

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14

UNITED STATES DEPARTMENT OF ENERGY

NATIONAL ELECTRIC TRANSMISSION CONGESTION STUDY  
WORKSHOP

Portland, Oregon  
Tuesday, December 13, 2011

1 PARTICIPANTS:

2 **Welcome and Presentation:**

3 DAVID MEYER  
4 U.S. Department of Energy

5  
6 **Panel 1 Regulators:**

7  
8 PHILIP B. JONES  
9 Washington Utilities & Transportation  
10 Commission

11  
12 STEVE OXLEY  
13 Wyoming Public Service Commission

14  
15 JOHN SAVAGE  
16 Oregon Public Utilities Commission

17  
18 MARSHA SMITH  
19 Idaho Public Utilities Commission

20  
21 **Panel 2 Industry:**

22  
23 RICH BAYLESS  
24 TEPPC Representative, Pacificorp/Northern  
25 Tier Transmission Group

26  
27 SUSAN HENDERSON  
28 PE, Manager, Regional Transmission Planning,  
29 Xcel Energy

30  
31 MARV LANDAUER  
32 Principal Planning Engineer, ColumbiaGrid

33  
34 STEVE METAGUE  
35 Senior Director, Project Development,  
36 Transmission, Pacific Gas & Electric

37  
38 BRAD NICKELL  
39 Director of Planning Western Electricity  
40 Coordinating Council

41

1 **Other Attendees:**

2  
3 JOE ETO  
4 Lawrence Berkeley National Laboratories

5  
6 ELLIOT ROSEMAN  
7 ICF

8  
9 LOT COOKE  
10 General Counsel's Office  
11 U.S. Department of Energy

12  
13 ROGER HAMILTON  
14 Western Grid Group

15  
16 LISA SCHWARTZ  
17 Regulatory Assistance Project  
18  
19

20 \* \* \* \* \*

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

22 (9:01 a.m.)

23 MR. MEYER: We'll get our workshop started.

24 I'm David Meyer from the Department of Energy and I  
25 have the lead for the 2012 Congestion Study. We  
26 appreciate your coming out for this workshop. I look  
27 forward to a fruitful discussion here.

28 Let me start with some background about the  
29 rationale for the study. The Federal Power Act, as  
30 revised, requires the Department to conduct a  
31 Transmission Congestion Study every three years. We  
32 did such studies in 2006 and 2009, so now we're

1 preparing for the 2012 study. I have definitions here  
2 of transmission congestion and related aspects, but  
3 those are so familiar to you folks that I won't go over  
4 them here.

5 I do want to say that we are very much aware  
6 that mitigating congestion in any, regardless of how  
7 you do it, has economic costs and so it's not always  
8 economic to mitigate congestion, and further that  
9 typically when people do undertake to mitigate  
10 congestion, they find that some mix of the possible  
11 solutions is frequently the most effective and most  
12 appropriate way to deal with it.

13 Finally, the Federal Power Act directs the  
14 Department to show where congestion is occurring, but  
15 it does not direct us to prescribe solutions or to  
16 undertake mitigation.

17 The earlier studies, in those studies we  
18 developed a sort of conceptual framework involving  
19 three different categories of congestion areas, the  
20 critical areas, and then other areas that were of  
21 concern, but not as severe as the critical areas, and  
22 finally what we called conditional congestion areas,  
23 these are areas that are particularly rich in potential  
24 generation resources, but where the existing

1 transmission infrastructure is simply not adequate to  
2 support substantial development of additional  
3 generation, and so if that generation were developed  
4 without associated transmission, then there would be  
5 significant congestion problems.

6           Let me say just a few words about National  
7 Corridors. The Federal Power Act authorizes, but does  
8 not require, the Secretary of Energy to designate  
9 certain areas as National Corridors. And I also want  
10 to say that there's an acronym that floats around about  
11 these corridors. We tend not to use that acronym  
12 because a lot of people don't know how to pronounce it  
13 and a lot of people don't know how to spell it, so it's  
14 simpler just to say National Corridor, which we think  
15 is a much classier term.

16           The National Corridor may be designated only  
17 after issuance of a congestion study and the review and  
18 consideration of the comments on that study. So,  
19 identification of an area as a congestion area does not  
20 necessarily lead to the designation of a National  
21 Corridor. That's a separate step in itself.

22           If a corridor is designated it has three  
23 principal effects: One is to emphasize that the  
24 federal government considers it important to mitigate

1 the congestion in question, it also enables the Federal  
2 Energy Regulatory Commission to exercise siting  
3 authority with respect to transmission facilities  
4 within the corridor under certain limited conditions as  
5 spelled out in the Federal Power Act.

6           And also, and this is especially important in  
7 the West, if a facility is proposed within a National  
8 Corridor that's also within the footprint of one of  
9 the two listed power marketing administrations here,  
10 those entities may then exercise some third party  
11 finance authority that they were given under the  
12 Federal Power Act as amended.

13           So, our process for the 2012 study, we're  
14 holding four regional workshops, two in the East, two  
15 in the West, to explain the basis for the study,  
16 explain how we're proposing to go about it to obtain  
17 data and information and just general perspectives  
18 from folks such as yourselves on the study.

19           And I want to emphasize that we try very hard  
20 not to rely on any single kind of data or source of  
21 data. It's very important to gather a diversity of  
22 input information and try to look for corroboration  
23 between different data sets to triangulate, if you  
24 will, on both where the congestion problems are and

1 what their significance is.

2           And so, we've listed some of the kinds of  
3 information that we intend to consider here. I do  
4 want to emphasize that we will use only publicly  
5 available source material, we think that's very  
6 important.

7           And this year, unlike the two previous  
8 studies, we will issue a draft report for public  
9 comment for a 60-day period, and then we will issue a  
10 final report after considering those comments  
11 received, and so if you have comments on this proposed  
12 process, we welcome that input.

13           So, today, we're looking for fresh  
14 information and analysis. I'm sure there have been  
15 significant changes since the 2009 study that should  
16 be taken into account.

17           We will have two panels. First we will hear  
18 from the state officials, mostly regulators, and then  
19 we'll hear from an industry panel, and after the  
20 panels, if there are others in the audience that want  
21 to provide input, we welcome that, and if you wish to  
22 do so, please let Sheri outside know, or Elliot  
23 Roseman, who is also here helping us.

24           We look forward to a wide-ranging discussion,

1 and I want to emphasize, we're having a transcript  
2 made because if we didn't, this would be ephemeral and  
3 we need a transcript so that we can be sure what  
4 people said, that we can go back and make sure we're  
5 not misunderstanding or misinterpreting some of the  
6 comments that people had for us.

7           It probably won't surprise you for me to say  
8 that I don't just sit down one weekend and decide to  
9 write this study. I have folks here who are going to  
10 be helping on this project. I want to introduce some  
11 of them, introduce all of them that are here now, at  
12 least, we have Lot Cooke from our general counsel. We  
13 have Mike Li, who is with the Secretary's office. We  
14 have Joe Eto, who's with Lawrence Berkeley Laboratory.  
15 We have John McIlvain, who's with the Office of  
16 Electricity.

17           Assisting us in the study is ICF  
18 Incorporated. Elliot Roseman is the lead person in  
19 charge there and Sheri Lawson, who's right here, I'm  
20 sorry, I thought you were out front. And we have our  
21 court reporter, also.

22           So, with that, let's get started on the first  
23 panel, and the panelists are listed by name and  
24 affiliation on your agenda, so I'm not going to



1 introduce them further. We will hear from them in the  
2 order listed. And so, Commissioner Savage.

3 MR. SAVAGE: Okay. Here we go. So, let's  
4 start again. I'm John Savage. I work at the Oregon  
5 Public Utility Commission. I want to thank David and  
6 the DOE for the opportunity to comment today. I sort  
7 of had envisioned that I would be talking to David,  
8 but I'm going to try and persuade the crowd, I guess,  
9 in terms of my position.

10 I chair two Western energy groups that have  
11 delved into Western transmission issues, one is the  
12 Committee on Regional Electric Power Cooperation, or  
13 CREPC, which consists as sort of a mixture of two  
14 groups: One is the Western Interstate Energy Board,  
15 the energy arm of the Western Governor's Association;  
16 the other one is the Western Conference of Public  
17 Service Commissioners.

18 The other group I chair is the State-  
19 Provincial Steering Committee, which consists of  
20 representatives from each of the Western states and  
21 provinces and each of the Western public service  
22 commissions or public utility commissions, and we have  
23 three, we came into existence at the same time that  
24 WECC got money to do the Western Interconnection

1 Regional Transmission Plan, and one of our charges is  
2 to advise WECC in the development of its 10-year and  
3 20-year plans.

4 We're also charged to promote policies to  
5 lower the cost of integrating large amounts of wind and  
6 solar into the grid and make more efficient use of the  
7 grid.

8 As David knows, CREPC and SPSC, the two  
9 groups, and this kind of feels like a CREPC/SPSC  
10 meeting to me, met in October, and the members  
11 basically adopted a statement about the congestion  
12 study. It's a very short statement. I'll read it and  
13 then I'm going to riff off of it.

14 So, this is the statement. "DOE and FERC  
15 should work closely with entities in the Western  
16 Interconnection that have studied and analyzed  
17 congestion and other related factors influencing demand  
18 for new transmission. For the past two years, the  
19 Western Electricity Coordinating Council, the State-  
20 Provincial Steering Committee, the Subregional Planning  
21 Groups, and others, have been collaborating on the  
22 creation of the first 10-year Regional Transmission  
23 Plan that was released in September 2011.

24 "DOE and FERC should not attempt to make the

1 focus of the 2012 National Congestion Study purely on  
2 congestion analysis. A federal study of the  
3 transmission grid will only have value to decision  
4 makers if it considers the economics of transmission  
5 expansion in the context of future generation resource  
6 build-outs under alternative futures."

7 I'm going to build off that statement and  
8 recommendations and make three points. One, conditions  
9 in the Western grid have changed fairly substantially  
10 since that 2009 study, and I'll talk about that, and  
11 that needs to be factored in. Two, DOE should not  
12 focus solely on congestion. Three, DOE should adopt  
13 and use rigorous non-congestion criteria to designate  
14 national interest corridors.

15 So, first comment, conditions have changed.  
16 In its 2009 study, DOE concluded for the West that  
17 Southern California should continue to be identified as  
18 a critical congestion area and it named San Francisco  
19 and Seattle to Portland as congestion areas of concern.

20 Now, since that last study there's been a lot  
21 of change in the Western grid landscape. Major new  
22 transmission has been built and is being built in these  
23 areas and throughout the West.

24 First, October 2011, energy infrastructure

1 update showed more transmissions being built in the  
2 West than any other region, substantially more. On top  
3 of that, WECC's recent 10-year plan included more than  
4 40 additional transmission projects covering 5,000  
5 miles, dubbed the foundational projects that are likely  
6 to be built by 2020.

7           The plan found that little or no new  
8 transmission is needed in the region beyond these  
9 projects over the next ten years.

10           This is a mouthful, the Subregional Planning  
11 Group, Coordination Group, or SCG, has recently updated  
12 this list of projects not yet built but that have a  
13 high degree of certainty of being in service by 2022,  
14 and this list is going to serve as a starting point for  
15 future WECC analysis and should serve as a starting  
16 point for this congestion analysis.

17           Second point: Don't focus on congestion. We  
18 believe that DOE must broaden the factors it considers  
19 prior to designating national interest corridors. In  
20 the development of its recent 10-year plan we found  
21 congestion analysis, regardless of how sophisticated,  
22 of less use in determining the need for new lines so  
23 reliance should be built on other factors.

24           In our comments on the draft plan we said,

1 "The plan should articulate reasonable criteria to  
2 build new transmission. We believe the appropriate  
3 criteria should include conditions to maintain  
4 reliability or a clear showing that the new  
5 transmission yields significant and demonstrable  
6 economic efficiency benefits. Congestion analysis is  
7 not enough by itself to demonstrate the need for new  
8 transmission."

9           As you'll hear from our, really the smart  
10 people who are on the second panel, I'm not saying...

11           MS. SMITH: That's okay.

12           MR. SAVAGE: I was just talking about myself,  
13 not my peers.

14           MR. JONES: I'm dismayed.

15           MR. SAVAGE: We've got two yes, and one no.  
16 As part of its recent plan, WECC's staff conducted an  
17 extensive analysis of congestion in the West and they  
18 generated a sophisticated set of metrics that they  
19 applied to Western pathways.

20           After conducting the analysis, they singled  
21 out two congestion paths in the West were warranting  
22 further study for potential expansion: Path 8 from  
23 Montana to the Northwest, and Paths 65, 66 from between  
24 Northwestern to California.

1           To better understand a need for an interest in  
2 these paths, SPSC held a webinar in October in which we  
3 asked developers and path owners to get their views on  
4 these paths and the need for development.

5           And the upshot from these webinars is that  
6 these paths are being extensively studied, but there  
7 appears, at this time, to be simply too little demand  
8 or too little interest for additional service to  
9 warrant investment, and I think this shows that it's  
10 critical for any congestion analysis to be viewed in  
11 the context of the plans of potential buyers of the  
12 service of those lines.

13           Which leads into my third point. We believe  
14 that DOE should establish non-congestion criteria, not  
15 just congestion criteria, to designate corridors and  
16 develop the information needed to apply those criteria.  
17 We recommend that the report and any designation focus  
18 on three questions. One, is the line needed to meet  
19 reliability standards? And is the line the lowest  
20 cost way of doing so? Two, is the line needed to  
21 lower the cost of power to consumers? And, three, is  
22 the line needed to meet public policy objectives such  
23 as state RPSs or carbon emission limits?

24           As an aside, we recognize that many

1 transmission lines serve multiple purposes, such as  
2 moving cheaper power to customers as well as being  
3 needed to meet our PS standards, for example, so we  
4 likely will be offering up recommendations on how to  
5 apply these three criteria. For example, to determine  
6 if a line is needed to cut the cost of power to  
7 consumers DOE could determine if the line has been  
8 recommended an acknowledged utility resource plan.

9           If the line is not in a plan, then DOE could  
10 either stop further consideration of that line or  
11 conduct its own rigorous analysis on the line and put  
12 it in public review.

13           One other related point, Section 1221 of the  
14 Energy Policy Act lists other factors that the  
15 Secretary may consider in deciding whether to designate  
16 a national interest corridor. These include: Economic  
17 vitality, Subsection A, value of fuel diversity to a  
18 corridor, energy independence in national defense and  
19 homeland security. We recommend that if the Secretary  
20 is going to use the suggested factors in Section 1221,  
21 then the DOE should consult with the states and set up  
22 a process for applying the factors to specific  
23 projects.

24           Some examples regarding economic vitality,

1 which is in Subsection A of 1221, and value of fuel  
2 diversity, DOE could defer to acknowledged utility  
3 resource plans to identify lines that are needed for  
4 these reasons.

5           Regarding energy independence, DOE could only  
6 consider, may only consider the impact of imported oil  
7 from outside North America. Regarding national defense  
8 and homeland security, DOE could consider whether the  
9 security of electricity supply to military assets would  
10 be materially improved by a line or whether there are  
11 alternatives that provide greater security of supply,  
12 and also whether the line will increase or decrease  
13 vulnerability to terrorist attacks as compared to the  
14 alternative, such as local generation at the military  
15 sites.

16           So, in summary, one, DOE should not rely  
17 solely on congestion metrics to determine where  
18 transmission is needed or to designate national  
19 interest corridors. Two, we believe that the statute  
20 gives DOE the flexibility to examine more meaningful  
21 factors such as whether the line is needed for  
22 reliability or to reduce costs to consumers or to meet  
23 public policy objectives.

24           Before making any finding on the need for



1 transmission, DOE should answer the threshold question  
2 of whether there is a buyer for the power the proposed  
3 line would carry. And, finally, in developing a study  
4 DOE should rely on the existing utility resource plans  
5 and the extensive work that's been done and is being  
6 done by WECC and the subregional planning groups.

7 Those are my comments.

8 MS. SMITH: Do you just want us to go ahead,  
9 David?

10 MR. MEYER: Yes. Yes.

11 MS. SMITH: My name is Marsha Smith. I'm a  
12 commissioner on the Idaho Public Utilities Commission.  
13 I also have the privilege of being the WECC board chair  
14 during this year. WECC, if you, I can't imagine anyone  
15 being in this room and not knowing that WECC is the  
16 Western Electricity Coordinating Council, but if you  
17 didn't, that's what it is.

18 I just note that last month the WECC board  
19 just approved a change in the definition of an adjacent  
20 circuit. You may recall that the old definition  
21 included a variable separation with a minimum of 500  
22 feet up to the height of a tower span, which, depending  
23 on design, could have been up to as much as 1,500 feet.

24 The new definition allows a separation of 250

1 feet between the lines. This means that transmission  
2 lines with greater than 250 feet between them no longer  
3 need to meet the reliability criteria as if they were  
4 on the same tower, which, if you're a project  
5 developer, you understand that this is a very big deal  
6 economically in planning your line.

7           So, to the extent that that might be helpful  
8 to DOE, I thought that was important to bring it up.

9           I really don't have a lot to add to what John  
10 just stated and the position of CREPC and the SPSC. I  
11 would note that physical congestion is probably  
12 interesting to look at, but it's not the same thing as  
13 economic congestion or even reliability congestion.  
14 And I also appreciate the fact that DOE is using a  
15 stakeholder process and reaching out to stakeholders,  
16 and I think there's a lot of value in that. There may  
17 also be value for DOE in using the stakeholder  
18 processes of others, such as WECC, whose RTEP process  
19 has expanded thanks to the support of DOE to include  
20 environmental concerns, land and water concerns, and  
21 state public policy concerns.

22           So, that and the subregional planning groups,  
23 such as the Northern Tier Transmission Group, also have  
24 their own stakeholder and public outreach processes, so

1 I think there's opportunities for the synergy here with  
2 DOE to work with the processes of other groups to apply  
3 public policies that are in the West and to use those  
4 to its benefit.

5 And I know that the technical people probably  
6 have more exciting information than I do, so I'll pass  
7 the microphone to Commissioner Oxley.

8 MR. OXLEY: Well, David, thank you very much  
9 for, excuse me.

10 (Discussion off the record)

11 MR. OXLEY: If I just call out a next slide  
12 sort of thing, you can, while we're getting squared  
13 away there, thank you, David, for giving me this  
14 opportunity to share some views of a large/small state:  
15 Large area, lots of generation, et cetera; small in  
16 terms of population.

17 So, I want to apologize for using a  
18 PowerPoint. It has a lot of linearity inherent in it  
19 and this is a somewhat non-linear subject.

20 Let's see, is that too, that's good. Okay.  
21 How about slide number 2. Marsha's already covered  
22 this. There's a Type 1, which is basically economic  
23 congestion, and there's real congestion or physical  
24 congestion characterized by the inability to transmit

1 all of your generation. There's a Type 2A that has to  
2 do with the new EPA rules and the significant  
3 difference they may make in where congestion occurs,  
4 how much there is, and we shall see.

5 I come from an energy and electron exporting  
6 state, so I have a different viewpoint than some  
7 others. We in Wyoming are concerned with Type 2  
8 congestion. We have lots of wind, lots of natural gas,  
9 lots of low sulfur coal, and lots of congestion.  
10 Bridger West managed to score among the top, most  
11 heavily loaded and congested paths in the Western  
12 Interconnection, and we're really proud that we have a  
13 winner here.

14 TOT 4A in Wyoming also has some contribution  
15 to congestion, but that is basically something we  
16 believe that the gateway project will fix when the time  
17 comes.

18 Type 2 congestion, we sometimes have to  
19 displace thermal assets to allow a little bit more  
20 costly, must-run wind to get out of the state, and  
21 there are people here with RPSs, who probably would  
22 like to have more wind and we would certainly like to  
23 get it to them if we can.

24 The problems of this kind of congestion are

1 that you have to follow, you have to chase loads  
2 sometimes with thermal plants or more expensive gas  
3 plants, you increase the cost to generators and  
4 ratepayers, and you curtail off-system sales, which we  
5 really like in Wyoming because we get some credit for  
6 them in rate cases for our ratepayers. Ironically it  
7 also limits high quality wind resource.

8           How about number 5? Upgrading systems will  
9 help. This is where I probably introduce myself as  
10 chair of a thing called the SPSC Grid Utilization Work  
11 Group. That's transmission technological folks. And  
12 also I will be stepping into Marsha Smith's shoes as  
13 regulatory chair of NTTG. I could have said somebody  
14 else's name, but it wouldn't be quite as funny as  
15 trying to step into her shoes.

16           So, in any event...

17           MS. SMITH: It's not even accurate.

18           MR. OXLEY: Yeah, it is. It's been a while.

19           MS. SMITH: I thought Rick Campbell was...

20           MR. OXLEY: Yes, that's why I said it wouldn't  
21 be any fun to say I'm stepping into his shoes. You  
22 were the original.

23           Okay, upgrading existing transmission,  
24 reconductoring and that sort of thing will help. It

1 only lessens the problem. It can be expensive.  
2 Building new transmission may alleviate our problems,  
3 but that's slow and expensive as you know if you've  
4 been following the process by which Gateway is churning  
5 through its environmental and other criteria.

6 We can make better use of what we have with  
7 technology and operational innovation. That can be  
8 cheap and quick. How about slide 6? And there's a  
9 picture of the future for you. Small and lumpy, but  
10 the future nevertheless in one sense.

11 This is only one possibility that can help  
12 with increasing the amount of information we have about  
13 the transmission systems. Now slide 7.

14 MR. JONES: What is that, Steve?

15 MS. SMITH: We don't know what that is.

16 MR. OXLEY: I'm glad you asked because slide 7  
17 begins to explain that. That is the transmission lines  
18 monitor that INL (Idaho National Labs) developed. Its  
19 sensors produce a lot of transmission line data,  
20 temperature, vibration, sag, so you know about  
21 earthquakes and people trying to saw down a tower, and  
22 lines that are trying to melt down, and wind and  
23 various other aspects of the system.

24 Each one has a little radio transceiver in it

1 and they work together as a network. If you're a  
2 transmission operator, you can interrogate one of those  
3 little footballs and find out what's happening on one  
4 individual span. They're self-contained, powered by a  
5 magnetic field, and apparently they can be installed  
6 hot by a single technician, single, brave technician.  
7 They're relatively cheap at \$350 to \$400 per unit at  
8 this point, we think.

9           Next slide. How cheap is that? Well, you  
10 remember the 2003 Idaho blackout that was caused by a  
11 sagging line? Did I say Idaho? I meant Ohio. That's  
12 the trouble with PowerPoint. Thank you, Marsha,  
13 commissioner from Idaho.

14           MS. SMITH: The other one was in '96.

15           MR. JONES: It says Ohio up there, Steve.

16           MS. SMITH: 2003 was Ohio, '96 was Idaho.

17           MR. OXLEY: Okay, now, it affected, according  
18 to the National Labs, 50 million people, cost billions  
19 of dollars in economic damage. It could have been  
20 averted if the sag could be detected and isolated  
21 quickly, and doing a little bit of the math and  
22 figuring only on \$1 billion worth of economic damage  
23 rather than billions and billions, you could buy about  
24 2 1/2 million of these little footballs.

1           Next slide. Seems to work. It's been tested  
2 by INL and BPA in their California field trials, going  
3 commercial with a California-based company called  
4 Lindsey Manufacturing and we can expect some deployment  
5 this summer on power lines.

6           INL says there are 158,000 miles of  
7 transmission lines in the United States with 800,000  
8 towers. Many of them like those in Wyoming are  
9 isolated. They deliver electricity over long lines,  
10 meaning, they're hard to keep tabs on regularly and for  
11 the high price of \$400, you could install one per tower  
12 for only \$320 million. "Only" means you get more than  
13 three times your money back if you avoid only a single  
14 \$1 billion blackout.

15           So, our recommendation is similar to the other  
16 commissioners. Use more information. Get as much as  
17 you can. We see, for example, that wind cooling can  
18 help increase the safe carrying capability of  
19 transmission lines. Five miles per hour wind, blowing  
20 at the right angle, of course, can increase capacity  
21 between 30 and 50 percent. If you can do that, if you  
22 can find that information out in real time, you are  
23 armed with some relatively cheap and quick ways of  
24 alleviating some congestion.



1           You don't have to stare at nomograms or tables  
2 of historical wind data; you just look and see how the  
3 wind is blowing and what the temperature of the line  
4 is. So, dynamic line rating we believe is important,  
5 we think it should be studied.

6           Now, I wouldn't be doing my job if I didn't  
7 make a plug for the Energy Imbalance Market that may be  
8 developing in the West. If it can be set up and run  
9 cheaply and if enough transmission operators will  
10 participate, that means private sector and PMAs as  
11 well. They thrive on real time information and those  
12 little footballs can help.

13           Slide 13. The EIM has been studied by WECC,  
14 and they're still doing work on it. The Western  
15 commissioners, with the assistance of Lawrence Berkeley  
16 Labs, are looking at an even more granular cost-benefit  
17 study. We think this will help utility decision  
18 makers.

19           And my unwavering support for an EIM has to do  
20 with; can it save money for ratepayers? If it can, I'm  
21 for it. If it can't, I'm not. I hope we can find out.

22           Now, next slide, that would be 14. Remember,  
23 an EIM is not an RTO. Participation should probably be  
24 voluntary just as it was with the model that we have in

1 the Southwest Power Pool. You can read the rest of  
2 this, but the important takeaways from SPP are that  
3 systems like that can be monitored to alleviate gaming  
4 and help newbies to effectively participate in a market  
5 like that without being hornswaggled by outfits with  
6 more computer power and more market experience.

7           Okay. Techniques and technological  
8 innovations. Black & Veatch has just finished up a  
9 report for NREL in draft form on transmission  
10 technologies. It's a guide, which we hope is going to  
11 be a comprehensive report on technology and operational  
12 changes that can help use the existing grid better.

13           We think that ought to be a checklist for  
14 regulators and transmission planners as they go through  
15 the exercise of deciding what to build and where. And  
16 we shall see, by the end of the year, what this report  
17 looks like. It's under final review by NREL right now.

18           Maybe we can increase capacity cheaply with,  
19 and quickly, sometimes without having new rights-of-  
20 way, which in Wyoming is quite a problem in some cases.  
21 And then what to do today, we say, be pragmatic. The  
22 only reason we, this panel, are here is because  
23 ratepayers who deserve that power, and like John and  
24 Marsha said, let's make use of the good work being done

1 by subregional and regional planning groups, which you  
2 will hear more and better information about later.

3           You also need to get into the habit of working  
4 together. That is a habit that is hard to inculcate  
5 into people. We need to take advantage of every  
6 available tool, and, again, as John said, don't look at  
7 congestion by itself, look at solutions, and that means  
8 observe the "mountain and sea" spirit. I'm sure you're  
9 all familiar with.

10           Last slide. This little bit of wisdom has  
11 been around since 1645. It means that it's bad to  
12 repeat the same thing several times when fighting the  
13 enemy: Congestion. There may be no help but to do  
14 something twice, but do not try it a third time. If  
15 you once make an attack and fail, there is little  
16 chance of success if you use the same approach again.

17           That was harshly worded for life and death  
18 situations for people who were about to cut you up with  
19 a samurai sword, but it does emphasize the concept that  
20 we need to concentrate on that sort of pragmatic  
21 spirit. Innovate.

22           And I'm done.

23           MR. JONES: Thank you, Steve. Steve, did you  
24 know that's a good segue to me, Steve, because I lived

1 for five years in Japan, so that's very appropriate.

2 Thank you for that.

3 My name is Phil Jones. I'm a commissioner at  
4 the Washington Utilities Commission and I'm going to  
5 make a few brief remarks.

6 I think my colleagues John, Marsha, and Steve  
7 have already said most of it. The first comment is,  
8 we're doing a lot of work. To my friends at DOE, we're  
9 doing a heck of a lot of work here in the Western  
10 Interconnection and we have been for a long time.

11 As John said, and Marsha, Steve, we have  
12 CREPC. We have, CREPC, by the way, is funded by both  
13 the Western Governors Association and by the Western  
14 Conference of NERC, which contributes a substantial  
15 amount of money to the CREPC folks every year. SPSC,  
16 of course, is funded by DOE. So, we thank DOE for  
17 that. And WECC, of course, is funded by the  
18 transmission providers. So, we have a variety of  
19 funding mechanisms.

20 MS. SMITH: Ratepayers.

21 MR. JONES: Ratepayers, but through the, yes.  
22 Eventually the ratepayers pay for it. So, we have a  
23 variety of funding mechanisms and a variety of ways  
24 that we get at these transmission expansion issues and

1 we've been doing it for a long time, I think ever since  
2 Marsha's been a commissioner.

3 MS. SMITH: A memory of (inaudible).

4 MR. JONES: Yes, I know. I'm sorry I said  
5 that, Marsha. But we've been doing, I think CREPC has  
6 been doing a lot of work for a long period of time.  
7 So, one of the messages to DOE.

8 MS. SMITH: Hard as it may seem, there are  
9 things older than I am.

10 MR. JONES: Thank you, Marsha.

11 MR. OXLEY: Be specific.

12 MR. JONES: So, we don't want to reinvent the  
13 wheel. I think you heard that from John in John's  
14 opening comments. We're doing a lot of work. We're  
15 spending a lot of time on this, frankly. A lot of us  
16 have rate cases and rulemakings and dealing with  
17 governors and legislatures that we have to do, but this  
18 is very valuable work and we're going to continue to do  
19 it.

20 So, let me talk a little bit about what we're  
21 doing in the State of Washington and then what we're  
22 doing at the regional level.

23 Most of what we do in the State of Washington  
24 is tied to the ColumbiaGrid and the good work that

1 ColumbiaGrid does. ColumbiaGrid, as you know, has, I  
2 think, nine members and seven cooperating members such  
3 as NTTG and PacifiCorp.

4           So, we are most closely tied into the work of  
5 ColumbiaGrid. We meet with them at least once a year.  
6 There's a lot of dialogue going on between our staff  
7 and that of ColumbiaGrid, and they produce a biennial  
8 transmission expansion plan, they perform a system  
9 assessment that checks the overall system, and then, of  
10 course, they're looking very closely at reliability  
11 issues and respond to, for example, our governor and  
12 legislature passed a bill to convert one of our coal-  
13 fired units, the Centralia Units, owned by TransAlta,  
14 to natural gas and the governors and the transmission  
15 operators asked ColumbiaGrid to do a study on the  
16 reliability of that conversion on the west side of the  
17 Cascades. So, ColumbiaGrid did that.

18           We fund all of those costs of dues and rates.  
19 There's never been a case in which, at least our  
20 commission, either for the previous efforts of the RTO  
21 or whether it's for ColumbiaGrid, and now Avista, by  
22 the way, has decided to join NTTG, so those costs will  
23 be included in rates that we, again, as Marsha said,  
24 the ratepayer eventually pays for everything.

1 ColumbiaGrid is looking at a number of paths  
2 in its 10-year plan. One is the cross-Cascades path,  
3 North and South, another is the upgrade of the Colstrip  
4 path, a 500 to 900 megawatt upgrade that would be led  
5 by Bonneville.

6 So, there are a number of things that  
7 ColumbiaGrid is looking at that we support the planning  
8 of, we're involved with the staff, and I think we're  
9 going to be hearing from Marv Landauer later more  
10 specifically on some interesting work that doesn't  
11 appear, frankly, in any congestion analysis, but very  
12 good work that's being done in the North Puget Sound  
13 area.

14 At a state level, as John said, the non-  
15 congestion criteria are key to what we do. Whether  
16 it's RPS, energy efficiency mandates, both of which we  
17 have by statute, distributed generation proposals, all  
18 of these things are being actively discussed by the  
19 legislature, by stakeholders, and they all come to the  
20 commission and various forum in which we discuss these  
21 things.

22 And, of course, all of these will have an  
23 impact on whether it's the Montana to Northwest path or  
24 Path 65 and 66 that are being looked at in the WECC

1 study.

2           The important thing to say is there are still  
3 uncertainties in this discussion of non-congestion  
4 criteria such as RPS, but we at the state commission,  
5 at least at the State of Washington, we try to lessen  
6 the levels of uncertainty.

7           How do we do this? Well, we use the IRP  
8 process. Every two years we update the IRPs of the  
9 IOUs that we regulate. And we look not only at  
10 generation, but at transmission, and remember, these  
11 are load-serving entities, so these utilities have an  
12 obligation to serve. If they're going to purchase or  
13 buy into a transmission expansion project they  
14 obviously have to, at some point, come to the  
15 commission for cost recovery.

16           And so the IRP process is a way in which they  
17 try to vet these ideas very carefully with the  
18 commission and our staff before they actually take that  
19 on.

20           I think John talked about it before; we are  
21 following the Montana/Wyoming wind issue. We are  
22 looking at other sources of renewable generation that  
23 would move further from load, but, as John said,  
24 according to what we're hearing on webinars and in our



1 discussions with utility executives, these concepts are  
2 still premature, whether it's due to the recession,  
3 lower load growth, high costs, or whatever the  
4 utilities that we regulate are not ready to sign up for  
5 some of these very expensive transmission projects.

6           But I do want to emphasize, in closing, that  
7 there's lots of collaboration going on. We had an  
8 issue when I became commissioner in 2005 of a  
9 constraint called West of Hatway. It was in Eastern  
10 Washington. This was identified as a real constraint.  
11 The utilities really worked together on this, Avista,  
12 Bonneville, and others. They did all the engineering  
13 work and they built new transmission.

14           So, new transmission was built, it was sited,  
15 and it has been put into rates, so there hasn't been a  
16 lot of fanfare associated with that, not that there  
17 should be. But as we proceed with this 2012 study by  
18 the Department of Energy, I just want to emphasize that  
19 we at the state level, working with our regulated  
20 utilities and with Bonneville and with other  
21 subregional groups, we think we're getting a lot done.

22           The other area from my state, it's different  
23 in Oregon and Idaho and I think DOE knows this, is we  
24 have a substantial presence of PUDs and municipally

1 owned utilities, so the investor-owned utilities in our  
2 state only supply about 42 percent of the electric  
3 load. Fifty-eight percent of the electric load is  
4 supplied by PUDs and munis.

5           So, both from a transmission planning  
6 viewpoint and a political viewpoint, we try to work  
7 with our colleagues in utilities that we frankly don't  
8 regulate, directly or economically.

9           So, these groups like NTTG, ColumbiaGrid, the  
10 other seven subregional groups throughout the Western  
11 Interconnection, are very useful vehicles in which the  
12 IOUs and the transmission planners can collaborate, can  
13 talk, and can plan for the future.

14           One last point I'd like to make before I close  
15 is, especially for the State of Washington, this  
16 concept of energy independence is important because  
17 oftentimes when our policymakers talk about energy  
18 independence, they exclude Canada or they put Canada,  
19 Mexico, Venezuela in the same box.

20           So, this statutory criteria where you talk  
21 about energy independence, I would just urge you, as  
22 John said, to really, to make a distinction between  
23 NAFTA and especially Canada and other countries outside  
24 of North America, because we depend, I think, for

1 natural gas, we depend heavily on supplies in British  
2 Columbia and Alberta.

3           We work closely with BC Hydro, we want to work  
4 more closely with Alberta, so, I would just urge you to  
5 be careful, be nuanced when you try to explain to  
6 Congress and when you put together the study on "energy  
7 independence." Thank you.

8           MR. MEYER: Well, thank you all for the  
9 thoughtful commentary. I have two points that I want  
10 to raise with you and get any reactions that you have,  
11 and then I will ask my colleagues here if they may have  
12 questions that they want to raise with you as well.

13           Some of the comments that we've received about  
14 the earlier studies have expressed a desire for  
15 somewhat more granularity in the congestion study  
16 itself and we would, this time around we would like to  
17 make the analysis more granular to the extent that the  
18 data will permit, but we are also mindful that you can  
19 say, well, this is where the constraint is, right here,  
20 this dot on the map. But the immediate question is,  
21 well, so what? The solution, the relevant or many of  
22 the relevant solutions may involve significant activity  
23 at some considerable distance from that point on the  
24 map.

1           And so, we're mindful of that, too. But I  
2 want to just throw the question out there, if we try to  
3 go in the direction of more granularity, what is your  
4 instinct about what would be the most useful,  
5 productive way to do that? And this question pertains  
6 to the industry folks as well.

7           And then my second question, there have been  
8 sort of passing references, so far, to the EPA regs but  
9 not much detailed discussion and I want to get a sense,  
10 particularly from you, whether there are, there's work  
11 underway that will be forthcoming soon that would shed,  
12 clearly, the regs will induce some changes in the  
13 pattern of flows, electricity flows on the grid.

14           And so what we're trying to without asking  
15 anyone to be clairvoyant or to reveal material that  
16 should be, that they want to keep confidential, we want  
17 to get some insight into what people think that those  
18 alternative flow patterns are likely to be.

19           So, if you can comment on those two points.

20           MR. SAVAGE: Okay. Let me start with the  
21 granularity question. I'm going to look at granularity  
22 both in terms of metrics, and I think what you're  
23 talking about is looking at lines rather than  
24 corridors, is that correct?

1           MR. MEYER: No, you know, in the previous  
2 studies we've identified geographic areas where  
3 congestion was either an existing problem or  
4 potentially a significant problem, but these have been  
5 very broad areas and the sort of the breadth of those  
6 areas and the kind of fuzziness, lack of any boundaries  
7 or any internal distinction within those areas has  
8 frustrated some people.

9           MR. SAVAGE: Okay.

10          MR. MEYER: So, we're just trying to see if we  
11 can tighten the focus a little more.

12          MR. SAVAGE: Well, the first thing I'm going  
13 to do is listen very closely to the technical panel  
14 when you pose this question to them, because right now,  
15 basically what I'm going to say is, I think Brad and  
16 his group at WECC have done an extremely sophisticated  
17 analysis, pathway by pathway, using a variety of  
18 congestion metrics and that's, you know, that's where I  
19 would start in terms of looking at this question of  
20 granularity, is I'm going to take it right to the work  
21 that WECC has done already for the 10-year plan.

22          On the EPA regs I'm going to give my view and  
23 then pass it on to my colleagues. From my view, we're  
24 deep into, we just happen to have two utilities who are

1 deep into taking a look at the impact of the EPA regs  
2 on their fleet. One has made a decision based on the  
3 EPA regs that they know that they're going to have to  
4 do that they're going to be, they're proposing to shut  
5 down their coal-fired power plant here in Oregon in  
6 2020.

7           We know that Pacific Power is, in part of its  
8 integrated resource plan, is looking very closely at  
9 the impact of those regs and we've asked them to do a  
10 plant-by-plant analysis of that in its integrated  
11 resource plan, and Idaho Power is also doing a plant-  
12 by-plant utility analysis of the impact of those regs.

13           So, we're just going to look to find out what  
14 the results of those plant analyses are, which is  
15 probably down the road and may not be in sync with the  
16 timing for this study.

17           MR. OXLEY: I agree. I think that it's quite  
18 true that WECC has done marvelous work from the hog on  
19 down today and it's ongoing.

20           Regarding IRPs, though, I would differ  
21 slightly from what Mr. Savage said, and he thought that  
22 DOE should look at acknowledged plans. And  
23 "acknowledge," I believe, is a term of art for Oregon,  
24 is it not, John?

1 MS. SMITH: And Idaho.

2 MR. OXLEY: No, I think other.

3 MR. SAVAGE: We acknowledge as well. It's not  
4 just Oregon.

5 MR. OXLEY: Well, he's the one who said it,  
6 but acknowledged is a stamp of approval. If you don't  
7 get acknowledged, that does not mean, from my point of  
8 view, that DOE should throw out everything they see in  
9 an unacknowledged plan, but should, in fact, take a  
10 look at it, look at the data that they find there and  
11 make the best use they can of it.

12 That's not to say that that would convert an  
13 unacknowledged plan into an acknowledged one. In  
14 Wyoming, we don't acknowledge them, we, well, we do, we  
15 acknowledge their existence and that's the end result  
16 of our review. It mostly comes out that will issue  
17 instructions or a want list for the next IRP or the  
18 next update to an IRP, in PacifiCorp's case, for  
19 example, to the things that we want to see studied a  
20 little more closely.

21 On the EPA regulations, yes, I'm not  
22 clairvoyant and I know that there's been a lot of  
23 speculation. I don't have a very good handle on it  
24 personally as to what will happen because the timing of

1 the regulations, the content, the final content, in  
2 some cases may still be up in the air. You know  
3 there's an ongoing, or there's at least a discussion  
4 going at FERC in three, which have not been  
5 consolidated, of which will show up on the same  
6 caption, where they are looking at the impact of these  
7 regulations, and I hope that DOE will look at what  
8 comes from that and ask the states if they would like  
9 to put in their two cents' worth also, if you want our  
10 two cents.

11 MS. SMITH: On granularity, I don't know if it  
12 would work for DOE, but you might try looking at the  
13 common case projects that are going to be in the next  
14 round of the WECC transmission plans because I think it  
15 might be valuable for those to actually have a corridor  
16 designation for those projects. And so, if your  
17 process allows that, I would suggest you might want to  
18 think about doing that.

19 I wish I knew what impact the EPA regs were  
20 going to have. I'd probably be not a commissioner and  
21 somewhere else making a lot of money, but I do know  
22 they're going to impact us even though there are no  
23 coal plants in Idaho. We get our energy from coal from  
24 Utah, Wyoming, Montana, Washington, Oregon, and Nevada.



1 But nevertheless, those things are going to change and  
2 it's going to impact just as the Boardman closure is  
3 going to impact us and just as these other states' RPSs  
4 are having an impact even though we definitely decided  
5 it wasn't in our ratepayers' interest to go that route.

6           So, what that's going to be, I'm not sure, but  
7 I do know the utilities will examine it closely and  
8 will probably get a glimpse of it in their integrated  
9 resource plans as they come forth for commission  
10 review.

11           MR. JONES: Yeah, on granularity I would echo  
12 what my colleagues have said, that common case  
13 transmission assumptions is a good idea. I'm also  
14 looking, David, through the ColumbiaGrid 10-year plan  
15 and they get very granular in what they're going to do.  
16 And you can ask Mr. Laudauer later about some of these,  
17 but I would urge you not to kind of repeat what they're  
18 doing, because they're getting down to very specific  
19 distribution level projects, and he will talk about  
20 those.

21           But they do have study teams: One is Puget  
22 Sound Area Study Team, one is the Northern Mid-Columbia  
23 Area Study Team, the other is the Cross-Cascades Study  
24 Team. So, what you may want to do is talk to those

1 study teams and see how granular they're conducting  
2 their analysis and then how you want to go from there.

3           The other point of caution on granularity is  
4 I'm thinking of FERC Order 1000 and the controversy we  
5 went through this summer on siting and the delegation  
6 of 1221 authority. I would urge you not to focus on  
7 specific lines, whether they be LSE lines or merchant  
8 lines. If you start focusing on project-specific  
9 lines, then I think you get into a whole host of issues  
10 involving other issues, jurisdictional both to FERC and  
11 the states where it may not, let me put it this way, it  
12 may not be productive.

13           On the EPA regs, a couple of points. As  
14 Oregon is going to be converting Boardman to natural  
15 gas, our state legislature, with the strong support of  
16 our governor, passed a bill, as I said, to convert  
17 Centralia, two 600-megawatt plants, from coal to  
18 natural gas in 2020 and 2025. And, as I said,  
19 ColumbiaGrid and Bonneville have done a study on the  
20 impact of transmission on the west side of the  
21 Cascades, so you should definitely look at those  
22 studies.

23           You know, these, I'm not aware of any other  
24 issues that we're looking at the commission now on the

1 EPA regs because, frankly, that's the last, those are  
2 the last plants in the state of Washington that are  
3 fired by coal, so once, if those plants are truly  
4 converted and we have transmission upgrades on the  
5 electric side to transmit the power reliably, then  
6 we're pretty much done.

7           The point I'd make, though, is it has big  
8 impacts on the natural gas sector, in my view, both in  
9 terms of natural gas supply, storage, and, frankly,  
10 pipeline infrastructure. I know this is not part of  
11 your study, but I just bring it to your attention  
12 because as we convert more coal to natural gas  
13 throughout the Western Interconnection, it is going to  
14 have impacts.

15           The last point on EPA regs is, at the NARUC  
16 level we are setting up a task force, David, to look at  
17 EPA impacts. Commissioners LaFleur and Moeller have  
18 offered to help us out on this and so we at NARUC are  
19 kicking off a joint study. I'm going to be one of the  
20 co chairs, David Ziegner of Indiana, and we're going to  
21 have a session at the winter meeting in February as  
22 part of the Electricity Committee Agenda on the impact  
23 of these EPA regulations once the Utility MACT is  
24 issued this Friday.

1           As you know, right now we really don't know  
2 what the presidential waiver or the one-year extension,  
3 what it's going to look like, if plant operators are  
4 going to have four or five, six years to comply with  
5 these new regulations, especially on mercury and air  
6 toxics, but we will know by Friday.

7           So, I would urge you to participate in that  
8 meeting if you can. I don't know the structure of that  
9 study yet, but it is going to be an ongoing FERC/NARUC  
10 kind of joint study, and what we intend to do, frankly,  
11 at least from my viewpoint, is get beyond the political  
12 rhetoric and get beyond this high level rhetoric and  
13 bring it down to unit-specific, distribution level  
14 reliability issues, where they are and what can we do  
15 about them.

16           MR. OXLEY: Could I add one small thing? As  
17 you look at granularity, I would urge you to not just  
18 look at granularity of, in the sense of finding out  
19 more about what's here, but also take a look at what  
20 technological innovations could be employed relatively  
21 efficiently to achieve a more granular view, whether  
22 it's 800,000 little football, aluminum footballs  
23 attached to power line conductors or an energy  
24 imbalance market that gives you real time data. Those,

1 I think, are also things that need to be looked at.

2 MR. MEYER: Okay, let me see now whether there  
3 are members of my group here who want to pursue  
4 particular questions. Joe is shaking his head no.  
5 Mike Li, John McIlvain, do you have queries? Okay.

6 I have one more, then, for the panelists.  
7 You've been relatively quiet, so far, on non-wires  
8 alternatives. Are non-wires alternatives essentially  
9 baked into a lot of the analyses that are being done  
10 and do not require substantial special attention on our  
11 part, on DOE's part as we conduct the study? Or  
12 perhaps you have other comments you want to make on  
13 this subject?

14 MR. SAVAGE: I'm going to let you start off on  
15 this one.

16 MS. SMITH: What is the question?

17 MR. SAVAGE: Oh, non-wires alternatives.  
18 Should they be taking a hard look at or is it already  
19 baked in to the work that's been done by the  
20 subregional planning groups and the like?

21 MS. SMITH: Well, on non-wires, I pretty much  
22 think that waterfront is covered in more than one way.  
23 Utilities, of course, who file integrated resource  
24 plans have to cover that base in the plan, at least

1 they do for us, that's one of the resources that ought  
2 to be in their stack, is energy efficiency and their  
3 demand-side programs. So, that's covered on that  
4 level.

5           And I believe it's also part of the RTEP  
6 effort and in that sense it's being done on an  
7 interconnection wide basis through the RTEP effort at  
8 WECC. So, I would say, you know, you don't need to do  
9 that again, but that's just one person's view.

10           MR. OXLEY: I agree with everything Marsha  
11 said.

12           MS. SMITH: Let me say more.

13           MR. OXLEY: To date. I have no idea how  
14 delicious the words are going to be that she will put  
15 in my mouth thereafter. I do agree.

16           I also think that it would be good to take a  
17 look at how utilities could be incented to actually put  
18 into place vigorous demand response markets, not just a  
19 tariff that says we can interrupt you and, well, we  
20 might even pay you for it, but a true demand response  
21 market might be a very interesting thing to develop. I  
22 realize that requires some granularity, as you use the  
23 term, to make it work, but I think it might be  
24 important.

1 MS. SMITH: For some people that would require  
2 a change in state law.

3 MR. OXLEY: Amnesty for regulators?

4 MS. SMITH: No. There's no such thing.

5 MR. JONES: Finally, John, isn't the SBSC  
6 doing some work on an aggressive, like, non-wires.

7 MR. SAVAGE: One of the, or two points there,  
8 is one of the cases we make requests to WECC on  
9 transmission cases that we want them to run and we have  
10 a very aggressive, sort of an aggressive conservation  
11 distributed generation case that we've been asking them  
12 to run so that by definition that will get us to take a  
13 look at non-wires alternatives for the Western  
14 Interconnection as a whole.

15 I might also point out another type of work  
16 that I wouldn't, it's a variant of non-wires of  
17 alternatives is that, again, WECC, as part of the  
18 development and the development of its 10-year plan,  
19 did what is called a Resource Relocation Case, which  
20 also takes a look at, do I need to build wires to get  
21 to remote resources versus developing resources in-  
22 state.

23 They zeroed in on California in the first  
24 draft plan. They'll probably be expanding that type of

1 resource relocation analysis to other states in the  
2 next plan.

3 MR. MEYER: Well, thank you all. Let's please  
4 give a round of applause to our panelists. (Applause)

5 MR. MEYER: We'll take a short break and then  
6 resume, so if you can come back in about 10 minutes,  
7 we'll get started on the industry panel. Thank you.

8 (Recess)  
9

10 MR. MEYER: Once again, I'll refer you to the  
11 agenda; I won't introduce these people to you. You  
12 know most of these people already, I expect.

13 Brad Nickell will lead off and then we'll  
14 proceed from right to left across the table here. So,  
15 Brad?

16 MR. NICKELL: Great. Thank you, David, and  
17 thanks, DOE, for the opportunity to come and speak with  
18 you and the group today and also, as always, for your  
19 continued support of WECC's planning processes.

20 Commissioner Smith, also, as she mentioned,  
21 the chair of the WECC board of directors mentioned a  
22 little bit about WECC. I'll expand just briefly.  
23 WECC's mission is to assure the reliability of the bulk  
24 electric system in the Western Interconnection. How  
25 that relates to planning is we do a number of



1 activities related to understanding future transmission  
2 system needs and reliability impacts out here in the  
3 West.

4 Part of those is a particular activity called  
5 the Regional Transmission Expansion Planning Program,  
6 which the commissioners earlier today mentioned a few  
7 different times. This effort, again, funded in part by  
8 the DOE, created a 10-year interconnection-wide  
9 transmission plan that was approved by our board of  
10 directors back in September.

11 My remarks today are going to center really  
12 more down on the details and some of the information  
13 that is available, that was created and available as  
14 part of that effort that may be useful for the  
15 Department in their work and the Triennial Congestion  
16 Study.

17 My role here today, I guess, is I'm going to  
18 set the stage for the subregional planning groups and  
19 to lay out, from a WECC perspective, what resources are  
20 available for the Department's use, and to David's  
21 earlier chide, show some of the facts.

22 (Discussion off the record)

23 MR. NICKELL: This diagram up here shows the  
24 Western Interconnection and the nine WECC-recognized

1 subregional planning groups. You're going to hear  
2 remarks from them about their individual activities  
3 today, but thought I'd set the stage a little bit. The  
4 missions of the individual subregional planning groups  
5 are all fairly similar but the work they do varies as  
6 does their organizational and governance structure.

7           They all do a number of different planning  
8 activities and are coordinated on an interconnection  
9 wide basis through the Subregional Coordination Group,  
10 or SCG. They coordinate on a number of different  
11 things but importantly on seams issues between the  
12 individual subregional planning groups, and  
13 importantly, on creating a common set of transmission  
14 assumptions for use by WECC in the regional  
15 transmission expansion planning process.

16           The previous list that has been widely used  
17 and publicized was called the Foundational Transmission  
18 Project's List. That name turned out to be a little  
19 bit confusing for some and thus was renamed, in the  
20 most recent installment of that, to the Common Case  
21 Transmission Assumptions, and that lines up nicely with  
22 WECC's use of the common case in our 10 and 20-year  
23 planning cases.

24           So, hopefully, there's not any confusion on

1 what those lines are and what their purpose is, at  
2 least from a WECC perspective. As was mentioned here  
3 by the commissioners, that's a great source of  
4 information for use by DOE.

5           From the WECC perspective, our job is to look  
6 at things from an interconnection-wide level. We do  
7 three things. First of all, we accumulate and  
8 disseminate data on the Western Interconnection. This  
9 is both historical information, present information, as  
10 well as future information.

11           This is all accumulated from different sources  
12 in the Western Interconnection ranging from the  
13 balancing authorities and transmission operators to  
14 state and local jurisdictions as well as the OASIS  
15 system that does tagging in the West. We accumulate  
16 lots and lots of data. Most of it is all publicly  
17 available on our website. To the extent possible, we  
18 make everything available to everyone.

19           The second thing is we do models, we create  
20 models. These models are available for use, both for  
21 WECC, as well as for parties across the Western  
22 Interconnection. Most of the models are publicly  
23 available. Of course you have to have the software, so  
24 it's not quite as transparent, although some of the

1 models are, you have to have a confidentiality  
2 agreement because some of them contain sensitive  
3 information related to power flow of the Western  
4 Interconnection.

5           And then lastly is the analysis activities and  
6 the reports that result from those activities including  
7 the 10-year regional transmission expansion plan.

8           Importantly in all of WECC's efforts, we  
9 consider and take into account all the information that  
10 is generated from the subregional planning groups as  
11 well as at the state and provincial level, and to the  
12 extent that we're aware of it, at the more local  
13 planning level.

14           My slide deck today, continuing forward, is  
15 pretty pragmatic as far as my personal comments to DOE  
16 on things that are available that I'm aware of.

17           So, good information to draw from that's  
18 public, back to David's slides, we do have the WECC  
19 Regional Transmission Plan. It's good information.  
20 It's at a high level, an interconnection wide level, so  
21 back to the comments on granularity, it's not very  
22 granular.

23           The level of granularity is really just down  
24 to the WECC path and then major load centers across the

1 Western Interconnection.

2           Subregional Planning Group plans and their  
3 related analysis activities, as Commissioner Jones  
4 mentioned earlier today with the ColumbiaGrid plan,  
5 very detailed plans. They take into account all of the  
6 local load service concerns and reliability concerns.  
7 And this is something that WECC doesn't do at that  
8 level of granularity just because it doesn't need to.  
9 The subregional planning groups and the local balancing  
10 authorities and transmission providers and load-serving  
11 entities take care of those activities.

12           So, if you're looking from a granularity  
13 perspective, look there for more granular data.

14           State and provincial regulatory activities,  
15 this goes back, and there was lots of conversation this  
16 morning about integrated resource plans and I guess the  
17 good information that comes from this is, you know,  
18 what's really being submitted and what's being approved  
19 at the regulatory level, and just as importantly, what  
20 are the state level energy policies that are enacted  
21 and how are they being executed? And I think that last  
22 part is the most important part.

23           When a legislator says we want a 20 percent  
24 RPS, well, that's all fine and good, but it's really

1 hard to turn that into steel on the ground, if you  
2 will, and it's the load serving entities and their  
3 regulators that try and figure all of that out and  
4 that's what turns into the need or not need for  
5 transmission.

6           And then at the local level, and very  
7 detailed, are the utility plans, both transmission and  
8 resource, and that's from that, really, that load  
9 service and obligation to serve perspective.

10           There were a couple of comments from the panel  
11 earlier that I want to touch on, really on emerging  
12 issues. The EPA regs were discussed. There's a number  
13 of different activities going on including some stuff  
14 at NERC related to that.

15           The other thing that was not mentioned that I  
16 think is germane to this conversation is the once  
17 through cooling regulations in California and their  
18 impact on the ability to have local, reliability-based  
19 must run generation in our major, in some of our major  
20 load service areas in the Western Interconnection. So,  
21 something to watch out there.

22           The other thing I want to comment on, and this  
23 is in part from a panel that I sat on with some gas  
24 folks that serve gas up into the Northwest, and all

1 under the comment, where's the gas? And importantly,  
2 as we migrate some of our generation over to gas, we  
3 need to start taking that more into account.

4           We've always assumed in electricity planning,  
5 largely, the gas is needed, it miraculously shows up,  
6 and if we look in the 1990s, the amount of electricity  
7 transmission that was built compared to the number of  
8 pipeline miles. It's, I don't know, five to one or  
9 something like that. Big difference.

10           And so, we need to start paying attention to  
11 that. You couple that with what's going on right now  
12 with the fracking issue. Fracking, or nonconventional  
13 gas plays, right now make up roughly 37 percent, that's  
14 a Wall Street Journal number from not too long ago, of  
15 the gas that's coming out of the ground right now.

16           If something happens and hydraulic fracturing  
17 is limited, what will that do to the gas supply and  
18 what will it do to the gas prices? And will that  
19 change the equation and all of a sudden everybody is  
20 going to be coming back going, hey, maybe this stash of  
21 gas is going to have a rate impact that maybe we didn't  
22 think of?

23           And I'm not sure Commissioner Savage is here,  
24 he spoke on a couple points about transmission

1 congestion and that's part of what we do, it's not all  
2 of what we do, but it is part of the story.

3           We do have to look at congestion, and what is  
4 congestion? Congestion is a metric around asset  
5 utilization, so we have to look at how our transmission  
6 assets are used. Are they used too much? Are they  
7 used too little?

8           And we defined in our most recent set of  
9 analyses three different metrics that are all looking  
10 at asset utilization. The first is risk, the second is  
11 value, and the third is utilization.

12           The first one, the one I'm going to focus on  
13 the most, has the largest reliability slant, if you  
14 will, and that is, is a load able to access the  
15 generation necessary to keep the lights on? And this  
16 is, really, looking at it from a load-serving entity  
17 perspective and can we deliver generation when it is  
18 needed to serve our load?

19           So, from a risk perspective, we really look at  
20 what is the risk of unserved energy. So, smaller lines  
21 have less risk inherently because they're smaller. So,  
22 from the DOE, advice to DOE, so from a national  
23 perspective, what level is important? What's that  
24 level of granularity?



1           There's a little analogy to this from a  
2 highway perspective. I'm always trying to find  
3 interesting analogies, and if we think about the risk  
4 metric, it's really about, during our times of greatest  
5 need, are we able to have an accident on the highway  
6 and still be able to flow all the traffic? And that's  
7 really what that risk perspective looks at.

8           The second metric, or a value metric, is how  
9 we named it, is economic generation able to access the  
10 loads? And that's turning the table looking from the  
11 other direction, the point of the generation. Is  
12 economic energy, or less expensive is how we're  
13 defining economic, able to be delivered to loads when  
14 it is needed? And this is a lot less about serving  
15 peak demand and much more about getting incrementally  
16 cheap generation to market.

17           This is also front and center when it comes to  
18 RPS compliance. If we put in RPS-complied generation  
19 and it's getting curtailed or it's having trouble  
20 getting to loads, which we've seen this year, there's  
21 been many cases of it including what happened in the  
22 Northwest, that really gets in part to that metric.  
23 Can we deliver the energy that we want to deliver at  
24 the times we want to deliver it?

1           This metric is also about connecting, really  
2 connecting large, new, incremental resources to our  
3 major load centers, whether they be conventional or  
4 renewable resources. And the highway analogy to this  
5 is, can our goods and services from other areas be  
6 delivered efficiently and effectively? Think about the  
7 interstate highway system in the U.S. between the rural  
8 areas and the urban areas. And I guess that's the  
9 analogy for that.

10           And, lastly, is the utilization, I call this  
11 the screening. This is just about understanding how  
12 much of that asset is being used over how many hours.  
13 And this really goes to a couple different things.

14           If you're a generation developer and you're  
15 looking at adding incremental generation, this is all  
16 about cash flows, right? This is about, as a line, if  
17 we put a new line in or an incremental resource in,  
18 what did it do to utilization on that path? What was  
19 the incremental utilization of a facility?

20           So, again, these are all screening metrics  
21 that give you an idea on where to dig deeper and  
22 they're pretty quick to calculate and they're extremely  
23 transparent, so you can understand where the numbers  
24 come from.

1           A little bit of WECC-related congestion  
2 information. WECC has a number of information sources.  
3 For past congestion we have our Path Utilization Study  
4 Reports as well as the data in a very easy to use now  
5 spreadsheet format. These are all posted publicly.

6           Under present need, we have a lot of  
7 information on project development, the Common Case  
8 Transmission Assumptions that the Subregional  
9 Coordination Group just got finished doing, as well as  
10 the WECC Transmission Project Information Portal, which  
11 we update every six months or more often as needed.  
12 This contains developer-provided information on the  
13 project, including financial status, permitting status,  
14 basically everything that we can get them to tell us.  
15 And, again, it is all available publicly.

16           And thirdly, on future congestion, we have our  
17 study case results as well as there's other information  
18 that I want to point out at this time, and one is the  
19 NERC Long-term Reliability Assessment and our related  
20 product, the Power Supply Assessment, that really looks  
21 at keeping the lights on, more from that perspective  
22 rather than an overall, "where should we build, or  
23 not," transmission in the Western Interconnection, and  
24 it really looks at deliverability of energy during peak

1 periods.

2           In addition to all of this, and I can't stress  
3 this enough, that congestion analysis is only part of  
4 the equation. One of the things that we focused a lot  
5 on in this last set of analyses is, when we move  
6 generation around or take in different policies, what's  
7 the impact on transmission, and then what are some  
8 efficient frontiers in order to meet those  
9 requirements? And we did a lot of work around capital  
10 cost estimations and comparisons of different  
11 generation and transmission packages, and in the 10-  
12 year plan there's a lot of information on that.

13           And as was mentioned on the earlier panel, we  
14 focused on California this first time. We're going to  
15 be expanding that broader to look at all the major load  
16 centers in the West.

17           Importantly, I guess, from a congestion  
18 perspective is, or congestion analysis perspective for  
19 the DOE study is, where are their efficient resources  
20 that are having trouble getting to major load centers?  
21 And should part of the study be focused on that? I  
22 don't know, but if you're looking in that direction I  
23 think the 10-year plan shines some light on different  
24 things.

1           I'm not going to cover, I threw this up just  
2 so you know what it looks like, not so that you could  
3 read it. We did a number of what we call dashboards on  
4 different congestion metrics and we're happy to help  
5 DOE with interpretation on this. It's very detailed.  
6 But importantly, if you're looking for trends and  
7 you're looking for causation, this is a great place to  
8 start.

9           The numbers don't mean so much as the  
10 differences between the numbers, if you will, and we  
11 have lots and lots of background and detailed  
12 information that we're happy to help with.

13           On that note, there were a couple of  
14 discussions related to recommendations out of the 10-  
15 year plan concerning two paths or sets of paths. One  
16 was 65 and 66, which is a Northwest path into  
17 California, and the other was Path 8. I know Steve's  
18 going to cover the 65, 66 discussion.

19           On the Path 8 discussion, importantly, here is  
20 a follow-up. The Path 8 upgrade, which was discussed  
21 in the plan, is moving forward and you put the path  
22 upgrade in and then that path falls off the list, so,  
23 like the Path 15 exercise, it is a really good example  
24 of how something went from planning through permitting

1 and financial commitment into production, and it's no  
2 longer being talked about. I think you might see a  
3 similar thing if the Path 8 upgrade continues to move  
4 forward.

5           This next slide, these are some of my views on  
6 what does WECC want to see in the study. As was  
7 mentioned before, comparability with previous DOE  
8 studies, what drove the change? We have to have  
9 reconciliation; otherwise it makes for a difficult  
10 story.

11           We also want to see comparability to studies  
12 in the Western Interconnection and to be able to  
13 explain the variances. There will be variances.  
14 That's okay. We don't want to say that it has to tell  
15 the same story, but what we have to do for the broader  
16 public and for all of our stakeholders is be able to  
17 say why it's different.

18           Use the most current information available and  
19 then focus on congestion that limits optionality to  
20 access reliable cost-efficient resources to serve our  
21 future needs, and I think that's very much in line with  
22 what Commissioner Savage had to say earlier.

23           My last slide, things to consider in your DOE  
24 congestion study, is what message will the congestion

1 study send to the industry? And the industry, I mean,  
2 everybody, including the regulators for our industry,  
3 both at the state, provincial and federal level.

4           How will a congestion study support -- or not  
5 -- other planning activities? When will a congestion  
6 study be published and how does this coincide with  
7 other activities?

8           The last congestion study went through a lot  
9 of process and came out a little bit later, I think,  
10 than people had originally anticipated, so here's my  
11 personal concern. If the study doesn't, isn't  
12 finalized and published until, say, early 2013 and our  
13 WECC's next transmission plan comes out and is  
14 published essentially in June, it gets approved in  
15 September, but it's essentially all out on the street  
16 in June, are we going to have timing issues?

17           And so I'm pretty sensitive to that and want  
18 to make sure that we don't set ourselves up for a  
19 discussion that maybe we don't need to have happen if  
20 we just think a little bit about it now.

21           That concludes my remarks, David.

22           MR. MEYER: Okay. Thank you.

23           (Discussion off the record)

24           MR. LANDAUER: Good morning. I'm Marv

1 Landauer from ColumbiaGrid. And when we, when DOE did  
2 the earliest study in 2006, they found some congestion  
3 in the Seattle to Portland area that was identified and  
4 also the Montana to Northwest as a conditional  
5 congestion issue.

6           And since that timeframe, there's been some  
7 projects, and Brad hit on them a little bit earlier.  
8 There's an I-5 Corridor project that's being pursued to  
9 deal with the Seattle to Portland congestion, and then  
10 more recently there are some upgrades planned to the  
11 Colstrip transmission. These are more capacitor  
12 additions rather than a new line, but it's dealing with  
13 the congestion there because there are some resources  
14 showing up that want to be developed in the Montana  
15 area and move towards the Northwest. So, those  
16 projects are moving on to rectify some of the problems  
17 that were identified a few years ago in those studies.

18           And the most recent WECC regional plan also  
19 talked about the Montana to Northwest path. It didn't  
20 have these upgrades in it so it also identified that  
21 there was some congestion there, but then again, that's  
22 being taken care of by these projects that are being  
23 developed.

24           And there's also congestion identified on the



1 two paths from the Northwest to California.

2           And besides the other projects we were talking  
3 about, there's also some upgrades to the California  
4 interties, and these are mostly in the Northwest, to  
5 firm up the existing rating that have been put into  
6 place to make that capacity more available. And Steve  
7 will be talking a little more about more robust  
8 upgrades beyond that, but this was kind of, again,  
9 reinforcing the existing system, trying to get the most  
10 out of it that you can.

11           So, I think there's a lot of projects being  
12 developed in response to this congestion that has been  
13 identified.

14           Just some thoughts here, ColumbiaGrid members  
15 just in the last year have energized about \$400 million  
16 in projects. And they've identified in their committed  
17 projects that they're moving forward with about \$2  
18 billion worth of projects. There's a lot of  
19 transmission construction going on.

20           Now, this isn't all to relieve congestion. A  
21 lot of this is for load service and things like that,  
22 but this is significant transmission construction.

23           And one of the things to keep in mind, and  
24 this was mentioned earlier, that it isn't always, when

1 congestion shows up, it isn't always economical to  
2 relieve that congestion.

3           You have to look at how much capacity is  
4 really desired on the path, you know, how often does  
5 that occur, and take that into account and see because  
6 these projects, and especially if a transmission line  
7 is needed, can be very expensive. And is it worth it  
8 to fix maybe a small congestion problem to build a big  
9 project? You've really got to look at those things.

10           And there were a couple items that were  
11 discussed this morning, I don't have them in the slides  
12 here, but one of them is a lot of concern about gas  
13 generation. There is this, not only are there a lot of  
14 renewables developed, but with the retirements of some  
15 of the coal projects, there's a lot of gas being built  
16 for baseload and for coal replacement.

17           And one of the things ColumbiaGrid is starting  
18 on right now is to look at, you know, we know what the  
19 generation looks like when the machines are spinning  
20 and we analyze that a lot.

21           We're trying to look behind the pipelines and  
22 into the pipelines and the gas storage. Are there any  
23 other issues that could be back there in that part of  
24 the system that we need to address? Because it could

1 have, if there isn't gas available or there isn't  
2 sufficient storage, that could change how the  
3 transmission system looks, you know, the generation  
4 that's on at any time during peak loads, and we're  
5 mostly concerned about like extended peak load events,  
6 too, just to see what the capacity is.

7           So, that's going to be an ongoing activity  
8 that we're just launching into now that we'll be  
9 reporting on in the future.

10           Another thing that we've been talking about is  
11 dynamic transfers and we've been doing a lot of  
12 analysis with Northern Tier to figure out, what is the  
13 capability of the system to have variable transfers?  
14 And this is looking at if you have a variable resource  
15 at one location; you're balancing it with another  
16 resource at another location. The flows in the system  
17 can change and, you know, they can change quickly and  
18 it's not something that the operators are going to know  
19 when they occur.

20           And so we're trying to figure out what the  
21 capacity of the system is when we have these variable  
22 transfers on this system. And I think this is going to  
23 cause us to start doing some different things to the  
24 transmission system to accommodate them. It isn't

1 necessarily build transmission lines. A lot of this  
2 could be automating controls and doing some other  
3 things, reactive support and stuff, to support these,  
4 because we're anticipating there's going to be a  
5 significant increase in the dynamic transfers on the  
6 system.

7           And one other thing I wanted to talk about is  
8 that not all congestion shows up in the production cost  
9 models. And I want to talk about the Puget Sound area  
10 as an example on that.

11           There is quite a bit of congestion in the  
12 Puget Sound area that limits transfers to and from  
13 Canada and limits the ability of the utilities to serve  
14 their loads when they need to, and it's requiring a lot  
15 of dispatch by the utilities when these events come up  
16 to try to work around these curtailments so they can  
17 maintain service to their loads.

18           The issue here is not with the full system  
19 intact. If you look at the system when it's intact,  
20 there's lots of capacity available, but along this  
21 path, and it's kind of a long, skinny path, and we'll  
22 look at it in a picture here in a minute, there are  
23 always facilities out of service for maintenance and  
24 various reasons, and when these facilities are out, the

1 capacity of the transmission system is limited, and  
2 there's a lot of generation sources along that path  
3 that can cause some constraints.

4           So, ColumbiaGrid got together with the  
5 utilities and we developed an expansion plan to deal  
6 with these normal outages that could occur, and it's  
7 quite a bit different analysis where we looked at the  
8 capacity of the system with each facility out. And we  
9 figured out where the constraints were, then we put  
10 that back in and took another facility out, and we went  
11 through a very rigorous analysis, and we came up with a  
12 plan, and this is the plan here, and this is quite a  
13 bit different.

14           And I think we've got very good buy-in from  
15 the utilities and they're pursuing these projects to  
16 relieve these constraints. But what we've got here is,  
17 we're trying to limit the power that's flowing on the  
18 115 kV system, there were some inductors that were  
19 added in the Seattle area. This pushes a little bit of  
20 that power over to the 230 system, and so we're  
21 rebuilding those lines and we're adding a few  
22 transformers to that.

23           This actually performs very well, but there's  
24 no new 500 kV construction here, and that's typically

1 the answer that everybody had, we need another line  
2 through the area. And not only would that be very  
3 difficult to site and get implemented, this actually  
4 performs much better and at a reduced cost.

5           So, I think it's very beneficial to look, we  
6 shouldn't just focus on these big megaprojects through  
7 the grid. Some places on the system, and this isn't  
8 always going to be the case, but there are going to be  
9 some places where I think you need to look at the lower  
10 voltage system and the most efficient way to improve  
11 the, to reduce the congestion that's on the system.

12           And there are lots of reports posted on our  
13 website about this, the analysis we went through on  
14 here for, if people want to dig into that further.

15           Anyway, I think so, I'll pass this onto Steve.

16           MR. METAGUE: Thank you, Marv. So, again, my  
17 name is Steve Metague and I'll be talking with a couple  
18 of hats on in my brief remarks this morning.

19           First, I'll focus on the California  
20 Transmission Planning Group, of which I am a the member  
21 on TEPPC representing that Subregional Planning Group,  
22 and then I'll speak a little bit more from a  
23 perspective of Pacific Gas & Electric Company, an owner  
24 of the Pacific Intertie, and some of the studies that

1 we've been doing and work we've been doing, which I  
2 think I'd like to call to David's attention as well as  
3 the study's attention.

4           The three things I'll focus most on: Summary  
5 of the CTPG, what that's about and what we're doing;  
6 I'll do a Path 66 update and a Path 15 update; and  
7 along the way I'll be echoing many of the comments of  
8 the first panel, maybe perhaps summarized best by John  
9 Savage when he talked about congestion not being the  
10 only metric.

11           I'll be talking about transmission needed for  
12 reliability purposes as well as for economic and public  
13 policy purposes.

14           Let me start with California Transmission  
15 Planning Group, and, again, all of the things I'll be  
16 talking about have been since, and activities, have  
17 been occurring since the 2009 study was completed. And  
18 the California Transmission Planning Group, relatively  
19 new, really wasn't formed until the fall/winter of 2009  
20 and it wasn't until 2010 that we were able to actually  
21 do our first annual cycle of planning.

22           Now, the Transmission Planning Group came out  
23 of kind of encouragement by the FERC, recognition  
24 within the state, that we really need to do a better

1 job in planning in a more holistic way. While we had  
2 the California ISO representing nearly 80 percent of  
3 the state, we had some very significant players not  
4 part of that, and all too often the planning was being  
5 done a little bit too much in a silo and it really  
6 comes home to roost when you're trying to work together  
7 to meet a statewide policy initiative such as our RPS  
8 requirements, and of course in California, they are now  
9 33 percent RPS.

10           So, the California Transmission Planning Group  
11 is all about unifying, coordinating our transmission  
12 planning and especially focused on transmission that  
13 might be needed to meet the 33 percent RPS.

14           I would call to your attention that we're not  
15 a decision-making body around what transmission gets  
16 built. The way this works is that the CTPG is a  
17 collection of very good planners who come together and  
18 coordinate their efforts, but the results are an  
19 identification of transmission needs, not projects, but  
20 needs, and it is at that point that that information  
21 then feeds into the various balancing authorities and  
22 their decision making processes around what  
23 transmission actually gets built.

24           One of the things I wanted to do is bring to



1 your attention, I won't have time to go into the work  
2 that CTP's doing, I'll do it very briefly on the next  
3 slide, but I'll bring to your attention their website  
4 where you can find, this is a very large stakeholder  
5 process, public information, you can find all of our  
6 studies, our assumptions, and kind of what we're  
7 working on now, and of course we've got an archive as  
8 well of things that have been done in the past.

9           Let me just use the 2010 study as a way to  
10 talk about what we're doing within the California  
11 Transmission Planning Group.

12           Now, this was finished in about February of  
13 2011. We did complete our first planning cycle and  
14 identified a lot of high priority and medium priority  
15 needs with a real focus on meeting the 33 percent RPS.  
16 And what you'll find here is that many of the  
17 recommendations have, or many of the needs that have  
18 been identified have gone on to the balancing  
19 authorities and many of the projects have come now that  
20 have been approved, for example, by the California ISO,  
21 and either are in some stage of permitting, siting, and  
22 a tremendous amount of work, really, in Southern  
23 California. And I'll point to this area, this green  
24 bubble, there were a lot of high priority needs

1 identified in that area and, of course, there's a lot  
2 of activity going on.

3 I don't want to preempt the workshop in San  
4 Diego in a couple of days, I'm sure that will be  
5 discussed, but there's been a lot of activity in that  
6 area.

7 In the blue bubble, generally we found medium  
8 priority needs, which really suggested, among other  
9 things, more study is probably needed in this first  
10 cycle. We had limited ability to use our power flow  
11 analysis and set up our scenarios and our cases. We  
12 couldn't study everything under the sun.

13 And what came out of the 2010 study is we need  
14 to take a closer look at that area and we also need to  
15 take a closer look at the three corridors which were  
16 not as deeply, the dive wasn't as deep in 2010.

17 So, now we're at that 2011 study cycle. We're  
18 in the stage where we're going to be, are actually  
19 releasing a first draft of our plan within about three  
20 or four weeks and we're hoping to complete the plan in  
21 February. I'd urge you all to take a look at it and  
22 we'll be having information updated on this, kind of at  
23 this level where you'll be able to see what the  
24 conclusions have been as we take a slightly deeper dive

1 into each of these areas.

2           Now, I'm going to move on to some observations  
3 about Path 66. I'll do less of Path 65, I think many  
4 of you know what's going on with Path 65 and the  
5 potential upgrade of that, which is the DC line into  
6 the L.A. area. I'll be focused more on the three-line,  
7 500 kV AC system that links Oregon and Northern  
8 California.

9           And some of you may be aware that in 2010 the  
10 owners of the Pacific Intertie got together and did two  
11 assessments of that facility recognizing that it's  
12 being identified in WECC studies as a congested path,  
13 recognizing that the DOE has looked at it and the  
14 owners of the Intertie got together and really did two  
15 major studies, joint studies.

16           First of all, utilization. What's the current  
17 utilization of that path? Is there low hanging fruit  
18 like coordinating maintenance, seams issues and  
19 scheduling practices? Is there a way to increase the  
20 utilization of the current path? So, that's one study  
21 that was looked at.

22           And the other one that was run in parallel is  
23 a look at Brownfield opportunities to upgrade the  
24 existing system, and let me focus on that for a minute.

1 We found in that study that there are four major North-  
2 South corridors through Oregon into California, and it  
3 gets a little more complicated in California, but we  
4 did find that brown field opportunities do exist. But  
5 as some of the folks on the first panel said, they're  
6 not without a pretty significant cost. We found that  
7 for all of the cases we looked at it was going to cost  
8 at least \$4 billion to increase the transfer capability  
9 by up to 2,000 megawatts, between, really, the mid C  
10 area down into, really, the San Francisco-Sacramento  
11 area.

12           Very hefty cost and I'll just kind of, again,  
13 repeat what some of the findings were. First, when we  
14 did the utilization study, we found that there really  
15 is not space on the intertie for a new incremental  
16 renewable resource to find new space on that line to  
17 support a long-term firm PPA, and that's kind of what's  
18 often needed to really bring about the development of  
19 renewable resources.

20           So, there isn't space on the line for that.  
21 We recognized, we found that out. But, yet again, when  
22 we looked at the opportunity to upgrade it and looked  
23 at the price tag, we really didn't see that it was all  
24 going to pencil out for the conditions at the time we

1 looked at it.

2           Now, the owners will revisit this subject.  
3 Things continue to evolve. The portfolios of the LSEs  
4 in terms of procurement continue to evolve and  
5 information and new things continue to occur, whether  
6 it's interpretations of regulations, interpretations of  
7 a 33 percent RPS, and things like what kind of out-of-  
8 state resources count.

9           So, a lot of information is continuing to  
10 evolve here and we'll continue to look at this path,  
11 but at this point, no further work is going on to  
12 upgrade that path.

13           And finally, I'll go to Path 15. This is a  
14 path that's received a fair amount of controversy over  
15 the years, and I just want to do a quick update on  
16 that. My company, Pacific Gas & Electric Company,  
17 recognizes that this is going to become a pretty  
18 critical path as we move deeper and deeper into our  
19 resource procurement future.

20           But it is a type of transmission need that is  
21 not driven by reliability alone, not driven by  
22 economics alone, and probably not driven by public  
23 policy aspirations alone. It's really the combination  
24 of all that suggests, at least to us, that a fairly

1 significant upgrade is needed in the Path 15 area.

2           We're doing those studies right now, we're  
3 doing them in coordination with the California ISO, and  
4 we'll be trying to look for opportunities to upgrade a  
5 fairly significant, perhaps 1,500 megawatts of transfer  
6 capability across Path 15.

7           And, interestingly enough, we already did.  
8 For the last five years, in a sense, we've been looking  
9 at Path 15 in conjunction with the California ISO, and  
10 Marv gave an excellent example of the kinds of things  
11 you can do in the short-run. And what we did is  
12 tremendous amount of reconductoring of 230 fixes on the  
13 existing system, and it bought us about five more  
14 years, which is a good thing.

15           But at this point in time, at least from our  
16 company's perspective, we've kind of run out of time on  
17 that or run out of the cheaper fixes to the system, and  
18 it probably is time to upgrade in a pretty significant  
19 way. And we'll be looking for a brown-field upgrade,  
20 by the way, that means using existing corridors to the  
21 fullest extent possible rather than trying to cut new  
22 green field transmission through that area.

23           And I think that's it. So, I hope this has  
24 been helpful and look forward to questions.

1           MR. BAYLESS: See, I didn't go last. Susan  
2 beat me to the last place.

3           I just want to say, Steve was right when he  
4 was talking about the need for those line monitors and  
5 where we've had sags, and he was right on the fact that  
6 we actually had two of those incidents out here: One  
7 into a cottonwood tree over in Eastern Idaho/Western  
8 Wyoming back in '96, I think, yeah; and then we also  
9 had another sag into a filbert tree up in Washington,  
10 probably in the same year. So, we have our sagging  
11 problems as well.

12           I'm going to indirectly answer some of the  
13 questions that were hidden in the DOE question and  
14 answers that they sent out that we were supposed to  
15 address. The answers are hidden in there, maybe not so  
16 obviously, but they're in there. And I'm going to talk  
17 a little bit about what's driving or not in the  
18 barriers to transmission expansion we see in Northern  
19 Tier. They're not mainly congestion, although there is  
20 congestion in the story.

21           I'm going to talk a little bit about how  
22 Northern Tier does use congestion and economic studies  
23 in our planning process to help in evaluating the  
24 transmission plan that we produce. And that plan,

1 again, is a plan that informs those that have to then  
2 carry forward and either decide that they want  
3 transmission and commit to transmission and sponsors  
4 that actually step up to build transmission.

5           The plan, in and of itself, is different than,  
6 say, California ISO's plan where it's actually more or  
7 less a construction plan. Ours informs, looks out into  
8 the future, looks and sees where the flows and the  
9 problems may be likely and seeks to come up with a plan  
10 that will inform on those issues.

11           So, in that, we do congestion type studies.  
12 We do a lot of work that we hope DOE will draw upon,  
13 and I think I also want to sort of emphasize some other  
14 areas that DOE or others should be helping us in some  
15 of these studies because there are some areas that need  
16 to be addressed. Go to the next slide here.

17           I don't intend to go through all these slides,  
18 but just, they'll be posted, but, you know, we got to  
19 where we are through evolution and what may seem to be  
20 congestion on some paths isn't actually. We designed  
21 some of the transmission to be the way it is.

22           The red areas there, the width of the lines in  
23 the map there sort of indicate the relative strength of  
24 the transmission paths between areas of generation and



1 load. And you can see there's skinny lines from the  
2 eastern side of the system to the big bus-bars on the  
3 western coast where all the loads are, except for a few  
4 pockets in the eastern side in Denver and Salt Lake  
5 City and those sorts of areas.

6           They evolved that way because we had a lot of  
7 oil-fired generation on the coast and we had a lot of  
8 waste, hydro in the Northwest, and we evolved into  
9 building coal plants and trying to get the cheap coal  
10 energy delivered to the load areas. And we had a lot  
11 of capability and capacity on the coast to actually  
12 follow loads and do things that were capacity-related  
13 and we needed to get energy delivered to the coast.

14           So, when you deliver energy, if you lose a  
15 line, you can trip a generator to stay in reliability  
16 constraints and so forth so you don't necessarily have  
17 to spend all that money on a big expensive transmission  
18 system that's totally redundant to get over that long  
19 distance. It's a long distance to those eastern parts  
20 of the system, very expensive.

21           So, now we've evolved. We actually had  
22 another big event here and that was disaggregation of  
23 generation, transmission, and distribution down in the  
24 early or late '90s and early 2000s, where transmission

1 providers, we're now customer-driven. We don't build  
2 transmission unless customers desire it and wish to pay  
3 for it, so congestion's a little bit trickier now in  
4 that there may seem to be congestion, there may be  
5 conditional congestion. Let me see, is that all I  
6 wanted to say on here?

7           Anyway, two more points on this one and I'll  
8 switch. Those long skinny lines were developed sort of  
9 hand-in-glove to just fit the resources on the other  
10 end, the dedicated plants, and there's not a lot of  
11 margin in there. And so when we get, in a minute,  
12 talking about conditional congestion I'll talk about  
13 how that relates.

14           Anyway, so, given that history, these are some  
15 of the barriers we see in Northern Tier now to actually  
16 getting transmission developed and congestion really  
17 isn't the biggest issue or focus, it's really what's  
18 behind causing what may be perceived as congestion.  
19 And if there is congestion, it really, in our  
20 definition, I think, has to be looked at is there firm,  
21 committed generation that can't get to customers over  
22 transmission that's been committed for and paid for?

23           If there's conditional resources out there  
24 that would like to get through the system but haven't

1 committed to pay for transmission, but they're out  
2 there, I'm not sure that's exactly the congestion that  
3 should be driving things.

4           Transmission takes a long time to plan and  
5 build. We require firm commitments from customers.  
6 When we get firm commitments from customers we end up  
7 looking at what's needed to reliably serve those  
8 customers.

9           We haven't seen in the Northern Tier system,  
10 because the lines are so long and expensive, that it  
11 isn't really congestion that's going to justify one.  
12 You're going to need a lot of congestion savings,  
13 especially these days when the marginal plants are gas  
14 plants and the gas prices don't differ that much  
15 around, and you would need a lot of congestion relief  
16 to justify it on its own merit.

17           The other big thing that's sort of restraining  
18 us here is what Steve and his state are going to do.  
19 There's a lot of uncertainty as to what the customers  
20 really want to buy.

21           Our system, Northern Tier, is sort of stuck  
22 between really good wind and big loads and the really  
23 good wind guys want to get on the system, displace  
24 other parties that have firm transmission rights, and

1 get to the customers, but now even the customers aren't  
2 certain that they're wanting to buy that. So, that's  
3 one of our big issues at the moment.

4           And our other big issue is, when they do  
5 decide, you can put up windmills or some of the  
6 renewables and solar a lot faster than you can build  
7 transmission now. It's, you know, you can put up a  
8 resource in a couple years. It takes 5 to 10 years to  
9 permit and get some of these lines built across the  
10 system, like Darrell and others are finding out with  
11 some of the projects we're looking at.

12           We've got some other developing issues I'll  
13 talk about in a minute.

14           So, one of the questions was, did we agree  
15 with the 2009 DOE study? And I think we basically did.  
16 Critical congestion looked like, you know, the Seattle  
17 to Portland issue is there. Just by way of passing,  
18 some of the projects in our plan will actually help  
19 alleviate that to a degree.

20           We do see that there is the potential for new  
21 congestion areas coming up as customers commit and want  
22 to build and wind is expanded on our east side and we  
23 then struggle to get transmission built to integrate  
24 wind and integrate generation into our system.

1           We do have wind coming on the system and we  
2 are endeavoring to get transmission built as fast as we  
3 can. And, again, this timing issue of how fast  
4 resources can come on versus how fast transmission can  
5 come on leaves one, therefore, requiring sort of  
6 conditional, firm transmission for a while until the  
7 transmission can catch up.

8           So, I'm not quite sure whether we have  
9 conditional congestion or not. Conditional congestion  
10 is defined at, are there economic resources in one area  
11 that if developed will cause congestion. And in that  
12 red there is our Northern Tier system. It connects  
13 into the Washington area into the ColumbiaGrid system,  
14 but it also connects into the WestConnect and into the  
15 California systems. We don't directly connect to  
16 Canada at the moment, but we do through ColumbiaGrid.

17           So, we're waiting to see, there's a lot of  
18 wind developers that want to connect to leases or WREZ  
19 areas up here that are in Wyoming and Montana. Good  
20 wind, good capacity factor, but very expensive  
21 transmission.

22           We did a study, in the Wind Integration Study  
23 Team that ColumbiaGrid and Northern Tier jointly  
24 sponsor, to look at that, and even with a good capacity

1 factor it's still very hard unless customers step up to  
2 commit and want to buy and fund that transmission.

3           You know, it's not a, "build it and they will  
4 come." You can't afford and you can't have the  
5 customers, in especially a rural area, try to foot the  
6 risk and the bill for something that they might come  
7 to, and especially when they're talking about, "they  
8 may not come."

9           So, that's our system. If some of that wind  
10 gets developed we'll have to have transmission  
11 committed to it that delivers it through or out of the  
12 area. And so if it is committed, then we'll start  
13 having some conditional congestion show up that will be  
14 looking at transmission to fix.

15           The 10-year plan study that we do gets into  
16 that discussion in that we look at scenarios that look  
17 at what will the flows be if somebody committed to that  
18 and if that wind was developed. We look to see out 10  
19 years with scenarios on different levels of wind  
20 developed in these conditional congestion areas. If  
21 that wind is built, how will the flows change and what  
22 transmission might solve that?

23           Really good wind, this just emphasizes where  
24 the good wind is potentially developable and where our

1 system, and the ColumbiaGrid system, is included in  
2 this one.

3           We're not sure of all the reasons in  
4 California why parties aren't committing, but these are  
5 a bunch of them. I'll let Steve talk about those.

6           We are doing a lot of studies. So, as you  
7 heard from Brad and others, they're doing studies. We  
8 would hope DOE would draw from a lot of the study work  
9 that's going on related to congestion and the other  
10 reasons for building transmission, this is where you  
11 can get some of that data. The Historic Working Group  
12 at WECC does a really good job of looking at historic  
13 congestion, both now scheduling and actual flows.

14           They're working on a new one. They've just  
15 published one for 2010-11. The RTEP Brad talked about  
16 is a good one. And then the Northern Tier Transmission  
17 Group has a really good page and set of data on  
18 historic use on its system, both reservations and use,  
19 that you can pull off the website. So, we'd hope DOE  
20 would work with that.

21           There are some areas where we think there's  
22 additional studies needed to help with the discussion  
23 about where transmission should be built. Granularity  
24 is a big one, both granularity in when you do

1 production cost modeling that looks at what the future  
2 load patterns and flow patterns might be over a year.

3           Right now the models we use look at one-hour  
4 scheduling periods and that's really hard to get a good  
5 sense from where reserves and some of the other issues  
6 that are now requiring us to look close at transmission  
7 need to be.

8           If you can use like the Plexos model and get  
9 data to draw up things that look at like five-minute  
10 intervals, that would be a big improvement and we're  
11 still struggling to get the National Labs and others  
12 going on some of that. And the Labs have done some  
13 good work on that, I think, through various places, and  
14 the WECC-VGS group is involved with that to a degree.

15           The other issue is the granularity, and I've  
16 got some slides I threw in at the end we'll talk about,  
17 which is locational sort of granularity. Do you try to  
18 organize your studies into balancing areas so you can  
19 do better EIM sort of modeling, or do you look at  
20 transmission-constrained areas, which actually get more  
21 into the transmission issues?

22           One of the big issues that's surfacing now  
23 that affects where and how you can use transmission,  
24 where it needs to be improved to move regulation and



1 balancing around the system, is the dynamic transfer  
2 capability issue.

3           Transmission lines, especially the long  
4 distance ones, we tuned and propped them up over the  
5 years to get maximum transfer capabilities by using  
6 switch capacitors and reactors and remedial action  
7 schemes that are manually armed and switched in a lot  
8 of cases, and they're sort of like the balloons in this  
9 diagram on this flimsy bridge that the cars are going  
10 over. If you know you're going to have five cars on  
11 the bridge, you put a lot of balloons on there to hold  
12 it up so they can go across. You put a lot of switch  
13 capacitors on; you put RAS schemes on so if you have a  
14 problem you can get cars off the bridge, that sort of  
15 thing.

16           If those are manually switched and your  
17 switching interval is too short or you have too many  
18 things going on, then all of a sudden you end up with  
19 one car on there and you don't take the reactor off,  
20 you can be out of voltage limits and have problems with  
21 high voltage. If you think you're going to have one  
22 car next hour and the wind develops and you actually,  
23 in the next scheduling interval, and you end up having  
24 five cars on there and you've only got one reactor on,

1 you're going to have a voltage collapse issue.

2           So, there's problems with this variability  
3 that shows up with wind as far as delivering  
4 transmission across paths. And if you're a wind guy  
5 and you're looking for self-supply of regulation from a  
6 remote gas-fired thermal plant that's going to regulate  
7 and you can't get across that path, you've got an  
8 issue.

9           And Bonneville's noted many of these issues on  
10 their system as well as other systems are starting to  
11 recognize it now and we're trying to get limits  
12 described so we know where they are and then we can get  
13 them fixed.

14           The Path 3, which goes from BC to Bonneville's  
15 system is shown in the nomogram and there's a variable  
16 transfer. This is a draft, we're still working on it,  
17 so don't take this as gospel, but it shows the  
18 relationship. There's a variable transfer amount you  
19 could have on the path shown on the Y-axis, and on the  
20 X-axis, there's the static old traditional more static  
21 sort of transfers.

22           In the old days we had to hold transfers  
23 between balancing areas constant over the hour. There  
24 are certain dynamic schedules now used to follow load

1 across paths, but they're more or less relative to some  
2 of the real variability now showing up from some of the  
3 renewables and variable generators, they're relatively  
4 static.

5           On Path 3, if you wanted to use that to  
6 deliver regulation from Canadian Hydro, for wind in the  
7 states, for example, and you wanted to ship, the static  
8 rating for that path is 2,600. That's the far out  
9 point on the bottom.

10           If you wanted to use it all instead for  
11 variable transmission, you can only use it up to 600  
12 megawatts and you'd be using like 20 percent or 25  
13 percent of that path. And Dave and Ann can explain  
14 this much better than I. They've been intimately  
15 involved in this. But if you think you're going to  
16 have a 2,600-megawatt ability to ship regulation across  
17 paths, it may be limited greatly by this variable  
18 transfer capability.

19           So, it's a thing we're trying to come up with  
20 and make sure we see where variable transmission is  
21 congested. And there seems to be a lot of desire for a  
22 variable transmission at the moment.

23           There are ways to fix it, but they take time  
24 and they're expensive, so they need to be identified

1 and resolved. And then you've got the issue of  
2 scheduling. How do you schedule on the protocols and  
3 all of the politics that go along with how you allocate  
4 it?

5 Congestion metrics. A lot of these lines,  
6 especially Path 8, for example, and some of the other  
7 lines, Bridger, for example, a lot of those paths were  
8 designed just to fit the generation on the other end.

9 Now that we've got wind and others coming  
10 along that could actually displace price-wise that sort  
11 of generation, what do you do if they get connected  
12 somehow without expanding the system? And who pays?  
13 These are issues that come around that.

14 But the metric for congestion, if you look at  
15 Path 8 or you look at Bridger West, they used it all  
16 the time, but that's how they were designed to be. So,  
17 actually the ratepayers are getting very good use of  
18 those lines, so you don't want to just strictly look at  
19 flow loadings to determine whether or not you need to  
20 expand.

21 Just real quickly, in our transmission  
22 planning process we do use congestion analysis or  
23 economic study analysis and I'll just show you how we  
24 do that. We actually try to look using the production

1 cost models out in the future to see where the  
2 generation is going to potentially be and how it would  
3 load our system and where do we need to really worry  
4 about expanding and where reliability issues may show  
5 up.

6           We run a production cost model to actually  
7 look at the flows on the paths within the system and we  
8 pick from those hours, over the year, the future year,  
9 we're analyzing, we pick hours out of the production  
10 cost model that showed the stress levels highest on the  
11 paths that are the reliability limiting paths.

12           We take that dispatch, that's best guess of  
13 dispatch, out in that timeframe because you don't know  
14 what the contracts are going to be, you don't know what  
15 the actual usage is going to be from various commercial  
16 perspectives. This is the best guess you can do out in  
17 the future. You take that, you move it over to the  
18 power flow program and you run your reliability N-1  
19 type study.

20           So, it's very useful in doing that, so we  
21 encourage those models to be developed. And the  
22 granularity issue, about how do you set it up so you  
23 can get the right flow information, is a piece that  
24 we'd like people to look at.

1           This just shows the, what was the foundation  
2 list is now the CCTA list that the Subregional group  
3 puts together, and those purple lines there are lines  
4 in our latest transmission plan that are bridging the  
5 areas East to West.

6           They are expensive. They are also a part of  
7 the Rapid Response Pilot Project lines identified and  
8 I'm not quite exactly sure how that relates to the  
9 energy corridors, but they're on the list.

10           So, we also did scenarios to try to see where  
11 conditional congestion might occur and what would be  
12 needed to cure it if wind was developed in the Wyoming  
13 and Montana areas. We did a number of scenarios.

14           These are the potential fixes, both AC lines  
15 and DC lines that if that wind developed in 3,000,  
16 6,000 megawatt increments, we'd need to have somebody  
17 step up and build if they actually committed and needed  
18 that wind to be moved.

19           You'll notice, those don't line up with  
20 Steve's map of where California is internally talking  
21 about building transmission, and that's part of our  
22 problem. We really need transmission plans to sort of  
23 align before you can actually start working on them.

24           This is just a picture of granularity. If you

1 looked at the Northwest, this is how you'd set up a  
2 model relative to balancing areas that you might use  
3 for an EIM sort of modeling using production cost. And  
4 this is what you'd look at if you were setting it up to  
5 look at transmission-constrained areas and set up the  
6 model.

7           And what we'd really like to do is get these  
8 models set up so we can change and map from all these  
9 different sorts of organizations and from the  
10 production cost model over to the power flow. It's a  
11 big effort and if somebody could help, like DOE, on  
12 some of that sort of thing, it would be very useful.

13           And with that, I'll be quiet.

14           MS. HENDERSON: All right. Well, I'm the  
15 last, so, my name is Susan Henderson and I'm with Xcel  
16 Energy. I'm going to be talking about the CCPG area.

17           First, I'd like to say that I'm the face up  
18 here but I would like to thank Jeff Hine and Bob Easton  
19 who helped me with this presentation.

20           So, where we are is it's basically the  
21 Colorado-Wyoming area, but before I get into the  
22 specifics, you're going to hear the common theme  
23 throughout, and we really want to stress that along  
24 with what was mentioned earlier, in the fact that we

1 agree that congestion is only one of the metrics and  
2 that it really needs to be looked at more from an  
3 economic standpoint, from a reliability standpoint,  
4 from a public policy standpoint, and so we would like  
5 to echo the same comments that the commissioners raised  
6 this morning.

7           In addition, we are also very big advocates of  
8 using the structures that are already put in place and  
9 the planning processes that are already put in place.  
10 CCPG highly utilizes its own studies and that of the  
11 WECC and the TEPPC studies and so we really say go and  
12 look at these studies and that's where a lot of my  
13 comments are going to be coming from, is using the WECC  
14 and TEPPC studies that were produced.

15           So, we really encourage DOE to go out and look  
16 at those documents and review them because there's some  
17 great information that's been vetted in this robust  
18 stakeholder process and that adds value and credibility  
19 to those processes.

20           And the other thing is that we have the  
21 consistency on data, make sure that you're using the  
22 most updated information available, and WECC and TEPPC  
23 provide that. Those datasets have really been reviewed  
24 and go through a lot of scrutiny this last time.



1           So, it's really important that if you're  
2 looking at the West as a region, that you are using  
3 some of that coordinated data and the most updated  
4 data.

5           With that, I'd like to talk to you about the  
6 Colorado area and I'm going to stick specifically to  
7 WECC paths, and we call them TOTs out in Colorado, and  
8 if you notice, we're the most Eastern portion of the  
9 Western grid and are the farthest away from any of the  
10 major load centers off the Pacific.

11           Realistically, we have five TOTs within the  
12 state of Colorado, but really only three of them are  
13 monitored by WECC, and that would be TOT 1A, which is  
14 in the Northwest corner, TOT 3, which separates  
15 Colorado from Wyoming, and TOT 2A, which is in the  
16 Southwest part of the state.

17           I wanted to talk about some of the reasons TOT  
18 5 used to be congested, but a lot of that has been  
19 changed due to the way that we're operating in  
20 generation. Within the state of Colorado we've built a  
21 lot of generation on the Front Range where it used to  
22 be a lot of the generation was on our Western Slope.

23           So, transferring East to West isn't really an  
24 issue anymore. I also want to note that geographically

1 Colorado is pretty difficult to traverse East to West  
2 being as that we have several 14,000 peaks and  
3 transmission line is kind of difficult to get and  
4 operate over that type of altitude. So, we are kind of  
5 geographically constrained as far as that point goes.

6 So, that's our map. And what we wanted to say  
7 is that we've been building a lot of transmission.  
8 We've been dealing with a lot of the congestion issues  
9 and the WECC study plans that have come out, that  
10 future-looking TOT 1A, there's really no issues with  
11 it. Nothing came up on the congestion studies.

12 TOT 2A, there's really none, and TOT 3, what  
13 issues there were with, I think you would call them  
14 conditional congestion, whereas if you built a lot of  
15 Wyoming wind and brought it down through the state of  
16 Colorado, there was some congestion but there have been  
17 projects that have been proposed to help with those  
18 type of congestion issues if and when that develops.

19 And what we've tried to do is always reference  
20 where we're getting these from, and on our next slide  
21 here, we actually provide those links for you. We try  
22 and make it as simple as possible and spoon-feed the  
23 information where we can. So, if you take and click on  
24 those links, it should lead you to the results of those

1 studies.

2           So, really, today, what we're looking at is  
3 TOTs 1A, 2A, and 3 were historically congested, but  
4 this is changing with the loads going down, the  
5 resources being located on the western slope, or within  
6 the Front Range, and with new transmission line that's  
7 being built within the state of Colorado to bring some  
8 of that new generation in the Front Range up to the  
9 loads.

10           So, the WECC 2019 and 2020 studies show no  
11 congestion issues along these paths unless, of course,  
12 you get that Wyoming wind built and then it's going  
13 through the state. So, we really look at that. That  
14 2019 study is the Resource Relocation Study that the  
15 commissioners spoke of this morning and it is really  
16 interesting and it shows you what happens if resources,  
17 I think it's 12,000 gigawatt hours, were relocated  
18 throughout the Western United States. And it's a very  
19 interesting study.

20           I also wanted to bring up that Colorado is  
21 quite progressive in its transmission planning  
22 initiatives and trying to lead the way, some of our  
23 success is that we have consideration of trying to  
24 build transmission or have plans, so that we can access

1 renewable zones, and we call that our Senate Bill 100  
2 Transmission Projects.

3           And what this is so that the jurisdictional  
4 utilities have a plan to access our renewable zones  
5 that were identified within the state and bring them to  
6 load.

7           This is our transmission plan, so if you were  
8 to "classify" these projects, they are somewhat public  
9 policy projects along with some reliability mixed in  
10 there and some of the economics together.

11           So, this is our plan for transmission project.  
12 This is some information about in-service states and  
13 the status of them, so some of them already have their  
14 certificate of need. Some of them are already being  
15 constructed and some of the ones that are being  
16 constructed or have received their certificate of need  
17 are included within the common case transmission  
18 assumptions for the high probability of being built  
19 within the next 10 years.

20           So, we wanted to specifically answer some of  
21 the questions that DOE posed to us. And so, for the  
22 question one that says, hey, did we get the 2009  
23 congestion studies right? What could we have done? We  
24 said, yeah.

1           For the time that the 2009 was done, it was  
2 pretty good for our area. But right now our area is  
3 becoming, things to consider going ahead is that the  
4 loads are being dropped off, again, that our generation  
5 on the Front Range has increased, and that we have been  
6 building lines within the state of Colorado. So,  
7 really look into some of those things when you're  
8 looking through.

9           The second question that you asked is, what  
10 should you look at when evaluating congestion? And it  
11 says, you know, depend on what your demand, what your  
12 load growths are, the ramifications of Order 1000,  
13 which is going to be happening and we're going to be  
14 meeting, so, how are those orders going to be  
15 implemented, and the possible shift of public views on  
16 development of renewables.

17           We saw number three and four as kind of linked  
18 in asking where is our congestion today and where is  
19 our congestion going to be tomorrow, and so we kind of  
20 looked at that and we're heavily relying on WECC's  
21 studies this year that if you look at that 2010 case  
22 study going around with the relocation of generation  
23 sources, it does show that Colorado could experience  
24 some congestion north to south if you build Wyoming

1 wind.

2           And, again, I think that that's one of the  
3 best paths that you're going to have seeing that we're  
4 limited East to West, geographically constrained.

5           So, are there new, are there other things that  
6 you need to be looking at as far as to solve these  
7 congestions? There's a lot of new technologies that  
8 are coming out. To Marv's point, that you can improve  
9 some of the underlying systems or put in phase shifters  
10 or put in other low cost solutions, but they do require  
11 a higher level of detail to really look and vet out  
12 those solutions.

13           And then for references, they are listed on  
14 the previous slide. Please use that. And that's one  
15 of the biggest reasons we love the PowerPoint  
16 presentations is that we can embed those links and  
17 hopefully get you to exact spots. If not, please feel  
18 free to contact us and we will get you that  
19 information.

20           So, that's my short presentation on the CCPG  
21 area. And, again, I'd like to thank Jeff Hine and Bob  
22 Easton for helping pull this information together.

23           MR. MEYER: Well, thank you all. I think I  
24 have some homework to do, and all of us, frankly, on

1 the project. You've given us a lot of great stuff to  
2 think about and resources to work with, or information  
3 sources to go to.

4 Brad raised the question of what are we  
5 shooting for in terms of the delivery date. I'll be  
6 candid with you, we are very set on delivery within the  
7 calendar year 2012. One of the problems that I've  
8 encountered before in these studies is the interagency  
9 clearance process is daunting and not very predictable.

10 It's not that people object to it, they just  
11 say there's a lot I don't understand here and I have  
12 some other things that are due tomorrow, so I'll just  
13 push this over a stack or two on my desk and come back  
14 to it next week, and that kind of thing. But I think  
15 we, many of you know Lauren Azar who is with the  
16 Department now, and I think she will be a resource that  
17 I can rely on to help move the review along when a  
18 nudge of some kind or other is needed.

19 So, let me raise, see here if some of my  
20 colleagues have questions they want to raise. Joe has  
21 a point or two and Elliot as well, I see.

22 MR. ETO: My name is Joe Eto and I'm with the  
23 Lawrence Berkeley National Laboratories supporting the  
24 Department of Energy in the preparation of the 2012

1 study. And I wanted to ask Mr. Metague if he could  
2 comment on something that the Department found in the  
3 2009 study when they designated the San Francisco Bay  
4 Area as an area of concern.

5 I'm wondering if you can comment on whether  
6 there have been changes in either the load, local  
7 generation, or new transmission since the time of the  
8 2009 study, factors that the Department should consider  
9 in reevaluating that identification of that area as an  
10 area of concern.

11 MR. METAGUE: Joe, thank you for the  
12 opportunity and I'll reflect on the San Francisco Bay  
13 Area for you for a moment. And, yes, there have been  
14 some things that have occurred since 2009. The two  
15 most significant, one is that the Trans-Bay Cable, a DC  
16 cable from Pittsburgh, California, into San Francisco  
17 is now operational. That went operational toward the  
18 end of 2010 and is certainly helping with yet another  
19 source to San Francisco, which is great.

20 The other thing that has occurred is the shut-  
21 down of one of the, really, World War II vintage gas-  
22 fired power plants in the city of San Francisco. The  
23 Potrero Plant has now been shut and closed. So, those  
24 dynamics continue to go.



1           As to the Bay Area, the greater Bay Area, and  
2 I'm going to really look at seven counties that  
3 comprise the greater Bay Area, there certainly still  
4 are some issues that deserve some attention, many of  
5 them driven by reliability, both PG&E and the  
6 California ISO are doing I'll call it pretty exhaustive  
7 studies on perhaps the most appropriate ways to address  
8 those transmission issues.

9           A lot of them fall into the category that,  
10 again, Marv described earlier where it's not a big,  
11 bold, new, high-voltage transmission line as much as  
12 reconfigurations, reconductoring, and doing substation  
13 work to try to really make sure that we're squeezing as  
14 much as we can out of the existing assets.

15           So, in short, I think things have changed.  
16 There still are needs in the Bay Area. I can't point  
17 to a single project that really needs support from DOE  
18 at this point, but we're certainly in the midst of it  
19 and I know among the references, just like Sue and  
20 others, I had a lot of website references. Of course,  
21 the California ISO is currently engaged in a cycle of  
22 transmission planning for the State of California,  
23 including the Bay Area, and PG&E has suggested quite a  
24 few transmission fixes for the Bay Area. They're

1 easily accessible for you to look at.

2 MR. ROSEMAN: Elliot Roseman with ICF. I'd  
3 like to ask the panelists here a question that I also  
4 put to the panelists in the Philadelphia workshop and  
5 it has to do with what your thoughts would be with  
6 regard to what the timeframe is that the study that DOE  
7 is undertaking now should look at? Should it be more  
8 short-term? Should it be longer-term? Should it look  
9 at just projects that are known or can be where there's  
10 sites already and have been approved? Should it look  
11 at different scenarios where it's getting a little more  
12 speculative, looking at different assumptions?

13 What are your thoughts, without reinventing  
14 the wheel, of other things that are being done, of what  
15 the DOE should focus on here?

16 MR. METAGUE: I'll be happy to be first. I'm  
17 sure everyone's got something to say about that. And  
18 from my perspective, really looking at the 2020, 2021,  
19 maybe 2022 timeframe are the right timeframes to look  
20 at given the long lead time for transmission to look at  
21 shorter really, I think, makes a lot of sense. And  
22 then you've got to balance that with trying to be  
23 realistic in the assumptions that underline the study,  
24 and the further out you go in time, the more

1 challenging that gets.

2           That's not to undermine the efforts that WECC  
3 is doing on the 20-year plan and all that sort of  
4 thing, but I think the timeframe that I just mentioned  
5 is probably the most beneficial.

6           MR. BAYLESS: Just a quick comment. Given the  
7 long length on lead times for transmission and some of  
8 the bigger policy issues that may be changing things  
9 way out there, I think involvement and timing of the  
10 study to look at where the WECC, for example, is going  
11 on the long-term planning tool, 20 years out, you know,  
12 might be warranted to be involved or looked at.

13           MR. LANDAUER: Yeah, I think once the  
14 resources are nailed down, our job gets real easy, and  
15 that's, you know, then just start working on it and  
16 there's less uncertainty. But trying to figure out  
17 where those resources are going to be located is, I  
18 think, one of the big things, and that's getting out  
19 into, you know, probably the 10, maybe even 20-year  
20 timeframe.

21           Because it's always good to look out, you  
22 know, you're not making a lot of decisions in the real  
23 long-term timeframe, but it's kind of guiding where you  
24 might be going with the interim fixes you're doing

1 along the way.

2 MR. NICKELL: I think both this panel and the  
3 panel earlier today sent a pretty clear message on  
4 trying to leverage and use existing information to the  
5 extent possible. So, that in and of itself is going to  
6 limit the timeframe essentially out to 10 years, and I  
7 would agree with the other panelists that that's a good  
8 timeframe. Maybe next time, it would be nice to look  
9 out further.

10 To Rich's comment, I'm just not sure what  
11 information you're going to have that's gone through  
12 some other stakeholder process that you're going to be  
13 able to draw from.

14 The other thing, a couple things, one is in  
15 the next 10 years, or at least from our data, 2009 to  
16 2020, this is Census data from U.S. and Canada, there's  
17 going to be another 10 million people in the Western  
18 Interconnection, plus or minus, so we have to think  
19 about that. And it's really hard to look in the  
20 rearview mirror at historical congestion, although that  
21 is an indicator from a trending perspective, where is  
22 stuff growing? But we've got to really forward project  
23 that just for no other reason, population.

24 The other thing, just to make mention of a

1 couple, I know a couple folks mentioned 12,000  
2 gigawatt-hours of relocations that were moved in the  
3 conditional congestion just to make sure there's not  
4 confusion on what the numbers are, that was about 3,000  
5 megawatts of installed capacity. So, not to get  
6 gigawatt-hours and megawatts confused.

7 MR. MEYER: One other point that I meant to  
8 address, Marv raised the question of what we call the  
9 Rapid Resource Response Group. Let me explain a little  
10 bit about that. There is an interagency group that's  
11 been created now, very senior people from Interior,  
12 Agriculture, DOE, CEQ, FERC participates as well, and  
13 people from the Defense Department participate, and  
14 this is a recognition by the Feds that with respect to  
15 the review, the process for reviewing pending  
16 transmission projects, where the federal agencies are  
17 involved, that we really need to be talking to each  
18 other, that the several agencies need to be talking to  
19 each other and coordinating more. And so that led to  
20 the establishment of this group. It's got a generation  
21 wing focusing mostly on renewables projects that are in  
22 the pipeline, and then a transmission wing that focuses  
23 on pending transmission projects.

24 And the transmission wing has selected seven

1 projects as sort of pilot projects to focus on, more or  
2 less, I would say, as case studies in the sense of  
3 recognizing that these projects are midway in the  
4 review process, are there things that we can do now to  
5 facilitate a coordinated, timely review process for  
6 those remaining attention to those particular projects?  
7 But beyond that, what can we learn from those projects  
8 relevant to all of the other projects that are further  
9 back in the pipeline?

10           And so this is a very fruitful thing for us to  
11 be doing, but it has, it's sort of proceeding more or  
12 less in parallel to the congestion study and there's no  
13 particularly direct relationship.

14           But I appreciate your interest in those  
15 projects, in that effort, and we're very aware that  
16 particularly here in the West, there is concern about  
17 the need to improve that coordination process for the  
18 review, for federal review of the transmission project.

19           MR. COOKE: Know that 216 of the Federal Power  
20 Act also has, oh, I'm Lot Cooke, General Counsel's  
21 Office, Department of Energy. 216H is a coordination  
22 provision for the federal agencies for permits for  
23 electric transmission, federal permits. And we have  
24 just released a proposed rule, it was just published in

1 the last day or two, and it's open for comment period,  
2 so if anybody wants to comment on that, we'd appreciate  
3 it. Thank you.

4 MR. MEYER: Any other questions for our  
5 panelists before I take them off the hook here? Okay,  
6 we will declare the second panel closed and at this  
7 point if there are members of the audience here who  
8 want to offer comments to us, we'd be happy to hear  
9 from you.

10 MR. HAMILTON: Thank you very much. Really  
11 appreciate, again, this invitation to make a few  
12 comments. I'm Roger Hamilton, Western Grid Group. We  
13 are advocates for transmission primarily for renewable  
14 resources of all sorts. It's becoming increasingly  
15 more difficult because the panelists here, and the  
16 regulatory, state regulators who were in the previous  
17 panel, we agree with them now. We used to have a  
18 better shot at taking exception to some of the remarks,  
19 but I must say that I've very encouraged by what I  
20 heard.

21 I did want to point to a couple of things that  
22 I think either weren't properly emphasized or we need  
23 to; you need to take another look at. The first is the  
24 fact that a lot of what we're doing, what public policy

1 is geared to, is it's very dynamic. The situation in  
2 California is a great case in point.

3           The \$4 billion that Steve mentioned it would  
4 cost to increase transmission capacity on COI is a very  
5 good example, and then that dovetails perfectly with  
6 Governor Brown's policy to build California renewables  
7 and not to look at imports before the state itself  
8 takes advantage of some of the benefits for job  
9 employment and reducing greenhouse gasses in the state  
10 itself.

11           So, it's very dynamic, and I wanted to draw  
12 your attention to a couple of things, first, some  
13 principles that we as renewable advocates always want  
14 to maintain. First, we actually believe in the laws of  
15 chemistry and physics and so we think that anything we  
16 talk about in terms of future energy policy has to  
17 consider climate change as a major consideration  
18 despite the fact that we don't have a regulatory system  
19 or federal policy in place to reduce greenhouse gas  
20 emissions.

21           We think as the planet continues to cook,  
22 particularly the southern portion of the United States,  
23 two things will happen. One is consumers themselves  
24 will demand a change in the resource portfolio, and



1 second, it occurred to me as I was sitting listening to  
2 the problems we have in getting Montana and Wyoming  
3 wind out to the coast and to the South, that may solve  
4 itself because a lot of people from the southern areas  
5 of the country, which we find uninhabitable in 20 or 30  
6 years, may be moving north. So, we'll actually have  
7 load in Montana and Wyoming that we can serve locally.

8           But I'm not really trying to be facetious  
9 here. We have some real work to do in this area. The  
10 principle, which I heard from all the panelists, of  
11 maximizing deployment of energy efficiency, demand  
12 response, and even distributed generation with the  
13 incredible disappearing act of the cost of PV rooftop  
14 generation at the distributed level, needs to be  
15 considered as we do our transmission corridor analysis.

16           We need to maximize the use of the existing  
17 grid and corridors. Marsha Smith referred to the  
18 potential for that. We need to encourage technology  
19 innovation.

20           I hadn't heard about Steve Oxley's footballs,  
21 but others were mentioned here, but what I didn't hear  
22 a lot of talk about was incorporating electrical  
23 vehicles, which are becoming the law in California, as  
24 an energy storage device into the system. All of these

1 things are planning a kind of moving target, all the  
2 smart grid stuff that you keep hearing about.

3           So, basically what we need to do is expedite  
4 the approval of construction of "smart from the start"  
5 for wind, solar, and other clean energy projects to  
6 create jobs, benefit communities, and are planned in  
7 ways to protect habitat and ecosystems, and I refer,  
8 with respect to ecosystems, to the great work that the  
9 Regional Transmission Expansion Planning efforts have,  
10 Resource and Transmission Expansion Planning work  
11 that's been done at WECC under Brad's tutelage and  
12 others.

13           There is an environmental data task force that  
14 you need to consider in looking at what we're doing  
15 because it's coming up with information about granular  
16 siting of transmission plans that have to be considered  
17 and protecting the environment.

18           And then, finally, I want to refer to  
19 something that was mentioned several times and that is  
20 the issue of coal retirements. We requested from WECC  
21 planners and received approval for them to study and to  
22 model what happens when coal plants are retired not  
23 because of greenhouse gas, carbon dioxide, carbon tax  
24 stuff, which, as we know, hasn't really been affected

1 in the United States, but just looking at the 2017 EPA  
2 regulations and what it does in terms of economic merit  
3 order to the cost of meeting those standards with  
4 respect to mercury and other criteria of pollutants,  
5 and we put some plants on the hit list, which caused a  
6 lot of heartburn, particularly for the owners of  
7 Colstrip.

8           But what happens is, as these plans become  
9 economic, the question is, what does that do to the  
10 transmission system? And the WECC model study  
11 proposals that we had are addressing those questions  
12 and coming up with some interesting answers, one being  
13 that it frees up a lot of capacity on transmission  
14 lines when you shut down certain coal plants, or maybe  
15 I should say retire certain coal plants because that  
16 sounds better, particularly at my age as I look forward  
17 to retirement. But as you do that, you free up a  
18 tremendous amount of capacity happily, because there's  
19 a lot of great wind in the Powder River Basin, as well  
20 as great low sulfur coal, but it frees up a lot of  
21 capacity for renewables.

22           Now, the other issue that we think should be  
23 addressed on coal retirement itself as we look now at  
24 model of transmission plant, a system that is based on

1 a new portfolio of resources that are enabled by those  
2 transmission lines that already exist.

3           The other thing we need to look at is the fact  
4 that we can now do this also with some operational  
5 improvements, energy imbalance markets is one that was  
6 mentioned. We certainly are strong advocates for  
7 looking at that and its potential, and the  
8 consolidation of balancing authorities that would allow  
9 a greater diversity of renewables so that, amazingly  
10 enough, we don't need to balance renewables with  
11 thermal plants, even gas plants, which have half the  
12 carbon dioxide emissions, but we can balance renewables  
13 with other renewables, particularly high capacity  
14 renewables and renewables that are basically baseload,  
15 like geothermal and biomass.

16           So, thank you for the opportunity to comment  
17 and I do want to also refer to, I want to take credit  
18 for the work that Lisa Schwartz has done on the WREZ  
19 projects, which, the WREZ (Western Renewable Energy  
20 Zones) because she's a member of the Regulatory  
21 Assistance Project. I'm on her board and she can talk  
22 about that more than I can, so if you want to do that.

23           MS. SCHWARTZ: Sure. Hi. I'm Lisa Schwartz  
24 with the Regulatory Assistance Project. I didn't sign

1 up, so this is impromptu, I hope it's okay. But I know  
2 that the Secretary's office at DOE, largely, is  
3 familiar with the Western Governors Association draft  
4 report on Phase III, which DOE is funding on the  
5 Western Renewable Energy Zones Project. And I think  
6 the thing that's important and relevant for your study  
7 now is that as panelists have talked about today, it  
8 really matters what the buyers are going to do here in  
9 the West, the buyers being the load-serving entities.

10           And we, as part of this, interviewed 25  
11 utilities in the West. We interviewed different  
12 segments of the company: The resource planners and  
13 procurement folks in one set of interviews, and the  
14 transmission personnel and regulatory or government  
15 affairs staff, manager level, actually, or VP level in  
16 the interviews as well. And so I think you'll find the  
17 executive summary was intended to be a short read of,  
18 really, all of the key findings, fairly short.

19           We do have a set of recommendations. We're  
20 completing now the final version of this report. It  
21 should be available in text form by the end of the  
22 month. It's going to be laid out, so that'll take a  
23 little bit longer, and really the only things we're  
24 tweaking, we heard what we heard, so, you know, the

1 findings are the findings and utilities already had a  
2 chance to take a look at that and provide any changes  
3 that they wanted. But we're just slightly tweaking the  
4 recommendations and improving them and adding a little  
5 bit more information, for example, on NTTG's recent  
6 efforts to look at scenarios with WREZ hubs. You also  
7 find in there findings from our interviews with all of  
8 the Western public utility commissions as well as from  
9 British Columbia and Alberta Energy Offices.

10           So, I hope you'll take a look at that just  
11 because it's very recent information. These interviews  
12 were conducted over the period from January to April of  
13 this year, 2011, and I think it's a good wealth of  
14 information. Thank you.

15           MR. MEYER: Any other commenters? Well, I'm  
16 going to close with a question to Steve Oxley. Is  
17 there a more technical term than "aluminum footballs"  
18 that I can use to put in the study?

19           MR. OXLEY: Yes, it's a transmission security  
20 monitor.

21           MR. MEYER: Okay, great. That sounds like a  
22 much more impressive term.

23           MR. OXLEY: It's even better than the Lindsey  
24 peoples' idea of, well, you just put them around the

1 line like a bun around a hotdog.

2 MR. LANDAUER: David, one comment, and it's to  
3 feed on what Roger was saying earlier. You know, there  
4 are some issues with these coal retirements that need  
5 to be addressed and WECC is trying to address them in  
6 their recent studies. When these big, heavy machines  
7 go away, transmission capacity changes with it and you  
8 don't always have the same capacity, you have typically  
9 something less. That needs to be addressed in these  
10 studies, too, and this is something that WECC is trying  
11 to incorporate in their newest studies so that we have  
12 and accurately capture that phenomenon, which we  
13 haven't done too well in the past. So, I think it's  
14 something that we just need to address in those  
15 studies.

16 MR. MEYER: Brad, you wanted to.

17 MR. NICKELL: No.

18 MR. MEYER: Okay, well, thank you all. With  
19 that, we will declare the meeting adjourned, and please  
20 enjoy your lunch.

21 (Whereupon, at 12:09 p.m., the PROCEEDINGS were  
22 adjourned.)

23 \* \* \* \* \*

24 CERTIFICATE OF NOTARY PUBLIC

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19

COMMONWEALTH OF VIRGINIA

I, Carleton J. Anderson, III, notary public in and for the Commonwealth of Virginia, do hereby certify that the forgoing PROCEEDING was duly recorded and thereafter reduced to print under my direction; that said transcript is a true record of the testimony given by witnesses; that I am neither counsel for, related to, nor employed by any of the parties to the action in which this proceeding was called; and, furthermore, that I am not a relative or employee of any attorney or counsel employed by the parties hereto, nor financially or otherwise interested in the outcome of this action.

(Signature and Seal on File)

**Notary Public, in and for the Commonwealth of Virginia**  
**My Commission Expires: November 30, 2012**  
**Notary Public Number 351998**