.m.)

3 SECRETARY BOSE: Good morning, Mr. Chairman.
4 Good morning, Commissioners. This is the time and place
5 that has been noticed for the open meeting for the Federal
6 Energy Regulatory Commission to consider the matters that
7 have been duly posted in accordance with the Government in
8 the Sunshine Act.

9 Please join us in the Pledge of Allegiance.

10 (Pledge of Allegiance recited.)

11 SECRETARY BOSE: Mr. Chairman, and Commissioner,
12 since the April open meeting the Commission has issued 63
13 Notational Orders.

14 Thank you, Mr. Chairman.

15 CHAIRMAN McINTYRE: Thank you, Madam Secretary,
16 and good morning to all.

17 I would like to take a quick moment to raise
18 three matters preliminarily before we turn to our formal
19 agenda.

20 First, I want to note that earlier this month the
21 staff of our Commission and the North American Electric
22 Reliability Corporation, NERC, jointly issued a report
23 assessing the availability of so-called blackstart
24 resources. These are generating facilities that can start
25 without support from the grid, or that can remain energized

1 without connection to the grid. This Joint Report is a
2 follow-up to a 2016 staff review among the staffs of FERC
3 and NERC and the various regional entities under NERC.

4 The work is very much in line with our ongoing
5 work on resilience, and it pertains to plans for restoration
6 and recovery of the bulk power system following a widespread
7 outage or blackout.

8 The team studied nine representative utilities
9 that are registered with NERC, and concluded in the report--
10 which I commend to your review--that those utilities have
11 identified sufficient blackstart resources in their system
12 restoration plans, and they have developed comprehensive
13 strategies for mitigating against any future loss of
14 additional blackstart resources.

15 The report also makes recommendations for
16 voluntary industry-wide consideration regarding practices,
17 procedures, and methodologies aimed at improving system
18 restoration and blackstart capability, planning, and
19 testing.

20 These recommendations include approaches to
21 addressing single fuel-use constraints, validation of system
22 models, and expanded testing of system restoration plans.
23 Blackstart resources are critical to maintaining the
24 reliability and resilience of our Nation's transmission
25 grid, and I do encourage everyone to visit the FERC website

1 to view this important report. I thank the entire team for
2 its work on this matter--and that is the team at FERC and
3 NERC, and the Regional entities and the nine utilities that
4 were involved. I am grateful to all of them.

5 Second, I would like to take a moment to note
6 that last Wednesday, May 9th, the second set of comments
7 came in in the referenced resilience proceeding, Docket No.
8 AD18-7, our ongoing proceeding to address the resilience of
9 the bulk power system.

10 We have received a considerable number and volume
11 of filings for which we are grateful. Thank you to all who
12 participated in the comment process. We are reviewing those
13 comments closely to see what we can learn from them to help
14 us think about what steps are appropriate to take next by
15 this Commission.

16 Third and finally, I would like to take the
17 opportunity to announce that the Commission will be turning
18 soon to our review of the Commission's long-standing
19 policies under the Public Utility Regulatory Policies Act of
20 1978, PURPA.

21 As many of you know, the Commission initiated a
22 review of its PURPA policies in the 2015-2016 timeframe, and
23 held a technical conference in 2016 on certain PURPA issues.
24 Much has changed since then.

25 First, the make-up of the Commission is

1 significantly different than it was in 2016 and, as you
2 know, in recent months we have been focusing on other key
3 issues such as resilience and our review of the Commission's
4 gas certificate policy statement. Now that we have those
5 two initiatives well under way, I have directed our FERC
6 staff to re-energize our PURPA review initiative.

7 The reinvigorated review will take a look at the
8 issues involved in PURPA so that the Commission may
9 determine what, if anything, we need to do to improve and
10 update our PURPA policies.

11 I am still talking with my colleagues on the
12 format, scope, and timing of this PURPA review, and I expect
13 that the review will build on the record that has already
14 been developed, as referenced.

15 The process will allow for robust stakeholder
16 input. Personally I have an open mind on the issue, and by
17 raising the issue I am not foreshadowing that I believe that
18 we need to make or not make any changes. I simply look
19 forward to working with my colleagues on this important
20 matter.

21 And with that, I would like to turn to my
22 colleagues for any opening statements they may care to make.

23 Commissioner LaFleur?

24 COMMISSIONER LaFLEUR: Thank you very much,
25 Chairman McIntyre, for those announcements, and particularly

1 your announcement of our focus on the implementation of
2 PURPA, which I think is very timely. Thank you for
3 acknowledging the work we did on this a couple of years ago,
4 which included a technical conference that really covered a
5 broad range of issues. We heard from people on all sides of
6 those issues with different viewpoints.

7 We also took extensive post-technical conference
8 comments on two broad areas in particular. One is the
9 one-mile rule, and the second is the standards for PURPA
10 contracts. I hope that we can build on that work as we move
11 forward, and I look forward to working with my colleagues to
12 identify any potential changes that may be needed to update
13 our PURPA policies.

14 With that, I have a few personnel announcements.
15 The first, which I'm sorry to have to talk about, is that
16 Patricia Smith, who is Patrician Harrian Smith, who is
17 sitting in the second row with the pink shirt, behind
18 Anthony there, who has been an executive assistant in my
19 office since I joined the Commission in 2010, she was the
20 last of my original team and had been with me for all eight
21 years, and as of this week she has left my office to become
22 a paralegal specialist for Chief Judge Carmen Cintron. Pat
23 has been studying paralegal studies for sometime at night,
24 and I am happy to see her moving up in her career, even
25 though we're sorry to not have her in our office. For the

1 last eight years she's been the face of our office, warmly
2 greeting guests in person, warm, unless they tried to go to
3 another office without an appointment--

4 (Laughter.)

5 COMMISSIONER LaFLEUR: --and then she was the
6 policeman of the 11th floor, or on the phone. She has been,
7 as with all of us who really rely on our administrative
8 staff quite heavily, to make our offices tick and do
9 countless administrative duties, including meeting
10 preparation. If you've ever gotten a call about a
11 biography, travel arrangements, favorite FOI searches, and
12 many others. Other duties as assigned include setting up
13 the Energy Village, serving chowder at the holiday party,
14 and being Lady Gig as music director. So we will definitely
15 miss her.

16 I also want to recognize Chris Fitzpatrick, who
17 we're not missing yet but will soon. We are happy that
18 Stephen Wellner is back from paternity leave, but sad to say
19 goodbye to Chris who has been on detail in my office the
20 last few months and has done an outstanding job. He has
21 handled a large number of market matters, and written
22 testimony and speeches, and advised on all kinds of things.

23 Chris is an excellent, clear, and careful thinker
24 and writer. And while I'm very sorry he won't be in our
25 office, I'm happy he'll be back in OMR-East with all their

1 important challenges. And I appreciate Anna and Kirk
2 allowing the detail.

3 Finally, I don't see Anton Porter in the room,
4 but I did want to announce that a couple of years ago when
5 our Executive Director Anton Porter won the Chairman's
6 Award, I pointed out that he and Ivy were the parents of two
7 future NFL prospects who were playing at the college level.

8 Well, one has taken the next step. Marcus
9 Porter, Anton's older son, graduated from Fairmont State and
10 has been signed as a linebacker with the Green Bay Packers.
11 And we are all really excited for him and for the whole
12 family, and wish him the best--except on November 4th when
13 the Packers play the Patriots--

14 (Laughter.)

15 COMMISSIONER LaFLEUR: And I guess I've covered
16 the NFL, so maybe I'll let my esteemed colleague from the
17 '76ers home town of Philadelphia cover the NBA in his
18 remarks. Thank you.

19 (Laughter.)

20 CHAIRMAN McINTYRE: Thank you, Commissioner.
21 Commissioner Chatterjee, care to jump in?

22 COMMISSIONER CHATTERJEE: I don't know how I
23 follow that up. Anton's not here; he's at the bank.

24 (Laughter.)

25 COMMISSIONER CHATTERJEE: Okay, so to try and

1 stabilize things, first I'd like to take a moment to thank
2 you, Mr. Chairman, for your announcement this morning
3 regarding your attention to review of our current policies
4 under PURPA.

5 This is an issue that has been top-of-mind for me
6 since coming to the Commission, and in fact one that I spoke
7 about in detail at a recent hearing before the House Energy
8 Subcommittee. As I noted then, today's energy landscape is
9 profoundly different from that of the late '70s when PURPA
10 was enacted. And because of this, many have rightly voiced
11 their desire for a fresh look at existing policy to better
12 align PURPA with the realities we face today.

13 I want to again underscore that changes to the
14 fundamental features of PURPA require Congressional action.
15 But having said that, I agree with the Chairman that we at
16 the Commission can also play a role here by examining
17 existing regulations to ensure that they fulfill PURPA's
18 mandate of fostering the development of renewable resources
19 and co-generation, while protecting customers and
20 competition.

21 I would like to thank the Chairman again for his
22 leadership in tackling this issue, and I look forward to
23 getting input from a wide variety of stakeholders as my
24 colleagues and I work together on the path forward.

25 Finally, I would like to also echo my colleagues

1 in thanking the regional entities, NERC and Commission staff
2 for their hard work on the recently issued blackstart
3 report. I think the examination of that particular issue
4 was very timely, given our focus on resilience. And I found
5 the conclusions and recommendations to be both thorough and
6 thoughtful.

7 Now on another topic that has been at the
8 forefront of my efforts since taking a seat at the
9 Commission, I'd like to thank all those who expended the
10 time and resources to submit comments in our resilience
11 docket. The comment period in that proceeding closed just
12 last week, and Commission staff and personnel in my own
13 office have been hard t work reviewing these filings.

14 Still, I know all of us have a lot of homework to
15 do. From what I have seen so far, I have been very
16 encouraged by both the quality and breadth of those
17 comments. I am particularly pleased that such a broad
18 spectrum of stakeholders have offered their perspectives,
19 including a number of energy industry trade groups
20 representing every fuel type imaginable, utilities, project
21 developers, state government officials, and public utility
22 commissions, Members of Congress, environmental and consumer
23 advocacy organizations, and even individual concerned
24 citizens.

25 Let me assure each of you who submitted comments,

1 we take your responses seriously and are grateful for them.
2 These insights are essential to the process and I am
3 confident they will allow us to make informed, reasoned
4 decisions in our grid resilience proceeding.

5 Thank you, Mr. Chairman.

6 CHAIRMAN McINTYRE: Thank you, Commissioner.
7 Commissioner Powelson?

8 COMMISSIONER POWELSON: Thank you, Mr. Chairman.
9 Let me also pick up on the effort here this morning on PURPA
10 review.

11 As you mentioned, in 2016 we hosted a very
12 successful technical conference. So we have a developed
13 record here. I think my big push for you as an in-patient
14 state regulator turned being federalized is we need an
15 expedited review of PURPA. Keeping in mind, again, we have
16 a 2016 technical conference record that has been developed.

17 I also think it is appropriate to mention that
18 the Commission's long-standing approach to PURPA is an area
19 that is ripe for examination. I don't think anybody would
20 argue that here this morning.

21 As the Chairman has previously noted, it is
22 important for the Commission to take a hard look at its
23 long-standing policies, as we did more recently with our
24 1999 Policy Statement on Gas Certification. And we want to
25 ensure that we remain relevant and involved with the times.

1 There are a number of changing dynamics in our
2 evolving grid, and I think this is a demonstration of that,
3 Mr. Chairman.

4 Now since PURPA's enactment, as Commissioner
5 Chatterjee mentioned, the energy landscape in this country
6 has changed dramatically. We have gone from a scarcity
7 environment now to what some would call energy dominance, or
8 energy independence.

9 During the '70s, just to give everybody a little
10 history lesson here, there was a lack of diversity in
11 electric generation in terms of size, fuel type, location,
12 and ownership. In fact, back in the '70s you could not use
13 natural gas to build a power plant.

14 Today the Nation's generation mix is more diverse
15 than it has ever been, and we can couple that with renewable
16 development and other clean tech investment as well.

17 Large portions of the Nation belong to energy
18 markets, thanks to the efforts of the FERC with the passage
19 of FERC Order 888, which did not exist in the 1970s. The
20 integration of renewables, as I mentioned earlier, into the
21 grid have skyrocketed in recent years. In fact, last year
22 here in our bulk power system 10 percent of our energy
23 dispatched came from renewable energy sources, and if we did
24 a 5- to 10-year look out, that number will increase
25 exponentially.

1 The Nation now has access to abundant supplies of
2 domestic natural gas, thanks to the Commonwealth of
3 Pennsylvania--excuse me, I mean many other states--

4 (Laughter.)

5 COMMISSIONER POWELSON: In the past decade, the
6 demand for electricity has been largely flat or declining.
7 Now in light of these changes, it is time for the Commission
8 to review its policies and make sure they remain relevant
9 and current. And, Mr. Chairman, I look forward to the next
10 steps in this review. But with one stressed point here:
11 Expedited review of PURPA.

12 There are things we know full well from the
13 one-mile rule to QF reform that we can address rather
14 quickly. Commissioner Chatterjee set it up nicely. There
15 are things that are in the purview of the Congress, and we
16 will certainly give them deference--although sometimes it
17 takes them two hours to watch 60 minutes. We are very
18 capable here at the FERC to provide expedited treatment of
19 PURPA reform.

20 But let me also take this last opportunity on a
21 lighter note, Patricia, to congratulate you. I have had the
22 opportunity to interface with you. Now I didn't appreciate
23 your boss's remark about the Sixers--

24 (Laughter.)

25 COMMISSIONER POWELSON: And I will take a little

1 swipe that you deserve combat pay for your last--no, I'm
2 only kidding.

3 (Laughter.)

4 COMMISSIONER POWELSON: Your staff is laughing?
5 What's up with that?

6 (Laughter.)

7 COMMISSIONER POWELSON: And for the record, I
8 will honor my bet to Commissioner LaFleur. I lost a beer
9 bet, and she honored her bet when the Patriots lost to my
10 Philadelphia Eagles and the Sixers played horribly. And so
11 I will be making up for that bet. And if things are good in
12 the Powelson household, I might allow everybody to have an
13 ale or two in my office.

14 (Laughter.)

15 COMMISSIONER POWELSON: But, Commissioner
16 LaFleur, kudos to your Boston Celtics on a great season.
17 It's not every yet, and I wish them well.

18 COMMISSIONER LaFLEUR: The next bet is already
19 set up.

20 (Laughter.)

21 COMMISSIONER POWELSON: And lastly, I want to
22 take this opportunity, also on a lighter note, to take this
23 opportunity to recognize one of my staff members who is
24 celebrating a milestone birthday today. April Balleau is
25 celebrating her 21st birthday.

1 (Laughter.)

2 COMMISSIONER POWELSON: And I allowed her to stay
3 back in Pennsylvania today to celebrate that milestone
4 accomplishment. So thank you, Mr. Chairman.

5 CHAIRMAN McINTYRE: Thank you, Commissioner.
6 Commissioner Glick?

7 COMMISSIONER GLICK: Thank you, Mr. Chairman. I
8 want to start out talking about resilience which was
9 referenced, about the resilience proceeding which was
10 referenced. And I've actually had to start at the beginning
11 in reviewing the comments, and they are very interesting and
12 very important, but I want to reiterate what I said at the
13 outset of the proceeding, which is: We first need to
14 determine whether a problem actually exists before we start
15 defining and developing solutions. And I am a little
16 concerned that that's where we're going.

17 My concern has been and continues to be that some
18 reviewing this proceeding is an opportunity to promote
19 market changes that they couldn't otherwise get through the
20 RTO stakeholder process, where they'll actually increase
21 revenues for economically challenged generation facilities
22 without actually enhancing grid resilience.

23 We have always balanced the reliability of the
24 grid based on the probability of outages, and I don't
25 believe that that has changed at this point.

1 Maintaining substantial amounts of excess
2 capacity, well above what is needed for a sufficient reserve
3 margin, does not to me suggest a more resilient or reliable
4 grid, and certainly isn't an approach in the best interests
5 of consumers, not to mention consistent with the
6 requirements of the Federal Power Act.

7 Another matter, I did want to reference PURPA.
8 Everyone else has talked about PURPA today, and actually I
9 did attend the 2016 technical conference. I was sitting out
10 there in the audience on behalf of the Senate Energy
11 Committee, and the record I think was very well developed in
12 that particular proceeding. And I think it certainly makes
13 sense for us to consider whether we can improve how the
14 statute is administered.

15 PURPA has and continues to play an important role
16 in promoting competition within the utility sector, ensuring
17 that qualifying facilities have access to the market. If we
18 do decide changes to our regulations are in order, I think
19 we must address the concerns raised not only by industry but
20 also by qualifying facility developers, and there were quite
21 a few concerns that were raised during that 2016 technical
22 conference.

23 However the Commission decides to proceed, and as
24 Commissioner Chatterjee and Powelson noted, this is a
25 Congressional statute. Obviously Congress enacted the

1 statute, and Congress did revise PURPA in 2005, made
2 significant revisions, and I don't think we as a body, as an
3 administrative body, have the authority to actually make
4 major changes to the statute.

5 Certainly we need to make changes if there are
6 problems that can be addressed from an administrative
7 perspective, absolutely, but major issues with this
8 particular statute need to be decided by Congress, not this
9 Commission.

10 Finally, Mr. Chairman, if I can, I just wanted to
11 briefly mention I'm going to be partially dissenting on C-1
12 regarding the West Lake Expansion Project today. I wanted
13 to just briefly explain why.

14 As the Commission did in its recent Order on
15 Remand in Sable Trail, we are again today refusing to assess
16 the significance of downstream greenhouse gas emissions
17 associated with the proposed pipeline project, while at the
18 same time making a finding that the project will not
19 significantly impact the environment.

20 I am not sure how we can do that. As I indicated
21 in my dissent in Sable Trail, both NEPA and the Natural Gas
22 Act requires that we consider each project's contribution to
23 climate change in determining whether a proposed project is
24 in the public interest.

25 In my opinion, by refusing to consider the

1 significance of the associated greenhouse gas emissions, all
2 we were doing is increasing the risk that the courts are
3 going to vacate these decisions and send our orders granting
4 pipeline certificates back to the Commission again. So we
5 will have to see how this develops, but it is something we
6 need to keep an eye on.

7 Thank you again, Mr. Chairman.

8 CHAIRMAN McINTYRE: Thank you, Commissioner.

9 ==dam Secretary, we are ready to go to our
10 Consent Agenda.

11 SECRETARY BOSE: Thank you, Mr. Chairman. Since
12 the issuance of the Sunshine Act notice on May 10th, 2018,
13 Item E-10 has been struck from this morning's agenda. Your
14 Consent Agenda is as follows:

15 Electric Items: E-2, E-3, E-4, E-5, E-6, E-7,
16 E-8, E-9, E-11, and E-12.

17 Miscellaneous Items: M-2.

18 Gas Items: G-1, G-2, G-4, and G-5.

19 Hydro Items: H-1.

20 Certificate Items: C-1 and C-2.

21 As required by law, Chairman McIntyre is not
22 participating in Items E-8 and C-1. As to C-1, Commissioner
23 Glick is dissenting in part with a separate statement. We
24 will now take a vote on this morning's Consent Agenda.

25 The vote begins with Commissioner Glick.

1 COMMISSIONER GLICK: Noting my partial dissent in
2 C-1, I vote aye.

3 SECRETARY BOSE: Commissioner Powelson.

4 COMMISSIONER POWELSON: I vote aye on all the
5 matters.

6 SECRETARY BOSE: Commissioner Chatterjee.

7 COMMISSIONER CHATTERJEE: Aye.

8 SECRETARY BOSE: Commissioner LaFleur.

9 COMMISSIONER LaFLEUR: Aye.

10 SECRETARY BOSE: And Chairman McIntyre.

11 CHAIRMAN McINTYRE: Other than the item you
12 identified from which I am recused, I vote aye.

13 SECRETARY BOSE: You are now ready to move on to
14 the discussion and presentation portion of this meeting.
15 The first item for presentation and discussion this morning
16 is E-1 concerning a Draft Notice of Proposed Rulemaking in
17 Docket No. RM 18-8--000. There will be a presentation by
18 Justin Kelly from the Office of Electric Reliability. He is
19 accompanied by Matthew Vlissides from the Office of the
20 General Counsel.

21 CHAIRMAN McINTYRE: Good morning.

22 MR. KELLY: Good morning, Chairman McIntyre and
23 Commissioners. Today we will provide a summary of Item E-1.

24 Agenda Item E-1 is a notice of proposed
25 rulemaking that addresses proposed Reliability Standard

1 TPL-007, version 2, Transmission System Planned Performance
2 During Geomagnetic Disturbances.

3 The North American Electric Reliability
4 Corporation, or NERC, developed and submitted the proposed
5 Reliability Standard in response to Order No. 830. In Order
6 No. 830, the Commission directed NERC to modify currently
7 effective Reliability Standard TPL-007, version 1(1) to
8 revise the benchmark GMD event definition as it pertains to
9 required GMD Vulnerability Assessments and transformer
10 thermal impact assessments, so that the definition is not
11 based solely on spatially averaged data.

12 Number two, to require the collection of
13 necessary geomagnetically induced current monitoring and
14 magnetometer data.

15 And number three, to include a one-year deadline
16 for the preparation of corrective action plans, and two- and
17 four-year deadlines to complete mitigation activities called
18 for in the correction action plans involving non-hardware
19 and hardware mitigation, respectively.

20 The draft notice of proposed rulemaking proposes
21 to approve Reliability Standard TPL-007, version 2.
22 Proposed Reliability Standard TPL-007, version 2 largely
23 addresses the directives in Order No. 830 by:

24 Number one, incorporating, in addition to the
25 benchmark GMD event definition, a new supplemental GMD event

1 definition that is not derived from spatially averaged data.

2 Number two, requiring applicable entities to
3 collect GIC and magnetometer data.

4 And number three, imposing deadlines for the
5 preparation of corrective action plans and the completion of
6 corrective action plans and the completion of corrective
7 action plan tasks based on the timeline set forth in Order
8 No. 830.

9 While proposing to approve Reliability Standard
10 TPL-007, Version 2, pursuant to Section 215(d)(5) of the
11 Federal Power Act, the draft notice of proposed rulemaking
12 also proposes to direct NERC to modify Reliability Standard
13 TPL-007, Version 2, to require applicable entities to
14 develop and implement corrective action plans to mitigate
15 supplemental GMD event vulnerabilities. The
16 draft notice of proposed rulemaking proposes to require NERC
17 to comply with this directive within 12 months of the
18 effective date of Reliability Standard TPL-007, Version 2.

19 In addition, the draft notice of proposed
20 rulemaking seeks comment on two options to address the
21 proposition in proposed Reliability Standard TPL-007,
22 Version 2, that permits applicable entities to exceed
23 corrective action plan deadlines.

24 Under one option, the Commission would direct
25 NERC to modify Reliability Standard TPL-007, Version 2, to

1 require NERC to consider extensions of corrective action
2 plan deadlines on a case-by-case basis as directed in Order
3 No. 830.

4 Under the second option, the Commission would
5 approve the requirement in Reliability Standard TPL-007,
6 Version 2, as proposed by NERC. Under either option, the
7 Commission proposes to direct NERC to submit a report
8 regarding how often and why applicable entities are
9 exceeding corrective action plan deadlines.

10 This concludes our presentation, and we are happy
11 to take any questions you may have.

12 CHAIRMAN McINTYRE: Thank you very much, Mr.
13 Kelly, Mr. Vlissides, and your respective teams, for all
14 your work on this NOPR.

15 As many are aware, protecting against geomagnetic
16 disturbance events has become a priority for this
17 Commission. GMDs can cause transformer damage, loss of
18 reactive power sources, and can result in voltage collapse
19 and blackout--therefore, they are very serious issues.

20 I am happy that today we are advancing the ball
21 of the Commission's work to enhance the reliability and
22 resilience of the bulk power system through this NOPR.

23 I have a couple of questions, if I may. First,
24 how does the proposed Reliability Standard TPL-007-2 improve
25 bulk power system reliability when confronted with a GMD

1 event?

2 MR. KELLY: Thank you for the question, Chairman
3 McIntyre. By incorporating a supplemental GMD event
4 definition that does not rely solely upon the spatially
5 averaged data, the proposed Reliability Standard better
6 addresses the risk posed by severe, geographically localized
7 GMD events than the benchmark GMD event in the original
8 Version 1 standard, which relies on spatially averaged
9 data.

10 CHAIRMAN McINTYRE: Very good. And how will
11 applicable entities conduct this supplemental GMD assessment
12 using the benchmark GMD event and the supplemental GMD event
13 definitions?

14 MR. KELLY: The proposed Version 2 Reliability
15 Standard affords significant flexibility on how entities
16 would perform the planning studies. There are three options
17 that are mentioned in the attachment one of the standard.

18 They can apply the supplemental GMD event across
19 the entire planning area. They can apply it to some subset
20 of the planning area. Or they may use any other method to
21 adjust the benchmark GMD event analysis to account for the
22 localized geomagnetic electric field enhancement of the
23 supplemental GMD event.

24 CHAIRMAN McINTYRE: Very good. Thank you. And
25 finally, does the proposed Reliability Standard TPL-007-2

1 require applicable entities to mitigate the supplemental GMD
2 event? Is there a required mitigation aspect of it?

3 MR. KELLY: The proposed standard does not
4 require the mitigation, but it does require that they
5 evaluate possible actions that could be used to mitigate the
6 vulnerabilities that are identified within the study that
7 could result in cascading.

8 While proposing to improve the Version 2
9 standard, the draft notice of proposed rulemaking does
10 propose NERC--proposes to direct NERC to modify the
11 Reliability Standard to require mitigation of supplemental
12 GMD event vulnerabilities.

13 CHAIRMAN McINTYRE: Very good. That's very
14 helpful. Thanks again to you and your team. And with that,
15 let me give my colleagues an opportunity to address anything
16 they may have, beginning with Commissioner LaFleur.

17 COMMISSIONER LaFLEUR: Well thank you, Mr.
18 Chairman, and thank you, Justin and Matt, and everyone on
19 the GMD team for your presentation, your work on today's
20 Order, and all your work on this over the last six years.

21 I am very happy to support today's Order, which I
22 think is an important next step in our ongoing effort to
23 make sure that we understand and mitigate the risk of
24 geomagnetic disturbances on the bulk electric system. Of
25 course everyone knows that this is something that's been a

1 personal priority of mine, and I've been very involved over
2 the last several years, maybe more than the team wants, but
3 first of all I want to note that I know a lot of important
4 research is still going on in this area. And I believe it
5 is very critical that our protection against geomagnetic
6 disturbance threats evolve as our understanding of the GMD
7 impacts improves, and today's Standard, the part that we're
8 approving, reflects that in the requirement of the
9 collection and use of magnetometer and GIC, geomagnetically
10 induced current data which I think is very important.

11 I strongly agree with the two respects in which
12 the draft order proposes to change the Standard. The first
13 is the requirement of corrective action plans to mitigate
14 against supplemental GMD events, as the Chairman noted.

15 While the Standard uses the word "supplemental,"
16 I mean our earlier work on this would suggest that that's
17 the more accurate assessment of GMD risks for a specific
18 facility. And the whole point of this work is not just to
19 understand it but to mitigate against it, to make sure that
20 the grid is secure and resilient.

21 I also agree with requiring greater oversight of
22 any extension of plans to make sure that this work gets on
23 in a timely manner. We did give some choices in the rule as
24 to the way we could use that greater oversight, and we look
25 forward to feedback on that--and on all of the rule.

1 On a related topic, I want to note that I've been
2 closely following the work that EPRI and the national labs
3 have been doing on intentional electromagnetic pulse, EMP,
4 to better understand its possible effect on the bulk power
5 system and other communications' devices, and how best to
6 mitigate against that effect.

7 I was happy last week to attend the NERC Members
8 Representative Committee. It was the first one of the new
9 CEO, Jim Robb, and I made the point at that time that one of
10 the key issues I think NERC and the whole enterprise of
11 folks who work on reliability are facing right now is how
12 they address emerging issues, how the standards might have
13 to be adapted from emerging issues, and, you know, how we
14 get ahead of what we--how we get ahead of risk to the grid
15 as we better understand them.

16 And I think both GMD, which we're acting on
17 today, and EMP, on which so much research is going on, are
18 very important examples. So I appreciate your work on this.
19 Thank you.

20 CHAIRMAN McINTYRE: Thank you, Commissioner.
21 Commissioner Chatterjee?

22 COMMISSIONER CHATTERJEE: My thanks to the team
23 as well for that informative presentation. Since joining
24 the Commission last year, I have come to appreciate the
25 incredible complexities of space weather and the potentially

1 significant effect it can have on the grid.

2 Now I'm not using jargon like "reference peak
3 geoelectric field, amplitude" in casual conversation yet,
4 but Commission staff and my team have done a fantastic job
5 of getting me up to speed on this complicated issue.

6 I think action to address geomagnetic
7 disturbances is critical. Because it's not a question of
8 whether we're going to experience a severe geomagnetic
9 disturbance, it's a question of when.

10 While I appreciate the concerns raised by the
11 Standard drafting team about the continuously developing
12 science around GMDs, I think the record in this proceeding
13 reflects a reasonable approach to evaluating supplemental
14 GMD events.

15 Moreover, given the potentially catastrophic
16 consequences of a severe GMD event, I think it is prudent to
17 err on the side of action rather than inaction.

18 For these reasons, I strongly support today's
19 NOPR, including the proposed Directive to Require Mitigation
20 for Supplemental GMD Events.

21 While I am supportive of the NOPR, I fully
22 appreciate the substantial complexity of these issues. In
23 light of this complexity, I welcome comments from NERC and
24 other interested stakeholders on whether there are ways to
25 address the identified issues in a more effective or

1 efficient manner.

2 Thank you, Mr. Chairman.

3 CHAIRMAN McINTYRE: Thank you, Commissioner.

4 Commissioner Powelson?

5 (No response.)

6 CHAIRMAN McINTYRE: Very good. Commissioner

7 Glick?

8 COMMISSIONER GLICK: I look forward to reviewing
9 the comments when they're submitted to the NOPR, but no
10 other comments.

11 CHAIRMAN McINTYRE: Thank you. Madam Secretary,
12 I believe that clears us to proceed to a vote.

13 SECRETARY BOSE: We will now take a vote on Item
14 E-1. The vote begins with Commissioner Glick.

15 COMMISSIONER GLICK: Aye.

16 SECRETARY BOSE: Commissioner Powelson.

17 COMMISSIONER POWELSON: Aye.

18 SECRETARY BOSE: Commissioner Chatterjee.

19 COMMISSIONER CHATTERJEE: Aye.

20 SECRETARY BOSE: Commissioner LaFleur.

21 COMMISSIONER LaFLEUR: Aye.

22 SECRETARY BOSE: And Chairman McIntyre.

23 CHAIRMAN McINTYRE: Aye.

24 SECRETARY BOSE: The next item for presentation
25 and discussion this morning is Item A-3 Concerning the 2018

1 Summer Market and Reliability Assessment. There will be a
2 presentation by Alan Haymes from the Office of Enforcement.
3 He is accompanied by Sedina Eric from the Office of Electric
4 Reliability, Alan Phung also from the Office of Electric
5 Reliability, Adam Bennett from the Office of Enforcement,
6 and Jennifer Fletcher from the Office of Enforcement.

7 CHAIRMAN McINTYRE: Welcome, all.

8 MR. HAYMES: Chairman McIntyre, Commissioners,
9 good morning.

10 The Office of Electric Reliability and the Office
11 of Enforcement are pleased to present the 2018 Summer
12 Assessment. This is staff's high level summary of the
13 reliability challenges that are anticipated in the coming
14 operating season and staff's corresponding assessment of
15 electric and natural gas markets as we head into the summer
16 months. We will discuss current and future trends, as well
17 as how recent developments may influence market outcomes.

18 Please note that some of this information comes
19 from NERC's 2018 Summer Reliability Assessment, which will
20 be released at a later date and is still subject to change.
21 The National Oceanic and Atmospheric Administration, NOAA,
22 forecasts a warmer than average summer for most of the
23 country.

24 The North American Electric Reliability
25 Corporation, NERC, Regional Entities anticipate that power

1 resources will be able to meet the reference margin levels
2 in most regions this summer. The Electric Reliability
3 Council of Texas, or ERCOT, however, anticipates its reserve
4 margin will be below its reference margin level.

5 In Southern California, lower-than-average hydro
6 generation may create challenges as natural gas-fired
7 generation, the replacement for hydro production shortfalls
8 in past years, may be limited due to reduced gas storage
9 capacity and local pipeline outages in the region.

10 Nationwide, this may be a record summer for
11 natural gas demand for electric generation. EIA forecasts
12 that natural gas production will climb to near record highs.
13 Performance requirements for all capacity resources in ISO
14 New England will take effect on June 1st, while 80 percent
15 of capacity resources in PJM will be subject to a
16 performance requirement for the upcoming capacity year.

17 NOAA forecasts an above-normal change for higher
18 than average temperatures for the West, South, and East for
19 June, July, and August. The expectation for higher than
20 average temperatures is greatest in New England and along a
21 band running from West Texas through the Pacific Northwest.

22 The NERC Regional Entities forecasted net demand
23 for electricity to be approximately the same as it was last
24 summer. The projected lack of growth in the net peak is
25 mainly attributable to the higher implementation of

1 demand-side measures in certain areas, and an increase in
2 behind-the-meter distributed energy resources.

3 Over 25 gigawatts of new generating capacity
4 plans to enter commercial service through the end of the
5 summer period. A majority of the capacity additions will
6 come from natural gas-fired and renewable resources such as
7 solar and wind.

8 Approximately 14 gigawatts of generating capacity
9 had retired since May 2017, including approximately 10.8
10 gigawatts of coal-fired capacity, and 2.3 gigawatts of
11 natural gas-fired capacity.

12 Notable coal retirements within the past six
13 months include the 1,187 megawatt Big Brown, the 1,9080
14 megawatt Monticello, and the 1,282 megawatt Sandow power
15 plants in Texas. In addition, the 1,358 megawatt St. Johns
16 River Power Park coal plant in Florida retired this year.

17 The NERC Regional Entities' data indicates that
18 planning reserve margins for most assessment areas will be
19 adequate this summer. The columns shown on this chart
20 display the anticipated reserve margins for the markets and
21 regions, while the black bars indicate the referenced
22 margins.

23 ERCOT anticipates that its reserve margin will be
24 10.92 percent, which is below the reference level of 13.75
25 percent. According to the ERCOT summer assessment,

1 significant resource changes since last summer have reduced
2 reserve margins in ERCOT, including the retirement of 4,449
3 megawatts of coal capacity in January and February, the
4 retirement of 806 megawatts of gas-fired capacity in late
5 2017; and delay in construction of new resources, totaling
6 about 2,100 megawatts that will not be available to serve
7 load during the peak.

8 ERCOT expects to have sufficient operational
9 tools to manage tight reserves and maintain system
10 reliability. Those operational tools include deploying
11 ERCOT-contracted load resources and emergency response
12 services using a previously mothballed unit expected to
13 return to service in May 2018, requesting power across the
14 existing DC ties, calling on generating resources that can
15 switch between the Eastern Interconnection and ERCOT, and
16 block-load transfers with SPP and MISO. There are also
17 voluntary actions that consumers and market participants may
18 take such as conservation, operating distributed generation,
19 and price responsive demand response.

20 MISO's reserve margin for summer 2018 is
21 projected to be 9.1 percent, 2 percentage points higher than
22 the reference margin of 17.1 percent. Since last summer in
23 MISO, some large units retired, but these were offsets by
24 additions. With a reserve margin of 19.1 percent, MISO does
25 not anticipate reliability issues for the normal forecast

1 for the upcoming season.

2 In addition, MISO's Summer Assessment studies
3 system reliability for both high-outage and high-load
4 scenarios. For those conditions, MISO expects to rely
5 heavily on demand response.

6 The summer of 2018 reserve margin for the portion
7 of WECC that is mostly California ISO is projected to be 20
8 percent, which is 5 percent higher than the reference margin
9 of 15 percent. Generally, California ISO expects an
10 adequate supply for normal load and supply forecasts.

11 However, California ISO 2018 Summer Loads and
12 Resource Assessment expects tighter supply conditions if
13 high-load and below-average hydroelectricity production
14 conditions occur. California ISO indicates that it expects
15 demand response and consumer conservation to mitigate tight
16 supply conditions in that scenario.

17 Finally, in the Mid-Atlantic and Northeast
18 Regions, as well as SPP and Florida, reserve margins appear
19 to be more than adequate, ranging from 5 to 10 percent above
20 reference levels.

21 This graphic shows a breakdown of this summer's
22 expected generating capacity to be available on peak by
23 primary fuel type across the Eastern Texas, and Western
24 Interconnections. Looking more broadly at the nameplate
25 capacity additions forecasted to occur during the summer

1 period--May 1 through September 30th--the Eastern
2 Interconnection expects to add approximately 11,286
3 megawatts of natural gas-fired capacity, 4,835 megawatts of
4 solar photovoltaic capacity, and 2,476 megawatts of wind
5 capacity, based on ABB Velocity Suite.

6 ERCOT expects an additional 355 megawatts of gas
7 capacity to be added by September 30, which is the end of
8 ERCOT's summer "peak load season." Also, ERCOT expects an
9 additional installed renewable capacity of 1,348 megawatts
10 to be added by September 30th, including 961 megawatts
11 coming from wind, and 387 megawatts from solar.

12 Finally, WECC anticipates installed capacity
13 additions in the Western Interconnection of 319 megawatts of
14 natural gas, 570 megawatts of solar photovoltaic, 968
15 megawatts of wind capacity, and 568 megawatts of hydro
16 capacity by the end of 2018.

17 This summer could see near-record-high gas demand
18 from natural gas-fired power generators. EIA forecasts
19 natural gas power burn to average 35.16 Bcf per day through
20 June, July and August, just 0.3 Bcf per day less than the
21 record high natural gas power burn set in the summer of
22 2016, and 3 Bcf per day higher than last year.

23 The addition of over 16,000 megawatts of new
24 capacity to the natural gas-fired generator fleet since the
25 record highs of 2016 and relatively low natural gas prices

1 contribute to expectations for strong natural gas generation
2 this summer. Futures prices for Central Appalachian coal
3 are less than \$2.50 per MMBtu, while the Henry Hub natural
4 gas futures summer strip reaches as high as \$2.87 per MMBtu.

5 Summer 2018 natural gas futures prices are
6 generally lower compared to those for summer 2017. At \$2.76
7 per MMBtu, Henry Hub summer futures prices are down 52 cents
8 per MMBtu, or 16 percent, compared to a year ago.

9 The difference between the summer futures prices
10 around the country and the futures price at the Henry Hub,
11 also known as basis, fell for most domestic natural gas
12 production regions except for Transco Zone 4, which is up 3
13 cents per MMBtu from last year, and Dominion South which is
14 up 8 cents per MMBtu from last year.

15 Natural gas storage inventories began the
16 injection season on April 1st at 1,354 Bcf, about 350 Bcf
17 less than the 5-year average. This is the largest deficit
18 to the 5-year average at the start of an injection season
19 since 2014.

20 Growing gas production from fields in Appalachia,
21 Texas, and elsewhere increased U.S. output to record highs.
22 In March 2018, the U.S. produced 84.9 Bcf per day of
23 marketed natural gas, a year-over-year gain of over 8 Bcf
24 per day. Continued production at this volume should
25 position the market to meet summer demand and adequately

1 restock storage inventories. Specifically, EIA forecasts
2 that inventories will grow to about 3,800 Bcf by November,
3 which is within the 5-year range.

4 Both PJM and ISO New England are implementing
5 changes to their three-year forward capacity markets to
6 enhance reliability through market incentives. These
7 changes alter capacity markets in both regions to compensate
8 and/or penalize capacity suppliers based on how well they
9 perform when called upon by system operators during
10 shortage conditions.

11 Resources that fail to perform during these
12 shortage conditions will have compensation subtracted from
13 their capacity revenues, while those resources that
14 over-perform in providing energy and reserves will receive
15 additional compensation.

16 In the two delivery years thus far in which some
17 resources in PJM have been subject to Capacity Performance
18 rules, there have been no shortage conditions that triggered
19 an assessment of penalties or rewards.

20 PJM is phasing in its Capacity Performance. The
21 program now encompasses 80 percent of the total capacity
22 requirement. After one more transition year, 100 percent of
23 resources must meet the Capacity Performance⁴ rules in
24 delivery⁶ year 2020-2021. ISO New England's Pay for
25 Performance Program imposes similar performance obligations

1 and will apply to all capacity resources beginning June 1st,
2 2018.,

3 Hydroelectric generation to serve the California
4 ISO depends on precipitation, especially snow pack, in the
5 months leading up to the spring and summer. This year,
6 snowpack in the Pacific Northwest topped normal levels, but
7 fell well below normal in California.

8 With warmer-than-normal temperatures forecasted
9 for this spring, the snowpack may melt faster than usual,
10 reducing the amount of hydro generation available during the
11 coming summer months to help meet peak electric demand.

12 Historically, California ISO has increased use of
13 natural gas-fired capacity and imports to offset lower hydro
14 generation levels. However, natural gas supply limitations
15 in southern California this year may affect California ISO's
16 use of natural gas generation fleet and present some risk to
17 California ISO's markets and operations this summer.

18 Distribution level pipeline outages in Southern California
19 could affect the amount of natural gas that can be supplied
20 to power plants and can hamper the movement of natural gas
21 into storage.

22 Limited operations at Aliso Canyon natural gas
23 storage facility, plus state rule changes reducing the rate
24 at which natural gas may be injected and withdrawn from
25 storage, may complicate pipeline operations.

1 Electric battery storage is deployed across the
2 U.S., with the largest number of installations in PJM and
3 California. As of January 2018, 720 megawatts of battery
4 storage capacity was in operation nationwide, an increase of
5 30 percent from the previous year. An additional 63
6 megawatts is expected by this summer.

7 According to EIA, 88 percent of battery storage
8 capacity provided frequency regulation, 28 percent served as
9 ramping/spinning reserve, and 23 percent provided voltage or
10 reactive support to the transmission system in 2016, with
11 some serving more than one function during the year.

12 Staff's analysis of the energy reliability and
13 market conditions and trends going into this summer indicate
14 that most regions appear prepared for the expected summer
15 demand. Areas worthy of attention as we proceed through the
16 summer season are hydro and natural gas availability in
17 Southern California, and total generating capacity in ERCOT.

18 Thank you.

19 CHAIRMAN McINTYRE: Thank you, Mr. Haymes, you
20 and your whole team for all the hard work that's reflected
21 in this detailed and useful report.

22 Your assessment of present and projected
23 conditions is an important tool for both industry and
24 consumers to prepare for the upcoming season, and of course
25 is very useful to us as regulators as well.

1 You touched upon the highlights of the team's
2 findings in your report, but I note for the benefit of all
3 that the entire report is available on our website for
4 download. So please have a look if this is of interest to
5 you.

6 I do have a couple of questions, if I may. In
7 your presentation you noted the staff's concerns in various
8 regions, including those that are anticipated--the
9 conditions that are anticipated in the coming season in
10 Southern California, and I wondered if you could address how
11 the anticipated situation in that region for the coming
12 summer compares with the comparable period last year?

13 MR. HAYMES: This summer differs from last summer
14 in two areas. The expectation is that there will be less
15 hydro production and, along with that, gas supplies will
16 continue to be limited by local gas transmission outages and
17 limitations on Aliso Canyon's storage field.

18 And the combination of the two will produce a
19 situation in the coming summer that will be a focus of their
20 attention. California ISO's summer assessment predicts a
21 high likelihood of at least one stage two emergency hour,
22 which could lead to a curtailment of nonfirm loads.

23 These results, however, do not take into account
24 the limitations of natural gas deliverability. Staff plans
25 to monitor the market and reliability impacts of these

1 conditions as the summer progresses.

2 CHAIRMAN McINTYRE: Thank you. Now taking kind
3 of a longer-term lens, are there any particular issues or
4 trends that could have longer term impacts on fuels'
5 markets?

6 MR. HAYMES: Yes. As we talked about a little
7 bit in the report, fuels is a really large determinant--
8 weather is a very large determinant in the fuels markets.
9 And NOAA is already calling for a higher than average, or a
10 hotter than average season. So if we were to have an
11 extended heat wave in July or August, say, in several of the
12 major markets, that could push up demand and prices above
13 the ranges that we have in the report. And that would have
14 implications for storage.

15 One of th pieces that storage is really hinging
16 on this year in the refill season is this record high
17 production. So if there were to be also any impacts
18 upstream as far as pipeline maintenance issues that are
19 unexpected, or any field issues that would limit production,
20 that also might hinder the ability of storage to refill at
21 the rate we think is going to happen and would also
22 contribute to some market tightness heading into winter.

23 CHAIRMAN McINTYRE: Very good. Thank you, Mr.
24 Haymes. Those are my questions. Let me offer my colleagues
25 a chance to say things they may wish to say.

1 Commissioner LaFleur?

2 COMMISSIONER LaFLEUR: Well thank you, Mr.
3 Chairman. Thank you, Alan, and everyone on the team, and
4 Demo in OER, and across the Commission who worked on this.
5 It's always an excellent presentation and a really
6 interesting snapshot, not just of what to expect this
7 summer, but of the changing resource mix in the trends that
8 we see.

9 I have a couple of questions. The first one is
10 on slide six in which you showed that the Eastern
11 Interconnection expects to add over 4,800 megawatts of new
12 solar PV capacity, and almost 2,500 megawatts of wind
13 capacity in the middle five months of this year. Those are
14 really pretty remarkable figures, and I wondered if you
15 could unpack it a little. Is the new renewable capacity
16 distributed broadly? Are there particular areas or states
17 where it is concentrated? And do you have any sense of how
18 much is behind the meter versus central station on the good
19 side of the meter?

20 MR. PHUNG: Of the 4,800 megawatts of solar PV
21 nameplate capacity, more than half is concentrated in North
22 and South Carolina. Whereas the expected wind capacity
23 additions are more distributed across the Central United
24 States. Although we don't have an exact proportion
25 percentage, a majority of the capacity is at the distributed

1 level over the utility scale solar.

2 COMMISSIONER LaFLEUR: Thank you. Okay, I also
3 had a question on slide seven where you showed the
4 comparison of gas and coal prices on a Btu basis. And it
5 showed that Central Appalachian coal is consistently below
6 the Henry Hub price for gas, even though the difference is
7 narrowing. And I wondered if you could explain how does
8 this square with the fact that natural gas is frequently
9 dispatched before coal, based on economics and economic
10 dispatch? Is it the averaged efficiency of the power
11 plants? Or is there another factor that I'm missing?
12 Because we generally think of gas as being on the margin,
13 except when it's very high, and then coal comes back on the
14 margin.

15 MR. HAYMES: Thank you. There is an overlap in
16 effective efficiency between natural gas units and coal
17 units. And as gas prices fall relative to coal, the balance
18 point moves between them through a continuum between the
19 consumption of gas and the consumption of coal. And natural
20 gas combined cycle plant is significantly more efficient
21 than a plant running on coal, then the combined cycle plant
22 may be placed in front of the coal unit and may remain on
23 until that price difference disappears.

24 Also part of the impact is because of the
25 flexibility of many gas plants compared to coal units. And

1 so they can ramp--sometimes ramp up faster, and they may
2 have smaller minimum run times. And so those factors are
3 things that will have an influence in particularly the RTOs
4 and ISOs when they dispatch during the day. They use that
5 flexibility, and it becomes more valuable to them to use gas
6 in many times.

7 COMMISSIONER LaFLEUR: Well thank you. Those are
8 two interesting factors. So if you showed the all-in price
9 that included the heat rate, you know, if the cost of
10 electricity made from coal versus the cost of electricity
11 made from gas, including the heat rate, forgetting the
12 flexibility--which is another whole thing; I guess it would
13 be a slightly different line?

14 MR. HAYMES: Yes, it would be. And as the
15 natural gas price changes, it moves through that. And more
16 and more may be added to the dispatch under certain of those
17 conditions.

18 COMMISSIONER LaFLEUR: Thank you very much. I
19 have no further questions.

20 CHAIRMAN McINTYRE: Thank you, Commissioner.
21 Commissioner Chatterjee?

22 COMMISSIONER CHATTERJEE: Thank you. Thank you,
23 staff, for the presentation. I do have a couple of
24 questions for the team.

25 Slide five to me was the most attention-grabbing

1 slide in the presentation because it indicates that reserve
2 margins will approach reference margins in several regions
3 this summer. And reserve margins in ERCOT in particular
4 will actually be below its reference margin.

5 Would you mind just taking a moment to briefly
6 translate into simple terms what the terms "reference
7 margin" and "reserve margin" mean, and how they're
8 calculated?

9 MS. ERIC: Uh, the reserve margin is calculated
10 as the difference between available capacity and net demand.
11 By "available capacity," we mean all existing resources
12 plus--resources at the plant, but we expect during the
13 summer. And net import or minus net exports. So that would
14 be resources.

15 On the other side, if the net demand, which is
16 internal forecast demand, reduced by demand response. So
17 when these two are deducted, divided by net demand, the
18 expressed percentage will be reserve margin.

19 COMMISSIONER CHATTERJEE: So as a practical
20 matter, what happens when a reserve margin falls below a
21 reference margin level?

22 MS. ERIC: If it falls below the reference
23 margin, it's still reserve available--resources available to
24 be used during the system. It's not the system is zero
25 reserve when it is low down.

1 COMMISSIONER CHATTERJEE: Can you elaborate on
2 how the reserve margins in each region compare to those for
3 the same regions going to last summer, specifically focusing
4 on ERCOT?

5 MS. ERIC: ERCOT had last year higher reserve
6 margin, but because of this retirement due in January and
7 delay in construction of the new generation that they were
8 expecting to be available during the summer, that has not
9 materialized and they have a shortage.

10 Last year they have much higher reserve margin.

11 COMMISSIONER CHATTERJEE: Thank you for that. I
12 want to briefly follow up on the questions the Chairman was
13 asking about Southern California and the Aliso Canyon
14 storage facility, and outages with key natural gas
15 distribution lines.

16 Has the State of California taken any steps to
17 address what seemed to be persistent constraints on natural
18 gas storage and distribution infrastructure in Southern
19 California? For example, have California officials
20 recently issued any decisions related to the authorization
21 of additional natural gas pipeline infrastructure in
22 Southern California? Or with respect to the operation of
23 the Aliso Canyon storage facility?

24 MR. BENNETT: Uh, yeah. The California PUC last
25 week approved a request from SoCal Gas to temporarily

1 increase injections at Aliso Canyon. But they also at the
2 same time denied a request to increase the storage
3 facility's allowable capacity.

4 CPUC approved the decision to ensure reliable
5 natural gas delivery this summer and for the upcoming
6 winter. The CPUC also approved several measures within the
7 SoCal Gas Injection Enhancement Plan, which allows a company
8 to implement temporary modifications to its operations to
9 increase injections and temporarily increase storage
10 injection capacity.

11 However, there has also been some other
12 developments. Increasing gas infrastructure in the region
13 has been difficult. In a recent state-level hearing, an
14 administrative law judge recommended that the CPUC reject
15 the joint SoCal Gas and San Diego Gas and Electric Natural
16 Gas Pipeline in San Diego County.

17 As previously mentioned, we are going to monitor
18 this closely as it develops.

19 COMMISSIONER CHATTERJEE: Thank you. My final
20 question is in regards to slide number 12, which indicated a
21 significant increase in nationwide electric battery storage
22 capacity over the last year.

23 The slide indicates that one of the regions where
24 the electric battery storage seems to be catching on is in
25 Southern California. Could you describe how that increased

1 electric battery storage capacity could help address some of
2 these electric reliability issues that may arise in Southern
3 California this summer?

4 MS. FLETCHER: Sure. So as of the beginning of
5 this year, 153 megawatts of battery storage was in operation
6 in Southern California, which accounts for about a quarter
7 of the nationwide growth from the previous year.

8 During 2016, batteries were used for ancillary
9 services to support the reliability of Southern California's
10 transmission system, primarily through frequency regulation,
11 with about half also providing ramping or spinning reserves
12 and voltage support.

13 California has twice before procured battery
14 storage specifically to meet local capacity requirements and
15 mitigate reliability risks. First after the retirement of
16 the San Onofre Nuclear Generating Station, and second
17 following the leak at the Aliso Canyon Natural Gas Storage
18 Facility.

19 According to a 2014 roadmap from the California
20 ISO, the California Energy Commission and the California
21 Public Utility Commission, electric storage resources
22 provide potential operational benefits such as offsetting
23 the variability of wind and solar power, helping maintain
24 local grid voltage across long distance lines, providing
25 reserves, flattening spikes in demand by supplying power,

1 and increasing consumption during times of abundant low-cost
2 supply.

3 COMMISSIONER CHATTERJEE: Thank you very much.
4 That concludes my questions, Mr. Chairman.

5 CHAIRMAN McINTYRE: Thank you, Commissioner.
6 Commissioner Powelson?

7 COMMISSIONER POWELSON: Thank you, Mr. Chairman,
8 and thank you to the team, also. The work that you do with
9 our winter reliability assessment is also critically
10 important, and I appreciate some of the key highlights.

11 First I'll start with the Henry Hub Summer Future
12 Prices, which are down 16 percent from last year at \$2.76
13 per MMBtu. And obviously seeing a drop in West Texas
14 pricing at \$1.54 per MMBtu. And I think this is a good
15 story for consumers.

16 But I pick up on the point that was made by
17 Commissioner Chatterjee, as well as Commissioner LaFleur.
18 The issue of reserve margins in the ERCOT Region--for the
19 footnote, we don't regulate the ERCOT market. However, as
20 someone who has worked very closely with the Texas PUC, this
21 is going to be certainly a good test for the ERCOT model.
22 And I'm also very hopeful with the \$9,000 offer cap changes
23 that have been made, that there is the right incentive in
24 place for the generators.

25 Adam, you mentioned a potential weather event. I

1 would call that the solar vortex, if it were to hit. And
2 here I have just jinxed us by bringing that up.

3 (Laughter.)

4 COMMISSIONER POWELSON: Let me shift gears to
5 California. Commissioner Chatterjee--that was not a joke--

6 (Laughter.)

7 COMMISSIONER POWELSON: I was shifting gears to
8 California. So let me just say I appreciate your footnote
9 about Aliso Canyon. It is--I think for the FERC as we work
10 cooperatively with states, and I have a good working
11 relationship, and I think we all have a good working
12 relationship with the California PUC, I'm just going to say
13 this: I am deeply troubled by California policymakers'
14 refusal to support Aliso Canyon as a reliable storage
15 facility to deal with the critical backup storage, not only
16 at the LDC level but more towards merchant power resources
17 in the market.

18 I also should note, anecdotally, in certain
19 decisions that we see in the dispatch curve within
20 California we're getting away from economic dispatch, and
21 we're causing tremendous costs to consumers in the
22 California marketplace.

23 So, California. I'm going to start with this
24 question. As you noted in your presentation, the snowpack
25 in California is below normal. I think the analytics show

1 57 percent below the normal level. So you combine that with
2 the ever-increasing amounts of variable energy resources and
3 highlight for us how CAISO plans to manage its daily peaks,
4 and in particular the infamous duck curve that we're seeing
5 associated with solar development in the market.

6 And again, I just tee this up. I'm very troubled
7 and concerned about the electric reliability in the
8 California marketplace. So I'm going to ask for your
9 feedback with respect to those scenarios that I've outlined.

10 MR. HAYMES: You are right. Those are
11 challenges. And as we look at a low hydro year, California
12 is particularly attuned to those. And the renewables are
13 steadily increasing in California ISO. And so the ISO must
14 plan its generating commitments and operating reserves to
15 take account of that over the day and over the weeks.

16 Sort of in a longer term planning, they set up
17 contracts with generators to try to make sure there's
18 adequate supply on the basis that it can be used.

19 And sort of as you noted, sometimes they have to
20 resort to exceptional dispatch in some cases. And the hydro
21 that is available, even though it's a low hydro year, the
22 hydro that is available the ISO will manage knowing that the
23 constraints are on that resource and will use it as much as
24 possible to take care of the load needs, subject to those
25 constraints.

1 COMMISSIONER POWELSON: My last question is on
2 slide six. Let me pick up on slide six here. You highlight
3 the expectation of a diverse generation mix available to
4 meet peak load this summer. How does this compare to prior
5 years? And do we expect to see increasing diversity going
6 forward? I would like your feedback on that question.

7 MR. HAYMES: Yes, we are aware--we're all aware
8 that the fuel mix to capacity is changing over time, has
9 been changing for several years. Natural gas and renewables
10 are growing, and there are less coal and nuclear facilities
11 due to their retirements and are in the mix.

12 And based on what has been announced and what is
13 known about the planned plant additions over the next few
14 years, and the retirements that we expect, we expect that
15 trend to continue during the foreseeable future.

16 COMMISSIONER POWELSON: Thank you for your
17 presentation here this morning.

18 CHAIRMAN McINTYRE: Thank you, Commissioner.
19 Commissioner Glick?

20 COMMISSIONER GLICK: Thank you, Mr. Chairman.
21 First of all I do want to again thank staff for this very
22 helpful presentation.

23 As I mentioned last months with regard to the
24 Quarterly Market Report when that was presented, these types
25 of reports are really helpful to obviously all of us, and

1 staff as well, but everyone out there as well, and the
2 people that are in the industry and who follow these issues
3 closely because the information provided is invaluable.

4 I also want to turn to California with regard to
5 the discussion today. Because as has been mentioned several
6 times now, we are--the West is experiencing a drought,
7 again, California in particular. I know the snowpack, as
8 was mentioned, is relatively average or maybe a little above
9 average, but as was pointed out already expected high
10 temperatures are going to make the snowmelt a lot--it's
11 going to melt more quickly, and therefore the hydro won't be
12 available as much I think toward the end of the summer as
13 was expected.

14 But I really wanted to talk a little bit about
15 the drought in the West where we're seeing a persistent
16 drought in the West with regard to forest fires, and
17 wildfires, and how that impacts the transmission grid.

18 I don't think there's been a year in the last 5
19 to 10 years when we've actually not witnessed or experienced
20 the significant wildfire that led to outages of significant
21 transmission. And I know that even transmissions that were
22 not directly impacted, they feared that eventually they were
23 going to be. And I know that we've come close a couple of
24 times to pretty significant power supply cutoffs because of
25 that. Montana is an example. But all throughout the West.

1 And certainly this is going to continue as we
2 continue to experience climate change. So I was curious if
3 you all had looked at what the West--California, but what
4 the rest of the West is doing to prepare for these types of
5 wildfires and in terms of transmission outages, and if
6 there's anything you think we can be doing to address that
7 particular situation.

8 MR. HAYMES: Yes. Wildfires are a challenge for
9 all of the Western grid, and California ISO in particular
10 which has the greatest challenges from that. They have had
11 droughts, and then they had some rain which built up some of
12 the low-level vegetation. And as we get to the dryer and
13 hotter summer, that vegetation becomes fuel for possibly
14 greater fire incidents over the summer.

15 And so there are a number of procedures that the
16 ISO uses to work through those problems. They coordinate
17 very closely with the state and federal fire authorities in
18 determining what fire outbreaks there are, where they will
19 go in the future. They plan transmission changes. They
20 deenergize wires when they need to reroute because of fire,
21 or to protect the firefighters.

22 And a number of other procedures are in place.
23 And so they work very closely in that effort. And so there
24 are no major changes this year, although they do realize
25 that it could be a year of high fire incidents.

1 COMMISSIONER GLICK: That's very helpful, and I
2 appreciate that. And, Mr. Chairman, you know there's been a
3 lot of very good but also very important discussion about
4 the natural gas situation and flexibility in California, and
5 all of those are very important issues.

6 I just want to highlight--you know, we talked a
7 lot about resilience earlier, and there's a report that came
8 out recently written by a couple of folks who used to work
9 for Chairman Wood here at FERC years ago, that really
10 discussed resilience in some detail and really focused on
11 the fact that, while certain fuel supply and fuel diversity
12 and generation supply is very important, that real
13 resilience, the real resilience threats we face are mostly
14 on the transmission and distribution sector.

15 So I think that as we go forward we need to keep
16 an eye especially on the transmission grid as we experience
17 other additional weather events. Thank you.

18 CHAIRMAN McINTYRE: Thank you, Commissioner.

19 Madam Secretary, does that conclude our
20 discussion matters?

21 SECRETARY BOSE: Yes, Mr. Chairman. No other
22 voting items today.

23 CHAIRMAN McINTYRE: Thank you very much. I would
24 like to take a moment, however, to address a
25 not-terribly-happy topic which concerns the departure of one

1 of our key trusted senior staff members, Arnie Quinn, who is
2 here with us at the table, who is our Director of the Office
3 of Energy Policy and Information, OEPI. He will be leaving
4 the Commission at the end of the month, and I want to take a
5 moment to express my appreciation and best wishes, and then
6 give my colleagues a chance to say anything they may care to
7 say as well.

8 Arnie first joined the Commission staff in 2003.
9 He has served in several leadership positions within the
10 Commission. Since 2014, as I say, he has been the Director
11 of the Commission's Office of Energy Policy and Innovation.

12 In his role as head of OEPI, I personally have
13 relied on him as the Commission's top economist. I don't
14 think it says that on his business card, but we all
15 recognize he's the Commission's top economist, and he is
16 really one of our truly deep thinkers.

17 I have grown to appreciate his judgment and his
18 advice with regard to the complex policy and market matters
19 that come before us. Through Arnie's leadership and
20 dedication, he has overseen the development and
21 implementation of some of the Commission's most important
22 and landmark orders, including Order No. 890, Order No. 745
23 concerning Demand Response, and more recently Order No. 841
24 concerning Electric Storage, along with Price Formation
25 Orders.

1 I also want to acknowledge Arnie's efforts to
2 further develop and enhance OEPI as one of the Commission's
3 key program offices. To his and his team's credit, OEPI
4 consistently receives high scores for employee satisfaction
5 and engagement, most recently above 80 percent in the last
6 Federal Employee Viewpoint Survey.

7 As a result of Arnie's leadership, OEPI continues
8 to make a valuable contribution to the Commission's mission.

9 So, Arnie, we thank you for your service. We
10 wish you the best in your next endeavor. You will be
11 greatly missed.

12 And let me offer my colleagues a chance.

13 COMMISSIONER LaFLEUR: Well thank you, Mr.
14 Chairman. I am very sorry to see Arnie leave. I think this
15 is a real loss for the Commission, but we were lucky to have
16 him for 15 years.

17 Not only is Arnie one of the tallest people at
18 the Commission--

19 (Laughter.)

20 COMMISSIONER LaFLEUR: --but in my opinion, to an
21 equal extent he is one of the smartest people at the
22 Commission, and that's saying something given the quality of
23 people that we have. He is a nationally recognized expert
24 on market economics, and has been a leading voice and
25 thinker on most of the important rulemakings and decisions

1 of the past decade. I had a whole panoply listed. You
2 mentioned some of them.

3 Also, Order 755, Frequency Regulation; Variable
4 Energy Resources; all the Capacity Market Orders, and many
5 more.

6 Arnie is also an outstanding leader. I was
7 thrilled to be able to give him the opportunity to lead OPI
8 in 2014, and he has done a wonderful job. When I first came
9 to the Commission--and I think I had only met Arnie once or
10 twice, and I had an opportunity to sort of look around to an
11 intern, Mary Cain Wesvecki, who worked for me at the time,
12 said, oh, you should definitely go to Arnie. He's great to
13 work for. He's the best person for an intern to work for.
14 And it was one of the first times I picked up the phone and
15 called Arnie.

16 He was a wonderful mentor and developer of
17 talent, a champion of his people, and we are fortunate that,
18 although he's leaving, he has built and nurtured a terrific
19 team that he leaves behind.

20 Finally, Arnie has a great temperament. He is
21 always fair. He is always calm--not like me. He always
22 looks t the positive side. And something I really value,
23 he's one of the people who is able to disagree without being
24 disagreeable, and engage on any issue.

25 So we will really miss him, but wish you

1 continued happiness and success in your next role.

2 CHAIRMAN McINTYRE: Commissioner Chatterjee?

3 COMMISSIONER CHATTERJEE: I also want to express
4 my gratitude, but also it's bittersweet with a bit of
5 sadness that Arnie is leaving. It is the Commission's loss,
6 but your family's gain, and I totally respect that.

7 I agree with Commissioner LaFleur that there is a
8 definite correlation between height and intellect--

9 (Laughter.)

10 COMMISSIONER CHATTERJEE: And I've been the
11 beneficiary of that. In particular, reflecting back on
12 the circumstances under which I joined the Commission, along
13 with Commissioner Powelson, you know, the backlog that had
14 accrued, dealing with the DOE NOPR, and the myriad complex
15 issues that were on our plate, I was able to turn to Arnie
16 and really appreciated not just your judgment, the
17 temperament, your patience, and the manner in which you
18 navigated that. That was a difficult period of time for me
19 in particular, and those on the Commission, and your
20 leadership was invaluable through that. And I will look
21 forward to the one year lapsing very quickly so that I can
22 once again pick your brain on these complex issues.

23 And then I also want to reflect on what
24 Commissioner LaFleur stated about the mentorship you've
25 provided, and the team you've put in place. One of my staff

1 members, Eric Vandenberg, was a beneficiary of your
2 leadership and guidance, and I gain from that every day.

3 You will be sorely missed, but I wish you all the
4 best in your new endeavors.

5 CHAIRMAN McINTYRE: Commissioner Powelson?

6 COMMISSIONER POWELSON: Thank you, Chairman.
7 Commissioner Chatterjee, there's also a correlation in hand
8 size, too. And let me pick up on that.

9 I had the opportunity this week, you know, you
10 come in on the train and I get this note that Arnie wants to
11 see you. So it certainly wasn't about a reliability issue.
12 It could have been a markets issue. And then I realized,
13 after 15 years of stellar service to this Agency, he was
14 going to embark on a new journey.

15 Let me just say, as my colleagues have said,
16 first of all, whoever replaces him, you have huge shoes to
17 fill. And I hope, Mr. Chairman, based on the culture that
18 Arnie's developed, I'm sure, to use a baseball analogy, we
19 have a good farm team in place, hopefully as good as the
20 Philadelphia Phillies. You like that?

21 Let me also express to you my gratitude. And on
22 behalf of my staff. We hit the ground running with you
23 rather quickly. I felt in my prior life I had some
24 interface with you, in my prior role at NARUC, the work that
25 you've done to outreach the states. I am very proud to

1 associate myself with you and your team. And I have
2 benefitted greatly from your advice and counsel.

3 And the epitome of your leadership is really the
4 foundation that you've laid for the next generation within
5 OPEI. And so with that, I want to wish you all the best. I
6 am now convinced I'm happy for you in many ways. It is
7 bittersweet. But you have, again, 15 years of remarkable
8 service to this agency. You have been grace under fire, and
9 you've been a tremendous asset to all of us.

10 And with that, I want to express to you all the
11 best going forward. And, yeah, that one-year stay-out will
12 be--you know, we'll try to communicate with you with maybe
13 smoke signals or something. But I also congratulate you on
14 this wonderful opportunity that lies ahead for you. So
15 congratulations.

16 CHAIRMAN McINTYRE: Commissioner Glick?

17 COMMISSIONER GLICK: Thanks. I also too want to
18 congratulate Arnie for his remarkably successful tenure at
19 FERC. I know that when Arnie started--we were talking the
20 other day, when he told me he was leaving--he started before
21 the Office of Enforcement was even the Office of
22 Enforcement. So it's awhile ago.

23 But you've obviously done a lot here. I think
24 the mark you've left on OEPI, or will be leaving on OEPI, I
25 think is going to be the most significant area in the policy

1 issues that we work on every day that provides a really
2 important function, and you've obviously led that.

3 I really do appreciate your commitment and drive
4 on a couple of the issues we've dealt with recently on
5 energy storage, but also energy resources, and I think
6 that's going to have a lasting mark here on the Commission
7 as well. And again, like everybody else, I also want to
8 thank you for helping us get up to speed when I started here
9 just a few months ago, and all the work and time you spent
10 with us. So again thank you very much and wish you the best
11 luck in your next venture.

12 CHAIRMAN McINTYRE: We do have a presentation I
13 connection with Arnie's departure. In recognition of
14 Arnie's service to the Commission, to our Nation's energy
15 industry, and to the American People, I ask Arnie to come
16 forward so that I may present him, on behalf of the
17 Commission, with the Chairman's Executive Leadership Award.
18 Please step forward, Arnie.

19 (Applause and presentation of award.)

20 CHAIRMAN McINTYRE: Again with thanks to Arnie
21 and to all of you for your participation here in the
22 meeting, we thank you. And with that. Our meeting is
23 adjourned.

24 (Whereupon, at 11:28 a.m., Thursday, May 17,
25 2018, the meeting of the Commissioners of the United States

1 Federal Energy Regulatory Commission was adjourned.)

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1 CERTIFICATE OF OFFICIAL REPORTER

2

3 This is to certify that the attached proceeding
4 before the FEDERAL ENERGY REGULATORY COMMISSION in the
5 Matter of:

6 Name of Proceeding:

7 1043rd COMMISSION MEETING

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15 Docket No.:

16 Place: Washington, DC

17 Date: Thursday, May 17, 2018

18 were held as herein appears, and that this is the original
19 transcript thereof for the file of the Federal Energy
20 Regulatory Commission, and is a full correct transcription
21 of the proceedings.

22

23 Jim Seeley

24 Official Reporter

25