U.S. Department of Energy
Pre-Congestion Study Regional Workshops for the
2009 National Electric Congestion Study

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Transcript

David Meyer: Well, good morning again, ladies and gentlemen, and thank you for coming to DOE's regional workshop on transmission congestion, and welcome also to those who have logged onto the webcast. Because of the, this program is being webcast, we will adhere strictly to our schedule in terms of the breaks and the timing for the panels and so forth.

But I'm going to make a few remarks here about the reasons for these workshops, and then we'll go into the panel discussions. The Energy Policy Act of 2005 directs DOE to conduct a Transmission Congestion Study every three years beginning in August 2006. So we are now engaged in planning the Study that we will publish in August 2009. And as part of the Department's efforts to consult with the states for the Congestion Study, and with the regional reliability organizations and other stakeholders, we are hosting six of these regional workshops this summer, and today is the first in this series.

In addition, DOE will schedule bilateral meetings with stakeholders upon request. And we have time available this afternoon for those bilateral meetings if people want to schedule them with us.

Now, let me turn to the Congestion Study and national corridors. The Energy Policy Act authorizes, but does not require, DOE to designate National Interest Electric Transmission Corridors where the Department finds that consumers are adversely affected by transmission congestion or concerns.

This series of workshops, however, is focused only on preparation of the 2009 Congestion Study, and not on the national corridors designated last October or on any possible national corridors that we might designate in the future. Lot Cooke, who is from the Department's General Counsel's Office. Lot, do you have additional comments you want to make about that aspect?

Lot Cooke: Not really, David.

David Meyer: Is it working?

Lot Cooke: Yes, now it is. Yes. As you all know, we did do the 2006 Congestion Study and put it out for comments, received comments, put out the draft designations for the National Interest Electric Transmission Corridors, and went through the procedural processes that involved, including getting requests for rehearings, putting our order out to nine

rehearings, and the administrative record on both the 2006 Congestion Study and the designation of the corridors is now closed. We've been sued, and any response that we're going to make to those is going to be in the courts. So we are not going to talk about the 2006 study, nor the designations, in these workshops. That's all I have, Dave.

David Meyer: Okay. Thanks, thank you, Lot. We are holding these workshops to receive information to assist the Department in preparing the 2009 Study. And I want to add, not that we expect that we're going to walk out of this meeting with a briefcase full of information from you. It's more to signal to people that, what kinds of things we're looking for, and to--if material that you have available now, yes, we would like to receive it as soon as it's available, or as soon as it can be conveniently provided. But if, for example, if you have studies underway and the results will not be available until September, well, okay, yes, let us know, and tell us what kinds of things to expect in September, and deliver it when you can. Yes. But in that sense, a general sense, what we are interested in is what publicly available data should be considered to identify transmission congestion, and how to evaluate that data to determine the character and magnitude significance of the congestion.

And a problem that's of particular interest here in the West is how to distinguish between the effects of technical limits on the use of transmission lines and contractual limits and how to distinguish one from the other and how to understand better how those two kinds of limits interact and affect each other.

Let me talk a little bit about the overall plan for the 2009 Congestion Study. This Study will focus only on recent or current congestion. And as in 2006, DOE will review the eastern and western interconnections separately, using the same concepts where applicable. That is, to the extent possible, we would like to have complete consistency, but that's not always possible or practical because of differences between East and West.

The Energy Policy Act excludes ERCOT from the areas to be included in the Study. In the West, again, we will work with WECC and now TEPPC to review recent transmission planning studies and review congestion-related data. And we very much appreciate the help that we've gotten, that we got for last time and that we will get again from the West. In the East, Lawrence Berkeley Laboratory will engage a contractor to perform a similar analysis.

Today we will have two panels, and each--I'm going to ask each panelist to make a very brief--five-minute max--statement just expressing the general perspectives of the organization concerning transmission congestion. Then we have some salient questions that we will discuss with the panelists.

And there will be an opportunity at the close of the meeting for non-panelists to make brief statements. And finally, we invite all participants to submit written materials. And I want to emphasize again that these workshops are just to get the conversation started in terms of major inputs to our process. I would say it's very important that you provide in written form--and electronically, if at all possible--and in those written submissions, you'd have latitude to supply or provide as much material as you wish. In this workshop format, it's difficult to accommodate that.

Now, changes since 2005. Recall that the 2006 Study was based largely on data from 2004 and 2005, so one of the things that we want to focus on in this upcoming Congestion Study is, "Okay, what's happened in your neighborhood since 2005 that we

ought to know about?" Or if you, if you see a consistent trend from back in, say, since 2002 through 2007 or so, that that would be something of considerable interest, too.

And we identified several areas in the West in our 2006 Study, and so we're particularly interested in being updated on what's been happening in those specific areas since 2005. And finally, are there new areas of concern that you have identified, that you would bring to our attention?

So far as the schedule, we would like to receive inputs by October 15. Our window will certainly stay open until certainly to the end of the year. As we get into 2009, things will begin to go into looking too close, because we do have a schedule that we have to keep. So in the early part of 2009, we will be reviewing the inputs that we've received and developing an outline for a report. April and May, we'll draft it, and then finally, June and July, we will be involved in an internal clearance process, and then finally publication in August.

So if you have comments, questions, please, you can provide them to me at the address shown. Other people that I wanted to introduce here and you can talk with them also--Joe Eto, he is here, he's with Lawrence Berkeley Laboratory and is providing assistance to us in this whole process. Peggy Welsh from Energetics, and also Brad Spear. He's out front from Energetics. They are helping us with the workshops, and they will probably have other roles in the production of this Study.

So with that, let's shift gears here and go into the panel discussion. I assume our microphones are live. Okay. Let me welcome the panelists. I will not take time to introduce you by name. I encourage you to briefly say who you are for the benefit of the people on the webcast. And as we get into dialogues, it may seem a little artificial for you to be constantly introducing yourself to people right across the table, but it's for the webcast people. This is, it's only audio. It's not visual, so it's going to be important for them to know who is speaking.

So with that, Dave Areghini, I welcome your statements.

Dave Areghini: Well, thank you. I'm Dave Areghini, Associate General Manager of Power for Salt River Project, and currently--up through April of next year--the Chair of the Board of the WECC. I want to thank the Department of Energy for conducting this workshop. I think this is a good start towards the next Congestion Study, but much work needs to be done in a very short period of time.

I will talk primarily on process and recommendations in my prepared remarks. I suggest that as soon as possible--probably at the conclusion of these workshops--that we establish what our objectives are, and when we include it in that, when we identify current congestion--what year, what timeframe we're talking about. I would suggest it be some time in the near future--2010, '11, or '12--and then the next step would be an issue that we have wrestled with for some time, and that is arrive at a definition of congestion. And I suggest that it be simple, measurable, and something that we can all understand.

Then, I believe it's important that we move to the adoption of the assumptions. And I know in the last Study, we had some protocols on how we were going to establish those assumptions. I'm not so sure that we ever carried those out and had a consistent understanding of all the stakeholders.

Then moving into the data. Let's say, for example, we arrive at 2012 as the date for which we will call "current," and that we need to all agree on what the data will be--what loads, what transmission capacities, what fuel costs we use, what projects will be completed by then. And I think it's fairly safe to say that we could identify what those are. If you haven't started by now, you probably won't get it completed by then.

And once that's all established--and I would suggest we allow TEPPC, the Board Committee within the WECC who is charged with the responsibility of facilitating transmission planning, I suggest we allow them to coordinate this. The Chair of that Committee is here. You can see it's a tough job--he's on crutches. And so, but I'm sure that he's up to leading this effort.

The one thing that I think we shouldn't lose sight of is when we look at congestion, even though we're talking about current congestion, there are a lot of plans--some near term, some in the future--that involve remote locations for our renewables. And I don't have the answer here, but I suggest that we incorporate that, because if you're going to build 150,000 megawatts of renewables in a remote location, that's obviously going to be a challenge for the transmission system between there and here, and there is where a great service could be provided in identifying a natural corridor.

I'll conclude by saying, "Let's get started." I think the sooner we get started, the better, and keep in mind that when we do conclude our study, if the study is completed, it must be defended on the data, and so therefore the steps that we take must be very solid, based on solid data and defendable material. Thank you.

David Meyer: Thank you, David. Yeah, let's just go around the table here and, Tom?

Tom Carr: Thanks, David. My name is Tom Carr. I'm at the Western Interstate Energy Board. It's also known as the Energy Arm of the Western Governors Association. We have a related organization, which is the Committee on Regional Inter-Power Cooperation. That's a joint committee of the Western Interstate Energy Board and the Western Conference of Public Service Commissioners.

I want to focus my opening remarks here on four topics that relate to the 2009 Congestion Study. The first point concerns congestion metrics, and I've just handed out a handout with two graphs on it to the people in this room, and unfortunately, we don't have the capability on the webcast to carry that out, but I'll describe. In, as background, the West has been in the forefront for developing a set of metrics to identify transmission congestion. Important conceptual issues and empirical work was developed by the Western Congestion Assessment Task Force in preparation for DOE's 2006 Congestion Study. And the second panel today, while it gets into the Northwest Power and Conservation Council, will address some of the methodological and conceptual complexities of these congestion metrics.

I also anticipate that the empirical work that will be discussed in the second panel will also give note to the important work that's been done by Dean Perry, who's been kind of the architect in designing some of these empirical congestion metrics.

This work on the congestion metrics has led to a series of different measures using different criteria such as the utilization of transmission lines to a 90% level, which we refer to as U90; a 75% level, referred to as U75; shadow prices; congestion trends; and other measures. Despite this excellent work, we are still a long way from having a coherent and consistent method for measuring transmission congestion. My handout

illustrates this point with a ranking of western transmission paths using the U90 metric. And that's the first graph. Seven other congestion metric data points are superimposed upon the U90 ranking using a common index. The wide dispersion of data points around the U90 lines indicates that very little correlation among the different measures. In other words, the use of different metrics leads to different rankings of congestion for the same set of transmission paths.

We support the continued efforts to better understand and improve our knowledge of congestion metrics through future work and through collaboration such as this workshop today. This is a very important effort, and we are not there yet, but we hope to get there.

My second point relates to historic path load studies and potential improvements for the 2009 Congestion Study. Dean Perry is producing analyses of historic flows over the major transmission paths in the Western Interconnection. The second page of my handout presents a summary graph of the most recent version of the path flow analysis. Note that this graph shows that only one of the 24 paths operated more than 90% of the time above the 75% operating transfer capability, or OTC, and that only six of the 24 paths operated 50% of the time above 75% OTC levels.

The key point here is that much of the current grid, historic flows are far below the operating capacity. The puzzle is that many of these paths also post zero available transfer capability, or ATC. There may be a rational explanation for this puzzle. We currently don't have the data on the schedules and ATC levels to compare with the path flow data. We commend the Department of Energy for supporting the Western Electricity Coordinating Council, or WECC, to obtain this data and to perform such an analysis. This analysis will be critical for the future transmission development. For any proposed project, we anticipate that developers may face critics that point to this data that shows historic power flows are below the operating capacity and conclude that new transmission is not needed. We need to understand this issue better.

My third point deals with forward-looking congestion, as Dave Areghini has referenced earlier. The DOE states that the 2009 Congestion Study will focus chiefly on recent or current transmission congestion. We believe historic and current congestion analysis is important and necessary, but to rely solely on the historic or current congestion would be akin to driving down the road while looking through the rear-view mirror. We recommend expanding the analysis to include forward-looking transmission.

Why, might you ask? We believe that the future generation additions in the West will be heavily influenced by state renewable portfolio standards and emerging regulatory constraints on carbon emissions. These policies will call for greater renewable resources and the associated transmissions to deliver renewable energy to load centers. The exact mix of the renewables and the transmission that gets built will probably be made by the load-serving entities.

The Western Governors Association, in collaboration with the Department of Energy, has just kicked off the Western Renewable Energy Zone Project to improve the information on the location of the best renewable resources and to facilitate transmission to such zones. We encourage DOE to look at the REZ Project for good, transparent information about the demands of future transmission.

And finally, on my final point, concerns process and transparency. In 2006, the Western Congestion Assessment Task Force, which is an organization formed in the West, was formed in an attempt to provide DOE with the best available information about the

existing transmission system, studies on transmission, and analysis about the congestion grid. A key objective behind this collaborative effort was to provide an open and transparent forum where information could be vetted and reviewed. WIEB and CREPC were disappointed that DOE's rationale in designating the National Interest Electric Transmission Corridor in the West was based in part on information outside the (inaudible) process and not publicly reviewed by the stakeholders.

Specifically, DOE relied on some information supplied by the California ISO and the Western Area Power Administration to support the designation ruling. We believe DOE's 2009 Congestion Study should reach for higher standards of transparency and thoroughness to guide future decisions about designating corridors. Thank you very much.

Dian Grueneich: Thank you. This is Dian Grueneich, Commissioner of the California Public Utilities Commission. My staff have provided some slides--I don't know if they're available--that I was going to reference during my talk. Let me continue, and we'll make sure that they are provided for the record.

In California, we have a large number of initiatives that are part of our integrated approach towards generation, transmission, and distribution, and we believe that is important in looking at congestion that there is an assessment of the entire picture. And I would just quickly list some of these areas. Then I will turn to some of our most recent efforts in transmission that are relevant to the work that's going to be done by the Department of Energy, and then we'll just state a couple of recommendations.

Our initiatives are, first of all, we do have as the top priority in California energy efficiency. Our current program is going to, for this current three-year period, it is an investment of more than $2 billion over the period 2006 through 2008. It's going to avoid building three large 500-megawatt power plants. And I bring this up because it shows that, when one is looking at transmission congestion, energy efficiency is a critical area. Because when you are doing it on the scale that we are doing it in California, that is increasingly being adopted by other states and throughout the country, it really has a direct link to avoiding power plants and therefore relieving transmission congestion.

We also have very extensive demand response programs, and we can again provide you the specific details on that. We have a renewable portfolio standard of 20% of investor-owned utility retail sales by 2010. We are looking under our global warming law that we may expand that significantly.

In terms of transmission permitting, our agency is charged at a state level with the permitting for those transmission lines that are proposed by California's investor-owned utilities. One of the steps that we have taken in the last couple of years is to streamline our permitting process and improving our statewide planning effort to address the need for transmission infrastructure.

A very important new initiative that we are engaged in is the California Renewable Energy Transmission Initiative, or RETI, R-E-T-I. It is coordinated among the PUC, the California Energy Commission, the California Independent System Operator, and three municipal utility representatives. This is going to be producing a detailed renewable resource assessment of state and neighboring areas by August of this year. It is engaging all stakeholders. It is looking at not just economic costs, but environmental issues as well.

As many of you know, our California Independent System Operator is also doing interconnection queue reform. We have a large number of transmission projects in our permitting queue. There's the Southern California Edison Devers-Palo Verde 2 Line, there's the Southern California Edison Tehachapi Project, there's SG&E's Sunrise Powerlink, and PG&E also has a major proposed transmission line.

In addition, we have major efforts ongoing at a distribution level in terms of our solar initiative and distribution projects.

Let me just end with some of our recommendations looking forward. We think that it is very important that the Department of Energy in its Congestion Study take into account state programs and policies. As I stated at the beginning, we think it's also extremely important that non-wire alternatives, such as energy efficiency, demand response, and local generation, be recognized as solutions to congestion. And this is something that we felt was not adequately examined in the last report, and we hope that it will be more strongly examined.

We think that there also needs to be a coordination with the efforts that are going on to look at the renewables development, the California RETI process, and as Tom Carr just mentioned, the Western REZ project that just has recently been initiated. And I bring this up, particularly since DOE is supporting that effort, I think that there's a great need for coordination, and it's going to really be looking at for the West, interrelated between the renewable projects and the need for the transmissions. And we also think at some point there does need to be a process that's going to be looking at how to de-list corridors once congestion issues are addressed.

And finally, we think identification of over-broad corridors that supports a one-size-fit-all approach is potentially inconsistent with individual state goals, and we urge that there is strong consideration given to how the states themselves are approaching their own energy needs and energy policy. Thank you.

David Meyer: Thank you, Commissioner Grueneich. Commissioner Mayes?

Kristin Mayes: Thank you, Mr. Meyer. It's great to be here. Thank you so much. It's good to hear a Commissioner, my colleague, Commissioner Grueneich's, comments. It sounds like we have a lot in common, actually, between Arizona and California. We do thank you for the opportunity to be here today and to offer the perspective of the State of Arizona on the DOE's 2009 Congestion Study. Arizona appreciates the opportunity to work with DOE to improve upon, in advance as processes for assessing whether to declare a National Interest Electric Corridor pursuant to Section 216 of the Energy Policy Act of 2005.

While we love being here in San Francisco, it's a beautiful day, we would actually request that DOE add another panel discussion in Phoenix. It will try to stay indoors. We have a lot of air conditioning there, and I will try to keep them comfortable. But neither San Francisco nor Las Vegas were in the 2006 NIETC Corridors, and it would seem that holding these panel discussions in Southwestern locations impacted by the previous Congestion Study would provide beneficial input and information to DOE as it considers its 2009 Study.

I wanted to talk first about alternative concepts and definitions of congestion. First and foremost, it is Arizona's view that the driver behind the 2009 Congestion Study should be reliability and reliability concerns. When DOE focuses its concerns instead on purely

economic factors, we believe that there is a failure to illuminate what the Energy Policy Act of 2005 was really aimed at, which was creating a reliable national electric grid.

Specifically, the Arizona Commission respectfully requests that DOE not place such an emphasis on speculative contracts when determining whether there is congestion in a given area. Simply because a potential customer of transmission is unable to get a certain price, or a certain contract at a certain price, does not mean that the electric grid is congested or that reliability in a certain region is jeopardized. We strongly believe that the desire, the wish for a contract on a line cannot legitimately be used by DOE to establish a National Interest Electric Corridor or by FERC to conduct backstop line siting authority.

The Arizona Commission also believes that DOE should adopt a definition of congestion that takes into account all of the various kinds of congestion, including physical congestion, contractual congestion, and actual congestion, and should tell the states what that definition is, going to Mr. Areghini's point.

For instance--and again, we believe the DOE must develop a clear, concise definition of congestion that includes a mechanism for measuring it, and then tell the states what that is. For instance, it's our experience that while there may be contractual congestion on a given line, there is no physical congestion, and there is no actual congestion. In other words, a line may be contractually maxed out, but during the course of the year, there is space on that line, and those, in fact, who have contracted for the service on the line are not using it. If only half of a contract is being utilized, then DOE should take that into account when determining whether congestion is occurring.

Further, in order to prevent physical or actual congestion, Arizona utilities--in fact, utilities throughout the Southwest--have been utilizing mechanisms such as network flow and displacement in order to avoid congestion. And we believe the DOE should consider that when determining whether congestion is occurring and whether it can be avoided without declaring a corridor.

Of course, Arizona continues to believe that the source-and-sink methodology for determining whether congestion is present is flawed, and we would hope that in this round of Congestion Study, the DOE would look at the totality of congestion on both ends of a potential corridor.

Finally, we believe that intrastate congestion should be left entirely to a state to address. State siting committees and commissions are best suited to determine when and how to respond to congestion between two points that rest entirely within the borders of that state.

Now, a little bit about indicators and impacts of congestion. Thankfully, Arizona has been successfully planning for its transmission needs and assisting the entire Southwest in that regard for many years--in fact, for decades. As a result, we're not particularly familiar with congestion in Arizona. Even when we have had extreme events in Arizona--fires, for instance, and the outage of the West Wing substation--our utilities successfully avoided outages or brownouts because they were planning and because the Commission ensured that they were.

Those states that do experience congestion would likely see brownouts or other difficulties maintaining reliability. Where that is the case, it is the view of the State of Arizona that those states should in the first instance seek indigenous solutions to such

difficulties. For instance, those states with transmission congestion should demonstrate to the DOE why siting additional generation in that state, introducing additional renewable energy projects, or conducting more aggressive demand-side management or demand response programs wouldn't solve the problems.

Finally, when determining whether congestion impinges on one state's economic growth, the Arizona Commission hopes--fervently hopes--the DOE will not favor one state's economic growth concerns over another's. Likewise, DOE should not favor one state's environmental concerns over another's. For to do so could shift environmental--adverse environmental--externalities from one state to another, like local area emissions and negatively impact resources such as local water and natural gas supplies.

As for the availability of relevant data, the Arizona Corporation Commission is proud of our record of siting transmission lines. As I said, interestingly, we have had 135 line siting cases and generation siting cases, and the State of Arizona has only turned down three of them. Out of 135, we have only turned down three. And most recently, the Arizona Commission required the creation of a Renewable Energy Transmission Plan. And you all have a copy of that. My colleagues here at the table have a copy of that. Mr. Carr, your comments were interesting to me, because our Renewable Energy Transmission Plan, which is nearly complete--it basically is complete--is now being used by the WGA to create its Renewable Energy Transmission Plan. So, and I would imagine that Commissioner Grueneich's plan as well is going to feed into that plan, and it's actually the states that are providing the leadership in this area. And our data and Commissioner Grueneich's data will actually be used to create that plan.

So we offer this to the DOE as an example of available data, and glad they do that. The BTA Task Force doesn't just serve Arizona. It's actually been expanded to serve, or the entire slot footprint, and it's a fixed date transmission study that will benefit the entire region. It's also available on our website at www.azcc.gov--had to get that plug in.

But finally, and I'll wrap up. In order to determine whether there is persistent actual congestion, the Arizona Commission recommends that the DOE look at first, the BTA materials like what I just referenced, but in general, our BTA material. And second, annual 10-year filings at the Commission. Arizona Statute 40-360.02.c.7 calls for, "The plans for any new facilities"--transmission facilities--"shall include a power flow and stability analysis report showing the effect on the current Arizona electric transmission system. Transmission owners shall provide the technical reports and analysis or basis for projects that are included for customer load growth in their service territories." Again, that information we would be pleased to provide to the DOE should it desire it.

And then, of course, finally, when determining future corridors, the Arizona Commission again requests that DOE conduct adequate consultation with affected states, including conducting dialogue with state commissions, and we again take this opportunity to extend an invitation for you to come to the great state of Arizona. Thank you.

David Meyer: Thank you, Commissioner Mayes. Jeff Miller, ColumbiaGrid.

Jeff Miller: Well, thank you. Yes, I'm Jeff Miller, Vice President and Manager of Planning with ColumbiaGrid, and I want to thank you, David, for inviting ColumbiaGrid to come here to speak. I certainly applaud the Department of Energy's openness to receive all these comments, and I think it's certainly worthwhile to revisit the Congestion Study and see what has changed in the past few years.

I'll try and offer a few comments without covering territory that's been covered by the previous panelists. I agree with all of their comments, and I'll maybe reinforce a couple, but I'll try and hit on some new things.

One of the things I think that is really important--and this was maybe implied in the prior Study, but not so directly--is that I think it's really important to focus on different categories of congestion, specifically congestion that occurs when you're trying to serve major load areas--I'll use as an example like Southern California--versus congestion that occurs where you have resources that are constrained--and I'll use as an example there west of Bridger. Those resources aren't particularly constrained, but I bring that path up because we look at Tom Carr's graph, you find that's the number one for congestion. But don't you know, those lines are the outlet of a coal plant, and they were designed to be operated that way. It's efficient transmission design, it's not congestion that needs to be addressed immediately, at least unless resources are added in the area.

So I think it's worthwhile making those distinctions. And then if you--in my mind, at least--the congestion associated with serving load areas should receive much greater attention than congestion that's associated with resource restrictions in an area.

I was in California during the period of time where Path 15 led, you know, restrictions on that path, led to rolling blackouts in southern California. And it wasn't long before that path was reinforced. Had those rolling blackouts not occurred, would that have happened? Certainly not so quickly. Maybe it would have eventually, anyway.

But those threats to consumer reliability from constrained transmission, I think, merit quite a bit of attention, and should be focused on in the Study. I'd even suggest that maybe as one of the metrics, you could look into considering resource adequacy as a potential metric. I don't think the traditional one in 10 would apply here, but maybe there's some way you could look at the security from a resource adequacy perspective of an area and have that weigh into your metrics.

Other than that, as far as metrics, I think the standard ones that we've used over the years are still good. The dollar cost of a constraint based on the results of production cost analysis, and the environmental consequences of congestion, which can also come out of the production cost studies. And I'm speaking there primarily in terms of emissions.

What I think is important when you're looking at a metric is not just to take something and look at a certain point in time and run with it, like the U90 or U75 metric, which looks at historical data. Maybe if you're looking at a past trend, that might give you some insights into where we're heading. But when you're looking at congestion, in my view as a transmission planner, the important thing is, "Where are we going?" not, "Where have we been?"

And to find out where we're going, I really think it takes some analysis. I know that the focus of the DOE Study is not to do any real detailed analysis, but I see value in that. I see that WECC has an effort underway. We'll have some results in this summer that we could contribute to the effort. I strongly support Mr. Areghini's suggestion that, to let TEPPC take a leadership position in this, and TEPPC is overseeing that study, and they can provide, I think, some useful input. So I would strongly suggest that you not just focus on current congestion and not just look at the past few years, but try and be forward looking. And maybe that doesn't involve production cost studies. Maybe there's a simpler, more common-sense way of looking at it. But since we have the production cost tool, we might as well take that as input.

And the last thing I would suggest is to go to Commissioner Mayes' comments. There are different types of congestion that occur in the system. There's physical, actual congestion, and then there's contractual congestion. And I think it would be worthwhile to look in the analysis, at a high level, at the institutional barriers that are causing congestion that might be able to be broken down and free up some transmission to eliminate congestion that wouldn't be there absent those institutional barriers.

And that concludes my comments.

David Meyer: Thank you. And John Roukema.

John Roukema: Thank you very much. I'm the Director of Silicon Valley Power, Santa Clara's electric utility, and I bring probably maybe a little bit different perspective here, although Jeff covered a lot of this. Now, we're a load serving entity, and we do serve about 500 megawatts of load, 90% of it's commercial/industrial, but it includes some of the very high-tech companies and data centers and very sensitive types of load here.

Congestion in transmission is really important as a user of it primarily here, although we don't hesitate to participate in the construction of transmission, either through the Transmission Agency of Northern California and try to be active in the planning process through the Bay Area Municipal Transmission Group.

Access to markets is huge, but it's just that probably one of our concerns is getting that energy to the load, getting it into the load pockets, and I think that inter-regional transmission is extremely important, but being able to deliver it to the customers is one of our primary purposes as importance to us.

And also, our customers are also sensitive--and it is referenced briefly in the 2006 report--to voltage fluctuations, and I think this is a symptom of the transmission system and its condition today. And that impacts the load to our customers, too, so it's something to keep in mind.

The other thing I have not heard here, and we talk about current and recent congestion, and I fully concur with the need that we need to be more proactive than that. And one thing, especially if you look at the Bay Area, the age of our transmission system, I think, is becoming important. I mean, if you look at the voltage that's used, the type of facilities, the age of the facilities, we are starting to see more and more transmission impacts on our customers from momentary fluctuations. But they've gone up by 50% in the last year, and a lot of that is due to the condition of the transmission system.

So that covers my three points I have. Pay attention to the load pockets, but we do want access to renewable markets, and that's very important to us. But also consider the condition of our existing infrastructure, and we need to be more proactive in our planning. Thank you.

David Meyer: Well, thank you, panel. Some very interesting and useful comments of value here. Let me say a few things about the focus on what we call recent and current congestion as opposed to projections and forward-looking analysis. And we recognize that all of you are working very hard to deal with problems that you see coming, and that is important to us also, and we recognize that looking at recent data snapshots for 2007 don't necessarily inform you very well about future problems.

Nonetheless, this Congestion Study is going to focus primarily on recent and current congestion, and we are very interested in what projections people are preparing and what the results coming out of those studies are, and what you think about those results. I mean, what--different parties can look at those results and come to somewhat different conclusions, and we would like to know about that.

But I think what, depending in part on what information we get from these workshops, one thing that DOE might think about would be to do some kind of companion study that would look at the projections material, just as a separate kind of analysis. But for the Congestion Study, it's not going to be forward looking. So that may be one way to deal with this cluster of questions.

I want to come back to the question of alternative definitions or concepts of congestion, and in particular this problem about gauging physical usage of the lines versus contractual. And I want to ask Dave Areghini to comment further on this, and then others can chime in. That is, do we have the data, is the data accessible that we need, for both the, to really effectively map and understand both the historical flows in physical terms and then to better understand the contractual limits that are out there?

Dave Areghini: I certainly believe we do. There is a myriad of historical data on flows, and certainly there is the data that would identify the capacity of the line. With respect to the contractual values, I believe most of that is data that can be acquired from FERC. I'm not aware of any limitations on that. So I think it's an effort that requires a lot of digging and a lot of data search. But with a focused group of people looking at that, I think that could be a quite--may be interpreted differently by different people--but I think the data's out there.

David Meyer: Okay. Any other comments on that particular front?

Tom Carr: Yes, this is Tom Carr from Western Interstate Energy Board, and in my remarks there is reference to the importance of trying to get scheduled data as well as ATC data. And within the West, Dean Perry, who has led the path flow analysis, there was an initial round of trying to get that data. There were some problems and complexities in doing it, but I think they're on the verge now of getting the right mixtures and being able to use that data in this comparable analysis. So that, I think, is really important, to get the schedule data and the ATC data to match with the flow data, or the path flow data.

Kristin Mayes: David, if I could just add to that. I would caution, though, on focusing too much on ATC data, because again, the experience of the State of Arizona is that you may find a line that technically has zero ATC, but there's available capacity on it. There may be contractual, it may be maxed out contractually, but those contracts aren't being used by the utilities or by the people that are taking service on the line. And in addition, there are other things that our utilities have been very successful in deploying, including network flow and displacement. So I think you've got to look at all of these different kinds of congestion when you're doing your study.

Jeff Miller: I would just like to build on that. I do believe that--.

David Meyer: Identify yourself.

Jeff Miller: Jeff Miller, ColumbiaGrid. I believe Dean Perry is on the verge of getting that data through the historical data working group. It's not a simple effort. You have to go back and unravel all the energy schedules through the ETAGs. But he's going to do it. I think

once we have the schedules, once we have the actual data, the actual flows, once we have the operational transfer capability, then we can apply those to each path, and we can see where there was OTC left beyond both the schedules and beyond both the actual flows. We can see where the schedules and the actual flows don't match up very well, and those are the opportunities that we have to break down the institutional barriers and make better use of the lines.

David Meyer: In the 2006 Study, we recognized that we would get a somewhat different story looking at--using one metric, you get one, you see one pattern; using another metric, you see a somewhat different pattern. But, in, your instinct what would you ideally like to find if you're trying to decide which paths are really significantly congested according to several metrics. I mean, which ones would score relatively high using a combination of metrics? And I still feel that that conceptually is a sound, probably a sound approach. I recognize Tom's point, that there is this scatter using different metrics.

But I want to ask people whether they do feel that yes, that's a workable approach, and can we, are there ways to somehow--now, for example, on this scatter diagram here, if you looked at some of the things like the Bridger Plant that you mentioned, and the high congestion on that particular, the line that serves that plant, you would probably regard that as an outlier of sorts that you would not want to give particular weight to. So if you removed the outliers of that sort--I'm trying to find ways to reduce what seems to be a very, you know, this dispersion of results here, trying to find some way to bring things into clearer focus. And I want to see what can be done that we didn't try to do in 2006, or for the 2006 Study. I'm looking for next steps, next ways to pursue this.

Jeff Miller: So I think it's, just looking at the data itself, I think we can reach some other kind of--again, it's Jeff Miller from ColumbiaGrid--I think we can reach some wrong conclusions if you just look at this in absence of thinking about where you're heading and what you're trying to accomplish.

For example, let's look in the very left on the first page of Tom's exhibit. I guess second page--excuse me--the bar graph. You see Bridger West, Path 19 on the very left being the most congested, and then on the far right, you see Path 14, which is Idaho to Northwest. Bridger West goes from Wyoming into Idaho, and then there you can either go south into Utah or you can go from Idaho to the Northwest. So the plans are to reinforce all the way from Wyoming all the way into the Northwest at (inaudible). The transmission plans right now are to reinforce both the most congested path and the least congested path with the transmission expansion plan.

So if you were to look at this, you wouldn't do that. But looking forward and looking at what you're trying to accomplish on the system, you'd come to a different conclusion than what you'd get from this graph. So I don't think that you can--you know, this is good background, it's good input, it's good to understand how the system's being used--but I don't think you can make any decisions about what to do about it and what congestion is significant just from this data.

Tom Carr: David, this is Tom Carr from Western Interstate Energy Board. You referenced what to do next. And I know in comments earlier, CREPC had suggested a congestion workshop. I think this is a very interesting analytical problem, trying to figure this out with the existing data. Conceptually, you would expect, I think, that the most congested paths with different metrics would over time, you know, rise to the top in terms of the data showing some sort of consistency. I suspect our efforts to date, just we haven't dug far enough and understood it. And I think we're, our feeling was that you kind of need a

series of workshops with people looking at this data, understanding, turning over, looking at different combinations, to really understand what's going on. I just think that this is a very interesting problem, and it's a tough nut to crack right now, and it takes kind of a concerted effort through a number of very intelligent people in the West trying to look at this and come to a better consensus.

And that's what I think we're really hoping for, is to build a basis, a factual basis, and compare good, sound analytics and empirical data to develop consensus over good units. And my point is, I just don't think we're there yet at this point.

And so I think it's as if we're looking for a series of workshops to try and understand, put enough time and energy in this, to get better results.

David Meyer: This workshop is conceived as a West-wide meeting, and the meeting in Las Vegas, similarly, will be a West-wide meeting. And we have generally told ourselves and others that if there were problems or topics that we felt we were not able to dig deeply enough into here, that we would have another opportunity in Las Vegas. So I welcome suggestions from people about what specific topics ought to be on the table for Las Vegas, and who we should seek as panelists, and if certain kinds of work should be kind of commissioned now to be delivered in early August, that would be very helpful. So let's keep that in mind.

Well, let me go on here to the drivers behind the changes that you've seen since 2006--or 2005. First, what changes specifically have you seen and what are the drivers behind those kinds of changes? And recognizing that there's a wide range of possibilities, and most likely it's going to be a mix of things, but that from our point of view, it's important to have as good an understanding as we can get. So what are the fundamental trends here that we need to be thinking about? And do you expect those trends to continue, or do you see other things coming in that are going to, that would cause us not to simply assume that while this trend that we've seen since 2002, we should just assume that it's going to continue? So let me just, I welcome anyone who wants to address that. Yes, Dave.

Dave Areghini: Yes. Dave Areghini. Possibly the biggest trend that we've seen is the need to have access to what I'll call "remote locations," primarily because that is where much of the renewable generation is going to be constructed. Now, is that congestion? Well, if you don't build a transmission line, you're going to have isolated generation. So that's a huge trend we see.

You know, you're basically looking at two things--reliability, as Commissioner Mayes emphasized, so you want to build up your system to enhance your reliability. And you want to build up, build your system to be able to access generation in markets. And the trend we've seen, because in our state, as the Commissioner also said, we have built transmission. We've got it approved and it's focused on mostly reliability and access to facilities within the state. But I see the trend in the future is having to build long transmission lines, and that's why you see this significant number of major projects covering numerous states, because that's going to get you to the, access to the renewables, which we all have a requirement in various forms that we have to meet.

Kristin Mayes: David, Kris Mayes from the Arizona Corporation Commission, and just to add to what Dave Areghini just said, I do think that the State of Arizona, really, entire southwest footprint is taking a leadership role in this area of renewable energy transmission, which isn't to say we've got it done yet. I mean, clearly, it's going to take several years from the point where we've developed this report that identifies various paths and lines that need

to be built. But I agree with Dave. I think you're going to see a lot of collaboration between the states of California, Arizona, and New Mexico, Utah, Colorado, to build lines that will benefit all of our renewable energy projects. And I think you're going to see that.

States like Arizona are also aggressively trying to deal with just the growth-related transmission. And I have numbers available on the number of transmission lines that we've built since the 2006 Study was completed. I mean, we built three in 2005, one in 2006, two in 2007, and two more currently pending for TEP in 2008. So I think you've got both of those situations going on.

David Meyer: Let me ask a follow-up question there. That is, these long interstate lines that are particularly associated with renewables. Would they serve, help to reduce congestion in load centers? Do they feed into the load center area? Or are those really two different kinds of problems? Does the load center, facility serving those centers, simply need to be upgraded, I mean, generally and independently? Or have these been thoroughly vetted?

Kristin Mayes: Well, I think, I mean, to be fair, and I know we're dancing around an issue here a little bit, but to be fair, it could do both. But the position of Arizona has been we believe that when DOE looks at creating a corridor, not only should they look at the renewable energy prospects for a line, but they should also look at whether one state is asking another state to subsidize that state's environmental impacts and externalities. And so that's why we're so opposed to the source-and-sink methodology for creating a line. Because I think it is almost inevitable that source-and-sink leads to the source state taking, subsidizing the sink state's environmental externalities. And so what we want DOE to do is look at not only the potential for renewable energy transmission, but also whether that sink state is doing what it can to solve its own load-related transmission difficulties, including siting additional generation and siting additional renewable energy projects in that state. But we do stand ready to cooperate and to participate, and we want to do that.

David Meyer: I caution everyone, again, we have a mandate from the Congress to do a Congestion Study. And that's our current objective. The whole concept of additional national corridors, whether they will happen or not, at present unknowable, I would say. And so materials pertinent to the possible new corridors are simply outside the scope of this effort.

Dian Grueneich: Dian Grueneich from California Public Utilities Commission. I wanted to get back to your question of what has changed since the last Study that could be relevant to this future Study. And just to emphasize that at our Commission, working with the investor-owned utilities, working with the California Independent System Operator, in the last two years and continuing this year, we have done a tremendous amount of new analyses, primarily in the context of permitting requests for new transmission lines.

And in particular, later this year our Commission will be issuing its decision on the proposed Sunrise Powerlink Line and next year, in the early part of next year, on the proposed Tehachapi Line, which is proposed by Southern California Edison. We already permitted the first three segments. This is now Segments 4 through 11. And because under our law, we are required to look at not just the proposed lines but also transmission routing alternatives as well as non-generation alternatives, there is a wealth of information that is now or will be available, certainly in the next few months, with regards to Tehachapi that was not available in preparation of the prior report. And because of our concerns of designating Southern California in its entirety as a congested

area, our hope is that with the additional information, there really will be an ability to look much more focused on individual specific areas with regard to Southern California.

Tom Carr: David, this is Tom Carr again. The various work that is going underway in states as well as interconnection-wide and renewable energy and identifying zones is really critical, there is another interesting thing I just wanted to mention so you can have it on your radar screen. In the historical analysis that was done by Dean Perry--or from the historical analysis work group within the TEPPC--they looked at aggregate, kind of a macro look at what's going on in transmission and the level of congestion. And one of the interesting things that came out was that it looked like overall, the congestion measures on the aggregate were actually declining.

We don't exactly have a good explanation for this. But it's something that's caught our attention, and we're not exactly sure why. It could be an increased use of gas generation, which is more load-base sited. And that may be one of the interesting little tidbits in the future. If we have more renewables and less coal, we may have also a lot of gas coming onboard. So I'm not sure exactly what this means, but at least in terms of what I want to mention is that in terms of the macro level, looking at some of these congestion measures, it looks like there's a trend that's actually going down, the congestion.

David Meyer: Let me ask others. Do you see that evidence of that trend also? Or similar trends in your area?

John Roukema: I know from a load-serving standpoint in municipal utilities, I mean, we're building an awful lot of generation in our service territories, and we're bringing on new generation throughout. And a lot of that is driven by the ability to access markets and so on, and gas-fired generation is a procedure of building your service territory. So we really see a trend there. And you also see it with the local resource advocacy requirements that are being placed by the ISO and kind of moving away from the RMRs that a lot of this is driven by transmission constraints.

Now, we happen to be already close to 29% eligible renewable and moving up here, but there's still a need to access, it's harder to put future mass renewables in your system, so we do need transmission access to the markets, too.

David Meyer: Jeff, do you have something to add to that?

Jeff Miller: I can add. Jeff Miller, ColumbiaGrid. Pretty much just reinforcing the others' points, that the real driver of congestion and transmission renewables, primarily wind generation, which is located fairly remote from the load and as far as renewables go, is the one everybody's going after because it's the least expensive, at least when you look at it from the energy you receive.

If, absent the renewable generation, the other options, the big ones are coal and nuclear, pretty much. They're either way out there or off the table, and you're left with gas-fired generation, which is sited locally, and generally has the benefit of reducing congestion on the major nets. So I suspect--I haven't done any data, any analysis to support it--I suspect Tom's suspicion is right, that a new, very efficient, gas-fired generation that's been sited locally over the last few years is probably reducing some of the loadings on those major paths.

David Meyer: And I want to ask people whether there are studies underway and things that you haven't mentioned already, just if you put them in the record here, then we'll pick them up later

and chase them down and make sure we understand these things. So anything that you want to bring to our attention in that regard?

Kristin Mayes: Well, again, David, Kris Mayes, an Arizona Corporation Commissioner. And I probably already mentioned it, but we do have our Biennial Transmission Assessment, which is available. We now have the BTA and Renewable Transmission Assessment Plan, and then we have our 10-year studies that are done and updated, refreshed every year by our utilities. And I think that, as I said in my opening remarks, that includes power flow data and a great deal of other data that I think you could mine.

David Meyer: But how do you deal with the interstate parts of--when you do the biennial projections, how do you deal with the fact that you're part of this larger pattern?

Kristin Mayes: Well, I think those projects, and Dave can correct me if I'm wrong. He probably is a greater expert than I, but I think those projects are included to the degree that they are on the horizon in our Biennial Transmission Assessment. We don't do BTAs that just include the borders of Arizona. I mean, we are very collaborative in our BTA process. And as I said, we just expanded the BTA renewables task force to include six states and the renewable transmission needs of those six states.

Dave Areghini: Yes, when we look at our transmission plan, we don't stop at the border. We look at the projects that we are contemplating, and those of which we are in a study effort, and we put some timeframe on those, and those are included in our plan. Some of those, the next year, may not be in the plan. And there may be new ones. That's why it's a rolling 10-year look. But we can't limit ourselves to just what we are doing internally within the state. There has to be some probability of success on interstate projects.

But if I may, let me address the previous issue of the studies indicating, or data indicating that congestion is going down. I don't have any data to support that, but I wouldn't be surprised, because just in the last three or four years, the focus on transmission and reliability--including the whole standards process that came out of the Energy Policy Act--has increased, at least in our perspective. The focus on the reliability of the system, so I wouldn't be surprised if the transmission system has grown more reliable in the last few years. I know the focus we've placed on things like clearing lines in our forested areas and the amount of new generation--gas-fired generation--that's been locally, in cooperation with the Commission in getting that sited, has contributed to probably more generation available, that in the past we maybe had to import.

David Meyer: Do you see some possible change on the contractual side? That is, is more of the transmission capacity that had been previously inaccessible for contractual reasons, is that now becoming more accessible? Is that part of it?

Dave Areghini: Dave Areghini again. I think it's evolving. With the amount of transparency you now have to have either with your postings on your OASIS or now throughout the West, with our Western Interchange Tool that you have to have a path for everything. It's got to be identified to users. I think you will see that evolve that there will be more and more illumination of the transmission paths and probably end up with some of it being accessible that wasn't before.

Kristin Mayes: And David, to that point again--Kris Mayes from the Corporation Commission in Arizona--I've been dealing with this really recently, because I'm talking to our utilities about how to get wind out of northern Arizona and down into the load pockets. And I think what you may be seeing is more and more use of displacements of contracts and

network flow and those types of things to allow for the existing transmission system to be used to facilitate the importation of renewable energy in the inter-region until we can get these lines built. And oddly enough, some of us Commissioners may be more pro-transmission than even some of the utilities are in this regard. And we're chomping at the bit a little bit in Arizona to get some of this transmission built so that we can get renewables into the load pockets. But I think the utilities are looking more and more on how to do this in the interim without having to build lines, but being willing to build those lines.

David Meyer: Okay. And Tom.

Tom Carr: One additional point. This is Tom Carr again. There's some other interesting work, potential studies which may be useful just to put on your radar screen. One, in terms of NERC's work in terms of long-term reliability assessment. Within the West, WECC will be preparing a comprehensive analysis, I think, to address some of these issues as some scenarios down the path.

But the other very interesting area is the work in integration studies, particularly wind integration studies. There's a, DOE is supporting through NREL, the National Renewable Energy Lab, a major study in the area of the Western Net footprint, basically. It's the Western Wind and Solar Integration Web, and they're modeling actually the entire Western Interconnection with a focus of integrating large amounts of wind within the Southwest region, states including Wyoming, Colorado, New Mexico, Arizona, and parts of Nevada. So there's going to be some interesting modeling that comes out of that, I think. And there are similar kinds of wind integration studies that have been done in California through the Cal ISO, the Energy Commission there, and there's similar work going on in the Northwest through the Northwest Wind Integration Forum.

So I think all that work is going to provide some additional interesting information and modeling in the Western Interconnection.

David Meyer: Great. Yes, Lot, you had a question you wanted to raise?

Lot Cooke: Yes, David. If you are seeing some relief in transmission congestion due to the construction of gas-fired plants in load areas, have you looked at and considered whether you're just trading one infrastructure problem for another? Is everybody totally confident that you have all the products and gas that you could need to run these things for a period of a year and that you have the transmission system in place for gas to get them to you during summer months, or whenever you need that for covering peak loads?

Dave Areghini: Dave Areghini again. You raised a very good point. We've built a significant amount of gas pipe generation in the Phoenix area and within a 100-mile radius. And a concern has been additional transmission. We now have under construction as we speak another major gas transmission line being constructed, which we hope to see completed by the fall, and it was strictly to address that issue, and it was another good collaborative effort by both the federal and state entities that had the jurisdiction over getting that sited and constructed. But there is still, with the contemplation of additional gas generation, there is still a need for additional pipeline.

Kristin Mayes: And we're--again, Kris Mayes from the Corporation Commission--to Dave's point, it's an interesting question, but the state--and this goes to my original point about states needing to resolve their own indigenous issues--at least to some degree, we have been--SRP and APS--have both been building new power plants. I think SRP has at least two, maybe

three, on the drawing boards. We just finished a line siting, a big line siting that skirts the metropolitan Phoenix area in order to get that gas into the load pocket and to serve Phoenix. We've got several other lines on the periphery of northern Phoenix that are working their way, winding their way through the process. But we are very willing to get that done, to do those projects and do what we need to do in Phoenix to serve our load.

And is it easy? No. It's not easy on the utilities, it's not easy on the electric commissioners who have to face the music when it comes to our consumers. But we believe that it's the role of the State of Arizona to deal with our burgeoning population. And obviously, there's issues with both long lines and short lines. I mean, there's others, you know, a lot of, probably more permitting issues associated with the longer lines, the interstate lines, but there's a lot more NIMBY problems with the shorter lines that are closer to the load pockets. But the important thing is the states are aggressive about, and forward-thinking about dealing with that load growth. And I think our utilities--we're very proud of the fact that our utilities have done that.

John Roukema: I'd just like to add--this is John Roukema--that for the most part, the gas plants that we've added are done for economic reasons and not necessarily transmission reliability reasons. And over-reliance on them for transmission reliability is a concern to us as we move forward here.

Dian Grueneich: Dian Grueneich with the California Public Utilities Commission. I think that you bring up an excellent point, which is are you trading off one problem against the other? And we certainly in California have tried to take a very extensive look at our gas supplies, but near-term, long-term, and in the context of proposals to site new power plants.

But there are other issues as well--water--when we're talking about some of these new power plants. And that's something for the entire West. It's a major concern. Our governor has declared a state of emergency, I think, as many people know, because of very extensive drought conditions, and those are in many areas of the West. And when you're talking about new power plants, you are often times talking about major new water usage as well. So these are all part and parcel of when we're looking at the larger issue, which is we are having increasing loads, we're having increasing population growth, and everybody here is very focused on, "We've got to have reliable power." That's what is really the focus of it. And that, then, in terms of transmission, translates into congestion. But I really encourage all of us, when we're thinking about this issue brought up, we're looking at the local, what can be done about building more power plants? I think it's absolutely true. Nuclear and coal are less and less seen, and if that's going to provide the nearer-term solution, we're looking at natural gas, we're looking at renewables, but we also are looking at energy efficiency as a solution to congestion, as a solution to reliability. And I think the West is doing tremendous activity. So I think somewhere in the next report that's acknowledging that, that's talking about that that's one element to the reliability, to the congestion.

And then I also see in California, and increasingly in the West, because of the problems with congestion, because of the concerns over natural gas supply for the new power plants, we're looking at solar photovoltaics. We're looking increasingly at distributed generation. And yes, the cost there is a concern. I think we're going to all be looking at these new elements as well as some of the solutions to congestion. I think DOE can take a great leadership role of at least in the next report pointing this out, that this is a trend that's going to be increasingly embraced to deal with congestion.

David Meyer: We are almost out of time. I want to give all of the panelists an opportunity to make any remarks that you haven't had a chance to bring, so any points you want to make, final points.

Jeff Miller: This is Jeff Miller. I just want to follow up on that same point about the concern about reliance on perhaps local gas plants. And I think that goes back to the point I was trying to make in the beginning. Looking at the resource adequacy of local load areas shouldn't be limited to the traditional one in 10 supply planning. I think it would do us a good service to look at things like gas curtailments in a loading area. What happens when you do have a gas curtailment? Are you going to be forced into rolling blackouts or could you, for a reasonable increase, build enough transmission so you could depend on your neighboring areas during those periods of time?

At ColumbiaGrid, we're in the midst of doing just that type of study, and we want to be able to weigh what is the cost of being able to import additional power versus the risk? How do you weigh the cost of that versus the risk of actually getting into a gas curtailment? Because those can happen. Those are real events. I know San Diego's exposed to that, and some other areas in California, as is the Northwest.

David Meyer: Well, thank you for some very interesting discussion. We will take a 15-minute break and convene the next panel at exactly 10:45.

[15 minutes of silence during break]

David Meyer: Let me give you a two-minute warning, folks. We resume in less than two minutes.

Well, let's get started on our second panel. The first panel was focused more on basic fundamental framework kinds of issues or questions, and some policy kinds of issues. This second panel is a more technical panel, and so I expect what they will do is to drill down a little more on some of the questions that were raised in the earlier panel and to a certain extent, the way I have framed my request to them, was to think of the earlier discussion as suggesting a kind of framework within which to think about congestion or analyze congestion. And so once you have a framework in mind, then how do you proceed to fill in the boxes? And to the panelists, you heard the earlier discussion, and you have sort of the luxury of responding directly to some of those questions if you wish.

And so with that, let me, I'm going to take things in a little different order this time. That is, I want to turn to Wally Gibson first. Wally has written at least one paper, and maybe more, on the subject of transmission congestion. And so I think he's a good one for us to start off with. And Kurt Granat is here to report on some work that was previously referred to several times, done by Dean Perry. Dean would be here except that he has some health problems that make it difficult for him to travel. So he has asked for Kurt to be here to give us some insight on that work. And then we'll just proceed around the table. So with that, Wally?

Wally Gibson: Wally Gibson, Northwest Power and Conservation Council. I'm also the Co-chair of TAZ. As David mentioned, I put together a little overview paper earlier this year on congestion metrics issues. For those of you who are interested in tracking it down, it's on the WECC website if you go to the TEPPC Committee Page, the TAZ Subcommittee page, the February 20 meeting notes on the meeting agenda. That's where you'll find it. And WECC's URLs are highly complicated, so they're not, you can't just repeat them.

So I think what we've heard already this morning is that congestion has a lot of different aspects. It's actually a little bit like the six blind men trying to describe an elephant. And what, and Tom Carr's handout at the beginning kind of put that in perspective, that first page with the scatter plot of the various kinds of metrics. So it's really important to understand exactly what each of these metrics and indicators is telling you and exactly what it's not telling you.

I like to think of the kinds of congestion being broken down into excess requests for transmission service, which is a question of whether there is ATC available or not. That is complicated by the institutional barriers that exist, the institutional problems of the current FERC definition of the interconnection queue process that's being addressed by a number of entities' proposals to do cluster studies and get their tariffs changed under the FERC OATT so that they can do cluster studies and address this kind of congestion that shows up way before we even see it in TEPPC.

The second kind of congestion is request to schedule. You actually have to have, so you actually have to have contracts in order to schedule in the first place. Western usage limits schedules to both path ratings. You can't exceed path ratings, and you can't exceed flows. So there are two kinds of limitations that show up in Western usage that are probably different from Eastern usage as I understand it. So that's something that the DOE is aware of and needs to keep in mind.

The final congestion is real time flow congestion. That's the kind of thing the operators have to deal with. That generally doesn't show up except in the case of outages or unusual events, although there are certainly problems that exist in certain areas where you have to manage real-time congestion.

The kinds of studies TEPPC does are very light. What you see in real time, congestion that shows up in real time. TEPPC does not do the forward-looking production cost studies, does not capture the lack of ATC, the institutional barriers to ATC acquisition, or the scheduling limitations.

And so we've heard a little bit earlier this morning about the historical data. Kurt's going to talk more about that. That's extremely important, to give that perspective, to understand this whole pre-scheduling our congestion piece, and what is congestion or what is not congestion, and why there are institutional problems and what the institutional problems are.

Jeff Miller made a really important point this morning about that, because it's going to tell us where the opportunities are to fix the institutional problems, which are not going to be fixable by transmission corridors, necessarily, but by just different processes, different tariff arrangements. So there's a lot of different ways to get to that issue.

And finally, just to summarize some quick points about production cost modeling and results. They're very easy to misuse, I believe, and so because of the nature of what a production cost study does, it's a linear programming solution. It gives you what are called shadow prices or nodal prices, as sometimes the shadow prices are called. They are the change in total production costs for a single unit change in the constraint. And so multiplying a shadow price by any large number that exists is almost certainly going to be misleading. Like multiplying it by the path rating is going to be misleading. You can't tell just by inspection what the total dollar value of relieving a constraint is by looking at any number that's multiplied by a shadow price in the production cost. You

have to go beyond that. And the paper goes into that in just a little more detail, so that's kind of like a summary of the issues. Thanks.

David Meyer: Kurt?

Kurt Granat: I'm Kurt Granat with PacifiCorp. And I'm speaking in part also to address, I guess, the historic work that Dean Perry has done, both for SSG-WI and WECC, and his ongoing work with the Historical Analysis Work Group. Dean, I know, has collected a lot--WECC has collected flow on major paths for a considerable number of years. I'm not exactly sure how long, and Dean has done a lot to combine that into data.

Similarly, through WECC we have modeling efforts going that look forward until you can look at how those lines look up on the various congestion metrics. As Wally alluded to, it's hard to come up with an exact, simple answer by looking at any, you know, the historical use with congestion, the flow data, or the various numbers that tumble out of the congestion, production cost model. It's a complex problem, and it all depends, because lines like Bridger West, the IBDDC [ph] tie, they are highly loaded, but they also have plants that can relieve the congestion very effectively by backing down a Jim Bridger plant or unit or backing down the ITP. So you don't have to move many megawatts to relieve that congestion. That tends to make it a cheap congestion to relieve versus a line that almost never congests but might have a very high cost.

The Idaho-to-Montana line was one that had a very high cost to relieve, because you had to move 200 megawatts to get a megawatt off it. And so you had to yank a large amount of generation to relieve it.

You get, for a new generation plant trying to get to market, or for a new user trying to obtain resources, if there's no ATC, the line is congested. They cannot get a long-term contract. They'll probably say this line is obviously congested.

It's difficult, because a lot of existing contractual uses of the line may never or very seldom produce any flow or schedule on the line. There's a lot of the high-value uses can be for contingency reserves or operating reserves. These are only used in the event that you have some sort of major outage. However, when you look at the major connections between companies and, in some cases, regions in the West, it's often been the generation capital deferral has often paid for those connections. I believe even the AC and DC Interties, the ability of the Northwest to reduce its need for energy resources and for California to reduce its need for generation resources in the summer peaks, was one of the major factors in justifying those lines.

Another problem with looking at the models is that the models and transmission maps tend to draw you to where the lines already exist, because that's where the congestion is, and that's where the lines are. The solution can often involve putting a line in a blank spot on the map, or modifying a line, or finding a line that simply isn't carrying to its capacity and modifying the line in such a way as to pull some of the power in that direction. So you have to, that's another issue that you need to look at.

Also, PacifiCorp is in the process of trying to get major transmissions built because we are facing congestion and need to move resources to our loads and accommodate the needs of our transmission customers. To some extent, it's hard to guess five or 10 years out what generation will be the cheap one. But we can pretty well know what regions have large resources that are fuel-type resources that would be difficult to move, such wind or geothermal or solar regions or coal regions. I kept thinking of the loads areas

also won't be changing much. So for the future, looking forward, if there were a streamlined process to help get the corridors between these regions in general would be useful and wouldn't be far wrong. Which one gets developed depends on which technology and what becomes cheap and what the users think, when all things are considered, what would provide our cheapest source of meeting our needs?

Another--I should probably wrap up here. But the other thing that I get concerned about is that the transmission, particularly the siting and planning parts of it, can take a long time. Those also aren't the high-cost portions of the transmission work. That's when you're ordering equipment and buying stuff and constructing. But getting the siting work done in many ways provides an insurance policy that is available. And transmission in general does provide insurance. There's the destruction of the gas supply. You can still have wires, and the gas resources do the other, so there's problem that the wires can fire up locals.

But there are other options that should be considered, but I have yet to think of anything that could effectively provide a non-wired solution to move wind out of Wyoming. So we need to be thinking about what happens if some of these other things don't pan out as we planned, because if we sit on our hands and don't plan any transmission, don't get some of the initial work done, you're looking at probably five to seven years or more to get any major transmission in place. So by the time we sit, we think that we can find other ways around this, we are sort of digging ourselves into a hole where we don't have much other than to accelerate it.

Well, I want to thank you very much for the invitation to speak here, and I know our company will be considering further comment. Thank you.

David Meyer: Thank you, Kurt. Jonathan Stahlhut of Arizona Public Service.

Jonathan Stahlhut: Yes, I'm Jon Stahlhut with APS. Since the majority of my talk today is going to be congestion issues in the Phoenix and Tucson area because they were labeled as areas of concern in the 2006 Study,, but first I'd like to kind of expand what Commissioner Mayes was discussing in the first panel. I believe that reliability should be a more major driver than economics as far as congestion. Congestion, to me, seems more like a physical phenomena than, more than an economic phenomena, even though economics play an important role in where the power gets transferred to and from.

And one of the major pieces of information that the DOE should look at as far as congestion in Phoenix and Tucson is the BTA report that the ACC provides every two years. The BTA is a very comprehensive report, and in my view is a very excellent compilation of how or where the transmission system in Arizona is going.

So what I'm going to discuss today is one piece of that report that's important to identifying possible congestion in the load pockets in Arizona. And this report is called the "RMR Study," which a lot of the technical people know what RMR is, but I'm going to give just a high-level overview of what RMR is.

The RMR Study is essentially on "reliability must run" So in our load pocket areas, we have a certain amount of times of the year where wires coming into load pockets cannot fully serve peak demand in the load pockets. And what we do in the RMR Study is essentially identify our import limitations to each of the load pockets and then also identify RMR conditions, which we would call the amount of generation needed to meet

peak demand, the amount of time and energy would be needed during a period of one year in which these RMR units, or local generation units, would need to be run.

And then a third piece of the RMR Study is economic impacts of these RMR units. Are they in the money? Are they competitive with outside generation costs when they are used?

So essentially, Arizona Utilities just finished their RMR Studies and presented them to the ACC, and they are part of this year's BTA. And for, specifically for Phoenix and Tucson, there is an RMR requirement in which we have to run local generation to meet peak load. However, this RMR requirement is a very small amount of time and a very small amount of energy compared to a one-year outlook. And probably the important piece is they are economically competitive with generation outside of those load pockets. Therefore, there's really no difference in cost if we have to--if we take the import limits away, there's no difference in cost as far as with and without import limits.

So we have several transmission projects in the 10-year plans that will decrease congestion. I'm not going to go through them. They're widely available. They'll be in the BTA or ATC filings of each of the utilities' 10-year plans.

But in Tucson, there's a specific study going on that would further address congestion concerns that the DOE may have for that area, and that's in the Southeast Arizona Transmission Study Group. They're currently underway on a study in which long-term plans for the Tucson area will be based from the study. And the entities in this group are not only Tucson area transmission providers. There's other transmission providers in the state that are a part of this study as well.

So essentially, what I'm going to just kind of conclude and say that I agree with Commissioner Mayes that the BTA's probably going to be a big part of Arizona's information submittal to the DOE, as well as the SAC study when it's done. It's part of the SWAT regional planning group, so they know, I think that study will be done later this year. And then any other information that Arizona Utilities or APS would provide--whatever is needed to the DOE to meet WECC's planning standards.

David Meyer: Thank you. And next, Ravi Aggarwal from BPA.

Ravi Aggarwal: Yes, this is Ravi Aggarwal from Bonneville Power. Let me move this mike forward. I was hoping I wouldn't be the last of the panel, because I wouldn't have anything left to say. I'll probably just say, "Ditto, ditto, ditto," but luckily, I'm in the middle. You might hear some reiterations of what has already been said and some other additional information that I'd like to mention based on the 2006 DOE Congestion Study Report.

But I want to kind of start by saying, "Is congestion really that bad?" The first really, you know, there is up to a certain point that I think congestion is okay. I don't think, from a cost effectiveness point of view or if you are looking at the physical needs of the system, if you didn't have any congestion at all on the system, you most likely have a system that's not cost effective. It's probably sending the incorrect pricing and then the customers are actually paying for it.

So I think the question is, "How much congestion is good congestion, and at what point do we say that our transmission is an adequate transmission system that can meet the needs in the most effective manner and provide, under varying dispatch scenarios?" So I think I'm going to start off by saying that.

Also I want to mention quickly about the fact that was talked about, you know, congestion more from reliability versus economics. I would tend to agree with that, but at the same point, transmission planners and transmission operators generally have to manage the system under reliability limits. Now, when an operator is running and managing and looking at the system, they don't really care about whose schedule it is and what's going on. They are going to meet what they need to, they're going to maintain the flows within the limits that have been established.

So, what's going to drive those flows? It's going to be the prices in the market for the generation resources--where the demands are, where the best prices are going to be. And a lot of times, the limits that are getting in place are not in sync with what the market is doing. So there is a problem there, a disconnect between how the planning and operating studies are done to set limits versus what actually is happening in the real time. So there is that disconnectivity, so reliability in itself, it's an important, a very important part. We need to make sure we have a reliable system and can keep the lights on under varying conditions, but it's the disconnect of market reality versus the study parameters that we actually do that sometimes creates that congestion. So maybe it is kind of a real versus an artificial congestion, if I may use that term here loosely.

The other thing--this is probably an engineering brain talking to you for a moment--but it's really the law of physics that's going to drive how the electrons are going to flow in the system. In the contractual path--and this we have seen on Bonneville's system a lot--you know, where we have schedules that are submitted, and the schedules are going in a totally opposite direction to where actually the electrons are flowing. And when you see a path being loaded beyond its capability, and we have to take some actions to correct it, you really don't have that schedule to cut, because that schedule is not made to do that for a congested path. It's made the other way. But it's the law of physics that's going to drive the flow.

So these are some of the things that need to be looked at. I understand it from a marketer's perspective. I've been kind of both sides from being a planner, operation engineer, to being in marketing and sales. So yes, from a marketing perspective, yes, we don't--what is physics? It's all contracts. Contracts drive everything. But at the same time, the engineering side says, "No, it's the physics." And you can't forget Ohm's Law. It's there to stay, at least for now.

The thing that I want to, a couple of key messages that I want to mention before I get into some of the observations that we have seen in our system, is first of all, to acknowledge and commend DOE on their efforts for the 2006 Study. It, I believe, was a good way to historically look at it and describe the results in benchmark, where we were and where we are. So that kind of sets the tone of the state, so I think that is really a great start, and I want to acknowledge that.

But at the same time, I do want to mention--and I want to leave today by saying that the environment around us is changing. There's a lot of changes that are happening. If a free market economy really works the way it's supposed to work, and the changes are going to happen in terms of meeting the renewal portfolio standards and some of the other mandates that may come depending on the emissions of CO_2 legislation--I know the bill didn't pass this year, but it will be back next year. So there will be things that will be changing around us, which--and most of these resources, which we will call renewable resources, are not going to be in the load centers, except perhaps some (inaudible) management things, which could be in terms of solar energy. But a lot of the wind and

perhaps wave energy, if that ever materializes after the technology gets better, they're all going to be a far distance away from where the loads are. And you're going to have to be able to move that energy to the load centers. And that is going to change how the system is going to get utilized in the future, which is going to be different than what we have seen.

So our future outlook is important. I understand that that may not be the upfront intent here of the 2009 Study, but I do want it to be documented that that's something we would like to see happen. Perhaps TEPPC is already doing that, and that may be our forum to get some of that analysis completed and looked at.

I think the Congestion Study should also factor some of the geographical diversities, and I think it was talked about how the schedules and things happen in the Western Interconnection versus the Eastern Interconnection, and how the systems are set up. So that regional diversity should be factored.

And I'm probably looking for some opportunities and tools, and I know there have been, there are a lot of tools out there to study--production cost modeling and doing all that, by the way, it comes to real time managing the system. I think, and Bonneville's system, I think they have one of the second largest number of schedules that are made in the United States. And that, I can tell from our operators' and the schedulers' perspective, it is a nightmare. It is a nightmare trying to figure out and differentiate between firm and non-firm. But basically, we're struggling and dealing with this thing on an ongoing basis. We are trying to come up with better approaches, and I'll talk briefly about those. But anything that DOE or other studies can allude to, would be helpful for us.

So going back to the observations. In the 2006 Study, the Seattle-Portland area was identified as being the area of concern for congestion. So now, in 2005 you saw a lot of excursions, about 183 or so excursions happened in our system, of which about, I think, 15 occasions actually required actual curtailments or redispatch of generation. One of the challenges for the Northwest system--at least for the Bonneville system--has been that the system was built around the hydro. And given the hydro flexibility--we used to have a lot of hydro flexibility at one time, but with the buy-offs and the new rulings and the things we have to follow, the flexibility is going away. And in terms of what it's going to do, it's going to make the managing of the system a lot more challenging, because we may not have the redispatch available all the time like we have been accustomed to in the past.

However, in the IPAQ corridor, which was an area of concern, things have happened. We have built, actually, another 500-KV line. It's about a 70-mile line more in towards central Washington, which has helped take the flow off between the Seattle-Portland area, and actually we're seeing a lot fewer excursions. I think we went from 183 to about 34. And none of those 34 were at a point where we were violating the industry limits. So I think sometimes building lines do actually take care of things, so that was one of the things.

We also have a redispatch pilot program in place. It was initiated last year, 2007 or so. And it has been fairly successful. Now we're looking at probably expanding that pilot program to include other control areas. Right now it was only for Bonneville system.

Our trends are still--you know, where we are seeing some are still not at the peak load for the Northwest region. It's still the winter which drives our loads. Given the different element--we use the term "global warming"--but temperatures in the Portland and Seattle

area are growing, and there's going to be more air conditioning load that's coming on. We have seen some of the pockets that are showing summer and winter peaks to be getting much closer than they were. So things may change in the future, and that's why I'm talking about future projections in the near-future studies.

At this point, I think we have done fairly well on the system to manage and take care of what was identified in the 2006 DOE Study. The challenge, the next challenge we're facing is that there's a lot of wind development happening in the Eastern Washington-Oregon area. And that is now causing a lot of, we're starting to see a much heavier flow on some of our paths that actually did never show up as being an area of concern or congestion. From a contract base it showed, yes, we were probably close to being sold out, but in real time, if you looked at the flow, they were not even close to 70% of their loading.

So the challenge, obviously, is that you have a lot of hydro on the eastern side, lots of the Snake River dams and some of the other hydro plants, that actually have a much higher generation during springtime. So when people are buying long-term firm, they're buying it 365 days. So essentially, what shows up as a high spring loading does not translate to a high summer loading, but when you're selling long-term firm, you've got to have 365 days reliability. So to me, that becomes sort of an artificial congestion, because you're limiting a flow during the summer because of something that happens during spring, and that probably goes to the ATC methodology or how the ATC methodology is done.

We are kind of moving into more dynamic OTC scheduling right now, and OTC limits, actually. We are looking at generation patterns and basic generation patterns. We're setting up the limits of that, that we are not going to the most conservative limit and studying that and maybe creating an artificial congestion. We're saying, "Okay, if we have better generation patterns that can support higher transfer, we'll post those and make that capacity available," which we have seen has actually helped us reduce some of the so-called congestion we were seeing in 2006.

Another thing that is really an important part of Bonneville, which we're going to see happen starting next year, is Bonneville went through an arbitration with the union on the barehanding. And Bonneville actually will be implementing barehanding on their 500 KV lines starting next year. So that will actually reduce the amount of outage time we would have on the 500 KV system, given that we all are seeing an aging infrastructure, we're seeing a lot of the maintenance requirements, at least on the 500 KV side, which provides a lot of the backbone in the Northwest. We'll probably see a less frequent number of outages, so we should be able to have the capacity available a lot longer. So it probably will help reduce maybe the loadings on other facilities.

The future state, I already talked about the wind development happening in the eastern and western eastern Oregon and Washington, which is actually going to change some of the things, but I believe the technological advancements will make probably some of the coal generation more viable in the future. Solar is going to be the future. A lot of wind, probably, I'm not too sure about wind, or, say, tidal or wave energy, how quickly that will translate into being a future resource. But I think all these will probably cause changes in our system which we need to address, and it's going to change the patterns and the flows and probably change the areas of where we see congestion in the areas of where we will see in 2015 and moving forward.

So just to kind of wrap it up, I believe, again, too, I want to reiterate all these good parts and good things that have been said by previous analysts, they were really helpful.

Again, commend DOE on the efforts, and I will be there to help you in the best possible way we can. We'll bring new data, we'll be there to provide you with the data.

Last point, congestion analysis on forward moving. We want to be able to apply the information to policy makers so that they can assist in the development of energy policies at different levels, address cost allocation and cost recovery issues. That's always going to be a challenge for transmission providers, as how to deal with those. We need to be able to find (inaudible) to enable efficient non-competitive markets through basically the development of transmission facilities.

So with that, I'm going to say that I took more than five minutes and apologize for it, and thank you again.

David Meyer: Dana Cabbell from Southern California Edison.

Dana Cabbell: Thank you. Yes, I'm Dana Cabbell, Manager of Transmission Intertie Planning at Southern California Edison, and I first wanted to start off with kind of a statement, a message related to the structure of this year's Study. In the past, in the 2006 Study, Edison did support the approach of that Study that simulated both historical and future congestion. And I was encouraged to hear from David that perhaps there might be a way to, as a companion to this year's Study, look at future congestion. That might be an interesting topic at some of the future workshops to see how that can be played out.

And my perspective's a little bit different on why looking in the future for congestion, why that's important. It really provides utilities, generator owners, and really participants in this industry to get a perspective on future congestion to guide the preparation of permitting applications of these large interstate transmission projects that are going to be involving multiple state regulatory agencies.

The DOE Study, as it's been proposed, looking at just history, may not help guide the preparation of the permitting applications for these large interstate transmission projects. It's already been stated to take several years to permit and build transmission facilities. And just looking at the historical congestion might not give you the perspective that is needed when you're trying to build and permit. And the Congestion Study can add value by identifying congestion relief on a regional perspective.

And I think this is very important, because as these transmission lines go through these multiple states and have to be reviewed, based on each of the states' concerns and the individual states' benefits, as those state regulatory agencies are reviewing that, they also need to take into account the regional benefits. And I think providing some basis for relief of congestion on a regional basis can help the individual states as they go through and analyze these interstate transmission lines.

That said, what we've been seeing in California, a good report that would be helpful, I think, for this effort is the California Independent System Operator prepared a market monitoring report, I believe--I'm not sure if it's on a quarterly basis or annual basis. That report looks at their various interties and branch groups, as they call it, and does an assessment on the congestion for what's coming into the ISO grid.

The recent report that I've seen in April, they've actually seen an increase in congestion on all their branch groups. And it will be important in looking at that data and looking at, I know the perspective has been looking at the WTC paths. A lot of these branch groups within the ISO are just a portion of those WTC paths. For instance, the Palo Verde

Branch Group, which consistently shows congestion, is actually part of the Path 49 east of the river path. So I think we need to take, there's a lot of data out there, there's a lot of reports, we need to kind of narrow it down and look to see what is all that data showing us? What is it specifically as you drill down? There are areas that are congested that maybe if you're looking more at a broader view, it doesn't seem like a congested path, so that there's, I think it's important, and I think it's good for this study to really drill down into that detail. And that's all I need to say. Thank you.

David Meyer: And Tom Darin.

Tom Darin: Yes, thank you. Good morning. Tom Darin with Western Resource Advocates, and I guess I do have the distinction of being the twelfth and final speaker on today's two panels, so a lot of what I have to say has probably been covered already. And I do also apologize. I think that what I have to say is probably more along the policy perspective than maybe any technical expertise that I really maybe don't have on these issues.

Real quickly, Western Resource Advocates is a nonprofit environmental conservation group based in Boulder, Colorado, working to protect the air, land, and water resources in the interior West and Southwest states. We actually focus on seven states as our footprint.

And I'd like to thank the Department of Energy for not only the workshops well in advance of the 2009 Study, but including the environmental and conservation perspectives about what congestion means, what the Study is going to look at. Maybe one thing that I can bring to the table that we really haven't talked about a lot is the relationship between congestion and more likely the solutions that we're seeing to electrical congestion and environmental impacts out there on many treasured Western landscapes and wildlife habitats.

I really want to focus on, I guess, three topics. And we talked this morning, this morning's panel has covered a lot about the current trends. I want to talk about our perspective on current trends driving, and maybe solutions for, congestion. The second thing is some thoughts about the types of solutions that could be at least addressed while at the same time we're looking at what the actual congestion points are. And then finally, and I think this is also right off this morning, coordination of this effort with some other ongoing, both Department of Energy and Western Governors Association efforts.

The first one is current trends. And back in the 2006 Study, when talking about renewable energy resources, and something that our group is actively promoting within the region, and recognizing, by the way, that transmission is the biggest obstacle to getting us to the exciting renewable energy economy where we want to see the region go.

Back in 2006, I think renewable energy was kind of described as a conditional type of congestion area, thinking about those resources. Well, as Tom Carr and others mentioned this morning, we have now eight of 11 Western states having renewable portfolio standards on the books, requiring anywhere from 15% to 25% of the retail electricity to come from renewable resources within the next decade or thereabouts. We're looking at significant additions of renewable capacity to the system--anywhere from 15,000 to 30,000 new mainplay capacity megawatts as these types of resources.

And so I guess my first point is that I don't think we're at the point where we can really call this conditional anymore. To get those resources on the grid, we need to sort of incorporate where they are located, talk about a definition of congestion or the other term

of constraints to include these type of geographically or location-constrained resources that don't have any access.

The definitions last time around talked about existing paths or existing power lines. I'd like to see this Study be more inclusive about the situations where there are no power lines to some of the best renewable pockets in the West and consider how that might be incorporated.

The second trend, and Commissioner Grueneich spoke eloquently about this this morning, is growing awareness of sort of the low-hanging fruit and a lot of the policy aimed at efficiency and demand side management and other measures that basically affect and effectively lessen overall loads in our major population centers. Not only should they be looked at in terms of how they might affect whether an area or a path is congested, but I also think that they are first order in some of the solutions addressed and how we can basically effectively deal with areas of some congestion.

My second point relates to the solutions. Thinking in this Study of just sort of teeing up some different tools in the toolbox for how we can solve areas that are found to be congested. My first comment along those lines would be that we should have a more, we should narrowly tailor the solutions to the actually sound areas of congestion. And it might be a specific power line, a specific pathway. But I don't think overly broad, maybe geographic areas to describe or try to solve congestion is maybe the best way to go about it. I think you'll have more buy-in from the environmental community that way.

I also think, relating to my last point, that solutions should include demand side management and energy efficiency. They should include maximizing local generation distributive resources such as rooftop solar. And they should also include how we can use engineering solutions to maximize the current grid assets to carry more power before necessarily having more power lines.

By the way, all of these, if you can -- I think Commissioner Grueneich again mentioned that through efficiency, many 500-megawatt power plants -- could be taken off the table through gains in that regard. And, of course, that has a ripple effect into less power line needs, which has the ripple effect into what I talked about earlier--less rights-of-way and less impact on the ground and on the environment. So there is a relationship between the solutions for congestion and sort of a sustainable environmental platform for how to connect this all together.

And then lastly, I will say that--and again, others mentioned this--but coordinate this Study with other current studies and efforts. And one that hasn't been mentioned yet is the DOE and the Department of Interior Section 368 Westwide Corridor Initiatives, looking at 6,000 linear miles of corridors on federal public lands in which to house future power lines and also pipelines. But we're talking about electric power here.

And one thought that occurred to me is could there, should there, be an alternative in that Study that says we're going to have a congestion-relieving set of corridors that really ties into where we need the power lines to address congestion?

Another one--another two--the newly initiated Westwide Renewable Energy Zone Initiative that was talked about, the California RETI process. This is kind of historic right now, where we're bringing all the different stakeholders in the West together to find the best locations for the renewable energy build-out. Those are going to be geographically defined polygons. We know where the load pockets are. So we're going

to start to get an idea of connecting the generation to the load pockets. We're going to know of congested areas in between, so having the solutions relate into those processes, to be able to deliver some of the best renewable energy resources in the region to the major population centers, I think, would be very valuable to coordinate those efforts.

So I appreciate the opportunity to be here and to give you our perspective.

David Meyer: Great. Thank you. Thank you all. Let me go back to one of the questions that figured very strongly in the first panelist discussion. That is refining metrics for congestion--and before you get to metrics, I think it's reasonable to say you have to first come up with some definitions.

But let's put the definitions part aside for now, because I think we know, I think our definitions--at least in my personal view--for the different types of congestion that we have talked about, we have those, at least working definitions, one might say.

The metrics are a different matter, though. The Western Congestion Assessment Task Force, I think, did us a very important service last time around in coming up with some metrics, and now here we are with the opportunity to refine them--to rethink them, make changes as appropriate--but I want to ask the panelists here whether they, did they see fairly straightforward ways to do that, or what opportunities do you see for refinements? Conceptual refinements to the metrics themselves, or is it, are we impeded by major data problems, or what reactions do you have to this question of refining the metrics from 2006?

Wally Gibson: I'll take a shot at that. I think we're on the way with--I should note with substantial help from DOE in funding -- for which I think WECC is very appreciative, we're on the way to getting more data to address the question of existing usage and why existing usage may or may not match the existing flow indications that we see, and that's the kind of work that Dean Perry's group is doing that Kurt talked about. That's a big data collection effort, because it involves scraping a lot of information off of ETAGs, which are proprietary information, and aggregating it and all sorts of things. So there's a big data effort underway with the financial aid of DOE. I'm not sure when, I think Dean is expecting some preliminary results toward the end of this year, but of course, things always come up, and so we'll see whether it will be useful at this point for the DOE Study next year.

So I think that piece is going forward pretty well. But, and it will help to give us the interpretation. I think it's really important--maybe more important than refining the metrics--to basically make sure that we're refining our interpretations of the metrics. And the historical data will help a lot to refine our understanding of the situation right now, why we see what we see when we look at the flows versus the ATC data that were on, for instance, Tom's second handout graph.

Ways of refining the study data, when you look at the results of the studies, I think that actually depends a lot on doing additional studies with slightly different planners. For instance, you can get a sense of how sensitive a shadow price is to an individual path limit by maybe raising a path limit by 300 megawatts and refining the setting. I mean, to focus on individual paths, you actually have to focus on an individual path. You can't change a bunch of things at the same time and expect to understand anything about any individual path just because of the flow problems that Ravi talked about. Basically, because power flows where power flows, and constraints show up in long distances away from generation to impact those flows, those flows on those particular paths. So if you

want to refine results for specific paths, you have to focus on a specific path and do a set of studies that try to isolate the magnitude of the effect on a specific path. So I think that's really what would needs to be done, and I don't know how that will fit into the DOE's plans, but as I think about all you can, I think you really need to do that kind of thing.

Kurt Granat: Yes, this is Kurt Granat out of PacifiCorp, too. You know, like Wally says, I think when it gets--some of the metrics are tricky to--well, most of them are tricky, because it all depends. And Jeff Miller alluded to running into the serious constraints. The Bridger West path, if you upgrade it, well, then you run straight into Borah West, which wasn't a problem, because power couldn't get past Bridger West. And you fix that, and now, oh, that's great, but it can't get into the Northwest.

So it's just one after another, and so it's hard to come up with a simple answer on that and you run into the east of river/west of river. In fact, there's a whole series of constraints there, and you look at east of river, and they look fine, but oh, the Imperial Valley North UL Line was loaded. So, because one pattern of generation ran straight into limits that you had to choke things back because of a line in the south, another in the north, another set of generation gets choked back to the center lines. And so the result is the path is limiting a lot of ours, but the path itself never shows up high.

And you just, it's just very difficult to do without studying it. And I remember when I first started reporting, I was an economic--I ran net power cost models. And when I first started reporting to Rich Bales [ph] in transmission, some of the guys, there came up with an issue, a simple issue, just, "How much can we bring in from a plant just north of Portland to Portland?" And it's just one line. And these guys are doing all this work, and I'm going, "Well, why don't you just solve it? You know, how much is the number?" And they're staring at me and saying, "Well, it's not just a simple calculation. With that, we're wondering whether it can reliably be brought in without causing problems to our neighbors, so in fact we're running 30 different contingencies to find out what the worst one of those is, and that's what we would then try to tweak it around to fix it so we could figure out how much we can reliably bring in."

And that solves it for that set of 30 that occurred to them might be the problem. There may be other ones, you know. If you get a little more creative, it gets worse--sometimes. And so it's just very cumbersome and difficult, and being an economist, I was assuming that it would all work out. You know, you could calculate it. I couldn't see what the problem was, but it just keeps getting worse.

David Meyer: Others want to respond to this?

Ravi Aggarwal: This is Ravi Aggarwal from Bonneville. Maybe there's (inaudible) to answer your question correctly, but I think one of the efforts that we looked at in the Northwest was development of the Transmission Adequacy Guidelines. And to think about it is if you can assess and assign some metrics to define what an adequate transmission system is, that metrics could at some point be an indicator as relative to what you see where it says, what you define, as sort of an indicator of where the congestion plants could be. And that would actually factor into the market behavior. It wouldn't be based truly upon what's from obligations. It will just factor upon flows that could be from firm versus non-firm and how the market is going to play out. So that is something which we worked in the Park Rule, through the Northwest Park Rule. For whatever that's worth, if you want to consider something like that, that would be, I would send addition or a supplement.

David Meyer: Let me go on to another line of questioning. Last time around, we focused, in the West, chiefly on the existing congestion catalogue to paths in the West. And I want to ask any, earlier folks from California were telling us that that was not necessarily -- that it isn't sufficient just to look at congestion on the catalogued paths. But if we're going to look beyond the catalogued paths, the question is, how do we bound that? Because if we don't, we could be launching into something that would be just very ambitious, more than the resources that we have would permit.

So, do you see other kinds of focus, ways to focus -- that is, look only at particular portions of some of the catalogued paths for some, provided you have a good reason to do so? Or would the flip of that be, is it possible or significant and worthwhile to do aggregate paths even more and try to look at a couple of them or two or three of them as a group? And so I welcome your responses.

Dana Cabbell: Hi. Dana Cabbell, Southern California Edison. I think to your first point, I think it would be difficult to try to go beyond the defined paths, because it's like we're already stuck. I think staying within the defined paths is the right approach. I think drilling down -- because some of these paths are made up of three, four, six lines. Maybe looking, if it's warranted, if we have some historical information at some of those specific lines within those paths having congested, maybe define that path a little bit, refine the definition of that path by those different lines themselves or branch groups, how the ISO defines their different interties. I think that might be a more refining approach. But I do think that it is best to stay within the defined paths, because then it's like a free-for-all in how you're going to bound it.

David Meyer: Yes. Okay. Yes, Tom?

Tom Darin: Yes, Tom Darin, Western Resource Advocates. Just to maybe push back on that slightly. I think that, again to look at transmission to facilitate the renewable energy resources, a path might not have a congestion or a constraint on it, and maybe in its current state, but that might change if you were to add on 5,000 megawatts of Wyoming wind and then to the nearest interconnection point and then to bring it to whatever load-serving entity that is purchasing for that power. So in the very near future--not at all distant future--I think that what is not congested today might well be on these existing paths just by what's about to connect up. At the very end, they said to reach out into the outlying areas for these types of resources.

Ravi Aggarwal: Ravi Aggarwal at Bonneville again. Just to add onto what Tom said, it's not only about how much wind you're going to bring from something--an example, like from Wyoming--and bring it to a point and then move it further into load centers. I think it's also about the regulation. What (inaudible) generator that is going to provide regulation to all that wind, and if that's going to be some peaking combustion turbines around the system, that may actually create congestion, that may create congestion when the wind dies down because of the regulation effect. So yes, the scope is slightly broader than perhaps what would be caught if you just looked at the wind and just calculated that particular point.

David Meyer: Dana, please.

Dana Cabbell: One more point. I agree with Tom. I mean, with his point, he's looking in the future. There will probably be, especially where the renewable sources are, we'll probably be creating new paths to try to bring in that resource. And that's why I think it is important to look in the future, not just in history. Where is the system going, in all these different

forms for the renewable energy zones? The renewables in these areas that are going to need more transmission, and somehow we're going to have to try to capture that, and new paths will be developed to be able to bring in that resource.

David Meyer: I want to ask you about one possibility, just to get your reactions. One of my friends in the East was telling me, "Well, if you want to look hard at, say, 2007 data or 2006 data, and you want to not simply take it as a potentially misleading snapshot, you could do some back-casting, probing into that data with the use of models to see--sensitivity testing, in effect, for that snapshot--to try to get a better understanding of why you're seeing that particular pattern of results. And we want to try to, how important are the various determinants?" Does this strike you as useful? First, is it doable, I guess? And at reasonable cost, and would it be an informative exercise?

Kurt Granat: This has come up at PacifiCorp on occasion when they're looking at how the plants have behaved, and it's usually awfully hard to collect enough data to model it. I mean, you have all the plant outage data. If you're looking at transmission congestion, you have all the transmission line outage data, which had been, plus, now, once that line's out, like in the West, you drop to a different set of contingencies. And so the line goes out, the restrictions change, what you looked at changed, and it just gets very cumbersome to try to get all that data in there for 8760 hours.

And plus, what you run into is a lot of the models have difficulty in--fundamentally, it's a behavioral type approach. You know, some companies are willing to turn off a combined cycle for overnight. Others don't like doing that, and so they'll insist on keeping it at minimum and dumping the power at whatever the price is. Some companies view the cost of starting up a machine at $5,000. Some view the same machine as costing $10,000. It depends on their approach. And it may be because one, depending on it as a peaking unit for meeting your summer peak, you don't want to be getting closer to risk any maintenance issue. So that type of behavior, they don't exactly tell you what the parameters are there, so it's very difficult to model.

David Meyer: Lot, do you have questions you want to raise?

Lot Cooke: Well, there's one, and this may have been better addressed to this morning's panel, but a lot of people said that in considering congestion, we should take a look at various other means that are being done other than transmission, and particularly energy efficiency efforts. And I just want to know, is there a direct correlation between increasing the energy efficiency of a house, say, and that household's consumption of electricity? Are you really reducing the demand for electricity by making a particular appliance or a particular industry more efficient in some aspects, or are you just giving them a reason to put additional demands on it?

Wally Gibson: This is Wally Gibson. It depends a lot on what you do. In a residential setting, insulating a house allows you to downsize an air conditioner or downsize a heating system. Once you've downsized, you've limited the maximum demand that residents can put on the transmission system. So that's a very clear example of how it happens.

There's always--I think most of the folks who do energy efficiency and demand side analysis are fairly sophisticated about what they call "take-back effects." And I recognize that increasing the efficiency of an operation makes it cheaper to run, whatever that operation is, whether that operation is heating a house or cooling a house or an industrial process or industrial motors--anything that makes the process cheaper gives you more discretionary income and more income to spend on--if you're a business, to spend on

maybe expanding your business. If you're a household, maybe you spend that on something entirely (inaudible), like going on vacation. So I think the answer is yes, and most energy efficiency and conservation analysts, I think, do a pretty good job of figuring out that effect.

The bigger problem, in a way, I think, is how you, from the context of the transmission analysis, put that into the models and capture what you think is going to happen in the models in a way that tells you something, particularly because it's so local. The LSEs are the ones who know about what's going on in their territory. So for WECC, for instance, to look at an 11-state area and try to figure out how to incorporate demand side management and energy efficiency into a TEPPC study is an easy thing to say, but it's a big deal. It's a really big data problem, frankly, and the easy solution is always to just say, "Oh, the load will be different. Well, loads will be lower," but whether you get that right or not is tricky.

Tom Darin: Yes. Tom Darin, Western Resource Advocates. Following up on what Wally said, that there has been at least one effort that I know of to kind of put that into a model, and the authors of that can speak to it more clearly. But it may just be a data source to point you guys to look at for your radar screen is that in 2006, the Western Governors Association released a report of their Clean and Diversified Energy Initiatives, and among the task forces was a Transmission Task Force. And the task force analyzed transmission in different increases or decreases, I think, to a 2015 base case of about a need of 4,000 additional linear miles, probably, within the WGA footprint or a subset of that.

And the finding--and it's on actually pages 8 and 9 of that Transmission Task Force report--was that if you achieved energy efficiency at the levels of 20%, which is aggressive but achievable by, I think, the year 2020, within the West, you could have a resulting decreased need of about 11,150 miles of transmission out of a base case of 4,000 miles. It's about a 30% decrease in needed transmission lines. And I think some of that analysis would relate to how you might incorporate that into relieving or even finding congestion. And again, I don't know the technicalities of how that was achieved, but it's out there, and there are, I'm sure, smart people that worked on it and got that finding. So there is some work that addresses this topic.

David Meyer: Okay. Yes, Kurt.

Kurt Granat: One thing that I remember being concerned from the 2006 WGA study as well is the issue, should the demand disappear, I don't think there would be a lot of people wanting to build generation other than to meet RPS standards, or build transmission. But that will, whether or not those programs indeed do the reduction that we're hoping, will be played out over time. If we haven't sited and or done some siting and thinking about planning and siting transmission in case that doesn't work out, we'll be in a big hole.

David Meyer: Okay. We have five minutes left, so I want to invite the panelists to step up and make any points that earlier you had said to yourself you were going to make and haven't had a chance to address. Tom?

Tom Darin: Yes. I don't want to be hogging all the time, but I do have one sort of maybe bigger-picture thought, and Kurt has touched upon this a couple of times in this panel. And I found it fascinating this morning that the well documented sort of shift right now to solving immediate load requirements through combined cycle gas plants might be creating a temporary, maybe artificial picture that there isn't much, there's maybe less congestion or a trend, a downtick in congestion. And my concern, and I think this is, I

would agree with Kurt on this point, is that we haven't had a lot of transmission expansion in the West in about 15 to 20 years.

And what I just want to make it clear is that Western Resource Advocates is not in the position, first of all, of being against transmission, and second of all, of advocating for close to load, combined cycle gas being the solution here. If that happens, we'll probably face another 10 to 15 years of no significant transmission expansion in the West, and we're going to leave out, again, to use Kurt's example, we're going to leave out some of the best renewable pockets in the West without transmission. So if the finding comes up because of this interesting phenomenon that a lot of natural gas close to load is creating a downtick in congestion and there is none, and that's your report--I'm just oversimplifying on many levels--but that's not going to work. That's not going to work for the next 20 years. We need to be looking at what's going to most likely happen, and it's not going to be forever natural gas being close to load meeting our energy demands. We need to be expanding the transmission in a smart way out to these types of resources.

David Meyer: Okay. Now, any particular suggestions about topics that we should think about for Las Vegas, things that you think warrant discussion, probing? You don't have to respond on the spot here. My email box is open for these things.

Well, with that, we will close. The next item on our agenda, we have set aside some time here for people in the audience to make comments. I have three people listed so far who want to speak, and there may be others who more recently decided that they want to contribute here. So in order of registration, it's Scott Cauchois, Kip Sikes, and Rod Lenfest? I'm not sure about the last name. But Scott, do you want to--the panelists, there are three to go--take a quick break here. We could have brought the mike to you.

Scott Cauchois: I'm Scott Cauchois, and this morning I'm speaking on behalf and as Chair of the Transmission Expansion Planning Policy Committee of the WECC. And so I thank you for the opportunity to speak, and I think that the workshop has gone well, and I just want to add on behalf of TEPPC just comments at a higher level.

I think we have heard a lot of good ideas today. One thing that comes to mind from TEPPC's point of view, and something we'll undoubtedly be discussing tomorrow when we meet in San Francisco at PG&E, is how to follow up from this workshop. And I think Dave Areghini in the beginning had outlined some areas about the planning, and I think he's speaking on behalf of DOE, but this goes for TEPPC as well, defining what we're going to be doing, what years we're focusing on, what our definitions of congestion are, and being transparent about what types of assumptions we adopt for our studies.

And I think it would probably behoove TEPPC to provide follow-up, written information to DOE with specifics about what we're going to be doing and when some of our deliverables are due, given your schedule and need for, I guess, information as early as September.

And then the work that Dean Perry's doing on historical analysis obviously sounds like it will be a little late, but I think we can probably focus on whether there's some interim type of additional information that will be developed out of that work and when that could filter into this process. So we'll follow up, I think.

I'll recommend to the Committee that we follow up with a letter to DOE to provide input on precisely what we're going to do and when. And I think that we'll probably be somewhat proactive on suggesting certainly what we're going to be doing on our studies.

And I think we're going to want to focus a little more on this issue that Dana Cabbell brought up, which is what can we do about thinking about the future versus the analysis of historic data.

Because as we go through this today, I'm reminded that we can talk about a big interstate project that's going to be delivering renewable power to the Phoenix load area, and as we all know, that has implications for gas-fired generation, where it's going to be located. It has implications on reliability in Phoenix, and it has implications for other paths in the Western Interconnection.

And I don't think the Western Interconnection, to date, is able to completely answer the question of, "What are the effects of this level of renewable penetration that we kind of throw around at 15,000 to 30,000 additional megawatts? What is this going to do to reliability all over the West?" And so it's not just confined to particular states and particular load pockets where the fallout of these big projects occurs.

So I look forward to working with DOE, and I think making as productive use of all the studies that are going to be coming out of the subregional groups, and out of TEPPC this year, to provide what I think is a guide, our view of what the future looks like. And then, of course, DOE's going to have to decide how it's going to use that information. Thank you.

David Meyer: Thank you, Scott. And Kip Sikes from Idaho Power.

Kip Sikes: Thank you. I'm Kip Sikes, Idaho Power Company, the Manager of Transmission Policy and Development. And I want to first, again, offer my thanks for the ability to express my opinions here as we move forward, and I want to provide some backdrop or framework in my comments here, so you all see where I'm coming from so it doesn't sound like I'm here to condemn versus commend this effort.

But my first comment is really I feel like at times we've got some solutions here looking for a problem. And what I truly mean by that is the issue is, what transmission to build is the outcome of this process as we're trying to designate, "Well, here's where we need more transmission." But without understanding that transmission is the outcome of this process, not the driver of this process, and how things actually happen, both in a regulated and investment standpoint, we have to get down to examine the underpinnings of why there is congestion, and that clearly is not just a historical analysis position.

I guess you kind of come back to an economic theory. When you look at the optimization of markets, this means you are at the margin in one of your resources, be that transmission or resources. So when you get into that comparison between, "Is it transmission that's constrained or production that's constrained?" that's where you get back into production cost simulation analysis, it really tells you what's the defining characteristic here is what are you trying to optimize--use of transmission or lower production costs for the benefit of the consumers?

So with kind of breaking that down, I really want to focus on future-looking, forward-looking as well as historical analysis. Obviously, with Order 890, there is much more transparency in ATC calculations and what the components of ATC are. And I think that gets into that fundamental question is, does ATC being zero reveal congestion, or is that just a measure of good asset utilization? Being one of those co-owners of the Bridger West Transmission System, that's a good design and high asset utilization. It doesn't

necessarily reflect economic congestion, as Jeff Miller and Tom Carr and everyone has already pointed out.

So what we need to consider there is what time window are we really looking at? We've got the contract limits, we've got flow limits, we've got what gets curtailed in real time. All of those are fundamentally different measures of how this system is being used and whether there is real congestion or not. And so back into one of the fundamental issues here going forward is if I'm looking at base load resources, ATC--long-term ATC-- is a good metric to evaluate, "Can I integrate new base load resources to get to my load?" If I'm talking about economic dispatch and economic market purchases, long-term ATC is not a good metric to assess that. That's where you get into day-ahead and real time measurements. So in looking backwards, again, be careful of what you're using to measure, what underpinning you're trying to identify here.

Another element of transmission service requests, or TSRs, is as a transmission provider, and many of us in the room here get multiple requests that do not move forward. So if there is no available ATC, a transmission service request comes in, you do a study to expand the transmission system, and the request does not result in a contract offer or execution of a contract offer, one has to come back and ask a fundamental question, "Is that a metric of economic congestion, or is it really a metric of uneconomic congestion?" in that the requester determined that this is not economic, therefore stay away from it, yet ATC remains zero. So that's one way to also ascertain the willingness to pay consumers and users of the transmission system as to whether there is a real value in expanding that transmission segment. So we have to also understand why are requests withdrawn, not just is ATC equal to zero?

And we also, as Jeff Miller pointed out, we have a number of policy issues, (inaudible) products, be it conditional, firm, redispatch. There are different ways that we have policy issues in play that can deal with "congestion" and mitigate that.

But a couple of uncertainties to touch on just real quickly as we get into the greenhouse gas, carbon and RPS policies, those may shift the landscape and the willingness to pay for delivery of long-haul transmission. And this creates some additional uncertainty relative to what these types of studies can produce and really be meaningful from an investment standpoint. Also, this was brought up, demand response, energy efficiency, other peak-shaping options will influence the design of these metrics. So we need to be cognizant of that.

One thing that hasn't been brought up is there is a significant impending retirement of the fleet of generation resources in the West as well. And looking forward into what impact that will have on transmission needs to be considered in this type of a study. And again, that's not going to show up in historical analysis, and it doesn't necessarily show up in production cost simulation analysis, but it needs to factored in as to what is the fleet going to look like in the future?

And finally, all of this leads to what we must understand--and I'm saying this kind of in the theoretical standpoint rather than the practical standpoint--we must understand the composition of the load shape and demand, getting back to energy efficiency, demand response. What is really there and why? And is that unadjusted or adjusted? So if you look at raw load, and it has already been brought up, I think, by Wally Gibson, is as you look at energy efficiency, well, you just reduce the load a little bit. Well, you do that, and you don't understand necessarily what has (inaudible), so that adjusted or unadjusted load is important to determine what needs to be delivered to the load centers.

But then you also need to understand the composition of the resource mix. What is coming in as renewables, what is coming in as base load, and where is it coming from? And again, this in a forward-looking sense, are these economic purchases or must-run units for reliability, et cetera? All of those, this is why it is such a complex issue to deal with as to where is there really congestion? So all of those elements truly need to be factored in if you want to get the right answer.

One other short-term look at that is, was there an actual call for redispatch? That is a measure of congestion. If there is a fully scheduled flow on a path, the market has already readjusted, so is a fully scheduled path really a measure of congestion, or is it a market inefficiency? Those are some fundamental questions in there. So historical metrics are--can be--somewhat misleading.

And so I think as you, David Meyer, had already alluded to, historical evaluation is important, but it must be combined with a forward-looking metric to really consider the outcome of these efforts or designation of national corridors of interest, and that carries a lot of baggage with it if we don't do the upfront analysis properly.

So that's why I think we really want metrics to be leading indicators that signal what to build rather than evaluation of historical analysis. Thank you.

David Meyer: Kip, before you leave, I want to go back to your point about significant impending retirements. Can you give us a little more detail on that? That is, what is this capacity that you see potentially or likely being retired? Is it some particular subtype of generation capacity, or is it just a mix of facilities that are aging? Are there particular locations, areas, regions, that we should think about with respect to the retirements? And what factors--I'm interested to know how sensitive these retirement decisions are to--are we talking about decisions that could be delayed, or is some of this capacity likely to simply be shifted over into RMR status and kept on functioning on that basis? Or what do you see happening on retirement?

Kip Sikes: Well, I'm not going to proclaim to be an expert for every utility's fleet of generation, but I have heard, and there have been times I use as an example, that in one year, California retired more production plant than exists in the state of Idaho. So all that says is I'm the flea on the tail of the dog that's wagging it. So, I mean, that's just an example, and can that then come back and impact transmission decisions? Well, if you retire 1,000 megawatts of fleet, or you get to a once-through cooling policy that impacts what is actually available out there, there are a number of these issues that affect decisions in other energy zones that require transmission. So I'm just suggesting that that needs to be considered as part of the metrics as well.

David Meyer: Okay. Thank you very much. Rod Lenfest. Thank you.

Rod Lenfest: There's one fundamental rule of speaking, and that's don't ever speak just before people are going to eat. And I apologize for that. Thank you. The first thing I'd like to do is also echo Dana Cabbell's comment about being too focused on doing a retrospective analysis. If we're just looking at history and doing an analysis of history, we're not--well, we're driving our cars by looking in the rear-view mirror. I think that's questionable.

One thing I'd like to leave you with is concurrent planning, and even coordinated planning, does not necessarily equate to optimized planning. We within the energy business tend to be very silo-oriented for whatever reasons, and usually those reasons are

mandates that are geopolitical mandates or service mandates, are very much focused on doing our thing. And just because we bring a collection of silos together and talk about what we're planning once in a while does not necessarily mean that we're doing anything productive as far as optimizing the decisions. If we bring all of the same parochialities into our meetings and then take those exact same parochialities out of the meeting and make the decisions we would have made anyway, we're deceiving ourselves. We're not doing anything that's particularly productive.

I'd like to say just a word about national interest corridors and corridors in general. Putting all of our transmission infrastructure--or much of our transmission infrastructure--into very narrow--in some cases, a couple of hundred or 300 feet wide--highly visible, highly indefensible areas does not necessarily make a whole lot of sense from a national security perspective. And I think we need to think long and hard before we make it too easy for people to make significant disruptions to our comfort and economic well-being by taking out focused transmission lines.

Thirdly, there's a lot of hard-working, good-hearted, highly intelligent and, in some cases, good-looking people that are very much focused on seeking least-cost solutions. And they're willing to find those least-cost solutions at any price. In some cases, that's an economic price. In some cases, it's the price of extending projects multiple years, and in some cases, multiple decades. I think we really need to look much more intently at what our actual valuation process is. Are we willing to roll over for the folks that are raising health issues or biological or environmental issues, or life issues in the interest of just getting something done?

And lastly, I think we need to change the timeframes. I think we take too much comfort in thinking out seven or 10 or more years in terms of building projects. If projects are being objected to and they're being taken to court and they are finding all kinds of issues, maybe we need to make some fundamental changes, and not just driving a particular solution from the past down people's throats. We need to look at different technologies, we need to look at different ways of approaching things, and we really need to focus, I think, very much on reducing the timeframe. I think we need to challenge people to get things done and get them done in a four- or five-year timeframe. If you're really talking out beyond that, maybe you need to look at doing things in a different fashion. Not everything's going to fall into that kind of a category, but many of the projects we're looking at could.

So with that, I'll let you eat lunch.

David Meyer: Thank you. I want to invite others from the audience who haven't signed in, if you've recently changed your mind and have things you would like to say, we'd be glad to give you some time here. Please identify yourself for the benefit of the people on the webcast and others in the audience who may not know who you are.

Rob Kondziolka: Good afternoon, David. Rob Kondziolka with Salt River Project. I am Manager of Transmission Planning. I also have affiliations with SWAT, WestConnect, WECC PCC, and WECC TEPPC. I'm not speaking or making remarks on their behalf.

I think the good news is that Kip stole my notes, so I don't need to repeat many of the things that he just said, but I do want to touch on three things. One is on process. When DOE looks at their timeframe and lays out their schedule to complete their Study, I do hope that you provide opportunities for review of the draft reports. We have found it to be beneficial here in the West, whether it is a WECC report or even a regulatory report

such as the referenced Arizona Corporation Commission Biennial Transmission Assessment Report, that it goes through some public vetting. We feel that that's a process of allowing that information to be out there, ensures the accuracy of the information, the data, and interpretations.

That also goes to when the report collection process occurs. Those reports that are publicly developed or publicly vetted, I think, have a lot more value than those reports that have been developed by individuals or companies that have not been shared and provided to DOE and have not had an opportunity to have comments.

The second area, I really want to follow up on this issue of ATC. There was quite a bit of discussion this morning on both panels and in these following comments, as when we talk about contracts, paths and ATC, I think there is a great misunderstanding of the different products of ATC. As Kip was alluding to, and then he commented about the request being made, is there's annual products of ATC, there are seasonal products of ATC, monthly products. There is a day ahead, and there's an hourly. And there's firm and non-firm. And so when you start talking about ATC analysis, we have to be very, very careful of the understanding of the complexities of it, what's being requested, and did somebody make a request because they knew they weren't going to have it in the first place? And we have to really understand that there is ATC out there, but it may not be used in the products in which it's being provided.

And then lastly, when, I think you had a question to Commissioner Mayes on the issues of the ACC Biennial Transmission Assessment and what's being done to look at the other states. I wanted to make certain that you understand that through the SWAT process and the affiliation through WestConnect, that process is occurring. WestConnect produces an annual report that is very comparable to the ACC Biennial Transmission Assessment Report, but it looks at the entire WestConnect footprint, which includes Wyoming, Colorado, New Mexico, Arizona, Nevada, and parts of California. And in that report, it has a total compilation of all the proposed transmissions in that footprint. And I think it provides it in a very convenient form. And if you were to go to the WestConnect website, it is all compiled into a Google Earth-type map to where you can see the entire footprint at once and see all the major transmission, and then as you use that typical Google Earth technology to be able to zoom in, it allows you to see a lot of the transmission that otherwise doesn't show from the different scales of magnitude. And I think that it is very useful.

And then lastly, with respect to WestConnect and in addressing this issue of is the right amount of transmission being proposed or not, the WestConnect studies not only are taking a look at the aggregation of all the proposed plans, but it goes two steps further. One, it takes a look at doing a 10-year snapshot analysis of that footprint. So it looks at all the transmission in that footprint with the projected loads and does an analysis on the adequacy perspective.

It additionally goes beyond that by saying, "Okay, maybe even at that point, we have too much. Do we know if we have enough?" It then goes in and takes a look at doing what we would refer to as N-1-1 studies to take a look at the sensitivity and find out, "Can you remove some of that transmission and still have adequacy?" And that, along with the other type of studies in the area which were referred to, or maybe not really clearly, but the extreme contingencies--I think it was Jeff Miller talking about this before--that are being done in the corridor analysis. When you supplement with that, we have a much better understanding of what's needed and what's not needed.

And with that, David, I'll conclude my remarks.

David Meyer: Yes, thank you, Rob. On the question of putting out a draft Study for comment, that's something that I will have to take back to my management and talk with them about. It's also something that would be of interest to the incoming administration as well. But I want to point out that if we put something out for comment, it would almost certainly have to go out for comment for 60 days, I would assume, just that a lot of the parties that would want to participate would say, "Well, we need 60 days in order to review it and develop our comments and get them back to you." And then there would be an additional period for DOE to review that material.

So it looks to me as if it raises a lot of scheduling problems in terms of meeting an August '09 deadline. If we were to try to do that, it would probably mean, we had talked about trying to include 2008 data if we could get it soon enough to analyze it in some way or to some degree in early 2009. But if we were trying to get a draft out for review, it would be that much more difficult to address 2008 data. And so there are those kinds of balancing things to be addressed. But thank you, Rob, for some thoughtful comments.

Anyone else before we declare adjournment here? We are very close to our cutoff time for the webcast. Seeing none, I will conclude that we have completed the program. Thank you very much.