FEDERAL ENERGY REGULATORY COMMISSION

TECHNICAL CONFERENCE ON

ENVIRONMENTAL REGULATIONS AND ELECTRIC RELIABILITY, WHOLESALE ELECTRICITY MARKETS, AND ENERGY INFRASTRUCTURE

DOCKET NO. AD15-4-000

Western Region - Denver, Co.

February 25, 2015

RENAISSANCE DENVER HOTEL

3801 QUEBEC ST.

DENVER, CO

PARTICIPANTS:

FERC Chairman and Commissioners

Cheryl LaFleur, Chairman

Philip Moeller, Commissioner

Tony Clark, Commissioner

Norman Bay, Commissioner

Colette Honorable, Commissioner

FERC STAFF

Dave Reich

Laura Swifter

Jeff Dennis

Heidi Neilson

Christy Walch

Anna Cochrane

Arnie Quinn

P R O C E E D I N G S

(8:47 a.m.)

MR. BARDEE: My name is Mike Bardee. I'm with the Commission's Office of Electric Reliability. I'll be the moderator for this morning's session of the Conference today. I would like to thank you all for coming. We have a busy day ahead of us so we will get right into it.

Let me start with some of the housekeeping and ground rules for the day, here's where we get to the substance of the day. First I would like to say that members of the public are invited to observe today's meeting, including attending, listening and taking notes but that does not include participating in the Technical Conference or addressing the Commission or staff.

Actions that purposely interfere or attempt to interfere with the commencement or conduct of the Technical Conference or inhibit the audience's ability to observe or listen to the Conference, including attempts by audience members to address the Commission or staff while the meeting is in progress are not permitted.

Any person engaging in such behavior will be asked to leave the Technical Conference and anyone who refuses to leave voluntarily will be escorted from the Technical Conference. Thank you for your cooperation.

So just a few other housekeeping points -- first

of all I'd ask everybody to please turn your mobile devices to silent, lunch will be from around noon to 1:00 P.M. The hotel restaurant has a buffet available and there are a number of options around the hotel. I would like to mention that the food and beverage out in the hallway, that's not ours.

The afternoon break is from around 2:45 to 3:00 P.M. For those who are speaking today, please be sure and speak directly into the microphones so that the audience can hear you and so that those who are listening to the audio-cast can also hear you. The microphones are live, you do not need to turn them on or off they will stay on.

Let me cover just a couple of points related to the content of the Conference. Last week the Commission held the first of four Conferences on the issues related to EPA's greenhouse gas proposal for existing plants. Today we are doing the first of three Regional Conferences. Last week it was on the national perspective, today it's the first of three regional ones and obviously this is for the western part of the country where we will delve into a more granular look at issues from the perspective of the west.

EPA representatives are here attending and will be here listening and in fact one of EPA's representatives will be speaking in just a little while later this morning but I would say that from the Commission's perspective our

main questions or our main interest is on what should our role be, what do we need to do to do that role well? So I would encourage the speakers on trying to focus on that aspect of the issues.

So let me turn now to introducing some of the other FERC attendees here starting with our Chairman and Commissioners. At the center table there in the center is Commissioner, excuse me, Chairman Cheryl LaFleur. To her left is Commissioner Philip Moeller, to her right is Commissioner Tony Clark on the far right of the audience is Commissioner Norman Bay and on the far left of the audience Commissioner Colette Honorable.

And now I'll introduce the other staff attendees that you see up at the table here. Going down from my left and around we have Dave Reich, and Laura Swifter from the Commission's Office of Energy Market Regulation and then Jeff Dennis from the Office of Energy Policy and Innovation. Heidi Neilson and Christy Walch from the Office of the General Council, Anna Cochren from the Office of Energy Market Regulation and Arnie Quinn from the Office of Energy Policy and Innovation.

So now I will turn it over to the Chairman and the Commissioners if they would like to make any opening remarks.

CHAIRMAN LAFLEUR: Thank you very much Mike and

thank you to all of you for coming. We know you have come from across the west and a large contingent from D.C. and we are very grateful that you are here. We want to make it a very substantive and helpful day. A couple of days ago at a climate leadership conference the Executive Director of NAARUC commenting on FERC's work on the Clean Power Plan, referred to it as even sexier than net neutrality.

When I read that quote it really put my life into some sort of serious perspective but we are very, very excited to be working on this. I want to thank all of -- I believe there are 15 or 20 members of FERC's staff who made the trip out with us. It seems like just 6 days ago I was thanking them for running a tech conference and indeed we already have the drafts of the East Tech Conference so this is a movable feast that we are going to be doing for the next month and I really appreciate their efforts to put together their good agenda and really help us make progress on the issue.

Judging by the very interesting testimony that I read on the plane I think we are going to have a very interesting day and I'm glad that we are starting in the west because of the diversity of industry, structure, geography, resources and the plethora of organizations most of which begin with W who are regionally poised to help us. Wheel, Wy-Rab, WECC, and many others that I'm forgetting at

this moment.

Again what I would really like to hear is for folks to be as concrete and specific as they can about their problems and to the extend -- you can assume we have heard what happened last week, we've read the comments, we know the basic building blocks and so forth. To the extent you can focus on what FERC can do. I think I have to modify that instruction a little because I said that last week but that just doesn't mean that people should say what FERC can do is tell the EPA this and then read their comments.

But what we can do in our jurisdiction that might help on this and with that I think I'm supposed to turn it over to Phil so he can probably grab that mic thank you.

COMMISSIONER MOELLER: Thank you Chairman LaFleur we are here because of you and we appreciate it. It's good for us, especially the west, I don't think FERC has had a meeting like this in the west since probably 2006 when we met in Phoenix so it's great to be back in the west and we look forward to your comments. This is an interesting issue because the west always likes to claim that we are a little bit different and in this case we really area because of the nature of markets and the western interconnection and the challenges, unlike the east where particularly generation units are often far away from load, the contractual arrangements are different and the state of the fleet is

different in the west, particularly with the diversity and essentially where it's going in terms of more gas, displacing a variety of sources.

But the challenges of infrastructure in the west are unique as they are in the east as well. We are all here because of what the EPA has projected as a Clean Power Plan and whether you like it or not I think the point of these discussions today is to try and be productive and come up with ideas as the Chairman referenced that would make it work better.

Whatever we want to do we want to make sure we don't make things worse. We want to protect liability and hopefully we will be cognizant of the cost of consumers on all of this. We had a lot of discussion on the proposed safety valve at our conference on Thursday afternoon and again as the Chairman pointed out at that conference that phrase means a lot of different things to a lot of different people.

So to the extent that you have thoughts about a FERC role on a reliability safety valve specificity would be helpful as we try and put something together to propose to EPA if that is something that they choose to put in the final rule. Again thank you to our staff for arranging this, thank you to all of our participants who have come from near and far. I look forward to a productive day.

MR. CLARK: Let me just add my thanks to all of you for being here and welcome as well. This is where we begin the process at these regional meetings really starting to dig down into a more granular analysis of the different regions. It can be tough from an electric -- especially on the electricity side to talk about national electric policy, national energy policy because this is still very much an industry that is very regional in nature and so by necessity these regional meetings are going to be where we start to dig into some of those issues.

One of the things that I am particularly interested in and beginning to scratch the surface on is the uniqueness of these bilateral markets. Certainly we have CAISO in the west. We will be hearing from folks from California, but the bulk of the west is in bilateral markets just as the bulk of the southeast is and we spent some time in D.C. talking about those kinds of markets but I would say looking back last week a lot of our time was spent talking about some of the more organized markets.

But there is just an entirely different set of issues that you have in places like the west and so this will be I think a particularly good opportunity to begin the process of looking at the very unique nature of bilateral markets. One of the other things that I would add to the list of admonitions that the Chairman gave and Commissioner

Moeller, talking about things that FERC can do.

I would also view this as an opportunity for folks who are going to be speaking with us here today to talk about the things that states can be doing across the west. This is really an opportunity for dialogue I think amongst the regulatory community and so much of what is envisioned in the Clean Power Plan is really -- falls to the states, either State Regulatory Commission, Governor's Offices, legislatures and these are all entities that need to be getting prepared and thinking about how they may address it to so I am particularly interested in looking at those unique angles from the perspective of what the states will need to do to be getting in position to deal with the plan so thanks for being here and I will turn it over to Commissioner Bay.

COMMISSIONER BAY: So I agree with Commissioner Moeller that it's great to be back in the west. I would thank staff for putting together these conferences, the Colorado Commission for its hospitality last night and our many panelists for coming here today to share their views with us.

The National Conference I thought was very helpful and informative in terms of setting the stage for Jay's conference. They gave us an overview of the kinds of issues that people are seeing and this regional conference

as in the other two regional conferences, I hope that we can do a drill down to examine the challenges at the state and regional level.

And I want to echo what my colleagues have said in that speaking for myself at least what I'm hoping to get out of these conferences is a sense for what your views are on the challenges of implementing 111D and second given those challenges, how can FERC be helpful. How can FERC be constructive in helping your state or your region deal with the challenges?

In any event I look forward to today's conversation and hearing what you have to say. I'm here to learn from you.

COMMISSIONER HONORABLE: Good morning, I too would like to thank Chairman LaFleur for convening these Technical Conferences and to our staff that has worked so very hard, not only in preparation for the beginning technical conference but for this one and the ones to follow.

I would like to thank all of you for being here, most of all for your very diligent participation. I mentioned I met Clare before we began this morning and I mentioned to her that my main purpose in being here and I know my colleagues share in this sentiment is to listen to you.

It's very important that we come to where you are and to sit and listen to your thoughts about it, your concerns, your issues so that we can work collaboratively together. And I appreciate Commissioner Clark's comments about the differences among the regions and I too expressed to someone about our Technical Conference last week -- that it was very focused on regional efforts and so in my past training I have learned to appreciate diversity.

I appreciate how diverse you operate here in the west and I want to learn more about that and what it will mean to implement the Clean Power Plan so I look forward to hearing your comments and thank you again.

MR. BARDEE: Thank you all and now the next part of our morning is a presentation on our regional energy infrastructure here in the west and for that presentation we have Olubukola Pope from the Commission Office of Projects.

MS. POPE: Good morning and welcome. I'm Olubukola Pope of the Office of Energy Projects. Today I will be giving a snapshot view of the current status of gas and electric infrastructure in the western region of the country.

For the purpose of this presentation the western region consists of 11 states as shown in this slide. We recognize that to the long haul nature of some interstate pipelines, natural gas pipeline infrastructure does not

newly fit into the geographic confines of the region.

However we find that this geographic configuration is reasonable for discussing the status of the energy infrastructure under the Commission's jurisdiction. The next slides will highlight the status of the electric infrastructure in the western region. The North American Electric Reliability Corporation NERC, is an international regulatory authority whose mission it is to ensure the reliability of the bulk power system in North America.

NERC's area of responsibility includes the continental United States, Canada, and the northern portion of Baja California, Mexico. NERC is subject to oversight by the Federal Energy Regulatory Commission and governmental authorities in Canada. NERC works with 8 regional entities to improve the reliability of the bulk power system.

The Western Electricity Coordinating Council WECC is the most diverse of the 8 regional entities and is geographically the largest with delegated authority from NERC and the Commission. The WECC regions extend from Canada to Mexico and include the provinces of Alberta and British Columbia, the Northern Portion of Baja California, Mexico and all or portions of the western states shown in this slide. The WECC has four main sub-regions, the Rocky Mountain Power Pool Area RMPA, the Desert Southwest, the Southwest Power Pool Area which includes the basin, the

California Mexico power area which includes northern and southern California.

This chart shows the installed generation capacity in megawatts and the total energy produced in 2012 in gigawatt hours for the western region. As of January 1, 2015 the total installed capacity import approximately 225,000 megawatts. Gas powered generation dominated with 43% of the total fuel mix shown in red. Hydropower had 23% shown in blue and coal-fired generation had 15% shown in gray.

Variable Energy Resources VERs include 4% solar and 8% wind capacity. I would like to note that the western region is the only region in the country with geothermal capacity and over 80% of this capacity is in California. I would also like to note that reliability must run units totaling 92,253 megawatts of which 56% is natural gas, 36% coal and 8% nuclear.

Turning to actual generation in 2012, the last year for which we have complete totals, you can see that it totaled 739,906 gigawatt hours with gas-powered generation producing 30% of the electricity in the region, coal-fired generation producing 27% shown in gray and followed closely by hydro which is 26% shown in blue.

Variable energy resource generation has doubled from 3% in 2010 to 6% in 2012. The takeaway from this slide

is that natural gas, coal and hydrogenation are the primary energy sources for generation in the western region.

Electric generation varies greatly within the west region and these pie charts show that there are strong regional differences in fuel mix among the sub-regions. Coal-fired generation is shown in gray, dominate in the basin, the desert southwest and the Rocky Mountains car pool area.

Natural gas-fired generation is shown in red, dominates in northern and southern California while hydro shown in blue is dominant in northwest power pool area. Although not represented on this slide I would like to note that southern California had a dramatic increase in natural gas-fired generation from 59% in 2010 to 73% in 2012 while nuclear generation declined from 16% in 2010 to 1% in 2012, reflecting the retirement of the San Onofre nuclear generation station.

This slide provides a view on the expected editions to generation capacity in the western region by 2025. So out of all the west sub-regions it is estimated that 44% of the projecting capacity for electric generation will be in California with 34% in southern California and 11% in northern California.

A conservative projection of capacity edition is currently under construction or projected to be in service

by 2017, totally 5,155 megawatts. Another 19,785 megawatts in advance development where site prep and permitting has been completed, is expected to come online by 2020. This total of approximately 25,000 megawatts include 64% in variable energy resources VERs. Of these VERs equal 35% in solar and 29% in wind. The remaining capacity would include 27% in natural gas, 3% in geothermal and less than 1% for water and oil.

Approximately 110,000 megawatts of additions currently in early development status may come online by 2025. Of this total, 51% is estimated to be in variable energy resources. Of these VERs 30% will be in solar and 21% will be in wind. The remaining capacity would include 24% in hydro, 14% in natural gas and 6% in nuclear.

A quick look at peak and summer/winter electricity demand in the western region shows that since 1989 summer and winter peak demand has mostly been increasing. Generally the peak demand in the summer is greater than the winter peak which can be attributed to the cooling requirements being greater than heating requirements for the entire western region.

However, the northwest power pool area is a winter peaking area while the other three sub-regions in the WECC are summer peaking. This slide shows in 2012 the western region was a net importer of electricity with

approximately 2,700 gigawatt hours from the northwest power port area in Canada, the top left. Approximately 2,400 gigawatt hours from Baja, Mexico bottom left and 37,000 gigawatt hours from southwest power pool bottom right.

In addition we see a total of 855 gigawatt hours of net exports to Midwest reliability organization, that's top right.

The electric transmission infrastructure in the western region consists of about 65,685 miles of existing transmission lines operating at 230 kilovolts or greater. Of this total, 53% of the lines are operating at 230 kilovolts, while 28% of the lines are operating at 500 kilovolts or greater.

In 2012 the WECC completed 16 transmission projects totally 970 miles of new right-of-way high voltage transmission lines which included Nevada's one line project and the Montana/Alberta tie line.

In the western region approximately 13,000 miles of new high voltage transmission lines are being projected to be built by 2030 at an estimated cost of 44 billion. Nearly 50% of the additional transmission lines are expected to be 345 kilovolts or greater. In addition the majority of the electric generation is located significantly far from load centers and the average proposed projects are over 60 miles long.

Currently electricity I'm sorry -- currently electricity products can be traded at more than 2 dozen hubs or delivery points in North America and natural gas products can be traded at over 120 hubs. The data posted here represents three major electricity trading hubs in the western region.

Electricity prices in the western region for 2014 were elevated compared to 2013 as a result of three things -- limited hydroelectricity in California, higher natural gas prices throughout the region as a whole and higher demand caused by cold weather in the beginning of the year. Average on peak electricity prices were up 16% at NP-15 hub and 13% at the Paloverde hub while prices at Mid-Columbia only rose 3%.

Turning to natural gas, the next slides address the status of natural gas in the western region. There are approximately 25 major pipelines that transverse the western region. The western region pipelines have the capability to transport natural gas into and through markets into the west, central and northeast regions.

The west also imports gas from west Texas and western Canada. This map shows approximately 30,500 miles of existing interstate natural gas pipelines and approximately 26 cubic feet of working gas storage of which 3.6 trillion cubic feet is under FERC's jurisdiction.

Although there is 14 imported I'm sorry -- also there are 14 import/export points with Canada and Mexico. Currently there is no LNG terminals located in the west, however there are two proposed LNG terminals under review at the commission, Jordan Coal and Oregon LNG.

This slide looks at natural gas consumption in the western region. Before I get into gas consumption I would like to mention that total western demand for natural gas in 2013 was 4.46 trillion cubic feet. Of this demand electric generation was shown in dark blue made up 1.81 trillion cubic feet or 41% followed by industrial demand which is shown in orange at 1.1 trillion cubic feet or 25%.

Between 2013 and 2020 total gas demand is projected to decrease to 4.22 trillion cubic feet with all of the decrease occurring in electric generation for the western region. The decline in electric generation seems to be attributed to the implementation of variable energy resources VERs in the western region. Now from 2020 to 2030 total demand for gas is projected to increase to 4.62 trillion cubic feet with both electric generation and industrial demand increasing to 1.82 trillion cubic feet and 1.24 trillion cubic feet respectively.

Looking at the sources of projection in the western region, we see that historically domestic natural gas production primarily comes from conventional and

non-conventional which are coal bed methane in tight sand sources. The west generally does not produce much shale. By 2030 we see some production of natural gas from shale formation but it will not dominate the production.

For the 4.51 trillion cubic feet in 2013 shale represented only .15 trillion cubic feet or 3%. While gas production is projected to increase to 4.51 trillion cubic feet in 2010 and 5.02 trillion cubic feet in 2030 gas from conventional sources is projected to decrease while shale gas and tight sands is projected to increase. Thus production from tight sands coal bed methane and conventional sources will continue into the future and will account for the majority of the western region's total gas production.

In contrast to the western region, the U.S. natural gas production is dominated by shale. In 2013 shale made up 47% of the total natural gas production and is projected to increase to 67% in 2020 and 72% in 2030. This chart compares gas facts to the U.S. to the western region from 2013 to 2030. As you can see on this slide, since 2013 the western region as a whole used about 18% of the total natural gas consumed in the United States and produced about 18% of the total natural gas in the U.S.

It is expected that gas production and consumption will grow slightly in the west through 2030.

Imports from Canada will remain the same between 2013 and 2030 and there will be a slight growth in exports to Mexico from the western region between 2013 and 2030. This chart shows that the western region is still depended on gas imported from Canada.

While Canadian imports to the U.S. shown as green bars are projected to decrease until 2030, Canadian imports to the west shown here in red are projected to remain consistent. This slide shows that natural gas exports from the U.S. shown again in the green bars to Mexico are projected to increase dramatically from 2013 to 2030. Gas exports from the west to Mexico shown again in red bars will increase only slightly.

In 2013 this figure shows gas imports into the western region from Canada. Small exports of gas into Mexico and delivery of gas into the central region. The number in white indicate capacity and the numbers in blue indicate actual flow. Projections to 2030 show pipeline capacity into the western region estimated to remain constant with steady flows from Canadian resources.

Pipeline capacity out of the west is projected to increase, particularly to Mexico. The western region is estimated to both increase in production capacity as well as increase in demand of gas consumption. Thus projections show that the western region will be primarily consuming the

gas it produces.

The data posted here represent four major gas trading hubs. Western natural gas prices were elevated throughout the year as warm weather persisted through the region. 2014 natural gas prices in the west were 20% higher than the prior years as summer temperatures in the Pacific region were nearly 16% warmer than the summer of 2013.

This slide shows that increasing shale natural gas production has helped keep natural gas prices relatively low over the past several years and is expected to keep prices moderate over the next 10 years. There are several projections showing that natural gas prices are expected to be under 5 mmbtu's for 2025. This concludes my presentation of the current status of the gas and electric infrastructure in the western region of the United States, thank you.

MR. BARDEE: Thank you Bukola, that's a very helpful foundation for our discussion here today. Let me turn next to our next speaker, Joseph Goffman from the Environmental Protection Agency. Many of you may know Joe he has been working here on this proposal for the last year and a half probably. He's been engaged in a lot of outreach, including meeting with FERC staff and others during the course of that time and so we thought the least we could do was sort of help him along by inviting him here so that he could reach his new personal best of frequent flyer miles.

Joe is the associate assistant administrator and senior counsel at the EPA, Joe?

MR. GOFFMAN: Thank you very much Mike for the introduction and thanks to you and your colleagues and to the Commissioners for giving the EPA an opportunity to participate in not only this workshop but the other workshops that you have been and will be holding.

It's -- let me just take a moment to know that my colleagues and I at EPA have really found it to be a very productive and a pleasure to work with you Mike and with your staff and colleagues at FERC and we look forward one way or another to continue that relationship.

I would also like to thank the Commissioners again for giving EPA the opportunity to play the role if you will of setting the table at these workshops and I hope to do that in the next few minutes. One thing I should also point out is that five EPA colleagues in addition to me are here at this hearing, one from headquarters in Washington and EPA's Region 8, Region 9 and Region 10 are also represented and all of them have played a significant role both in the engagement and outreach process we have undertaken and in developing the proposal and the ongoing rulemaking.

The opportunity to speak here today is critically important to EPA because at the very least it gives us

another opportunity to engage with the states, utilities and other stakeholders with such a high interest in this issue and to thank them all for the numerous substantive comments that they have submitted and counsel, advice, guidance and information they have provided in discussions that we have had with them, all of which will contribute to our best efforts to make the final Clean Power Plan as workable and as effective as possible, taking into account that like you we see workability to encompass not just emissions reductions that the proposal or ultimate final rule intends to achieve but also to encompass affordability and reliability for the electricity system and for the customers, consumers and overall economy that depend so critically on it.

EPA is extremely grateful for FERC's work in putting these workshops together and conducting them because we are confident that what will emerge from these discussions and from your synthesis and advice moving forward after these workshops are concluded will be absolutely invaluable. Indeed I and several of my colleagues poured over the written testimony from last week and noted that in keeping with the comments we have received it was very high quality and very, very informative.

We've had the good luck as an agency to be able to coordinate with you and your staff not only the

development of the Clean Power Plan but in the implementation of the mercury and air toxic standards and we expect that along with the work done in these workshops and in follow-up we will be able to rely on that coordination as we move forward with the Clean Power Plan and we expect that that coordination will be critical to the success of the Clean Power Plan.

Notably the engagement that we have had to date and planned going forward will focus on reliability and we think that because the states play the role as co-regulators with us in implementing the Clean Power Plan they too will gain invaluable information from this process and to answer -- take a first pass at least in answering the Chairman's question about what FERC can do, it seems that providing information not just to EPA but to the states as they put their compliance plans together will be critical to ensuring reliability and the work required to ensure reliability going forward.

Last week acting assistant administrator Janet McCabe spoke at the Commissioner-led national overview session at FERC headquarters. There will be some repetition in the remarks that I deliver today and those that she delivered last week. My goal however is to focus on issues that are pertinent to and raised by western states, utilities and stakeholders and to answer questions that you

may have but I will be if you will incorporating her comments into the record of today's workshop.

As you heard assistant administrator McCabe say last week EPA's understanding of our own history in developing Clean Air Act pollution standards for the electric power sector including the Clean Power Plan proposal. We have tried to consistently treat electric system reliability as absolutely critical. We have devoted significant attention to this issue ourselves.

We have also made sure that we are coordinating with stakeholders and energy regulators at the federal, state and regional levels to ensure that the important public health and environmental protections Congress has charged us with providing are achieved without interfering with the country's reliable and affordable supply of electricity.

Because of this attention at no time in the more than 40 years that EPA has been implementing the Clean Air Act, this compliance with air pollution standards resulted in reliability problems. Of course we are equally committed to our own mission of protecting public health and the environment. In the case of the Clean Power Plan proposal that means addressing climate change, a problem that is already affecting the health and economic well-being of communities across the country.

These impacts on health and quality of life and on the environment, both dramatic and incremental will only worsen if we do not take steps to reduce carbon pollution today. So let me turn to the proposal which we issued under Section 111D and particularly to the issue of the liability.

In crafting the Clean Power Plan proposal EPA sought to provide the flexibility and the kind of timeline states, tribes, territories and affected generators would need to cut carbon emissions while maintaining affordable electric power and safeguarding system reliability.

To develop the proposal we started by looking at the wide range of input states and stakeholders provided to us through our outreach and engagement process. This helped us to identify four strategies or building blocks that are already widely used in the power sector and again let me emphasize that.

What we derived from the outreach process was a vast stored information about actions already taking place across the country and across the system and our four building blocks, the basis of our proposal, represented our attempt to capture that on-going activity and utilities, states and stakeholders experience undertaking that activity.

Those four building blocks included making fossil fuel fired power plants operate more efficiently using lower

emitting fossil fuel fired power sources more, expanding renewable generation capacity and using zero emitting resources more and those would include of course solar, wind and nuclear facilities, and finally using electricity more efficiently.

While our proposal recognizes the interconnected nature of the power sector and is founded on four common strategies that are already in use today, it also proposes unique goals for each state that reflect the differences in the mix of resources that are currently being used to generate electricity in each state and differences in the potential each state has to increase the use of lower carbon and zero carbon resources.

Because of these key differences, the proposals target-setting does not rely on a one size fits all approach, instead it proposes different goals for different states. We know that there are several aspects about the west that make each of the states and electricity systems in this region different in key respects from those in the northwest, northeast, Midwest or southeast.

States, utilities and stakeholders have made the point very clear to us through the comments and discussions that have been provided to us and that they have participated in with us throughout this process. We have heard about individual state goals. We have heard about

ways the proposed goals affect the coal fleets in western states and how that may affect reliability.

I want to assure you that we are looking closely at this issue because we agree that coal must continue to be a part of the diverse energy mix in this country, not just for reliability reasons but for overall economic reasons as well. We have heard about how the proposal can change the way states participate in the energy market in this region.

For instance, we know that Arizona has raised an important point that potential coal plant closures and increased energy cc use could cause the state to transition from being a net electricity exporter to a net importer. We understand the concerns that states like Wyoming have about the possible effects on electricity rates for its residents and we understand that from both Montana and Wyoming how critical the importance of their coal generation and resources are to the region to reliability in the region as well as to the economies of their individual states.

We have heard from many states in the Midwest and Pacific Northwest who rely heavily on hydropower about the proposal -- about how the proposal handles hydropower and the development of stake holds and how this could affect reliability in Idaho, Oregon, Washington and North Dakota.

By the same token several states and stakeholders in the west have actually expressed appreciation for the

work that EPA has done to make sure that the right flexibilities are in the rule so that they can be implemented without triggering reliability issues.

Montana, for example, signaled support for the option of using new natural gas plant builds as a way to help the state meet the full suite of its goals, both in terms of emissions reductions and in terms of maintaining affordable and reliable electricity. California stakeholders in particulars supported the flexibility to use a wide range of compliance options well beyond those reflected in the four building blocks calling out for example, combined heat and power as a way of complying with the rule without creating significant potential impact on reliability or costs.

Stakeholders in Colorado noted that the option to use utilities scale solar power as a way of complying under the rule can improve the stability and reliability of the grid in this region as well. Many of the comments we receive, including from the western states focus on the four building blocks and the targets derived from them.

I think it's critical to emphasize that the proposal offers states in the power sector a broad range of choices. Not only in choosing the measures reflected in the building blocks, but also going beyond those approaches and formulating their compliance strategies. The choice of

emission reduction measures were at the breadth of the choice of the emission reductions measures is a key flexibility in the proposal and it's there because we are intending to ensure that the goals are met without risk to an affordable and reliable electric power system.

Even before we put pen to paper we understood that states and utilities need time to make changes that cut emissions. Part and parcel of offering states and affected generators wide latitude in meeting the state goals, the proposal provides room for planning to avoid reliability concerns.

Our thinking is that the proposal final compliance date of 2030 gives states generators, reliability entities and other stakeholders a 15 year planning horizon. Meanwhile the intent with respect to the compliance period of 2020 to 2029 for the interim state goals was to allow states and effected generators to shape their own glide paths so that they can determine the pace and timing of the measures and programs they need to be put in place again so that they can integrate their emission reduction obligations with their equally critical obligations to ensure affordable and reliable electricity.

Because of the importance of timing and flexibility to the assurance of both affordability and reliability, in late October we issued an additional notice

that among other things sought public comment on the question or whether the proposal did indeed provide a realistic opportunity for states to develop their own glide paths for achieving emissions reductions in the 2020 to 2029 period.

Our objective in issuing that notice and raising that issue again, was to ensure that stakeholders and the public have the benefit of reviewing the information that we have provided and the opportunity to comment on the ideas that were presented in that notice as potentially instrumental for expanding flexibility and truly delivering on the promise that states and utilities could craft and follow their own glide paths.

Again as I have already emphasized we continue to believe that such flexibility is critical because it is instrumental to maintaining electric system reliability and avoiding unreasonable costs. The rulemaking record also reflects stakeholder comments regarding how the 2020 initial interim compliance year and the stringency of some state targets may defeat the flexibility the proposal intended to provide.

Specifically from this region we have heard that there is a need for more time to develop natural gas pipeline infrastructure and transmission capacity and we understand how unique barriers and complications to

renewable energy and infrastructure development in states like Nevada, Wyoming and New Mexico reflecting such concerns as sage routes protection and the high amount of federal and tribal lands or acreage must be considered as states develop compliance plans.

We appreciate the input we are getting on those issues in terms of its specificity and we understand that those challenges are significant, particularly in light of the 2020 compliance date and I assure you that we are looking at this range of issues very closely in the process of developing the final guidelines.

From the perspective of insuring electric system liability and the final 2030 compliance date we continue to believe that the long time horizon for the final target will provide system operators, states and generators the needed flexibility to do what they are already doing, looking ahead to spot the potential system changes and contingencies that could pose reliability risks and identify the actions needed to mitigate those risks.

We do appreciate the length of time that some of these investments can take and note that planning horizons are essential. We see the significant changes already under way in the industry and response to changes and fuel markets and increased use of renewable and distributed resources. We also know that companies are making long-term investments

to address the mercury and air toxic standards and regional haze obligations.

We have received suggestions to avoid stranding new assets and we are considering ways to address those comments and achieve that outcome in our final rule.

Finally we know that working together in regional or multi-state arrangements or plans can provide just the flexibility needed and produce a more integrated path to compliance for states in this region.

We believe that this option allows states to develop strategies that are more in line with existing interstate power markets, taking maximum advantage of the sectors interconnected nature to maintain the liability and affordability while achieving emission reductions. We know that states have commented on whether they will be able to commit fully to regional approaches or be able to do so in the time when the final rule will provide for state plans to be completed and we are thinking carefully about comments for many of the western states who note the interconnected cross-state nature of the electricity system in this region.

And we appreciate the efforts that states and utilities already have underway in discussions with each other looking forward as to how to make suggestions and provide guidance to us and in turn achieve compliance over the long-term of this plan.

We recognize that making full use of the flexibility provided by the proposal requires time for planning. Many states and stakeholders have commented that the one to three year timetable for states to submit their compliance plans is inadequate and that more time is needed. We recognize that planning is key not only to achieving reductions but to safeguarding reliability.

Fortunately commenters including many from the western states have offered practical suggestions for including in the final rule elements, either in the form of additional process steps and developing compliance plans or in the form of relief from specific requirements that would constitute what many call a reliability safety valve.

It should go without saying that EPA is taking information and suggestions commenters have provided and the concerns they have raised very seriously. Let me close by looking ahead. One of the outcomes of this and the two other regional workshops that we are looking forward to is the development of ideas that FERC and EPA and perhaps DOE as well can use likely in coordination at times, to focus on reliability issues after the Clean Power Plan is issued this summer and as states undertake the compliance planning.

The EPA's mercury and air toxic standards provide an example of how this could work. As many of you know when EPA announced the final MATS rule, we also issued an

enforcement policy that defined a specific path that affected generators to follow if they needed extra time to comply with the rule in order to maintain electric system reliability and I believe the Commission already participated in one such action that was moving forward under the auspices of the EPA's enforceability or rather enforcement policy.

In addition to that, FERC, DOE and the EPA began a process that continues today of jointing and regularly convening with RTO's and ISO's to monitor closely and frequently the changes in the various regional systems that have been occurring as generators work toward MAT's compliance which starts in April of this year.

We hope that coordination like this would continue as state plans take shape, as utilities and states implement the Clean Power Plan. Like you we will be examining the information, the ideas generated by these workshops as we move forward after the final Clean Power Plan is issued and as part of the process that the states then pursue in putting together and implementing their own compliance filings.

And in that process we continue to look forward to working with FERC as well as DOE. Again, let me thank you for the time to speak to you this morning and I appreciate your patience and the length of the statement but

I am hoping that it provides the kind of foundation that will be helpful both to you and to the other participants of this workshop as they focus in on the liability-specific issues.

MR. BARDEE: Thank you very much Joe. Let me turn to our Chairman and the Commissioners to see if they have any questions for Mr. Goffman starting with Chairman LaFleur.

CHAIRMAN LAFLEUR: Just getting up to pass a note in class in a long time, but I thought that was excellent and I appreciate your setting the stage, but I don't have any questions, I'm going to save them for the panel.

COMMISSIONER MOELLER: Joe, thank you for being here. We have been around the country together talking about this, including now in Denver and I appreciate your outreach and I really feel like you are sincerely listening and trying to come up with solutions to the challenges that our present that we need to talk about.

I'm particularly glad you have your regional people here as well.

MR. GOFFMAN: Yes.

COMMISSIONER MOELLER: Because going forward I think any successful implementation of the approved power plan is going to require a lot of coordination, not only between states and the federal agencies, but between the

federal agencies themselves, yours, the resource agencies, again thank you for referencing the challenge of getting in pipes and wires built in the west and that is going to require a lot of leadership from the federal government to make sure that the various agencies are working together to make that happen.

You did answer a couple of my questions in your testimony recognizing that the alternatives other than the four building blocks probably need to be flushed out a little bit more. You made a reference -- a couple of references to that. I think also it's important that you state publically what Administrate McCabe said last week that despite the fact that the comment period has ended, you are still taking these comments at these regional conferences and the national conference into account when you formulate the Clean Power Plan. My question is can you elaborate a little bit more on your thoughts on what a safety valve would look like or perhaps it's too early for that.

MR. GOFFMAN: It is a little too early to do that but you know you won't be surprised to hear that for example the ISO-RTO's counsel's proposal is getting a lot of attention because in the best sense it seems to me that they have laid out an all of the above strategy. You know they certainly counseled us to be very, very careful in setting

up the time and flexibility in the final rule.

But I think their comments were useful because they characterized two or three different ways reliability could be a common issue and suggested a remedy for each of them and I think they suggested a prospective tack when states are putting their compliance plans together and then a -- what I call, not their language, kind of a real time tack when events emerge or developments occur after compliance plans are launched when developments require further attention and so that that's the -- we're looking in both areas.

We -- you know our understanding enriched recently by last week's workshop is that reliability is both an event and a process and you know we are going to be sensitive to both attributes.

COMMISSIONER CLARK: Joe thanks for being here, my question I'm going to take off my federal hat for just a second and wear one of my old hats which goes back a few years which is a state legislative hat. I understand there probably aren't a lot of state legislators in the room but the record that we are building here may be instructed to them in terms of things that they don't need to be looking at at the state level.

So this question is all in the context of what I will call portfolio states. States that are looking at

building the portfolio as opposed to relying on a REGI or a Navy 21 or something like that type of compliance mechanism.

It's my understanding the way the Clean Air Act works that the state, BEQ or state environmental regulator has to basically have very similar authority for enforcement as the EPA would have in order to have a SIP that's considered compliant. But in most states the types of things that would go into a portfolio are probably not things that currently a state DEQ would have authority over, whether it would be renewable portfolio standards, energy efficiency programs, which often times run through utilities and are overseen by Public Utility Commissions, the like.

Are there state -- are there state legislative changes that legislators need to be thinking about now in terms of changes that they might have to make within their own state statutes to make the portfolio approach more understanding that the DEQ's state environmental regulators who typically work don't cover the sorts of things that are contemplated in the portfolios.

I'm trying to get a sense for a heads up to legislators what sorts of things will you need to be looking at in terms of restructuring your state statutes to ensure that a portfolio plan can work.

MR. GOFFMAN: That's a -- you have put your finger on a very interesting issue and I'm going to ask your

indulgence in my not answering the question directly because I think, I think the comment record has already sort of triangulated the issue if you will.

We got some very creative suggestions from states who clearly had in mind an approach to state compliance plans that accomplished a couple of things. First the suggestions were clearly aimed at capturing a portfolio of actions as part of a stated plan while side-stepping some of the phony enforceability issues. The other objective that some of these suggestions seemed to us at least to be aiming at was allowing states, whether it was the DEQ or another state entity that supported the governor and ultimately signing the compliance plan to move forward of compliance plans while necessitating as little alternation in the current state legal regime as possible so that the states would have their own flexibility over time within the envelope of their compliance plan to make changes in due course and to instead of having a short window of time in which legislative changes or other administrative law changes were required and pushed by this plan you know.

They could get an approvable plan in place, move forward and then over in a more gradual fashion make any legal changes that would be required. Now I described these proposals not by way of signaling that we have taken a view on them one way or the other but it seems to me that there

is a certain amount of interest from states as I said to use their own existing authorities and their own existing arrangements to at least start out with a portfolio of actions and then make changes more gradually.

COMMISSOINER CLARK: Thanks.

COMMISSIONER HONORABLE: Joe I just wanted to end by thanking you. Certainly we could talk this as Commissioner Moeller said, we could talk quite a bit over the last few years and I'm really hearted and continue to be heartened, not only by your presence, the folks from the region, you and I have talked about the fact that it's very important for us to be connected with the EPA regional folks, it's good for them to be here but also your comments today I would respectfully say to you different in great part with GNN's generally, the overlay of them very consistent.

But your comments today clearly demonstrate that you are paying attention, you recognize the tough issues and most of all I just want to thank you for your willingness to continue to come to the table. These are challenges that we will have to overcome together so I look forward to doing that work with you, thank you.

COMMISSIONER BAY: I too want to thank you for coming here today Joe and in particular it's clear from your remarks today that you are very carefully considering the

issues that have been raised by states and other stakeholders in the west and that you are cognizant of special issues in the west. I also appreciate the fact that you are considering the record that is going to be developed through these technical conferences.

MR. BARDEE: So thank you Joe we appreciate your attendance here and the willingness to speak and take questions. With that I would ask the panelists on our first panel to please come up to the table.

So let me start by introducing our speakers this morning. Starting from the left of the group of panelists we have Chairman Joseph Epel from the Colorado Public Utilities Commission, Chairman Alan Minier from the Wyoming Public Service Commission, Melanie Frye, Vice President for Reliability Planning and for Performance Analysis at WECC, Hardev Juj, Vice President for Transmission Planning and Asset Management at Bonneville Power Administration; Mike Hummel, Associate General Manager and Chief Power System Executive for the Salt River Project; Wayne Morter, Director of Power Management for Seattle City Light, Kara Clark, Principal Engineer for the National Renewable Energy Laboratory and Ben Fowke, Chief Executive Officer for Xcel Energy.

Thank you all for being here this morning we appreciate it. Those of you who watched or attended our

conference last year in Washington may have noticed that we started each panel with a slightly different kick off question and true to form we are going to do that again today.

So what I would ask each of you to do is to make just a point or two, your most important points, please try and limit yourself to two minutes. If we were in Washington at this point normally we would have the big clock sitting right about here where you could see it. We didn't bring that big clock with us but I do have my IPAD here with me and it has a timer right on it so I am going to send it over.

It's very simple all you have to do is hit the start button to start, it's a dumb button, if you finish before the two minutes is up -- if you finish a little after the two minutes is up hit the okay button and I will send that over right now. If you all could just pass that down. I will note that I turned off the audio alarm I thought that was a little too rude.

MR. BARDEE: Chairman Epel?

CHAIRMAN EPEL: Is it go time?

MR. BARDEE: It is.

CHAIRMAN EPEL: Now I'm supposed to hit the button?

MR. BARDEE: Yes.

CHAIRMAN EPEL: Now if I don't do this -- Michael thank you, thank you Commissioner LaFleur, Commissioners for the opportunity to participate in this important Technical Conference. I want to start by welcoming you to the vast west. As you know we do not have an ARCEO and we have literally dozens of bouncing authorities.

What some of the people in this audience do not realize is how vast west truly is. All of the REGI states could fit within Montana with 20% to spare. Colorado has a county larger than Connecticut and an old economy where all of the oil and gas development is taking place is larger than Delaware and Rhode Island combined. And just like the west is different from other regions of the U.S., each western state is unique geographically and temperamentally.

And what I'd really like to do very briefly with my one minute and 7 seconds left is talk about the Colorado model and I would like to point out that my fellow Commissioners Glenn Vaad and Pam Patton are here, Will Allison who runs the air division is here and that's really to emphasize the teamwork that we express in Colorado and really three points.

In Colorado we have charted our own course to decarbonize our electric system. We have done that through American jobs that you have seen in our comments, tremendous amount of wind, a real diversification of wind resources,

including pioneering community solar gardens and this is the state approach to reduce our carbon intensity and as you have seen in our comments, our biggest concern is getting credit for this early investment.

Now when the Clean Power Plan is finalized I believe that Colorado as a state will come up with an approach which will meet the revised goals but our second significant task I've got 11 seconds I'm going to go right for the punchline. Since you have asked for what could FERC do, I think an issue you might want to consider is looking at natural gas storage and I'll explain that because there's going to be an issue of adequate storage or adequate gas during peak times, something which is uniquely range and it is gas storage, analyzing it and expediting permitting so I would gladly share my remaining minute and a half with some other points but I am going to live with Michael's admonition.

MR. BARDEE: Thank you, Chairman Minier?

CHAIRMAN MINIER: Thank you for this opportunity to be here today. Since I have already had a chance to speak at NARUC about some of the things that are of most concern to Wyoming which are the practical aspects of this problem I talked about our comments to the EPA and I talked about specific regional issues and the problems with incentives to have other states cooperate with us to address

targets.

I thought I wanted to raise one more issue, put one more ball in play at this point at a granular level. I think it's time that we started to think particularly from a reliability standard aspect about what the states will actually be facing when they try to put this rule in place. Here's an example. Mass versus rate -- seems like a simple straight forward issue. Whenever I have seen it written up it seems like something that someone characterizes as something a state can do.

In Wyoming we have the problem that we have one set of EGU's that are in favor of a mass approach and another set of EGU's that are in favor of a rate approach. Not surprisingly the later set of EGU's has a substantial inventory of black 3 and black 4 types credits.

This is the kind of clash that is between two large industrial concerns that regulators like me try to stay away from because it's a road kill recipe fundamentally. I think it's important to realize that unless we are able to address some of these issues that it is going to be very difficult to get the Clean Power Plan implemented on time.

One way that we can get a start on that I think is to revise the targets for some of the states like ours that are most concerned about the feasibility of doing

anything so I'm done before my time.

MR. BARDEE: Melanie?

MS. FRYE: Thank you for the opportunity to be here and speak about reliability. I am very pleased to see the focus that is being placed on reliability at these technical conferences and the interest in that because that is WECC's primary concern in the western interconnection.

And I would just like to make the point that the unique opportunity that WECC has is that we are an interconnection reliability insurer which means we have the tools, processes and capabilities to do interconnection like studies. You have heard a bit about the interdependence of the states and one of the early studies that we were able to do using a 2024 comment case that was put together by our transmission expansion planning policy committee, which is a diverse group of stakeholders. If you look at that in aggregate and on average, the western interconnection is fairly close to being able to meet the EPA proposed targets.

However if you look at it on a state by state basis, there's a very different picture and there's also a very different picture that plays out in the operational aspects of the interconnection and so the key component that we are focused on now is having the ability to have additional time once the final plan is provided by EPA as well as the state implementation plans are put into place so

that we can just study the interdependencies of those plans and the operational impacts that it will have on the electric system, both from resource adequacy as well as stability perspectives so we look forward to the opportunity to continue to participate in this dialogue and continue to keep the focus on reliability, thank you.

MR. JUJ: I'm going to start before my clock starts. Thank you very much for the opportunity, it's always good to go after Melanie because we are part of WECC so whatever she said I agree. A couple of points very quickly and then we can get into discussion. Axillary changes to the resource mix they are going to cause the power flow very differently the way we have set up the system and we need to do a lot of analysis.

That's okay what happened to the transmission system when the resource mix is ordered kind of displacement or replacement it's going to have serious challenges. So if we need to construct the transmission we can have the generator in place in about three to five years but if there is anybody you can build a transmission to match that timeline, talk to me please because that's about ten or fifteen years, permitting, siting and construction it's going to be a serious issue that if we have to get in to match these two, we need to come up with some sort of bridge product for that time-being to make that line.

And you know like we were talking about the must-run generators. There is a one study it came from the discretion with me with APRI, anybody from APRI here? Damien Brooks and I we were at the airport so we starting kind of discussing that each kind of resource has a different contribution like Black Start what kind of resources can provide.

Voltage support, frequency support so I have given the kind of metrics to Mike what we came up with and we came up with a paper at APRI which is contributions of supply and demand resources to require the power system reliability. A very good paper and I have a copy and I can talk about that one during the discussion. So looking at the, you know, some of the potential challenges that are going to be that if you are going to take the resource away and you may have the potential notice for the problem. So we have looked at it once and tried to estimate the plan and we are now looking at one part of the grid, we did the studies and came up with the plan of what we need to do.

So a resource static electricity and transmission adequacy is another one we need to look at very carefully that worked, the resources are doing and we need to clean up from all the liability issues while we address those ones.

We talked about that there are a transmission lines going to be built in the west interconnections as well

as the gas production. I hope we have identified the right places because it is going to be a challenge if the resources that are in place so we may not be able to kind of provide reliability sources.

So in a nutshell very quickly I have I think I'm running out of time. Cost -- we talked about we need to do analysis case by case. What particular Genara brings to the table for reliability and collaboration should be with the regulatory agency, states and the balancing authority. Please include the balancing authority because we know more than anybody else that how my system works so that is -- and tools training and we were talking about safety while you are looking at operations. Operations is going to have serious problem unless you give them the tools. Visibility of the system, we have time so how do we train the dispatchers because they came from the field and it's going to be very hard to train them the way we are kind of operating the system right now.

Climate change and CVP is very important with her liability, thank you.

MR. HUMMEL: Thank you we appreciate the opportunity to be here and provide comments today. We have been involved with this process since before the draft was out, very active in it. We agree it's a regional process and we agree the west is different and for purposes of the

Clean Power Plan, Arizona is the poster child of the difference.

The final goal for Arizona would require a 52% reduction in CO2 emissions, and it's 52% of the total CO2 emissions would have to be reduced. And additionally 90% of that would need to be achieved by 2020, not 2030 so we essentially don't have a glide path, we have a cliff and we essentially don't have a minimum target, we have a final target that needs to be in place by 2020. So from our perspective that's very challenging under the EPA goal the state of Arizona would have to shut down its entire non-tribal coal fleet, 3800 megawatts of coal would need to be shut down and replaced with existing natural gas-fired generation according to the Plan, we think the capacity assumptions that went into the development of that Plan are badly flawed and as Melanie stated, we absolutely agree with this time required to assess the impacts of that, to develop the state plans and to implement the state plans willfully and adequate and we will need to spend much more time looking at the reliability impacts of the new resource plans.

All of the existing studies we have done to date and in the past have been based on the largely known generation portfolio, both in terms of field type and site and we are going into a whole new world for that and we

can't do that without adequately spending time doing the studies. It has been suggested in a number of studies including NERC's so we are glad to be here, we look forward to the dialogue, we look forward to engaging in this issue. We have already made what we believe are very common sense recommendations to EPA for changes to the plan and we are glad to see they are here but we are glad to see they are listening and we look forward to continuing to work with them, thank you.

MR. MORTER: Good morning it's a pleasure to be here. I thank you very much for the Commission and staff and Commissioners to invite us here. On behalf of City Light we are very interested in this issue. City Light is a large municipal utility that serves a majority of the metropolitan urban area of Seattle. We are very interested and supportive of the EPA's long-term 2030 target. It's an issue that we see as a city and as a utility affecting us significantly in terms of climate change.

The utility is sensitive to the issues of other utilities in other states, and I would like to make a few points here at the opening. Specifically we believe in regional cooperation, very significant. The Northwest particularly has done that over a period of years and several different methods including the specific Northwest Coordination Agreement which coordinates storage for load

service reliability reasons.

The Northwest Power and Conservation Council conducts power plans to find the region's plans for power or conservation and reliability in the future. Those are very important to us. Lastly with some of our regional planning, we made plans to actually close the last remaining coal plant in Washington State over a period of time which did take some stakeholder engagement and had to work with other people.

We are concerned a little bit about the interim goals, especially if there's going to be a multi-state or regional type approach which we believe makes sense for both reliability and cost effectiveness. Those plans while there are studies being conducted by WECC and NERC preliminarily, once those plans are filed they need to be review and we believe that's one of the things the Commission can do is require NERC and reliability organizations as well as EA's to examine those plans for impacts and probably keep doing the annual assessments of those plans.

The last and most important point that I would like to make and this is important with regard to the current Clean Power Plan but status quo and not doing something on climate change has significant reliability impacts for load serving energies across the country, particularly in the northwest where we are seeing a change

in securing flow conditions, wildfire outbreaks and conditions that threaten reliability service now.

Changes in our weather, we are seeing quite a bit this winter so again looking forward to the discussion today and I'm very, very interested in participating.

MS. CLARK: Okay thank you very much to the Commissioners and staff for allowing me the opportunity to participate today. My technical expertise is really an integration of renewable generation into the power grid. How do you identify the impacts of the increased variability and uncertainty and how do you mitigate any adverse impacts?

So I'm going to take my two minutes to talk really briefly about some of our long-term research in that area. One of our settings, the western wind and solar integration studies and a series of work to address the feasibility of relatively high penetration, 33-35% on an annual energy basis and the work has shown that it is doable. You can't do it and maintain the status quo but there is a lot of items in the toolbox that would allow you to get to relatively high levels of renewable generation and maintaining a reliable system.

Increased inter-area cooperation, as soon as there are wind and solar forecasting, faster regeneration dispatch, faster energy schedule changes, better controls on wind plants, you know there's the commercially available

technology for initial controls and government frequency response and things like that that would allow these relatively new power plants to look like we would expect the commissioned power plant.

So in essence I guess that there's every indication from the research that has been done, both at NREL and at other organizations doing the integration studies in New England, PJM, California, Texas, all over the country as well as operating experience at some relatively high instantaneous penetration levels that show integration of renewables is very doable and could be a significant component to either of the PPPC, EPA CPP Plan thank you.

MR. FOWKE: First let me welcome you to Colorado. We know there's something about a two minute drill here so let me get started. Xcel Energy has the privilege to serve 3.4 million electric customers, 1.4 million of those are right here in Colorado. We have been the number one wind provider for decades so we know a little bit about wind integration and we are on the path here in Colorado to reduce carbon emissions by 35% by 2020. So we know it can be done, and we also know it takes time, a lot of coordination and if you don't have the luxury of time you are going to potentially sacrifice both reliability and affordability.

Let me give you an example. The Clean Air Clean

Jobs Act that was passed here in 2010 gave us to 2018 to implement the law and we needed that time. We had to build 34 miles of pipeline. 34 miles took us 5 years, just imagine what we are looking at nationally and here in the west under the Act.

And finally early action is an extremely important part of what we were counting on and we don't have that today so in addition to being unfair I think that really chills any kind of initiative to get started early. So when you think that by the time this law gets sorted out it's 2018 that's not enough time and that obviously creates liability issues.

Finally I would just say if FERC could do anything I would really focus on this coordination between electric and gas. We are moving from solid fuel to just in time fuel. Fuel and energy that is going to be sourced over pipelines and transmission lines that go hundreds if not thousands of miles, we have to get it right, thank you.

MR. BARDEE: Thank you all we appreciate that and let me turn at this point to our Chairman and Commissioners for their questions again starting with Chairman LaFleur.

CHAIRMAN LAFLEUR: Well thank you very much and thank you all for being here and I'm very glad we are here because every weekend in the county is different and this region is different even within the region. Looking at what

I see as the big strengths of the west is the tremendous potential for renewable resources and the demonstrated ability to utilize them in a big scale, both traditional hydro and all of the wind and solar we are seeing out here.

The big disadvantage from my perspective is the vast scope of the region and the lack of a region-wide market or some kind of coordinating authority with a vast number, a large number -- maybe vast is too strong of balancing authorities. So I want to take advantage of having you here. I'm going to put myself forward and I'm just going to make up what a reliability safety valve might be.

And so my reliability safety valve has changing parts. The first is when all the state plans or regional plans or fips or whatever they are comes in, EPA turns to FERC X-anti I think someone said in one of the comments and said, "Hey FERC is this going to work for liability? Can you give the good housekeeping seal of approval?" That's part one. And part two is if the state comes in and says hey I'm Arizona and I didn't get enough changes in the final rule, I need more time or whatever somehow that FERC gets involved in validating that extension or giving an opinion on it.

So I guess my question is out here in the west we can't just turn to like an iso in New England and say, "hey

can you work with us". Clearly WECC has to have a role, but I am interested in from Melanie what you see WECC -- because I can see WECC checking if the transmission is in place and the standard, not necessarily looking at whether New Mexico optimized their energy efficiency or whatever else has to go into looking at the plan.

So I'm interested in what tools and what WECC could do and especially from the state commissioners are there other -- what do you think if you were me, if you were us what would we do? Should we use joint panels with the state commissions, something that's in the Federal Power Act we hardly ever use? Should we go to YRAB? That's a bunch of the state commission's right or how do we do this when these come in?

Because I'm sure the clock will be ticking, we will have to figure out what to do and in the west I'm interested starting with Melanie what you think we would do and if we don't have the tools what we need to develop? Just a small question.

MS. FRYE: Great, thank you. I do think that that is an appropriate role for WECC to be the convening body to begin to perform reliability studies. Today WECC currently has tools that involve resource advocacy and gathering data and looking at data to put out periodic assessments, both seasonable assessments and working with

NERC on the long-term reliability assessments.

In addition to that we have stakeholder forums where we work with the operators, the planning folks within each of the utilities as well as you have mentioned with YRAB that we work very closely with. So today we are working with YRAB through the Western State Energy Board to try and understand what potential compliance scenarios would be to ensure that we have the capabilities in place once the final rule is implemented and we do have state implementation plans to consider.

So the tools that we have today include the forums where we are able to bring the right subject matter experts together to engage in the conversation including the industry as well as state and policymakers. We also have tools in the form of the production cost model, the ability that we have to simulate the dispatch under different scenarios and then the ability to move that into the powerful world where we can assess the stability of the system and that's really where you get into the operational impacts of the rule.

And as Mike talked about, Arizona is in a unique position because it is becoming a -- instead of a net exporter, becoming a net importer changes and potentially could have the impacts on the path ratings that we have within the interconnection and the way the entire machine

operates so that is where we see a role for WECC to be able to participate and work with the states, work with the balancing authorities, the transmission owners and operators to understand the impacts and then be able to make an independent assessment, because we are independent of any particular resource preference, technology and resources in general, so hopefully that --

CHAIRMAN LAFLUER: Not to put you on the spot how long do you think that would take? It doesn't sound like a 30 day -- so now we get all these plans and we say okay EPA we are on the clock, we are going to look at these for you. We are going to call in WECC, get out all the models -- I mean.

MS. FRYE: That is an excellent question. We are working to try to understand right now -- we are doing some mock scenarios to test our capabilities. We are working to reconcile the different models so that we will have the ability to more quickly study these issues. I can't give a good estimate of the time right now, but I think we would measure it in months to turn that kind of information around.

CHAIRMAN LAFLEUR: Mr. Chairman and Chairman I'm interested in so from your perspective you are okay with FERC and WECC doing this? Do you want to -- I mean because the plan isn't going to be done by you right? It's going to

be done by your environmental you know, cousin in the state and I'm interested as to what you see as the state regulatory rule and that whether we are checking the plan ahead of time, getting -- reviewing your request for more time or anything.

CHAIRMAN EPEL: Madame Chairman you put me in an awkward spot because the members of the FERC I hold in the highest esteem and yet I believe Colorado is going to proceed on its own. We have been very successful with Clean Air Clean Jobs which yesterday the Public Utilities Commission, we approved a settlement with multiple parties but the total rate impact to residential customers put a billion dollars investment, is a dollar a month for the next three years, so I think we could handle this.

I'm very pleased with some of the steps we have taken with just approved unprecedented amounts of utility scale solar which Joe Goffman mentioned in his issue and compliance tool. We are doing a lot with wind, we are doing a lot with innovating approaches actually passed by the legislature, taking methane from coal mines to electricity perhaps, solid waste pyrolysis.

So we think there's a lot of innovative tools for Colorado to use and I don't anticipate -- I actually anticipate that as a state we are going to replicate Clean Air, Clean Jobs that will mean involving more than just the

investor owned utilities, but we are seeing tremendous progress by tri-state, by the co-ops. They are tackling the problem incrementally so I think I would agree with Melanie that the big issue and I think almost all of the participants agree is the timing. 15 years with an appropriate as we said in our comments, appropriate target -- we could achieve it and we will do it the Colorado way through cooperation and collaboration.

Martha Rudolph who runs our environmental department, we wrote the comments together to EPA. There is a tremendous sense of collaboration and our energy office, we all work together I think -- I don't anticipate that not being the model for Colorado.

MR. MINIER: Madame Chairman I think those are two sensible suggestions. I guess the emphasis from my perspective is I'm not the optimist Chairman Epel is in this situation. I think the emphasis from our perspective is what relief are we going to get from what's been proposed now and obviously that's something we have to wait and see so that the key words for me were when all the plans come in, because I don't think there's any point in getting too exercised about that until we have some idea about what we are working with but I think FERC is better positioned than we are to put all of the pieces together which as you may recall from previous remarks I have made include reaching to

Iowa, it's not just WECC, we go in several different directions.

CHAIRMAN LAFLEUR: Mike it sounded like you had a comment?

MR. HUMMEL: I do thank you Miss Chairman. The -- unlike the Clean Power Plan reliability is a regional issue, not a state issue. I think it needs that regional luck for that assessment at the end of the plan, developing a state plan is fine but the bulk transmission system is interconnected so it certainly needs that regional luck and I believe WECC is the appropriate agency in the west to be able to do that.

But to your point earlier, you have heard a lot of definitions of what safety valve is since you started this. I would argue that reliability review after the state implementation plans isn't a safety valve, but that is part of the protocol that needs to be written into this rule. We heard Joe Goffman talk earlier today about a real-time versus a perspective pact with respect to safety valves. I think that's absolutely true.

This is perspective, we need to be looking at this and we need to be looking at as we develop the plans and after the plans are developed. If we build in what people see as a safety valve, there's going to be scrambling at the end of that and time is going to be an issue so we

need to build time in at the beginning of the plan and that needs to be part of the protocol for that power plan.

CHAIRMAN LAFLEUR: Thank you, I want to ask one more hard question and then turn the Mike over to Phil. One of the things we have heard a lot of as we have met with people about the Clean Power Plan and at these conferences, and I think we will continue to hear is that some of the states feel their goals are very challenging, certainly Arizona.

We have heard from a great number of people in the state, Wyoming and some of the others really feel it is going to be difficult and are looking for an adjustment in their goals in the final frame but we haven't heard very many states coming in and saying they are a little weak on me, we could do more.

So now if and we do see that WECC I believe the overall studies westside there's a lot of opportunity. So I guess the question if I were the EPA and I am kind of glad I'm FERC, but if I were the EPA if you make one -- if you are not going to reduce the overall achievement, forget the dates for a minute. Let's even say we are talking about 2030, if you are not going to reduce the overall what you are going to get if you make one state weaker and you don't make someone else stronger then you have changed the whole trajectory of the carbon reductions so is there any way,

could you imagine ever taking a regional goal and then working with some kind of regional planning to do it because there must be states where you can do it more cheaply than others and I'm just curious because we have put the EPA a little bit in a you know, zero some gain here if they start tinkering with the state targets but yet there might be other opportunities and are there structures -- is this a pipe dream that somehow we could balance it against each other -- I'm trusting that --

MS. FRYE: So I'll take the first comment and then others can chime in. I think what you've hit on is something that from WECC's reliability perspective in our ideal world there would be regional compliance plans, states partnering together because you know as has been stated earlier in describing the interconnections, the interconnection doesn't stop at state boundaries and so that would perhaps be more reflective of the way the interconnection works.

We recognize there is a whole host of issues associated with trying to formulate regional plans and I think there is a lot of effort underway to investigate the possibility which does lead to another timing challenge that exists with the amount of time that it would take to pull those together.

But as you say from a reliability perspective

being able to use the diversity of the resources within the interconnection and the transmission infrastructure, that's the way it's built today so if there was a way to construct a compliance plan that would meet the EPA's goals as well as allow to continue to operate the grid in a similar manner to the way it is today I think that would be very helpful for reliability.

MR. JUJ: I think the issue is going to be the cost allocation. Even if one state or one is going to be asked to give more, although it's cheaper but who bears the cost? So we need to be very kind of careful about cost allocation to different group of customers. Thank you.

MR. MORTER: Yeah I was just going to make a comment that consistent with what I believe the NERC CEO said though that work on these regional plans needs to begin very soon otherwise we will begin to slip and have challenges because we do recognize that it will take probably an extra couple of years as these more complicated plans come in requiring safety valves on the forehand -- I don't have a lot of faith in the real time safety valve concern.

I think these need to be more of the reliability-type contracts so I think this work is very important to be done regionally and so this assessment by WECC and other entities can begin.

MR. FOWKE: I guess I would just echo some of the same comments and I think a regional approach would be great but I think you fundamentally have to change the overall goals and when you have states that have such despaired targets it is going to be very difficult to work together in a coordinated fashion and it gets back to cost allocation.

Frankly I think we are going to have our work intrastate to do the right thing and the opportunity is there just like it would be in a region. It might make more sense to shut down one coal plant which generates far more of a carbon emission reduction and spread that cost over multiple utilities within the state or the region. Potentially you could do that within the state, right now I think that's very difficult to do on a regional basis.

MR. HUMMEL: I think he's absolutely right, just trying to work out a state plan takes time. A regional plan is going to take additional time that I think is going to be extreme as in Arizona we are kind of the least attractive person at the dance so there's not many people knocking at our door and we have had neighboring states say explicitly they do not want to work on a regional plan with us because of that. There are seven states in the country that have final goals, or 2030 goals that are above our current carbon generation today. Our current CO2 generation today, so 7 states are already above or have a goal above where we are

now.

So it helps put into perspective how badly Arizona is. I think there are a couple of positions or points that regional consideration absolutely has to consider and in the west many of our large co-fired plants are participant owned, they are jointly owned. Numerous participants and those participants are in different states so in Arizona there is three large power plants for their owners that take power out of that state.

Arizona is penalized in the calculation because of that and those other states benefit. And conversely, we import renewable generation. There was a discussion in the first presentation about geothermal capacity in California. We import geothermal capacity into California, the rule does not provide a mechanism to take advantage of that benefit for that. Those are areas under the existing rule we have to absolutely have regional coordination to look forward to develop regional plans that will take much more time than it is allowed for in the plan today.

CHAIRMAN LAFLEUR: Well thank you I'm going to cede the mic I have more questions if there is time at the end of the round robin but thank you very much.

COMMISSIONER MOELLER: Well thank you Madame Chairman I have two questions for the panel if anyone wants to answer them, but starting out with the premise the first

is that we always need to remember that unlike socks, knocks or mercury if the challenge with carbon is what's linked to climate change we have to work on this and solve it on a worldwide basis because the concentration of carbon in the atmosphere is going to be the same in Denver as it is in Dakar and I can speak for FERC that all four of my colleagues and I have worked or will work extensively with the international community to try and help bring us to policies that improve the environment while maintaining affordable energy for the citizens of the world.

We will all focus on somewhat different regions, more South Pacific, India and the EU but we are working, we are doing our job I think to extend America's position of cleaning up the environment but it is always important to keep that in mind. If we do something but someone else counteracts it, we haven't actually solved this problem we are trying to solve.

The first question relates to timing that obviously has brought on a lot of comments and at the risk of piling on I can't see a scenario, at least in states that are relatively challenged with the goal. I mean let's take the REGI states out because you know they are a unique situation but -- so a state comes up with a plan. Let's say a state focuses on building blocks 3 and 4. You are going to expand renewable production, it would expand on energy

efficiency and that will have to go through the Public Service Commission.

That will be a relatively extensive process and then it is going to be litigated from each side. There will be folks who say that that is going too far, it having too much of an economic burden on consumers. There will be other folks who say it is not aggressive enough. It will have to go through the courts, that's another couple of layers of uncertainty and timing and I just don't see how it adds up in any scenario for 2020.

If any of you have comments on how you can construct a compliance timeline that can match up with 2020 I would like to hear it. Or if you have thoughts on why it can't I'd like to hear that and maybe to kick things off Chairman Epel?

CHAIRMAN EPEL: Well thank you for that hot seat. We've actually taken a step. We just completed our role at the resource plan where we are adding quite a bit of wind and solar as well as other renewable resources so I think we are on the right trajectory and our position with EPA and our comments is we should be judged on the appropriate trajectory not 2020. That was a fundamental comment of ours. I think we are in the right place, going to a point of how do we do and what is the resource plan for the entire state is something we haven't done but there is a lot of

cooperation.

So that's what I am anticipating but I am not looking at the 2020 cliff as something which is appropriate for Colorado.

MR. FOWKE: Just to echo on that, one of the reasons why we are so far ahead with renewables in Colorado is because we were incented to go early, through banking mechanisms and when I think about this 2020 target, I've already said you know it's kind of I feel like Lucy and Charlie Brown on the football. We are not going to count on Lucy not to pull the football from us again, so we don't want to most faster until we know how the rules are finalized.

However if the EPA gave banking incentives then I think you would have state commissions and others that would feel more comfortable saying we don't know the finalized rules but let's get started today. We are going to be rewarded for it, here's what is in the rule. In the absence of that I think we have just paralyzed markets until 2018 and then what you just said Commissioner I think is going to compound that with the multiple layers of litigation that they are going to have.

MR. HUMMEL: We agree it's a global issue and not just a local issue. That said we believe we have a role in helping to reduce carbon CO2 generations and we have been

doing that. We have a plan in place to actually go down a true glide path toward reduction of CO2 and an end target not too far from where the Clean Power Plan came out, it was a longer day, 2040 and a much more gradual path and we believe it was the right thing to do and still do to the point that we are trying to deal with the global issue with local strategies. There are economic implications as well that we are going to have to bear as we do that.

Within Arizona we see a 2 billion dollar infrastructure development requirement in order to meet the safety feed by 2030 and about 3 billion dollars in stranded assets. So it's a significant impact and a significant impact to our state and to our customers to try to compete in an area where others aren't forced to compete quite as aggressively.

To answer your specific question we don't see a way of by 2020 we can't get there.

MR. MORTER: I guess just one other thought, I think again this is important with a regional perspective. There are states that have opportunities for more renewables that are more effective, that are capacity factors. There are other states that are perhaps under invested historically on energy efficiency in the northwest because we are a fuel supply limited region. We have extensively invested in energy conservation and probably will continue

to do that in coordination with the power plants with counsel.

But I think that's one aspect to keep in mind is those are the trade-offs in the regional plans that can be more cost effective.

COMMISSIONER MOELLER: My second question relates to an added level of complexity to all of this. We have already talked about the fact that federal and state agencies, as well as obviously the load serving energies are going to be a in a new paradigm of getting along but the other added complexity is other rules related to the environment.

The Clean Water Intake Rule is going to particularly account hit California hard and the Ozone Rule is one that I am curious if you have considered in this context. We all love the fact that variable generation has free fuel, but it is also variable which means it has to be backed up by usually fast ramping gas plants and if you haven't seen the dock crew from California in terms of what is going to happen, the enormous amount of lamping capacity that will be necessary, you certainly should.

I am curious to the extent, maybe you can lead us off Miss Clark, have you considered the potential of the Ozone Rule in limiting the ability because it's county by county of new generation to be essentially constructed in a

way that will meet ozone requirements in order to provide the ramping capacity for an aggressive, renewable expansion.

MS. CLARK: Well I guess the short answer is no in that has not looked specifically at the ozone requirements in the city of Denver or whatever that would impact the ability to run CT's or something like that. However, I would argue that there's a great deal of flexibility in the system that does not require any kind of backup to incorporate variable generation into the grid.

Broader cooperation between areas of energy access to other resources that might be cheaper, might have better ramp rates, might be more responsive in some fashion, something along the lines of the energy and balance market that has been operating to the core and California ISO and is intended to you know, increase the flexibility in that manner.

You can increase the flexibility of your existing conventional generation either you know retrofitting or just encouraging better behavior in terms of lower minimum operating conditions, faster ramp rates, things like that and you can have requirements on your encouragement as the case may be on your variable generation to be a good citizen of the grid and have some of the advanced controls that are crucially available but not honestly likely used.

COMMISSIONER MOELLER: And hopefully storage will

be a part of that solution too but again we have to be thinking about this now.

MS. CLARK: Right, right, storage would have great impact if it were economically viable and it is really isn't at this point.

COMMISSIONER MOELLER: Any other thoughts on -- yes?

MR. JUJ: Commissioner Moeller I think when you mentioned Dakar that's what I was going to admit too that your bath rating is going to be very different. We looked at it at Dakar, if you look at San Diego it's about 40% annual increase in the roof with solars. So we are going to have which is the COI, California Oregon Intertie, the flow is going to be the worst and if it is going to be the worst what happened to the delivery system. We are really, really now looking into all of those issues. It is going to be very critical, you will look at that and fields of light is free but you may end up being more on the transmission system at this point, thank you.

MR. HUMMEL: And certainly we can't consider that Clean Power Plan in a vacuum and it's not just the ozone, although the ozone is potentially troubling to us. Depending on the final ozone rule, we have the potential of the entire state of Arizona being a non-attainment area. So if we shut down 3800 megawatts of gas, or coal, I'm curious

where we are going to build that replacement in gas and while we are going to continue to add renewables and energy efficiency to our portfolio, it can't count for all of it so we will need -- that needs to be considered, but that's not the only rule.

We are in the middle of the Regional Haze Implementation as well, we are facing capital improvements, several hundred million dollars in coal plants now that we don't know what the future for those will be and it's forcing decisions about whether we install those, whether we comply or whether we shut plants down early because events certainly around the Clean Power Plan.

So we have the Ozone Rule, we have Regional Haze, we have the Mack Rule and we have other requirements at the same time we are trying to manage.

MS. FRYE: So I would just like to make one additional comment about the report that I referenced earlier, the WECC Phase 1 technical report where we based our analysis on the TEPPC 2024 common case, which is an RPS compliant case and the interesting thing is this case was formed before the EPA draft rule had been published so what it reflected is that for those states and as a region as a whole, there's been a sincere effort of the industry over the last several years to reduce the CO2 emissions and the study that we did looked at the CO2 emissions absent the

Clean Power Plant, so certainly as Mike said there have been investments made and it gives a great example of the investments that have been made over the years to reduce the impact on the environment and you know, what this tool can do for us in the future is to allow us to be able to study from a power flow perspective how those changes in resources will affect the actual operations of the grid.

Again, I know I keep saying the same thing it does take time and there are a lot of technical analyses that really need to be complete to really understand the impacts.

COMMISSIONER MOELLER: Well thank you for your answers and my point is that these are not necessarily insurmountable challenges but again as stated earlier, the Clean Power Plan cannot be considered in a vacuum but it needs to be considered in relation to the other challenges that are being proposed through air and water regulations.

MR. BARDEE: Before we turn to Commissioner Clark if I can interrupt for just a minute. We have heard that it's difficult for the listeners to the audio cast to follow who is speaking at times. So I would just ask that the panelist identify themselves unless it is obvious from the succession that was just stated as addressed to you, then if you could start by stating your name, we would appreciate it thank you. Commissioner Clark?

COMMISSIONER CLARK: Thanks Mike. So this may go more in the bucket of the statement but I'll make it and then you can rack it -- and getting back to the reliability safety belt issue that Chairman LaFleur raised and I agree with her that there are two flavors that seem particularly applicable. One might be the issue that you need, some agency I would argue probably for a sufficient altitude over the industry as a whole to be able to look at the individual compliance plans and guide EPA on whether it actually works from when the quilt begins to be stitched together.

The second is the state-by-state plant-by-plant issues that you brought up. I would raise a third which I think we heard at the first conference which is the best way to get to a reliability safety development is to not have to use it which means you have a timeline that can be met. But I am going to offer up sort of a fourth little nugget here.

Can an argument be made that there actually is a reliability safety valve that exists today but the safety valve doesn't exist within the Clean Air Act and it's not EPA's role to authorize the use of the safety valve. The safety valve actually exists today in the Federal Power Act itself. Section 202C which is the Department of Energy's emergency reliability authority to order a unit to run if there was an emergency deemed and the Secretary of Energy determines that unit had to run to ensure the reliability of

the grid.

But also under Section 207 which I believe has only been invoked once by the Commission which states that upon the complaint of a state commission to FERC, if FERC determines that there is an insufficiency or an inadequacy of the service that is being provided to utility which in the one case I'm thinking of which the Potomac Plan I think, the Commission determined that there was a concern that FERC could order that the utility come up with a plan to ensure that there can be reliable service.

With that as a backdrop, I'll phrase it as a question. Understand that the Federal Power Act isn't subservient to the Clean Air Act and vice versa. Do you see a potential where a state could come to the Commission and say look this just doesn't work for us, our utilities aren't going to be able to provide sufficient service and then that becomes a complaint under the Federal Power Act itself and there's the potential then of having a clash between the Federal Power Act and the Clean Air Act which is this issue that Commissioner Moeller I think you raised at our first conference which has become known as the Hobson's Choice, where utilities are trying to figure out which regulatory they have found.

MR. FOWKE: Yes, it's just one more complexity that we are going to have to deal with so I think we just

keep coming back to the same themes. 2020 timeframe is just not going to be adequate and if we don't want to -- the concern I think we have all expressed about these safeguard measures is that they tend to be bolt-ons, after the fact and as kind of a -- well if it gets real bad FERC will stop it.

We know that's not the way good rulemaking should be so when you make a great claim but I think it's just one more complexity and it would just delay what the goal of the Act is to begin with.

MR. HUMMEL: This is Mike Hummel. The -- in my mind it depends when that happens when that gets triggered because we reach a point where we start to restructure the resource portfolio in the west where you can't recover from. Once we make a decision to close a coal plant, that coal plant will be maintained and operated differently. The staffing for that will change and the staffing for the coal mine that supplies the coal will change, so we will get to a point where those plants are shut down when they are not going to be able to be started back up again in a soon enough period of time.

I would rather see that work go on in the front end and defining what those reliability requirements are instead of dealing with it after the fact.

COMMISSIONER CLARK: Thanks, I raise the question

because I think there has been maybe a build-in bias that we may have had at some of these meetings where we are always thinking about these things in the context of the Clean Air Act and what EPA might do to come full time to the rule, the reliability, safety and development. I simply raise it because we do still have the Federal Power Act itself which this Commission administers and I think has some pretty strong authority in it as well, you know reliability.

My second question is actually for Ms. Clark I will just direct it to specifically. You had raised the issue of the studies NREL has done and I appreciate the work that you all do, some of it is fascinating stuff. And integration of variable resources and coming from the part of the country that I do in the upper Midwest we have seen a lot of those types of resources come online and agree that it can't be done.

My question is with regard to the nature of the studies that NREL has completed thus far. To what degree do you differentiate between the technically feasible which is this can be done but puts aside questions of cost and practicality and things like when you get a transmission built, a transmission line built in a short timeframe as opposed to a long timeframe versus looking at that question more holistically like say a state commission might or some other regulatory commission where you are not only taking

into consideration can it be technically done, but you begin to get into questions of as compared to what you have what cost, what are the reasonable time frames for getting transmission built for example and make sure that the system can work.

MS. CLARK: I guess I would have to say, I would have to say that we are probably a little bit biased towards technical feasibility rather than getting enormously into practical questions however what we have technical review committees which are essentially stakeholders involved in all of our large research projects and we regularly start with you know a WECC data base which has involved a lot of stakeholder comment and incorporates transmission that people think are reasonably going to be done in 2024, you know if that's our study year.

And our own individual TRC's for our research projects, people on those committees will -- their job is to vet our data and modeling assumptions and make sure that we have a reasonable, not necessarily 100% crystal ball, you know a view of the future, but a reasonable view of the future that will help look at some of the questions of reasonable generation penetration and integration.

COMMISSIONER CLARK: Okay thanks.

MR. MORTER: Wayne Morter with Seattle. I think it's a good question Commissioner Clark. The other thing I

might point out was recently regarding integration as the possible when it's being discussed this afternoon as an opening of a primary frequency response market in the west that can be quite important.

It's complicated because we have long spans of transmission lines. We have, and it might be technically feasible for more government response to come from currently and thorough type you know variable generation but there's a large amount of spinning mass in one region that might serve the inertia requirements of another region of the country and so I think that commission has started that back up, I think that's worth looking at.

COMMISSIONER CLARK: Thanks Chairman Epel?

CHAIRMAN EPEL: Thank you Commissioner Clark. I apologize because I keep referring to us because we recognize that Colorado, although a leader is unique where it's differently situated but in our recent Electric Resource Plan, when we look at natural gas units, graphing time was one of the primary considerations so we were looking for and will work very closely with the company, public service company on how do we make sure that we can integrate the additional renewables that we are bringing online and I think that's part of the whole educational process in anticipating what does the future look like and are we building the right type of units that will be used

not only for the next three or four years, but the next few decades to facilitate the integration of renewables.

COMMISSIONER CLARK: All right, thanks to everybody I'll turn it over to Commissioner Bay.

COMMISSIONER BAY: Thank you. Melanie I wanted to comment WECC on the study that it did, its preliminary technical report, and you referred to that study a few times. One of the things that I found interesting about the study was that it looked at the TEPSI 2024 base case which was a base case that did not take into account 111D and then it modeled what would happen under 111D.

And one of the interesting things about the chart that you came up with is that for the west as a whole, even in the absence of 111D emissions rates would meet the UK target is that correct?

MS. FRYE: Yes it is a little nuanced but on average and in aggregate, western interconnection did compared using the assumptions that we input was pretty close to being on target with the EPA.

COMMISSIONER BAY: And another interesting aspect of this chart is that it shows that for about 9 of the 11 states in the west they come very close to meeting the UK targets or even in some cases surpassing them, even in the absence of 111D is that correct as well?

MS. FRYE: That is true.

COMMISSIONER BAY: And so as I look at that chart it seems to me that and of course Arizona is one of the big outliers but it seems to me that it makes such a case for states in the west trying to come up with a regional approach if they can and I'm wondering -- I know that different panelists have commented on this earlier but I'm wondering what other -- if there are any structures within the west that can help make a regional approach possible or maybe you know Mike's view is right that no one is going to want to partner with Arizona or some other state, but is this something that could happen? Are there structures that could get that conversation going?

CHAIRMAN MINIER: It's to me presumably. I'm just not there yet. I mean the reality is I think we have to start with what the targets are and what your chances are of meeting the target and how you are actually going to get there with the institutions that you have. And until we have an answer to that it would be nice if modeling -- actually I think the way I phrase this is I'm not confident that the modeling translates into compliance and it's a big bet it seems to me in terms of the resources we have to be chasing after the modeling in hopes it will work out all right when from looking at the straight forward picture of compliance it's pretty bleak.

So maybe it's just that I'm a bleak realist but I

understand what the argument is but I'm not comfortable that I want to put all of my eggs in that basket when I can see coming down the pike what's going to happen with the enforcement starts.

MR. JUJ: I think I agree with Alan when you are modeling it is kind of a lot of assumptions of those things. But I think what capacity is and what timing here we are going to be running different units and it is going to be very hard when you are looking at the compliance, that's going to be very different emissions.

MS. FRYE: This is Melanie Frye if I can just make one additional comment and just to Hardev's point. We did make a lot of assumptions and we had to make some conversions of how we were treating the data to try to make comparisons so this was just one small view of other reliability study based on some data that we had and certainly by no means were we trying to necessarily suggest any particular compliance approach or necessarily that any state would either be or not be compliant, but trying to make good use of the data that we have available to us today.

MR. HUMMEL: That said though I think the regional approach is the right one but not necessarily under the current draft plan. When the targets were set that makes the regional approach that much more divisive from the

beginning and given the diversity of Arizona's resource nixed today, I think that we have the ability to work with other states and bring benefit to the west as a whole.

But with the targets that were put in place from the original plan I think it's very challenging at this point. Arizona was penalized based on the methodology of the plan because of the amount of gas-fired generation that got built in the 90's and the 2000's of which more than half of that is merchant power which leaves the state anyway and has the -- under the plan there is an assumption the utilities can re-dispatch that power for our own use and we don't even have control of that so it's kind of a flawed assumption.

But if we were to start from scratch a regional approach certainly makes sense and we would be supportive of that.

COMMISSIONER BAY: Another question I have is this. I know that Salt River Project and WECC have done some planning and modeling and you have presented the results of that planning and modeling to us but to what extent have other entities or states done planning in more than a back of the envelope way to try to see what would happen under 111D.

And if you have done that planning or modeling what have been the results of that planning or modeling?

MR. FOWKE: I can kick it off, this is Ben Fowke. We are looking at -- there are a lot of different modeling assumptions you have to use. I mean let's just take right here in Colorado for example, we have already made a lot of progress and we have got a long-term plan as Chairman Epel mentioned to continue to reduce carbon and in fact will be ahead of where the EPA was if you use that 2005 baseline which clearly is not being used.

However, the state would have to make I think it's approximately 30 percent more carbon reductions by 2020 to meet that plan. Now how are we going to allocate that? I mean you could just have iteration after iteration on that because those intrastate rules are going to be just as perplexing as the regional rules. So I think with a lack of clarity we can do some of that preliminary modeling.

We could look at how we would implement the plan if chairman Epel and the states said hey you do your part, the others will have to do our part but I am not convinced of that. So I guess my point is that you can -- until the rules are finalized it's very, very difficult to -- you could model things but to actually implement anything would be really fool-hearty, again I'm a broken record. When you don't have early action established it just paralyzes action.

COMMISSIONER BAY: Chairman Minier?

CHAIRMAN MINIER: Thank you I would like to go back to my two minutes at the outset. When you recall what I said was we have one set of ECU's that wants to freight base and the other that wants to used match based. Planning becomes very difficult because you have no consensus at all from the very start and you are lacking broad support for the role at least in our state as to how it is configured.

So there are a lot of reasons why the planning is a non-starter at this point. I don't want to sound negative because I believe we thought about our situation a lot but honestly as I said at NARUC if I talked to the Commissioner and I and we are asked how we are going to work this out, the answer is no just as a starter because we have a lot of carbon, they have some new renewables, there's not much to talk about.

I think the incentives have to change and there has to be some theory about it.

MS. CLARK: We haven't technically done any analysis that is specific to 111D. We have done significant analysis of the impact of 33-35% renewables and the key point with that is when you are talking about that as an annual energy number that means that sometimes a year you are going to have 10% renewables and other times for a year you might have 5% renewables or something like that.

And some of our most recent work addressing very

high renewable penetration and the displacement of coal has been specifically on the liability in the first minute after the disturbance and the work has shown that you can maintain reliability, you can maintain stability, you can meet the WECC wide frequency response, very high penetration of renewables, displacement of coal to quite an extent. So that is a potentially useful data point, not exhaustive enough specific to data.

COMMISSIONER BAY: Thank you.

COMMISSIONER HONORABLE: Thank you for your responses and also your statements at the beginning. I think about the similarities quite frankly, between the west and the south and southeast. So much of what I have heard really resonates with me coming from that area, but also I thought about for instance in the southwest power pool region how we began the process of developing transmission cost allocation policies to integrate.

And there you have a number of players, some like Texas and Kansas who have had lots and lots of wind. Some states like Arkansas and others who didn't have as much but the beauty of the regional construct was that we came together and focused on what was best for the region. And I say that knowing that it's not in an over simplified way. There's a lot you have to get comfortable with when you make a decision like that.

But I want to continue to be vigilant about the west's concerns. I think we have heard a lot around the table and you have to be applauded for. Colorado and certainly your early action, WECC's work in developing this phase one technical study and I'll go back to Colorado again with regard to your legislation.

And I heard the gentleman from Xcel reference incentives and what made it work. So I really would like to drill down a bit about that infrastructure. I've heard a little bit about what you perceive as the challenges. What in the west are the major infrastructure challenges in detail? I have heard a bit about pipes and transmission, I want you to please elaborate about that you live here, what are you concerns about that?

Conversely I would also like to hear what you believe are the innovative tools, I've referenced a couple. What are the things unique to the west that have worked well, that have helped you move ahead with your early action and anyone, yes?

MR. MORTER: Wayne Morter with Seattle. One of the things we are working on in the northwest require quite a while -- modeling somewhat after southwest's power pool is the energy imbalance service. That work has been going on for almost three years. That to address is rather

complicated here because we are still into the balancing areas but so are they when they set up their initial service and merged out, when they went to their day 2 market.

That -- one of the problem statements executives came up with was the integration of the variable energy in the region which has been a challenge, particularly for the Bonneville Power Administration.

The other aspect of it while that design is not necessarily set up to solve congestion, one of the deliverables in our phase three of that effort is actually disability tools working with peak reliability to get more transparency region to particularly utilize the infrastructure we have, that's a key we see as some of the misalignment planning models and that's what's actually happening in real time and sometimes there is curtailments that don't need to actually be doing and I think that has been seen in some other regions.

So that's one of the efforts we have going on, that effort hasn't been breached to conclusion have engaged both FERC staff and the Commission with the MC folks from the power pool company to see folks later this year.

COMMISSIONER HONORABLE: Thank you, Chairman Epel?

CHAIRMAN EPEL: Thank you Commission Honorable. I would like to focus on. I would like to focus on the

second part of your question which is innovative strategies and I think there is a number of opportunities -- I think one of the challenges actually for EPA is how to give states credit as Mr. Fowke said for its innovative strategies. One of the next specific example is last week at your technical conference, Assistant Administrator Cabe talked specifically about using voltage optimization as an energy efficiency measure, getting credit for really optimizing our distribution system to I think a lesser degree of distribution.

I think as the state for Colorado, probably other states, that may be a tremendous tool to really add efficiency in a cost effective way and that will be a large time process but I think that's an opportunity and I was really pleased that EPA mentioned that specifically.

Another that we have been doing in Colorado, some out of air quality concerns and some out of permitting purposes, is we are seeing some electrification in the oil and gas sector which is one of the largest areas of growth in Colorado, certainly load growth and certainly emissions.

And as we progress with that electrification there are opportunities to reduce emissions coming out of the oil and gas industry. The third one really this one has to be given credit to the air division and specifically the governor as he negotiated this is new controls on methane

and VOC emissions from the oil and gas sector.

Well by squeezing down those emissions that is certainly reducing greenhouse gases and ozone so there are lots of opportunities to look at this holistically and be creative how we get credit from the EPA for these innovations is a challenge that -- it's certainly thinking outside of the box and as Joe Goff said earlier we are going to give you opportunities for doing more than just the four building blocks.

But I think this is a an opportunity, looking at those types of innovations that we can really reduce our greenhouse gas emissions and at the same time promote more oil and gas activity because without the oil and gas from Colorado it is going to be really difficult for the other western states to move from coal to natural gas.

COMMISSIONER HONORABLE: So although you just said Colorado is going it alone I hear a little opening there for regional cooperation.

CHAIRMAN EPEL: We are always ready to cooperate.

COMMISSIONER HONORABLE: Mr. Hummel?

MR. HUMMEL: Thank you Commissioner. With respect to infrastructure in the west, I'm not sure if our generation as I mentioned earlier is participation owned, jointly owned and is built very distant from the load center so the transmission was developed and built specifically for

that location.

As coal plants end up getting shut down there is an assumption that gas plants get built in the same locations and they are often unsuitable for gas generation because of altitude and performance or because there's no gas line capacity to that area so that's clearly one of the infrastructure concerns we have. There are two main gas lines that run through the desert southwest we believe with the amount of gas that will have to be built in the future, those are inadequate and new gas lines will be sited, both mainline gas pipelines and laterals.

About 80% of the state of Arizona is either under state, federal or Indian control so siting becomes a huge issue and it is not that things can't be sited, it is just that it takes much more time than we have to deal with so that's part of it. I think with respect to infrastructure, I think it's also important for the Commissioners and FERC staff to keep in mind that we are dealing with not only the infrastructure but security of that infrastructure as well.

So as we move into a future where we have a resource portfolio made up primarily of gas, the opportunity for attacks on those gas facilities and rendering those inoperable become much greater and the ability to take out a huge portion of the west infrastructure with gas line interruptions is very large as well.

COMMISSIONER HONORABLE: Thank you, Mr. Fowkes?

MR. FOWKES: I think Mike said must of what I was going to say but I mean you asked what makes the west unique. We are blessed with some of the best renewable resources in the country. Quite a lot different than where you hail from the southeast so that's the advantage and I think Mike hit upon some of the real disadvantages, the vastness of land, the fact that cost allocation and markets that aren't really developed yet, it's always difficult, it's even more difficult in sparsely populations when you are going across thousands of miles of land so that's a huge disadvantage and it all leads to more time and more thought being put into these goals.

COMMISSIONER HONORABLE: Thank you Mr. Juj?

MR. JUJ: Two things, one is the natural gas dependency. We did a lot of work in California and looking at the first conference FERC had I think about 2 and years ago. I think the issue is the gas transportation system usually has that commitment that what do you have right now, the existing commitment? So the question is if we are going to go and have more uses of gas and who is going to pay for the infrastructure?

That is going to be really the issue that if we are going to use that for electric generation do the electric, you know generation customers pay for it or where

does it go, that's another cost allocation. And it's going to be challenging for the gas transportation companies to come up with that infrastructure.

Back to but colored by the way you think that you guys are taking like the Pacific Northwest we did that voltage introduction program in 1984. That was every project I did that one and it was really good. The question is that anybody is going to do right now you have to credit if somebody already has done that one so you wouldn't get credit, thanks.

COMMISSIONER HONORABLE: Thank you.

CHAIRMAN LAFLEUR: Thank you I want to ask one more question about a resource we haven't talked much about today which is hydropower. Of course the four building blocks built up the targets based on the resources in them but we have heard from the National Hydro Associations and others that hydro wasn't given that much of an assignment in the building blocks but that doesn't mean that the states can't go beyond and so I feel like I will never have a better panel to ask about hydro than this one but is there more that we should be thinking of even thinking outside the box? I mean if we are serious as a nation about really reducing our carbon footprint can we look at potentially thinking outside of the box upgrading some of the big hydro facilities the way that we have done with nuclear where we

have changed the way because we obviously have made a lot of compromises for other environmental and species and other objectives.

Is there more that we can get out of our big hydro and also to Kara and others, can we do more with all of the untapped small hydro and hydro-kinetic and other opportunities in the country because I mean I think this is a resource we don't want to leave out of the planning discussion, especially here in the west so whoever wants to take that on I guess Mr. Morter?

MR. MORTER: Thank you. Yes, this is something very important to folks in our City Light and northwest region as we put our comments back to EPA back in December. We did mention similar to the aspect of this maybe something where the Commission could help out with.

Similar to at risk nuclear, which is part of building block three I believe, there is also the aspect of what I will call at risk hydro large facilities now that brought a lot of flexibility to the region, integrating renewables, providing storage actually for and that's one of the beauties of the northwest system's ability to balance load and generation and integrate renewables.

The challenge we have is that we go through licensing on some of these projects, and it is possible that they become simply too costly to renew the license with the

impediments we might have and business decisions will be made by that utility whether to renew that project.

The other aspect of hydro that we have debated quite a bit was whether hydro should be counted in the baseline or not. Ultimately we thought not because hydro is an aspect that has got a lot of variability from year to year so its basis in fact, we are very concerned about the 2012 baseline year because it's such a high, high growth year that that's an aspect.

The other thing I would say similar to what northwest excuse me -- the Hydro Association mentioned was there are prospects for either new enhancements to curb projects that we are doing some of our own projects, Bonneville's upgraded some of the largest power projects in the country at Grand Coulee.

There are projects we can do and invest in that I think will bring more capability to integrate some of these renewables and other things that might lead to better solutions for the region.

CHAIRMAN LAFLEUR: But do they need cross state trading to make that economic because the states that are 70% hydro didn't have big volumetric targets so from a national perspective looking at some of those huge hydro resources might make a lot of sense. Whether there is enough in it or the state implemental plan to incentivize

that is not clear to me.

MR. MORER: And that's one of the challenges we have as that and others have pointed out that we are very you know right now cost allocations in our region are very local. And we are going to have to work through some of these methods to get through them. I don't really have a solution for the Commission today on that but that is something we will have to work on.

CHAIRMAN LAFLEUR: Thank you Melanie?

MS. FRYE: Thank you, the point I would like to make about that certainly hydro resources have been a new quarter of the energy in the western interconnection and something that we rely heavily on. From a reliability perspective one of the studies that we are undertaking is what would be the impact of long-term droughts near areas where we did not have those resources to rely on for a period of time.

We know that this year California has certainly been having some challenges in that area and so it's an important reliability consideration -- especially if it is going to be coming a larger portion of the resource portfolio.

CHAIRMAN LAFLEUR: Thank you Miss Clark?

MS. CLARK: Thanks. There are really two sides to the hydro question as I see it. One is that it is

potentially a great resource for improving the flexibility of the grid and integrating and responding to variability and uncertainty of renewable generation. The flip side of that from an analytical perspective is that as you know there's a whole lot of other things that come above power generation and incorporating those into a model is not trivial by any means and there has been a lot of work in the last couple of years, particularly in the northwest power pool where upgrading their hydro models to trying to get a better sense of how they really will behave and then how it might work with some kind of energy imbalance service, energy imbalance market like they have with Pacifico in California so you know I think it's a resource of great potential from figuring out what you could do with it analytically I think there's some work that needs to be done.

CHAIRMAN LAFLEUR: Mr. Juj?

MR. JUJ: Hardev Juj from Bonneville. I think we need to look at the solutions and not holistically that you know when you have the storage, you have possible hydro and then you look at you know how you are going to integrate renewables, that is up to integration. Then we might need to look at operations. For example people think that you know when we were integrating wind, Bonneville, we integrated about 5300 megawatts and 10,500 peak.

And people usually ask that what's the problem here, have you had hydro you can go up and down without knowing that we have the - - you know, the strength. So normally that when a nuclear congestion taking this resource out so you have got to have the resource at the right place to ramp it up -- otherwise you know like I'm dropping a hundred megawatts at Grand Coulee to remedy 1 megawatt of congestion, that's not the way we should look at it.

So it's not only planning we need to go and look at it that these are the operational challenges, thank you.

CHAIRMAN LAFLEUR: Well thank you very much. I feel like I have heard as much as the downside risk of relying on the hydro as the upside potential but either way I think it's a critical part of the discussion, especially here out west.

I want to ask my colleagues if they have additional questions and also if we have time for our sharp staff over there to be thinking of questions, but I'll start with Commissioner Moeller.

COMMISSIONER MOELLER: Just a comment, I appreciate you brought up hydro and I'm ashamed to be someone from the northwest but we just have to be realistic. I think that FERC's staff did a great job of processing the licensing under the current law but if there is not a whole lot that we can do outside of the current law to change the

process.

And Colorado has been a leader in some of the small hydro and being creative and again we have the memorandum of understanding with the state of Colorado that helped facilitate that process. They are very small projects and a few of them, and hopefully there will be more.

And we need to make sure that we define some of those terms because the buy-out refers to the court agreement how the dams are operated which is that you cannot excessively spill water or else you can super saturate the water with nitrogen, essentially if the juvenile fish, the bends kill them and that's criminal statute.

So Bonneville is somewhat limited in their ability to stay within the law so I'm very pro-hydro, hopefully we can expand it but we have to be realistic I think going forward given the limitations, frankly of current law.

CHAIRMAN LAFLEUR: Well just as you have talked about the way the Clean Power Plan works with ozone and others, a lot of other of the big suite of environmental restrictions on the way we use our resources play on those things as you have said.

MR. JUJ: Can I add one more comment please? On the hydro side if you look at it, if you are going to have

it on other rivers it may not help the period because you need to have the hydro's with the storage so that you can store water and cannot balance it, otherwise it may not help, thanks.

CHAIRMAN LAFLEUR: Other questions from this table, I'll turn it back to -- if we end early for lunch that's fine too especially given the weather, but I just wanted to give you an opportunity.

MR. BARDEE: I do have a question for this, Mike Bardee. One question I have is at the conference we held last week and earlier in this dialogue we have heard about a concept called essential reliability services which generally deals with things like frequency response, ramping, voltage support, sometimes ride through capabilities and some of you may know that we issued a proposal last week dealing with frequency response.

I won't ask you to comment on that at this point but I use it as an example to raise the question of are there other ideas we should look into, actions we should consider related to this set of services as the portfolio of resources on the grid changes, are there things which we should be looking at regarding this set of services that might be necessary or helpful as the resources change?

MS. FRYE: If I may this is Melanie Frye from WECC. WECC is participating very closely with NERC in the

task force about the central reliability service, certainly something that is very critical to the reliability components that we are focused on. I don't think we are prepared to day with any new ideas it's very early in the process of trying to understand how to study and how to model those things.

I very much agree with you Mike that that's going to be very critical to setting this.

MR. BARDEE: Just one last question from me and then I will see if other staff have questions. Recognizing the difficulties of finding a regional approach or regional approaches in the west and elsewhere, are there things that we from our perspective could do to facilitate any kind of regional efforts, whether it's information gathering, analysis, convening -- is there anything that we can do that would be supportive of trying to find any regional approaches? Chairman Epel?

CHAIRMAN EPEL: I guess my only suggestion would be to be a forum for bluntness. One of the things we heard a lot about is cost allocation. That's going to be a very tricky issue and to actually have somebody convene it and not avoid the topic and say what's fair, what's appropriate. Because frankly, there are going to be winners and losers and if we don't make that statement explicitly and talk about that and say well what would be the fair outcome, it

is going to be very challenging so I think only FERC is suited to convene those type of groups.

But make sure that we are getting to the heart of the issue having a real discussion of how do we deal with the troublesome aspects of a regional approach? How would we have California compensate other states if they are shutting down the coal units or they are obtaining energy? I think that type of discussion would be incredible helpful.

MR. BARDEE: Any questions from other staff? With that I would like to thank the panelists for their attendance and participation here today. It's been very helpful and insightful and we will adjourn the morning session with a little bit of time to spare and resume at 1 o'clock.

(Break for lunch, reconvene at 1:00 p.m.)

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

MS. COCHRANE: Returning from your lunch if everyone could please take a seat and we could get started. Thank you, my name is Anna Cochrane. I'm with the Office of Energy Market Regulation and this is the second panel of our

conference today on identifying and addressing infrastructure needs.

Compliance with the Clean Power Plan may drive the need for infrastructure regulated by the Commission. This session will focus on potential infrastructure needs that may arise from state or regional compliance approaches and how any infrastructure needs can be met in a timely manner in order to ensure system reliability. Panelists will be asked to discuss mechanisms to identify potential infrastructure needs and how relevant planning entities, industry and states coordinate reliability and infrastructure planning and siting processes with state and/or regional environmental compliance efforts to ensure the adequate and timely development of new infrastructure.

So I would like to introduce our panelists for this afternoon. We very much appreciate your coming to be with us today. Chairman Alaina Burtenshaw with the Nevada Public Utilities Commission, Joel Bladow, Senior vice President for Transmission, Tri-State Generation and Transmission Association, Incorporated, Mark Gabriel, Administrator of the Western Area Power Administration, Sean Gallagher of the Solar Energy Industries Association, Brian Parsons, Director of the Western Grid Group, Mark Westhoff, Vice President, Pipeline Management for Kinder Morgan and Maury Galbraith, Executive Director of the Western

Interstate Energy Board.

I have a reminder for when we get into the Q & A session, we have a reminder to help the people who are listening in that when you are answering questions and we get into the Q & A if you could please identify yourself with audio only it's hard to tell who is who and who is speaking and so unless the question is directed at you, if you are answering a general question if you could please identify yourself.

And as we did this morning I have handed you an IPAD with a two minute timer and I will ask you now for each of you to present the one or two most important points that you would like to make today and keep your statement under two minutes and to help you with that I would just like to recognize a way that we all know that you are very grateful for us inviting you here for this very important conference so that will save you a few seconds anyway, thank you, Chairman Burtenshaw?

CHAIRMAN BURTENSHAW: Thank you, the topic today is extremely timely, identifying, addressing infrastructure needs. I guess my primary concern about that particular issue is that timing is a real problem. If we do an assessment of reliability which we believe is critical before extensive decisions are made.

Every time -- and we sort of have a chicken and

egg problem that we have identified which is if everybody turns to the western states, we take a look at what WECC is going to do for us. Right now WECC does not necessarily have a coordinate planning position for this. So if we relying on WECC we have a significant timing problem.

By the time every state identifies their CF and files it with the EPA, that's about the time when WECC will have perhaps enough information to start dealing with those modeling issues. So that to the extent that's going to identify what transmission needs are, or voltage support, or what path ratings are going to be changed because of every individual state's steps that's when we will sort of know what infrastructure needs we are going to have and obviously if anybody has ever tried to site or develop a transmission project or pipeline project, we know how long that takes.

It is 2015, the possibility that we would have everything in place to address the infrastructure needs by 2020 is optimistic at best. So I think the timing problem that we have given the steps what would have to be done in the west to coordinate those changes and reach those decisions, to identify those infrastructure needs is a problem that the west is going to have addressed and it's going to be a very difficult thing.

MR. BLADOW: Anne I'm going to have to admit your password kicked in so we don't have a timer so I will try to

be two minutes but I have no idea when I hit two minutes or not. You know I guess I'm going to have to take a little different approach -- this is Joel Bladow with Tri-State is that I'll give you a little example of what Tri-State is, as we serve mainly rural areas.

Our service territory is larger than the state of California and we have 5% of the load that you see in California so we have some unique challenges. And the Chairman has asked this question of everybody's time and I'm going to try to answer it a little different way, what should the FERC do? And I think you started off great, have these workshops.

The second thing you need to do and really Joe Goffman hit this is you need to summarize what it is you heard and make recommendations publically. Here's a report that says these are things that need to be addressed before the Clean Power Plan is finalized because if we wait until after it is finalized I think you are going to have a very limited set of options that you need to put out there.

We are like a bunch of voices in the wilderness, thousands of us, saying different things and if EPA really understood some of the complexities here you wouldn't be having these hearings. Obviously they missed on their initial proposal, they are asking for the feedback and I can see FERC as being the right body to synthesize what you

hear, kick the key points, they may be online, probably not, but you will figure out what the most important ones are and put them out there for the EPA to address.

Frank, like I say I don't see them having the expertise to do that and you need to translate what we need. Once the rule is finalized I am sure it will be more than a handful of pages and a few months after it is done I would see you starting up another set of these then I think that you could get meaningful feedback from us on it.

The authorities you have, how do we see them working in the environment that EPA has created for us in the context of this rule. So with those two things I don't think I used more than my two minutes.

MR. GABRIEL: I'm Mark Gabriel, Western Area Power Administration and I would like a few of the comments we heard regarding timing but the couple of things that really strike us, as Western we provide not just the hydropower from 56 dams, but we also are active buyers on the market of power. Somewhere in the range of a half a billion dollars a year supporting the 700 or so customers, some are as large as Joel in Tri-State but others are small entities out in the marketplace and they rely on us not just for hydro but also for purchased power.

So the implications that we have is that being able to make sure that there are sufficient resources to

supply them at a cost that is reasonable. We'll also address in my limited time this question about construction of transmission. Two weeks ago we opened up 106 mile line in Arizona. It was on existing rights of way, we had the existing permission, we had the money issue, the ARA grant program and that line took 7 years. So the challenge of getting the overlay right with the construction of either electric or gas transmission to me is one of the biggest issues that we are going to have to face. Western's lines -- the 17,000 miles of them don't go to the end of the universe but you could see it from there.

So you have got a situation where we are really strung out, as Joel said, in our case across 15 states, multiple jurisdictions. That's the other point to take away from my perspective the vast majority of our customers are not jurisdictionals, they don't fall underneath the state regulators so you have got a challenge in how we work with all of those folks.

And last but not least I think managing the right incentives for constructing transmission lines in the right places is really something that FERC should look at because today if you build the line where we need it, you get the same amount of money as if you build the line where we already have one and there is a change that we might want to think about in that.

MR. GALLAGHER: Thank you I'm Sean Gallagher with the Solar Energy Industries Association and I'll make a couple of points here. We see solar energy as a key part of how states and utilities are going to comply with a Clean Power Plan. Solar Power and renewable energy, broadly speaking are already here.

In the west the Clean Power Plants are really going to enhance processes that are already underway. I've got some figures here but I couldn't say it better than this slide that staff showed earlier that 65% of the new capacity to be added to the west in the next 10 years is going to be wind or solar.

So this is happening with or without the Clean Power Plan. And renewables can and are being degraded reliability into the grid today at penetration levels that exceed those that are likely under the Clean Power Plan. Nationally the Clean Power Plan is looking around 13% renewables. In California right now I can tell on my handy, dandy ISO APP, renewables are serving about 28% of the load.

In Germany last year renewables served about 28% of the load for the full year, not instantaneous though, the entire energy. We heard earlier that in Colorado we have seen renewables instantaneously at around 60% and these are all being done without reliability problems.

Now there are infrastructure needs in the west,

we do need more transmission in the west and there are good planning processes in the west that have identified transmission that can be built sort of in a least regrets manner. The WECC has an excellent transmission planning process and these least regrets slides should be built and they will help us meet the goals that we saw earlier and they will help us meet the Clean Power Plan goals and there should be no delay because of concerns for the Clean Power Plan and building transmission lines that we need already.

A couple more quick points -- incremental grid infrastructure needs. It may be necessary, also the Clean Power Plan can be minimized by doing a number of things, some of them we heard earlier, repurposing existing transmission lines to serve renewables rather than coal, we are seeing this already.

The Moapa solar power project that is under construction on the Indian reservation outside of Las Vegas is going to utilize transmission that was built to bring coal power from Navajo down to Los Angeles Department of Water Power. The Reid Gardner coal plan that was recently retired by Nevada Energy is going to free up more transmission capacity, we will see other instances of that.

Incremental infrastructure needs can be further minimized by increasing regional coordination. The EIN is a good baby step in that direction, energy storage is going to

be another good tool. And there are some things FERC can do. FERC can insure that there are market signals so that wind and solar can provide voltage support. It can provide the other kinds of grid stability and grid flexibility that the technology is there to do but that aren't currently being valued.

And the other thing that FERC must do is insure that regional transmission planning under Article 1000 addresses the Clean Power Plan, thank you very much.

MR. PARSONS: Hi I'm Brian Parsons from the Western Grid Group. The Western Grid Group works to accelerate the incorporation of a broad range of cost effective low carbon technologies into the western interconnected light system and we really appreciate the opportunity to address reliability issues. We think that there is a lot of issues that have been raised, even though we are not aware of any chances in the past or what has been raised is a problem with implementing any particular pollution cutting initiative that hasn't been shown to be a problem.

Not that this time we should ignore that. I think we really need to urge the stakeholders and the people involved. Let's get specific with the issues, let's get specific with the evaluations and the standards. Let's really look broadly and quickly examine the limiting

institutional and business as usual practices for a vision.

I think we need to fully consider the capabilities of all existing and potential new grid elements and resources in regard to providing the delivery of essential reliability services so that includes generation, it includes demand size as well as others.

We need to consider system adaptations and cost effective solutions that are part of a good system planning and engineering, rather than just removing a system and seeing if it breaks. You know let's think about what we can do to fix issues after they are identified.

So our broad assessment is that the goals of the EPA rule are largely achievable while maintaining reliability although there's a lot of hard work that has to be done to really demonstrate that. I think the work that NREL and GE have done in the past looking at high penetration renewables and lower use of coal in the future, although they weren't necessarily directed at the Clean Power Plan are directly illustrative of the kind of work and the kind of analyses that can inform these processes as well as some of the stuff that WECC has done to get ready for this, getting their models calibrated, getting them ready to answer those questions I think is really important as well.

And that illustrates that processes and tools are largely in place for the west. Are they perfect? No, we

have a long way to go in making sure it all works but you have got a good start. I think we need to coordinate among the diverse stakeholders and the responsible parties in a transparent fashion in a way that this can be seen.

For the longer term I think that FERC should use as Sean mentioned Order 1000 in the regional entity planning process to incorporate the key power plan as a public policy and that will help with states looking at compliance options, it should help with the regionality questions that have been raised.

I think those assessments need to explicitly and upfront include evaluation of non-wires, distribution level and demand side measures as well as best use of the existing system as a foundation of identifying immediate systems additions.

Finally I would like to reinforce the Colorado story. I guess I'm proud to be a native, given the leadership that Colorado has shown. I think the five year time frame of the Clean Power Plan, Clean Power Clean Jobs Act does show that things can be ramped up pretty quickly. In Colorado we are ahead of the game a little bit and I think the overall picture for variable energy resources in WECC is illustrated by the FERC staff presentation up front shows that particular building block could perhaps help with some of the challenges and some of the others but that kind

of adaptation between blocks is something I think that we cannot support.

So I guess if I had to sum it up in one thing it's an often used phrase but I think it applies here. Let's keep calm, let's carry on.

MR. WESTHOFF: I'm Mark Westhoff with Kinder Morgan. I believe out here in the west we have a solid track record of building infrastructure on behalf of our customers who are willing to enter the long-term firm commitments. As with the electric generation side the reliability of our pipeline grid, pipeline storage in particular, is that they must be appropriately sized, not just for the average day, but for the instantaneous peak demands that are required, particularly those that are imposed with the integration of renewables.

We have done that successfully and we need to keep working at that. We believe that the market will pick the best alternatives if the EPA timeline is sufficient for implementing the various phases of the CPP. Building out here in the west does have its challenges. Timely permitting decisions can significantly improve the efficiency of building infrastructure with some specific exceptions.

For instance, the lack of market areas of storage in the desert southwest, the west region gas infrastructure

appears to be very well positioned to support the implementation of the CPP with wise and judicious expansions as required.

Finally before we get the infrastructure in place we can mitigate some of the shortfalls associated with the performance shortfalls of that infrastructure if we are creative in developing services and capabilities with our shipper communities to mitigate those limitations somewhat hourly services and those types of things.

And finally the pipelines are going to have to maintain some tools in the tool box, operational flow orders, economic incentives to ensure that the pipeline systems remain balanced between supply and delivery through all of this so that they can respond robustly to the challenges ahead, thank you.

MR. GALBRAITH: Good afternoon Commissioners and FERC staff. For the record I'm Maury Galbraith and I am here today representing the staff of the Western Interconnection Regional Advisory body. The views that I express today do not represent the consensus views of the 14 western states, 2 Canadian provinces and Mexican government that are members of WIRA but I do have observations and recommendations for FERC in three particular areas.

The first area is electric and natural gas resource adequacy and the observation here is that the state

IRP processes and tools are in place in the west to address resource adequacy. As long the EPA provides sufficient time for capacity expansion and the resource pathways with the states are viable we do not believe that the CPP presents a significant risk to resource adequacy in the west.

On the natural gas side of things a recent study of natural gas pipeline adequacy in the west under a high coal plant retirement scenario found the need for continued pipeline expansion. That wasn't a surprise but the required build-out is feasible and it is consistent with the build-outs that have occurred in the past. So again on this one the tools and processes are in place so for this area the recommendation to FERC would be to encourage the EPA to allow sufficient time for those processes and tools to continue to work.

On the second area is electric system and gas pipeline and gas pipeline flexibility. Electric IRP planning in the west, I think we heard this this morning is expanding to address whether the existing generating capacity is flexible enough to meet the ramping needs and balancing requirements associated with high penetrations of renewable resources.

More work in this area is obviously needed. Things like deployment of the energy and balance markets would certainly help in expanding electric system

flexibility. With respect to natural gas pipeline flexibility that same study found that it is again technically feasible for pipelines to meet the variable gas demand associated with high penetrations of renewable resources in the west.

So on this point the recommendation to FERC would be to continue to encourage the coordination between the electric and natural gas industries to improve the scheduling and communications between those two industries with the overall goal of trying to improve overall flexibility.

The third area is grid reliability and this is an area where I think additional processes and tools are needed. The preliminary indications from several recent studies indicate that we should be able to maintain system frequency response with high penetrations of renewables and high levels of coal plant retirements but more work on that issue, more studies on that issue are needed.

The western states are looking to WECC and the Order 1000 regional planning groups for analysis of these reliability impacts and WECC and the RPG's need to quickly develop their capabilities in these areas to undertake studies. By quickly, you know within the next year. So the recommendation to FERC here is to urge WECC and the RPG's to conduct a rigorous and this is important, transparent

studies of potential reliability issues and FERC and other parties should not draw conclusions on these potential grid implications until that rigorous and transparent work has been completed. So with that, thank you.

MS. COCHRANE: Thank you very much. We will turn now to questions from the Commission starting in reverse order this time with Commissioner Colette Honorable.

COMMISSIONER HONORABLE: Thank you Anna, thank you panelists for being here and Mr. Parsons I appreciate your admonition that we get specific so here it goes. I appreciate your collective thoughts about some of the broader areas in which FERC may be helpful. Mr. Gabriel your thoughts about going forward and reconvening this group in the future certainly is something I will keep in mind.

I don't know how the participants here are feeling at the moment. We are just getting started but I think it is certainly worthwhile even having the first technical conference under our belt and now here we are in the middle of the second one and the first regional one. It's been very, very enlightening, particularly for a new Commissioner so thank you.

But to Mr. Parson's point I would like to ask each of you are there specific FERC rules or policies that we should revisit as we consider the implementation of the Clean Power Plan? I certainly have heard your thoughts

about Order 1000, about sending the proper market signals, I agree with that. Are there specific rules or policies that are a barrier to your ability to carry out this work? He's going to jump right in.

MR. PARSONS: I am. So I think that we can get specific. We talked a little bit about the central liability services. You know the history of this is we go back to integrated utility world. These were things that were just part of stuff that happened. You know a guy owned a generator, it had governor control, it had inertial response, you know because it had a spinning generator in it so you know a lot of these services were just part of making the grid work.

I think as we break things up things change a little bit and we have got to start to get more explicit about what these services are, where they can come from and how we access them the most cheaply and what kind of other sources and solutions we can look at so I'm broadening that view to where can we get these things, what are the solutions we can employ and is there a way -- this is specifically to FERC, they can take a look at, you know is this a service that makes sense as part of a grid code standard in working with NERC, is this part of the service where we develop a market, like a frequency response obligation.

Is this something where we try and figure out how we motivate people to not turn their governor's off because they are foregoing energy opportunity costs there. So this is an area where this strange world of standards and markets and capabilities of different parts of the system come together and I think FERC's position to help illuminate those kind of questions.

COMMISSIONER HONORABLE: Any other thoughts? Don't be bashful Mr. Gallagher.

MR. GALLAGHER: Thank you Commissioner. A couple of quick points, it's not widely recognized I think yet that clean energy resources like wind and solar can provide good services like voltage support, like frequency support. But providing those services can come at a cost for those kinds of resources and costs of lost active energy.

So those -- there has to be a way for producers to recover those costs and I think FERC has a role in encouraging markets to be developed to value the variety of different goods and services that are really sort of taken for granted from conventional generators today but if we are going to have them deployed more widely, if we are going to have them produced by the new fleet, we have to sort of divide them up and articulate them and make them explicit and provide markets for them.

I guess the other point I would make is that I

think FERC has a role in -- Commissioner Moeller mentioned the last time you guys were out west in Phoenix. I had the pleasure of addressing the Commission on that occasion as well so I hope to be invited back every time they come out west. I was then at the staff for the California peak, and we were talking about seams issues and FERC has a role of course and has done a lot in reducing seams and can continue to do that.

The energy imbalance market that has been started in California and that is of course joined and now Nevada Power I believe is going to join, this is a real good step in that direction and this kind of inter-regional transfer can really help manage some of the issues around incorporating larger amounts of variable resources into the system.

And along with that FERC can help encourage grid operators to enhance forecasting to make forecasting better and more transparent and this also can help us with mounting these additional resources, thank you.

COMMISSIONER HONORABLE: Thank you, anyone else? Some of you have talked about some of the sorts of things FERC can incent or encourage during your opening statements but I wanted to allow time. My feelings won't be hurt if you do come up with any but now is the time to contemplate any rules or policies that we should revisit but thank you

for the counsel you have provided thusfar.

COMMISSIONER BAY: So part of the answer clearly seems to involve the build-out of more transmission. But I am wondering whether the transmission in the west is used as efficiently as it could be used and whether there are any opportunities to increase the efficiency of the existing transmission and whether that could provide some assistance, sure Joel?

MR. BLADOW: Yeah I'll start off with that one. You know one of the challenges of course in the west is long, long lines, load centers remote from each other and seams between all of them. Can we use it more efficiently? Part of that is going to depend on what happens this summer with EPA's rule and what the impact is on what gets shut down. Because if there is an assumption by some folks that the transmission capability between those regions is fixed and somehow when you take off a lot of the inertia you can still utilize them.

I don't know if that's true. I think you are going to have a very different scenario to study. So could we use it more efficiently with markets? I think it really depends and when we get to usually -- and I've been involved in a number of these trying to get common tariffs with a number of utilities, it always comes down to cost allocations.

You have the utilities that have very concentrated, low cost systems and you have utilities like tri state that cover five different states with assets and have very high transmission costs so folks would love to use ours for nothing and we can use theirs for nothing and kind of a license plate approach but it doesn't really work and I think that's one of the challenges that we see as how do we make sure those costs are allocated fairly when you go to that type of a system.

MR. GABRIEL: Yeah I -- this is Mark Gabriel, I believe that there is two different components, the one that Joel mentioned which is really the market conditions and when you can use line and who pays and who gains and certainly every day we constantly look to optimize the transmission system for any given five minute period.

So at 3 o'clock in the afternoon there is no excess capacity, 3 o'clock in the morning as we know there is plenty of it. I think the bigger challenge for us is to start understanding how the interconnections are going to work and how we transfer power more effectively and more efficiently. I have just spent a lot of time in our control center recently I will tell you there are moments of pure concern, let's put it that way, given resources switching on and off.

So we are going to get better I think as an

industry and we can manage a whole lot more on the existing system. But we also have to be careful, this is very location specific. What occurs in North Dakota is very different than what may occur in Wyoming, virtually at the same hour of the same day.

Just two other quick points on this issue around transmission we know how to build the lines. We have got lots of expertise, we've got eminent domain, there's availability of raw capital. The two challenges I think that we face, one is to be able to move the process along quicker. It took seven years for us to put a line in that everybody wanted, nobody complained, 18 communities and tribes supported it. It still took us seven years. We have been trying to site another major line to bring wind in and that's seven years and we haven't even come close to breaking ground so that's one of the components.

And the second one I think where there can be more incentive is really getting customers for the power. We make the assumption that just because the power is on the line if somebody wants it but this is where price comes in and markets come in and folks look at it and say you know what it's just too expensive and I'm not willing to commit for the long term.

So to the extent that we can get more commitments at the other end of the line, that really helps the process.

COMMISSIONER BAY: Yes.

MR. GALBRAITH: So for the record this is Maury Galbraith with the Western Interstate Energy Board. I think it's an excellent question, what I would offer is that the Western State Provincial Steering Committee has recently hired a contractor, Quanta Technologies to take a look at the methodology that the WECC uses to calculate transfer, total transfer capability on western lines.

Currently when we calculate that transfer capability and then we do not frequently refresh it or update it and so one of the questions for Quanta Technology is would a methodology that used more real time data in the calculation of half transfer capability result in a higher utilization of the transmission system.

Again they have just started work on that but we are expecting results in April but that's one possible area where we could get more transmission system utilization.

COMMISSIONER BAY: Brian?

MR. PARSONS: So I'm going to give "atta boy" to them for doing that path rating because I think that like many things we need to revisit better data and certainly have a chance of up-rating the path capacity. The other thing that I think goes to the core unit to the question Commissioner is there's a lot of data out there, there have been several studies done in the past we can compare

basically the committed amount on line in the path versus the actual used, and those numbers are shocking across the west at times.

And they are not necessarily because somebody couldn't use it. If somebody has got some embedded rights in the line and they are not releasing them necessarily to an oasis or anything like that, we need to perhaps revisit that kind of a situation because I realize institutional challenges, I realize the coordination challenges, but just that basic look at that data tells me the answer to your question is we can definitely use what we have got better.

COMMISSIONER BAY: Thank you, one more question and this question is for Mark. Salt River Project was on an earlier panel and they basically said that Arizona may need a lot more gas and gas capacity. So what would it take from a kind of pragmatic perspective for Arizona to get that gas? What would have to happen?

MR. WESTHOFF: The solutions it will have in Arizona will be similar to what we have done here in Colorado for example. We will collaborate with Salt River Project, APS, the various stakeholders in the Arizona area to look at what their needs are.

A lot of it depends on where it's at. Where do they need the generation and the size of the project and its location will derive a great deal of what the costs are

going to be and at the end of the day we are going to evaluate all of the possible options that are out there. My team literally does hundreds of iterations working in collaboration with each customer to come up with the most economically viable approach.

One of the things that we have looked at and we have looked at probably for 15 years trying to develop market area storage capability down in the Phoenix Tucson area. It's an extraordinary difficult prospect but we were meeting on it just a day or two ago and continuing to work that effort and seeing if we can develop that kind of an infrastructure.

That would be particularly helpful because otherwise we have to meet the hourly requirements of these power plants with pipeline capacity and that's pretty inefficient. My plants are good at storing gas but that is not an economic storage vehicle. So those are the things that we are going to be looking at. We look to the shipper community to tell us what their needs are and then we work diligently to come up with the alternatives that make sense for them.

COMMISSIONER BAY: Is there anything that FERC can do that would help in that analysis, or is it really initially a question of the discussions you have with potential shippers?

MR. WESTHOFF: Last week I believe a gentleman from the gas industry mentioned the three phases, the commercial, the certificating and the construction phases. Clearly we are in the commercial phase right now and we are working through that. When it gets to be the construction phase, you know, we like the FERC to lead by example. Your processes for certificating facilities are very straight forward, they are timely. If you could influence without authority and carry that capability into the permitting area and helping us there be efficient in getting those kinds of permitting decisions done in a timely fashion it would be particularly helpful.

COMMISSIONER BAY: Thank you.

COMMISSIONER CLARK: My follow up is for Mark. Commissioner Bay was heading right -- was interested too on the pipeline side of things, we know in the east there are some very specific challenges with developing pipelines there which tend to revolve around a lot of the people in very highly populated, densely populated areas and so on and so forth.

In the west it's sort of just the opposite. There's a lot of dirt between people and there's lots of federal land which is often brought up, this is one of the challenges both for pipelines and the electric transmission sites. So you had mentioned FERC's certification process in

siting processes and then right there at the end you talked about I think you were heading towards some of the other agencies.

I wonder if you could add a little bit more specificity. If you had a wish list of how the federal government as a whole could do a better job from a time line standpoint in terms of getting pipelines developed, understanding that there is probably going to need to be a fair amount of pipelines developed to meet the Clean Power Plan. What would that wish list look like?

MR. WESTHOFF: Having a clearly defined process for getting that done and having deadlines that are met. We have such that there will be times where we will submit a permit application and it will sit on somebody's desk for quite some time and there is somewhat disjointed and you mentioned a patchwork quilt last week. This one is a pretty odd quilt, there are a lot of different agencies with overlapping responsibilities.

It would be very helpful if there was some mechanism for rationalizing that process somewhat, making it much more straight forward. I'm not suggesting that you know they have to be automatic approvals. I mean getting in a quick and timely denial is helpful to look at re-routing options and things like that.

But the delays associated with waiting for who

takes precedent, I'll do this after you do that that kind of sequencing problem can add tremendously to the process of getting all of the permits in place to do the construction.

COMMISSIONER CLARK: Thanks, I'm going to turn to the electric transmission site now and ask a similar question. Understanding that this is less of a FERC issue and more of a state issue and certainly a federal land's issue and start with Mark and would ask Joel and Chairman Burtenshaw to chime in on this as well -- if you had a wish list of how to make transmission siting certification more rational in the west, both from a time line standpoint and just from an efficiency of where lines go standpoint, because we know sometimes routes take deviations to just sort of avoid certain issues that they might otherwise run into, but not the most economical way to do it.

What would your wish list look like in terms of getting more timely responses to transmission development otherwise?

MR. GABRIEL: From our perspective it's quite simple. Right now there are divergent missions in the various agencies. Our goal is obviously to build transmission to support our customers and to support all the needs. The challenge that we have is that folks have a different mission in other parts of the government. Now we do have a rapid response transmission team that was formed a

number of years ago with an attempt to speed things up.

If I can have one wish that would be we have a standard form, sort of a checklist that we go down and that the various agencies have to meet at a certain time or place and make a decision by 30 days and/or this decision is made by default and I realize that that is a fantasy but we really need to get folks number one to have the same vision and alignment around what we are trying to accomplish.

And then number two to follow a process that makes sense. We have been trying for example in the upper great plains for eight years to put together problematic environmental impact statement process so that wind developers could down the checklist. It's been eight years, I have only been here two, my hope is that it is done before the next eight years. So we have to move consistently, having some type of a path and a pattern that we can count on that developers can count on as part of the process, whether it is electric or gas.

COMMISSIONER CLARK: Thanks, Joel?

MR. BLADOW: Yeah that's a great question and Mark I think one of the keys is getting some more consistency. The only thing we found is one of the things DOE tried in that rapid response team is let's refocus the meager existing resources that are out there and these land management agencies. They are good people and they have

absolutely overwhelmed with all the various requests and priorities that come from the administration, whether it's endangered species, that's your priority today or its gas pipelines or its electrical or it's something else, there's a lot of uses for these public land.

There's a very limited federal work force that is there to actually provide it so a lot of times what we see is the people are working hard, but their bosses are saying these are your priorities today and they will get to ours when they get to ours.

The other nature that I don't know how you solve this one, but just things continue to change and I'll give you an example. We tried to build a line out of one of the most solar rich areas of Colorado, St. Louis Valley with a partner and we went on for four or five years, got the state permit, we had one wealthy landowner that very much opposed it and understand that but at the end of the day, what ended up happening was the Fish and Wildlife bought a conservation easement. I paid him for a conservation easement which neglected, basically eliminated our opportunity so we shifted directions. We will try going south.

Start the planning process, the president now declares a national monument on the south end of the St. Louis Valley, that's route is closed off. So you end up as you go through these permitting processes, I think it's very

simplistic to think can we get it all on one checklist.

I mean one of the things you have to recognize, these will take time. It's a very established process in the west, good or bad, sometimes you lose, you can't get them done but you can't assume that we can speed that process up. I think you have to take account EPA and FERC have to think about as we look at rules and requirements and realize it will take a long time to do these how does that impact how we draft our rules?

COMMISSIONER CLARK: Thanks, I'm giving extra credibility to your answer because of your both Bachelors and Master's degrees from North Dakota State University, my alma mater.

Chairman Burtenshaw I know a lot of times folks point fingers at states when it comes to transmission siting, but I know across the west it's often a frustration for state commissions that where maybe holding something up might be federal issues and not actually the state itself.

CHAIRMAN BURTENSHAW: The 85%, almost 85% of the land in Nevada is federal, so that creates its own challenges. And I -- what this other gentleman said about divergent missions of various agencies is absolutely right. You have a totally different message from the Fish and Wildlife Service person via land versus the EPA versus FERC.

And I think in Nevada we are going to have this

sort of like perfect storm with the sage grass. We have significant issues associated with taking maybe large sloths of land in Nevada where transmission or gas pipelines might come through for liability purposes that will not be available because it is sage grass habitat.

That is -- we've actually had a very good work relationship with BLM, but there is also this overlay that's going to probably address this issue. If we had some ability for federal governments who have these diverse missions to have conversation or some working group to say well the sage grass, is there some way we can mitigate the sage grass concern because we really need this transmission path to go through to comply with the Clean Power Plan and to assure liability.

But right now there's not a mechanism to have a conversation at the federal level and the states can say Mr. Bladow said at the very beginning said we really need -- there's plenty of these voices in the darkness that kind of say stuff, but at the federal level the FERC for instance has much more access to the folks at probably Fish and Wildlife, probably BLM to identify these reliability concerns in individual states.

But it is a significant problem and there needs to be more discussion at the federal level to kind of deal with these issues.

COMMISSIONER MOELLER: Thank you the questions I had, the concerns were precisely articulated by Commissioner Clark and I really like the anecdotes and I think they are very powerful. When Mr. Gabriel, can you walk us through briefly how that seven years played out.

MR. GABRIEL: In terms of the line that we just completed?

COMMISSIONER MOELLER: Yes exactly.

MR. GABRIEL: It obviously starts with a germ of an idea, which is -- there are plenty of ideas out there but from there it moved to getting in this case 18 communities who are on that path to agree, actually 14 communities and 4 tribes to agree. We then have to file a series of permits and processes to get through, finally getting to the point where you go out to try to acquire the rights of way that we didn't have.

We were lucky, we had most of those rights of way but that still requires us to go back out to do archeological studies, surveys, environmental surveys -- that plays through. We then have to acquire the equipment, actually build the line itself. In this particular case it took us an extra six or seven months to procure the transformers so we had issues with that.

And that just takes you know a lot of time. It was only 103 miles with one major substation rebuilt on an

existing footprint so it's very proud of it and you are welcome to come out and see it but it's a really good example. Here again we have willing participants, we have the money through the grant program through our TIP program and it still just -- the time seems to drag on.

I certainly get concerned with the overall rating that's going to be required should we decide that we need to build a new line, we are required to build a line because coal is being shut down in a certain area and we are still left at supply. So we have got another project that has been going for seven years and it's not even at the drawing board stage.

COMMISSIONER MOELLER: Chairman Burtenshaw, perhaps you can elaborate your experiences on the line, I think we have known those of us from the west that probably for 25 years there was a need for more transfer capacity from northern Nevada to southern Nevada and yet it's finally been energized can you elaborate?

CHAIRMAN BURTENSHAW: You bet. There have been for decades discussion about trying to combine I'm sorry I don't talk very loud. For years there have been discussions about trying to connect the two systems between the north and the south. It finally became a realization we approved it in the resource plan of 2010 and like I said we have an excellent working relationship with the land. They got the

EIS very quickly, it was sort of in the works and it was energized December 31st of 2014. So it took us about four years to build it, it had its challenges associated with some re-vibration issues, associated with basically construction issues, that kind of put them back.

I think that that transitional line probably given the experience typically on transmission lines went along fairly smoothly in terms of time. It wasn't without challenges but for the most part, once again there are some advantages to not having to go over since so much of Nevada is publicly owned, a lot of private landowner issues that were discussed earlier, typically doesn't hamper our ability to build transmission lines or have pipelines, because most of the time they are coming across public lands.

We have public land issues that we have to deal with and like I said BLM has been very cognizant of our concerns and very helpful but I think we are facing some new challenges that I think will take a lot of discussion, much of it to try to work through.

COMMISSIONER MOELLER: Mr. Parsons?

MR. PARSONS: Yeah I think that they have identified it is trying to get people co-actively to start discussions early. They are far from the perfect solution but there is a couple of examples recently, some successes where feds and states have partnered together. The

California Desert Renewable Energy Conservation Plan is moving forward identifying low conflict, high value resource areas, I think that really, really can help.

Because if they can get together with communities and start talking about this early so you don't come to those gotcha's later we can identify them early. There's a similar program in Arizona, the Federal Design Energy process so there's some I guess, early models that might be something you could help build on.

COMMISSIONER MOELLER: Mr. Gallagher?

MR. GALLAGHER: Thank you, I guess I'd say I wouldn't expect there to be any silver bullet that is ever going to significantly decrease the timeline through transmission. When I was with the state the rule of thumb was a couple of years for planning and a couple of years for permitting, a couple of years for building transmission. And any one of those components can run longer.

So the key really is to do the planning and do the planning up front and if we are talking today about clean power plant implementation for the decade starting in 2020, the time to be doing the planning is today because it's going to take some time to develop transmission.

It's going to take some time to plan it, to permit, to build it and so the time to be starting is now.

COMMISSIONER MOELLER: Mr. Bladow?

MR. BLADOW: Yeah the one thing I don't think you want to do is put another process in place because I have seen recently there was some kind of accelerated process that folks were looking at on siting to kind of do some pre-work and from our experience and we have got lines that we build in two years and lines that have taken fifteen years and it really depends on the amount of opposition, where you are going, who the private or public landowners are in the area so I wouldn't recommend trying to speed it up by adding some kind of accelerated process.

In our experience they don't work, they just add more time.

COMMISSIONER MOELLER: Well that's a good point because I comment the Administration, the DOE for implementing the rapid response team, but the earlier views are mixed and actually is adding two more layers of process as opposed to decreasing process and I called for last Thursday, you know if we decide as a society that reducing carbon is such a high priority then something else has to give and the resource agencies particularly at the federal level in the west, but also in the east, we have got some real issues in Pennsylvania related to delayed transmission that by the way was costing consumers several hundred million dollars a year in congestion.

You know somebody has got to take some leadership

in the federal government to get the agencies together to focus on this if carbon reduction is the highest priority and I'm sure you know we would be happy to do it but as an independent agency it's really not our role, but I believe that the people should make that clear in their comments and their discussions with the EPA that the infrastructure that we are talking about on this panel, we talked about on Thursday.

In my opinion it is absolutely necessary at the least to bring a couple of those building blocks and in the present system it just isn't going to line up in terms of the implementation date. So I'm hoping there will be leadership from the federal government to coordinate the federal agencies if this is deemed to be the highest priority of the various factors that have to be balanced when pipes and more is built so thank you for your answers.

CHAIRMAN LAFLEUR: Thank you Phil. Well Commissioners Clark and Moeller have covered a lot of what I had planned to ask about federal lands as well. I definitely agree with what Commissioner Moeller just said that to the extent a specific transmission project is critical path to a state or region making the Clean Power Plan goals, even the identification as such somehow to help -- one would think it would be important in the negotiations with the different federal agencies to have a sharpness that

this has to be done because state x is out of compliance.

Because I think 2030 starts to look close when you start hearing about some of these timetables. I wanted to ask about the part that where I have some that FERC can do something and that's on transmission planning, rate making, cost allocation.

Now just to kick off Western Grid Group and the Energy Future Coalition, and Mr. Parsons in your comment put forth a proposal that I'll call it kind of federal CREZ, that FERC would help to identify the regions with the strongest, cost-effective potential for renewable generation and then oversee a process where by having those identified that would help drive state plans and that really has worked well in Texas and Ercot.

It's kind of the opposite, it's kind of the complete flip on its side of Order 1000 where we said have a process and you are required to look at the state plans and the state policy drivers in determining what transmission might be driven by those state needs.

And you know we haven't really given that much time to work yet but it is something where we have done a tremendous amount of work on it and my goodness, all the transmission planning organizations all across the west and across the country have put in hours upon hours. Do you see Order 1000 has helping to identify the needs that might be

the resources, the transmission that might be needed to meet these Clean Power Plan goals and if not, what has to change because that's exactly the kind of thing it was intended for.

MR. PARSONS: I appreciate the recognition. Renewable energy zones I think is a really good way to try and turn around the chicken and egg problem. The idea that renewable wind and solar plants can be constructed very quickly, so permitted and permitting does seem to move forward in a timely fashion, it's never perfect every time but when you look at the development time scales for transmission and renewables particularly.

The idea that you have to wait for an interconnection request for a specific developer or a specific resource or a specific location and then you start the transmission planning process means that we have this delay problem. So the renewable energy zone concept broadly turns that around and says we know that we have a reason to build renewables like in Texas. We have a renewable portfolio standard in this state, we realize to do that, to deliver the power from the best resource areas we need wires to do that, it's not magic.

And we know that to meet those goals our transmission processes that were perhaps good to start with weren't going to work. You can't wait for the interconnect

request from XYZ developer and then still make the timeline. So they turned it around and they said we know where the best resources are in the state. We are going to say that these are now renewable energy zones that are going to be developed one way or the other to meet the public policy requirement and let's start proactively planning the transmission now.

Well that worked great in Texas. Single state jurisdiction, they then went back and said we are going to figure out what some of those problems were and they said some of the problems are used and useful designation and cost allocation, construction costs, you know you can wait until the transmission line is completed and then you go to the state PUC and say okay, is this used and useful?

Well if you planned well the answer is yes, but you are taking a risk, situations have changed in the past five to ten years during that process so I really applaud Texas's proactive approach there. I'm trying to turn that around for the rest of the west. I need some help from some really smart people to figure this out. We haven't done a renewable energy zone process in the west. WGA and what's the new state energy board looked at Texas and said let's see what we can do in the west.

We worked really hard we have identified those renewable energy zones. There has been some very positive

effects of that. We see that in some of the federal plans to look at prior approvals and trying to do a problematic environmental impact statement, trying to look at renewable energy zone processes that cross federal land and what can we do there.

You know frankly I think the problem that we come into is federal, state jurisdiction and multi-state jurisdictional cost allocation issue and if Order 1000 can help us in the long-term to get down and start talking about those things than great we are all going to celebrate but I don't think we have got a silver bullet here and I would love that we could try and address this more directly.

Is there a way that we can people to get there and start talking about cost allocation, start talking about -- you know public policies that we are trying to meet and how we can move these processes forward as a result.

CHAIRMAN LAFLEUR: That was very helpful and the last thing that I want to do is be argumentative, but I didn't interpret Order 1000 as you needed to have a specific interconnection request before states say hey we are going to need a lot of x-type of resource and if you look at for example what the Midcontinent ISO did they got together on the multi-value projects, it wasn't just like one specific generator that needed a hookup it was doing some big things together.

So the process was intended to enable that very thing among other types of planning for reliability and efficiency as well. And we tried with incentives and so forth where things are jurisdictional to us to give the construction working process or the abandonment where it is needed to meet specific risks such as you identify.

So this is where it gets a little dirt under the fingernail stuff. If there is stuff we need to do differently to make those processes do what they are intended to do, I would welcome comments.

MR. PARSONS: You know I didn't mean to be negative. I was meaning to say there is at least a start to the process and I think that if we can figure out those tougher issues and how, as you have said, to use the tools that we have got available then perhaps Order 1000 and the fact that the Clean Power Plan is a public policy that can be factored into that, maybe that's a way to start motivating those longer term discussions that are going to be needed.

CHAIRMAN LAFLEUR: And I think we have tried to structure it in a way that enables the participation of public power, at least in the planning and we are hoping if there are things that we have to do differently to make it vibrant in the west, that was the whole goal, Mr. Galbraith?

MR. GALBRAITH: So yes I think this is an area

where you know regional cooperation on compliance with the Clean Power Plan is going to go. Instead of states combining their targets and melding their targets and trying to achieve, you know, one target, they could keep their own separate targets but cooperation in ways that allow them to achieve those separate targets and this is clearly one area where two states identified in renewable resource zone could allow them both to make progress towards compliance and they could work out the cost allocation issues amongst the two states, that's what we would call a modular approach to compliance with the Clean Power Plan.

CHAIRMAN LAFLEUR: Ask Chairman Cavulo what a modular approach was, you just did his work for him.

MR. GALBRAITH: There's other ways which the states could cooperate in that way without joining up on mission targets, so we think that's an exciting area to look in.

CHAIRMAN LAFLEUR: Mr. Bladow?

MR. BLADOW: Yeah I would want to actually thank you on Order 1000, I thought you did give us some good flexibility. Remember west connect being non-jurisdictional is important to us to plan, we wanted to be in the process, we tried to figure out how do we make sure we continue to plan, so I think that works well.

CHAIRMAN LAFLEUR: Without you when you have so

much of the west under your belt.

MR. BLADOW: So that really helped us to be involved, to stay involved in a meaningful way. You know the challenge with the resource zone, I'm going to differ a little here is we were involved in the set-up of the resource zone, in the west it is so much more complex than it is like in Texas where you have a fairly clear we are going from A to B.

You know there are lots of visions of shipping Wyoming wind and others to California except when you find out California doesn't want it. Or Mexico wind or solar into Arizona and in fact Arizona they want to export theirs to New Mexico and you get into quite a discussion that there is not a lot of agreement.

There are a lot of renewables all the way across the west and everybody wants to be an exporter and agreed on which line should get built a lot of times depends on who actually wants to sign up for it and I think FERC Order 1000 and once we get -- I call it a target, I think that FERC Order 1000 planning process will help us but right now without the Clean Power Plan final version we don't have a target to shoot for.

And the tri-state's view you have heard one of our Commissioners from our states from Colorado, another from Wyoming, you will notice they had a different opinion

and Mike from SRP had a third opinion, those are three of the five states we are in so it becomes very difficult to kind of get everything where you have these interstate lines.

CHAIRMAN LAFLEUR: Well I don't expect you to start telling us tariff provisions and interconnection terms right on the spot here, but there's like soft powered talking to EPA and having conferences, but then there is hard power where we actually do things and I expect to now in the coming years to see in some of our dockets people say hey FERC make this change and this because we need it for the Clean Power Plan or make this because we need to act because this is holding us up.

And whether it's the way we do some sort of permitting or anything that we do, those will be useful comments because those are the things where you know we can actually try to make a direct difference, Mr. Gallagher?

MR. GALLAGHER: You know Brian mentioned earlier the Western Governors Association Western Res plan and the BLM now has its solar PEIS that has identified particular solar zones across the west and we really have found that in a couple of circumstances that if you build a transmission line to a renewable energy zone, renewable energy is going to get built.

We have seen this in California Tehachapi for

example, where the decision was made to build the transmission to the wind resource area well before there was anything really concrete in terms of wind resources up there and we saw it again with the Sunrise Power Link where there has been an explosion in renewable development in the Imperial Valley.

And so you may consider and I should know this but I don't know if it is happening already, but in the Order 1000 process that the groups be directed to explicitly study the renewable energy zones that have been identified in their transmission planning because some of them will you know, will be profitable.

CHAIRMAN LAFLEUR: Well I would say both of those examples you gave were from a state which is part of the west although we haven't heard too much from the EF which is California which has very clear public policies and shapes action around them. Not saying everyone in the west is going to become California, but to the extent two states agree there's renewables here and we need gas to balance it, so we need those pieces of infrastructure.

At least the part that we can do on the costing and cost allocation that we can oversee on cost allocation of the transmission and on the permitting of the gas pipeline there seems to be an opportunity there.

I guess I'm going to turn it back to Anna, I know

that Mr. Quinn had a question but I don't know if other staff have questions.

MS. COCRANE: I do have a question thank you Chairman. I have a question for Mr. Westhoff from Kinder Morgan. In your statement you said that Kinder Morgan has a track record of building for those who sign long term transportation contracts and that has historically been the traditional way that pipelines are constructed and then financed.

But you also recognized that you need to be creative and developing more flexible services and I was wondering if just to clarify are you discussing changing your traditional scenario and maybe having some hourly services for generators that would if you put together enough of a portfolio against it you can see that that would finance a build out of a pipeline.

And on top of that I was wondering if you could say whether you think that there is more flexibility in the west than in perhaps in the northeast where there is a challenge in building pipelines into that area for electric generation.

MR. WESTHOFF: To your first question the comments that I made relative to services are perhaps a stop gap measure, more operational than capital investment okay. To give you an example, we had a pipeline that was running

relatively low utilization factor and we were seeing a continual interconnection of electric generation and we saw a need to serve variable hourly loads there but our pipeline tariff at that time was basically a uniform hourly rate.

So we developed ratable services and the services put a capacity premium on that hourly variation. We quantify how much capacity it took to manage a variable load relative to a 24 hour load, so we came up with services, we worked with our shipper communities worked through the rate making process with the FERC and we have those hourly services.

They recognize that. That is a stop gap for managing hourly variable loads whereas if you have storage a much more efficient way of managing that capacity drain associated with variable loads, you have another total different dynamic but it takes a long time to get a storage field put up so that comment was directed more toward operational as opposed to building infrastructure.

And then to you second question, could you phrase that for me again?

MS. COCHRANE: Well I was just wondering since this is the Western Region Conference and we are looking at differences at different regions, I was just wondering if you see any more flexibility or differences in what you can provide in the west versus what your sister companies can

provide in the northeast?

MR. WESTOFF: Well some of the flexibility that we are seeing right now has to do with the dynamics of the dramatic change in supply basins in the lower 48. We are seeing pipelines reversing direction, we are see projects coming to you related to expansions associated with turning pipelines around, flowing in different directions, things like that.

There is an opportunity here right now with some of these long-line pipelines that were originally designed to export eastbound now with the growth in the Marcellus you are starting to see some capacity being available in those pipelines so that offers us a nice opportunity here to tap into existing capacity, we don't have to build that infrastructure.

At the end of the day there still will be needs for additional infrastructure whether it be to a brand new plant, a lateral, perhaps a main line compression, but we are seeing some flexibility in certain parts of the country where we haven't seen it before. We have seen these pipelines coming out of the Rockies used to be 100% load factor every day, virtually every day of the year.

Now we are seeing some capacity opening up there so this does present an opportunity to look at attaching perhaps, an additional electric generation.

MS. COCHRANE: Okay, thank you. Arnie do you have a question?

MR. QUINN: We didn't talk much about merchant transmission and what role merchant transmission might have in future compliance with the EPA regulations. The Commission has done some things in the last couple of years to make it easier to develop merchant transmission to sign up anchor customers. I guess the question to the panelists is whether you see a continued role for merchant transmission in compliance with the EPA regs and if there is anything the Commission would need to do to how we handle merchant transmission now to make it easier to use that vehicle to build infrastructure?

MR. GABRIEL: Well I can just speak for Western through our transmission infrastructure program we have got eleven potential lines that we are looking at building and almost all of those are merchant, but I think you said the right word which is getting the anchor customer that seems to be the gating item, at least nine of the eleven projects that we know of and having that anchor customer really make all the difference in the world.

And we have funding through the TIP program, there's funding in the marketplace, making sure that there is an off taker is really the big gating item right now.

MR. BLADOW: Joel Bladow I would add to that, we

actually have participated with merchant transmission builders for example, Sunzea and the biggest challenge you run into is do you have enough financial backing to get money to build the line, that's always the challenge.

And with the flex in where the resource comes from, where it goes, kind of the uncertainty I think it's been challenging. In the east there may be shorter lines but in the west as soon as you get two to three states involved, tribal lands, federal lands, I kind of use a rule of thumb if it is hard to build in one state, it's four times as hard in two states, it's nine times as hard to go across three and it really, really becomes difficult, whether you are a merchant or not.

MS. COCHRANE: Anyone else have questions?

MS. LAFLEUR: In view of the weather maybe we should break early and come back early and fall on to markets.

MS. COCHRANE: All right so we can take a fifteen minute break and come back at 25 minutes to three.

(Whereupon a 15 minute break was taken.)

MR. QUINN: So assuming everyone wants to stand through the third panel we will just introduce our third panel on market implications of the EPA's Clean Power Plan. Compliance approaches to the proposed Clean Power Plan could have an impact on commission jurisdictional electrical and natural gas markets.

This session will consider how potential compliance approaches may interact with these markets. As we noted earlier today the discussion at the national conference focused heavily on the market implications for the centralized wholesale electric markets.

Recognizing the important role of bilateral trading in the west our hope is that we will spend some time discussing the market implications unique to the bilateral markets. We know that the west is also unique in that the sole centralized market in the region relies on imports from the rest of the region for a significant portion of energy needs and so we will look forward to talking about what that means for market implications as regards to compliance with the EPA's proposed regulations.

I am pleased to welcome our panelists today. We have Mark Rothleder the Vice President of Market Quality and Renewable Integration from the California System Operator, Commissioner Travis Kavulla of the Montana Public Service Commission, Edie Change from the California Air Resources Board, Steven Schleimer, Senior Vice President, Governmental and Regulatory Affairs for Calpine, Stefan Bird the Senior Vice President, Commercial and Trading PacifiCorp on behalf of Berkshire Hathaway Energy, Clare Breidenich from the Western Power Trading Forum and John Jimison the Managing Director of Energy Future Coalition.

We will use roughly the same format we used for the earlier two panels. We have provided you the handy dandy IPAD with the two minute timer. This one that won't time out on you so you will all be bound by it and the guilt you will feel as it ticks to zero. We ask that you provide kind of the top one or two things you would like us to take away with regard to market implications and as I noted at the introduction because bilateral trading is such a big part of what happens in the west and trading from those bilateral markets into California is another unique component, we would love if your top one or two things had something to do with those two issues so we will start with Mark.

MR. ROTHLEDER: Thank you, Mark Rothleder, Vice President of Market Quality and Renewable Integration of California ISO. Thank you for the opportunity to discuss really what is really on the path to success in terms of both renewable integration and on implementing our greenhouse gas policies.

From an operation perspective some landmark points and ideas this month we have crossed over 5,000 megawatts of peak solar production. In fact peek solar production has surpassed wind production in California and that's the grid side solar production, not behind the meter distribution.

We have been successfully integrating the renewables in California and there are several things that we have had to do along the way to keep up with the changing conditions. Specifically we have recognized the need for flexible capacity and we have taken steps in real time markets to ensure there was sufficient flexible capacity and bidding capability.

To support the greenhouse gas policies in California we have now incorporated greenhouse gas costs into our dispatch so we are dispatching at lowest cost dispatch recognizing and incorporating those costs of greenhouse gas that are results of cap and trade regime in California.

In addition to that we have leveraged some of the things that we have learned along the way and extended that in our attempts to extend our regional collaboration, specifically we have implemented the energy imbalance market with Pacificorp which we expect as that increases and Nevada joins the EIM we expect that the benefits to continue to accrue -- mutual benefits to accrue.

Moving forward we are looking forward to working with the Commission on the additional things that need to change and these changes are going to be incremental in nature and we look forward to discussing in more detail what these things are moving forward, thank you very much.

MR. QUINN: It will be -- I have an innovation here that we added the audible alarm.

COMMISSIONER KAVULLA: I've never heard Mark speak for just two minutes, you have accomplished a miracle. Travis Kavulla from the Montana Commission here -- even without an RTO the western interconnection has a lot of imported and exported electricity across state lines to liquid trading hubs dispatch across various oasis reservations.

But I think it's important to make clear that this EPA proposed regulation really does not incent regional cooperation, notwithstanding exhortations about the benefits of regional cooperation and that's not EPA's fault, it is just the nature of the law. There are all sorts of different goals for states, EPA's own IPA modeling resulted in a zero to 62 dollar a ton for carbon dioxide price range and fundamentally the state is the political unit of plan writing and sometimes compliance itself.

And as civil servants here at the table know once a state bureaucrat obtains authority to do something they are locked in to aggregate it to regional markets or to others. The most efficient solution undoubtedly to comply with the EPA regulation that requires carbon reductions undoubtedly would be one that shares goals between states that prices carbon explicitly and that dispatches resources

through a security constraint of economic dispatch.

But that most economically efficient approach is also probably the most politically unrealistic. I think instead that you will see a lot of state compliance plans masquerading as job plans in order to comply with this rule. It's really the mismatch of these state plans that may cause wholesale electricity market impacts in the western United States.

Imagine for instance if you have a mass base state that does put kind of marginal price signal on a particular thermal unit versus a rate base state that doesn't wear the costs of renewables are essentially hidden with the classic service revenue requirement. One of those power plants is going to have a higher cost of dispatch even if it is fuel cost, even if it is carbon emissions don't fundamentally correlate -- don't fundamentally change between one plant and another.

I'm happy to talk about what FERC can do as well, maybe I'll leave that to Q and A.

MS. CHANG: Good afternoon I'm Edie Chang from the California Air Resources Board. I feel a little bit like a fish out of water here as an environmental regulator, this is not our usual playground but I am happy to be here to talk about our program in California.

As you all know California has put a price on

carbon as part of a broad cap and trade program that started in 2013. It was developed under the authority of AB32 and under AB32 we are reducing greenhouse gas emissions back to 1990 levels by 2020. One of the things that AB32 also asks us to do is to account for the emissions associated with electricity that is imported into the state.

And that's why in our cap and trade program, importers of electricity are pulled to compliance obligations so they are required to hold allowances for the electricity that they bring into California.

I'm happy to report that the implementation of the cap and trade program has gone smoothly and as Mark talked about the carbon prices have been incorporated into the electricity market. I think the lesson learned from California is that this can happen but it only happened because of a lot of really hard work and coordination between the folks at ARB who spent a lot of time learning about how electricity markets work, the folks at ISO who helped us every step of the way as well as the importers, the utilities and the folks that are actually involved in the electricity markets.

So I am happy to talk more about the program as part of the Q and A.

MR. SCHLEIMER: My name is Steve Schleimer and the key to take away. I think,I want to repeat what

Commissioner Kavulla said. Once you move away from a regional program, how states do what they do will significantly impact the wholesale market and there is a role for FERC to play in examining that. You know states that are fully integrated you know, I don't mean in a pejorative sense, community control, sitting next to a state that has priced carbon.

There's going to be an impact on how units in those two scenes dispatch relative to each other. If two states are next to each other, one choses a mass based program and the other chooses to implement a rate based program, you can have the exact same you know, combined cycle so I'll just refer to combined cycle.

You can have the exact same combined cycle facing different economic conditions and dispatching differently in those two states purely because of just the way they have implemented their program. You know two states that choose a rate program but they have different rates that will also impact what the outcome is.

So I just say you know to wrap it up that you know it is really important to look at what the wholesale market impact is from overlaying the state-by-state or regional implementation of the cap of the Rule 111D programs to understand where you are creating efficiencies, et cetera to basically you know, try and take those out of the system.

MR. BIRD: Stefan Bird for PacifiCorp on behalf of Berkshire Hathaway Energy and our affiliates. We have four entities that have responded to the EPA's Clean Power Plan draft rule and that included American Anderson Company in the west, our Green River natural gas pipeline, and the energy utility and PacifiCorp.

And my comments today, first I would appreciate the fact focus on reliability, affordability, efficiency and BAT group of company support, building blocks and the focus on flexibility. I think I'll start with a non-market comment which is particularly for PacifiCorp in the west we are a bit unique with a six state retail jurisdiction. We have existing regulatory cost allocation, methodologies that frankly fit very well in a 111D construct and enable us to flexibly allocate renewable energy credits if you will or energy efficiency and re-dispatch you know across the six states without the need for some you know, new cap and trade or REGI-type program.

And so I think for some of us in the west there's a real value in flexibility that EPA provided in its draft rule and we urge the EPA to continue that and include that in their final rule.

Certainly and from a market standpoint, I think we have the benefit of our experience in the Midwest with our Mid-American Energy Company utility that's part of the

MISO, they have been able to produce very high penetration of wind energy within that utility not before being part of the market, I think it would either have been impossible for it certainly would have come at a much greater cost to customers.

In the west, you know we are exciting about our entry into the energy imbalance market, we are seeing benefits being generated for our customers, even the first few months of operation we can see that benefit for renewables and more efficient dispatch across our six states now incorporating also the Cal-ISO footprint and please just see that you know we have worked through stakeholder processes and the FERC framework to work through innovative tariff modification to marry out some of these you know concepts in order to enable that efficient dispatch and so I see more of that coming even with our year one enhancements and the work that we are doing and the energy and balance market. I think that's going to be critical for us to enable in particular a higher renewable penetration in our district.

MS. BREIDENICH: Thank you I'm Clare Breidenich with Western Power Trading Forum. I'm not sure if I'm allowed to do this but I was going to respond a little bit to what I have heard today in my comments as well.

I think my starting point and the starting point

of my organization when we think about this is when it comes to questions of reliability. The impacts of Clean Power Plan on the grid, on the market is going to be as dependent on state choices as it is on the targets and timetables that are ultimately in EPA's final rule.

I would echo the comments made by several at the table as well as this morning that in my organization's strong view carbon price signals and a uniform carbon price signal for a regionally interconnected regions is the most efficient way to go and I think the only economic way to really maintain economic dispatch.

I take the point and I am very aware of the difficulties of getting states, and in particular the western states because of the diversity of resources. The difference of our markets compared to eastern markets and the challenges of regional cooperation but I don't think that's a good enough reason to throw up our hands. If we think that the Clean Power Plan is not going to go away in 2030 but this is just the beginning of transforming the energy system then I think it's incumbent upon all of us to think about how we can get to good market design solutions that make us able to deal with in the future.

And in my view and in the view of my organization the only way to really get there is to think about carbon price signals and I think FERC has a very important and

useful way to encourage states to think along those lines and to facilitate that.

MR. JIMISON: I'm John Jimison of the Energy Future Coalition and we have a project called Americans for Clean Energy Grid. Fortunately the IPAD got stuck up the table here so I have got -- no I will try to be very quick.

Americans for Clean Energy Grid is a coalition of very diverse stakeholders, all of whom understand that we can't get to a clean energy future unless we can expand, integrate and build-out that high voltage grid that will give us the access to the clean energy that is in such abundance, especially in the west.

Well what we have learned in the analyses we have done is that it takes transmission capacity and markets to really let that renewable energy achieve its values in serving load and that when those are available, in fact the renewable energy can outcompete other sources not only reducing the cost of the delivered energy to those markets, but actually paying for the transmission -- incremental transmission investments that are necessary in the process and that's a function of the fact that renewable energy has zero variable cost and markets price energy at their variable costs, so it tends to push higher variable costs sources of energy off the margin.

Now you have the variability issue with renewable

energy but it turns out that expanding the grid not only helps deal with that by the geographic mitigation of that variability, the wind is always blowing some place but it also helps it because it allows that energy to come into markets that have distributive resources, demand response, energy imbalance markets and the new technologies in renewable energies are also helping a great deal to offset what would be a cost increase from variability and to allow the cost decrease from low variable cost to play in those markets.

So the west is the key region for renewable energy. The west has many needs for enhanced transmission and the west doesn't have the markets. So, what she said.

MR. QUINN: So we will start with questions from our Commissioners, Chairman LaFleur would you like to go first?

CHAIRMAN LAFLEUR: Thank you Arnie and thank you to the panelists. While folks could see we are down a Commissioner, Commissioner Honorable had to get back for a pre-scheduled speaking engagement and I want to use that an opportunity to thank all of my colleagues for juggling all kinds of things to come to these conferences. It shows how important we all think it is that we are all here. But I have two more Commissioners who are locked and loaded for the next plane I think so I am going to start with Tony,

then Norman and then Phil and I will go.

COMMISSIONER CLARK: Thanks Madame Chairman. Okay so Commissioner Kavulla you left us with the cliffhanger which was what can FERC do and maybe we will get to that this part of Q and A so I took that as an opening and I'll give you the floor, what could FERC do?

COMMISSIONER KAVULLA: Sure that was a give me Commissioner Clark and I guess I just defined what FERC can do in two sort of broad buckets. There's the sort of the hardware bucket, what new transmission infrastructure for instance, could you incent or plan for or build et cetera. Then there's the software part of the puzzle, what kind of systems can you run on the existing infrastructure to make sure that it is as nimble as possible.

And I think it's fair to say that in the later respect, there's still a lot of work to be done again for western United States. Because unlike those regions which do have set in place which really pushes the use of their transmission system to the engineering limits to which it was designed, the west resembles a kind of air wide list that is fundamentally to clear its stand by list when it has seats available on the plane and energy balance markets are an attempt to remedy some of that and FERC's continuing encouragement and willingness to be flexible about governments institutions to run those markets is very

important.

It's important to ask in the context of -- it's important I think for FERC to remind itself, especially since you spend so much time dealing with RTO tariffs that you are the regulator of all wholesale electricity markets. There's a sense on the part of some in the west that you don't really regulate by lateral wholesale electricity markets. You do, it's just that it's with a lighter touch and not necessarily through an RTO like a tariff.

So thinking about whether in those situations whether market products are well enough defined to actually do what they report to do, to ask whether or not in the case of individual transmission operators and tariff providers whether their scheduled force for energy imbalance are just and reasonable in the status quo without the overlay of something like it.

Asking whether practices and standards of the operation of transmission lines continue to be reasonable or could be used or included to have some revenue credits that offset some of the scheduled one-revenue requirement on which those transmission lines depend. A lot of the stuff you have to do as I think Chair LaFleur previously alluded to, this is really the hard work of the tariffs and that of course is your largest hammer and it needs to be welded with a lot of discretion and tack I think as far as the west is

concerned, but it shouldn't be ignored in its entirety.

Making sure as well that Order 1000 is not -- does not seep into a process that is just imbued with a compliance mentality is a very important thing that FERC has to play watchman on, so those are a few ideas Commissioner.

COMMISSIONER CLARK: Thanks Mr. Schleimer?

MR. SCHLEIMER: Yeah I would just add that I think that I mean you understand the agency better than anyone, the competitive market, how wholesale competitive markets work and can analyze the implications, different state choices or regional choices will have on the effect and efficiency of those markets and as the EPA is going through finalizing its final rule and developing the you know the fit for the various states I think there's definitely a role for FERC to play in providing analytic support and expertise to the EPA on the implications of their different choices.

COMMISSIONER CLARK: Mr. Rothleder?

MR. ROTHLEDER: So I think there's two buckets that Travis pointed out, I think one of the buckets is just being supportive of some of the incremental innovative changes that are coming about. Things like the energy imbalance market but things that are changing in the energy imbalance market. You expand the imbalance market, there's going to be some issues that we are going to have to deal

with including transmission utilization, potentially compensation over the wider EIM footprint and we are going to have to deal with those when we are preparing those discussions.

So team those up and working through those issues is one bucket. The other bucket is really being supportive when we identify needs for either new products or new requirements that recognize that the grid is changing. We need certain characteristics and certain capabilities to still maintain reliability and when we bring products that incentive those things or things that requires those things as part of interconnection, support in those areas, so those would be the areas that I ask your support.

COMMISSIONER CLARK: Miss Breidenich?

MS. BREIDENICH: I'm going to tread lightly here because I know of the sensitivity of the Commission about getting involved in state policy choices and you know the EPA's role to establish the Clean Power Plan. Your jurisdiction, your role is different but it strikes me that it would do a lot for the conversation if as Steve said, you were to get involved in supporting the analytics and looking -- supporting state's consideration of their compliance choices and I would argue in particular market based approaches.

And that doesn't necessarily mean that FERC has

to -- there's a policy choice, I understand since stated why you wouldn't but I also think it would be very helpful for you to recognize that certain policy choices are going to have different implications in the bulk of electric systems than others.

The other thing that I would do is I would encourage you, in talking to your constituents to make a distinction between opposition to greenhouse gas regulation full stop versus opposition to specific mechanisms to how you get there and I would argue that right now the game and well let's not call it a game because it's very serious.

The game right now is easier to try to get the EPA rule thrown out or the targets for the timetables changed. And it is very difficult I think in that environment for regulators and states to think who are in that battle -- to think about what really, once this rule comes down and if they don't throw it out, what really are good policy choices for going forward.

So I would just encourage people to make that distinction when you think about this, what's really opposition to greenhouse gas regulation in general versus different regulatory approaches. Cap and trade, press processes don't tend to be popular because the price signal is very transparent. It's transparent it's just transparent to the affected entities.

That on the other hand is the exact reason why it's useful in operating markets it's because of that transparency so just some thoughts there.

MR. JIMISON: Yeah I just wanted to say that we think expanding transmission and having effective markets is the least cost way through building block three of FERC's compliance in the west to -- with the Clean Power Plan. And that if the states, as Clare said they can dispute the overall need but as they think about compliance and given the time frames regarding building transmission relative to building renewable energy, the sooner that recognition is shared the better.

And you are in a great position supervising both the transmission rates and the markets to help communicate that reality into the planning process.

COMMISSIONER CLARK: Thanks, this is a comment and if anybody has a reaction to it I would be interested. I understand the pointed view that is brought up and I have heard it a view times on this panel, we heard it a few times last week that you know if everybody would just adopt some sort of REGI type program, AB32 this would all work and then they could just be priced into the market.

But actually I end up in the same spot that Commissioner Kavulla did in his comments which is at a certain point you have to accept political reality which is,

there's a limited number of states that are going to go that route and most of them probably are already self-selected. There may be a few others that decide to join but just check out what happened last November and I think most folks would say the political reality is that in the near term there are a large chunk of states where it is just a non-starter. It's a poison pill.

So then we get into what comes next and what I tend to see coming next and correct me if you think I'm wrong, is that states are going to start to sort into a few different buckets. Some will be those that are already there or doing something like REGI or AB32 and that will be their compliance plan.

There will be this second set of states that look at their target goals just because of the vagaries of how the target comes out they feel like we think we can probably meet it. They happen to be states that just kind of got lucky maybe and are lower than average states in terms of their compliance target and they feel like they will be able to do it on their own.

So why would I throw in next to my neighbor who has got a really hard target to get, and then at the end of the day you are going to have this almost game of musical chairs where there's only a handful of states who when the music stops playing don't have a chair to sit in, they don't

have a lot of regional partners to work with and the question is going to become; is a regional plan possible in that sort of scenario or certain states it self-selected out?

Or is it more of an all or nothing thing. I'm concerned that we are heading towards and end where there's just going to be a certain cluster of states who throw up their hands and say we can't do it. We don't have anybody to partner with, it's the regional compliance -- it's too hard to get from A to B, the width is too heavy, EPA do what you have to do. Is that a likely outcome? And what does it mean to FERC?

COMMISSIONER KAVULLA: Sure, I don't know -- I can tell you the state of Montana has previously allowed itself to be phiped on the regional haze. It was not a pleasant experience compared to the outcome say of the same type of rule, state rules in the Dakotas for instance which wrote their own plans, ended up with frankly a much better solution. I do think that getting there wasn't pleasant.

Right and the process of getting there in the state of Montana was so unpleasant that it dissuaded us from even trying for it and instead caused the political establishment of the state to just throw up its hands in a kind of you know terse rejoinder to the federal government and the federal government lo and behold just came in and

did it anyway.

So I don't know how many states will actually be interested in replicating that unless they truly believe this is a legal non-starter, that the federal government doesn't really have the tools to do what it purports that it can. I'm not sure. You know I can tell you that and I don't want to speak for say the state of Arizona or anyone else, but a lot of the people who do have some significant targets to reach as has been expressed here today, export a lot of their electricity.

The carbon emissions that are caused within their state are the responsibility of ultimately their state to mitigate what are paid for by whoever happens to own those EGU's and this is the case throughout many states so even if you have a loaner state that has a got it alone state plan, that plan whatever it may be will have to be paid for by the people who own the EGU's and that's where it becomes even more politically complicated.

Because you have the Department of Environmental Quality making decisions about what an EGU should do for compliance obligations. For instance, requiring those EGU's to go out and enact the governor's jobs plan which involves a wind farm over here, energy efficiency over there but the invoice ultimately gets sent to whoever owns those EGU's -- which may be rate pairs not in that same state.

And so it's an odd -- it's not like even a state acting on its own is alone in that respect and I think in those situations even if they have been left without a chair in the game that there may be some attraction trying to enter into some kind of bilateral arrangement with the utility and the other state in question or the other state government to try to patch something together.

But you know let's not delude ourselves here, you are absolutely right Commissioner Clark that this is made so much more complicated because by the nature of the Clean Air Act, the Clean Power Plan doesn't result in a single price of carbon. It results in a different price of carbon, a different value of carbon avoidance for every single state in the west.

And so do adopt a kind of multi-state framework requires you to identify a price that achieves that amount of carbon reductions which is a price that will either be above or below what the value of carbon is for any given state under this Clean Air Act arrangement and that has the possibility to create a lot of perverse economic incentives that are infused with the politics of any given state.

COMMISSIONER CLARK: Miss Chang?

MS. CHANG: I'm really going to speak more to sort of kind of the mechanism of how you might do this and the plan and I think that the conversation that we had is

why it's really important that what we have asked for EPA to provide is flexibility of the states, not to have just sort of an all or nothing. Not you go it alone and you have an omnibus regional plan, but you have the opportunity to enter into some of these bilateral agreements that states can work together to figure out what might work for them.

I think that you may still have these issues where you have states that are sort of wandering around looking for a chair, but I think that the rule needs to reflect full enough so that states can come up with the agreements that work for them. And it's not just -- there's an environmental aspect and obviously that is our main objective as we look at this program and recognize that we work in the system here and we didn't you know, as we developed our cap and trade program, we recognized the impacts that it has on the electricity system, on our industrial sources and the other sources that are out there.

And we want to make sure that EPA provides opportunities for states to revise their plans too. It may be that you start out with I'm going to go this alone, and we see what happens and you know what we hope is that FERC and WECC and people that are doing analysis as we are going along, and as people are implementing their plans to identify potential issues so that we can address them and maybe states start to look at things a little bit more

differently and they want to modify their plans and they weren't so interested in talking to someone before but maybe now they are.

So we need EPA to build that flexibility into the process so that we can do that.

COMMISSIONER CLARK: Thanks, Norman?

COMMISSONER BAY: Thank you. So this question is for Commissioner Kavulla and I guess we are asking you too many questions, but Montana is an interesting state because it is one of the states in the WECC preliminary technical report that when you compare the base case of the TEPPC base case in 2024 with reductions that would have to be made under the Clean Power Plan, in fact under the TEPPC base case you would already be more than meeting the EPA target.

So for a state like Montana does it even make sense, you know to discuss joining a market or forming some sort of broader regional approach?

COMMISSIONER KAVULLA: Right, I think that's an astute question Commissioner Bay and if those 2024 base case projections hold it doesn't unless Montana can somehow extract revenues from that type of a market. Or our goal may change between now and the issuance of the final rule, knock on wood I hope it doesn't.

You know Montana is not in the position of a state like Arizona because of the way the building blocks

worked to put together our state goals. There are still incremental benefits possibility to come from joining the market, maybe due to the revenue credits but there would also continue to be these kind of command and control jobs planned, political advantages from going it alone, from choosing to impose on the state's EGU's acquisition obligations for renewable energy which Montana views itself as having been long frustrated from developing because of a variety of things.

So that would be my point, it's not just -- it is not necessarily just compliance that states will have in mind but what other ornaments to hang on the Christmas tree a kind of -- as I said of a compliance strategy masquerading as a jobs plan or vice-versa.

COMMISSIONER BAY: So I'm hearing a number of people today suggest that there may not be a broader push for a number of reasons for a market-based approach in the west. Some think it is possible, hope it happens but some are predicting that for a variety of reasons it may not happen. So it that's the outcome you would have CAISO, you would have an EIM and you would have a bilateral market everywhere else so how can FERC again be helpful?

And I think a number of people have identified areas where FERC can be helpful. One would be on infrastructure development, both with respect to gas and

distribution. With gas electric coordination, with monitoring the wholesale bilateral markets, are there any other items that you would want to add to that list?

MR. ROTHLEDER: I'm not sure I'd add something to the list but I think one of the things to be aware of is that the things like energy imbalance market or broader coordination in the electricity market I think are capable, even in light of potential different compliance models under the trade rules.

And so I think you have to somewhat differentiate joining market or collaborating regionally from an electricity perspective and the benefits that you may get out of that from the EPA's compliance itself and I think in developing the energy imbalance market we had to grapple with those issues.

We had to grapple with how do you optimize transfers across multiple states some of which states like California are under cap and trade but yet the other states, PacifiCorp are not and we came up with a way of doing that. Now is it ultimately I think for FERC to continue to watch and see how it plays out and see if it is playing out in an equitable way, if there's issues arising then be open to ideas that we come up with to solve those issues.

I think that's some of the things that are complimentary to this discussion and I kind of want to make

sure we differentiate in the electricity market how we can coordinate from the EPA coordination on the rules and such.

COMMISSIONER BAY: Sure Stefan?

MR. BIRD: I'm just going to echo that in the context of it was highlighting again the physical reality of variable generation and the need to back it up as Commissioner Moeller had commented on earlier today, you know that's a reality regardless of any of these additional externalities of accounting for the greenhouse gas or the other types of things and for the grid to be stable, I mean I think it is just important to remember that you have got to have the mechanism to do that in an efficient manner and that really necessitates vast wide area markets and so we are thrilled again with the progress of the EIM.

And again I would highlight a comment made earlier that it is the innovation that is necessary as we continue to evolve and deal with whatever comes down the pike, that I think is important and I really appreciate FERC's recognition of that as we have involved the EIM in this unique way in the west and I think the west does bring its unique aspects and as others join I think accommodating that will be important.

COMMISSIONER BAY: Thank you.

COMMISSIONER KAVULLA: Yeah just to add on that I also sit on CAISO's EIM transitional committee so I guess I

can opine on that a little bit as well. But you know it is worth thinking if you don't use -- in a footprint where a centrally dispatching market, real time energy market or a full blown RTO does exist, if you don't use that infrastructure to set up a carbon price and then let it dispatch as part of the marginal cost of a generator submitted bid or something that an RTO itself places on the system to cause it to dispatch somehow differently.

If you do something else it is well worth thinking about how that affects that kind of a market. Right now there are already two carbon price regimes in the EIM. There is one for California where resources that are within California or dispatching into California have to within the EIM comply with park's regulations and when they dispatch the loads outside of California's footprint they don't have to pay that carbon price.

It's worth asking how many local carbon prices imposed by individual states can a multi-state regional market rationalize. Because right now the fundamental logic of all of these markets tend to be one where you know you have a curve of supply representing the bids of generations who tend to but in their bids based on their marginal costs, including our carbon cost and demand curve and where they meet is the market clearing price.

What happens when you try to throw a couple of

other state-specific curves on what was heretofore a pretty simple graph? I'm just not sure and so it's worth thinking about the durability of markets in the context where states are coming at them with different angles, with different sort of local carbon prices and prices which may not as Steve pointed out and I pointed out may not be expressed within the marginal cost but which instead in the case of vertically integrated utilities participating in these markets, where they have built in essentially carbon reduction strategies like building renewables and putting them in their cost of service revenue requirement.

Something that ends up, you know depressing that wholesale market price. I just don't know it's probably worth some intellectual effort being vest into it.

COMMISSIONER BAY: Thank you.

CHAIRMAN LAFLEUR: I'm going to grab the mic while Commissioner Clark is still here because I wanted to pick up on something he said. First of all Commissioner Kavulla in your pre-filed remarks you said something like I was so struck by it I wrote it down, there's a conflict between economic efficiency and political palatability. That was just so striking to me, it not only describes the Clean Power Plan but many, many other things that FERC does so that might be like my FERC epitaph for whatever.

But I just wanted to come up on the -- come back

to the idea before we just left a some kind of a multi-state even if it's not the whole west, carbon-trading regime because I just wanted just to play devil's advocate a little bit, when I was there when a regional greenhouse gas initiative was negotiated and it seems right now, probably from here sitting in Denver you look out at these little enie-meeney-miney-mo New England states or northeastern states, they are all unique and look alike and geographically that's true however they are very populous and highly politicized.

We have Republican governors like Governor Pataki and Governor Romney with Democratic governors and big fights about who got the allowances and who did what and how it was all going to be carved up before it came together and the -- as I remember the breakthrough moment was giving the states flexibility about what they did with the allowance proceeds so they could just go off and pursue their own state goals rather than doing something generally.

But it has ended up being a way that you can incorporate some sort of carbon target, even if it wasn't the whole, even if you didn't have a carbon market where everyone was going to get the whole Clean Power Plan goal out of it. Some kind of level of reduction that's allocated across so some percentage of what a state needed could be bought in a regional or a multi-state rate even if other

parts they did within their own four corners.

So I'm just -- I noticed Clare in your comments now I'm going to WPTF tomorrow you get to ask me all the questions but now I get to ask you questions, you were called for a market based solution of some sort, did you have a thought who might do that? I mean there might be some volunteers at the table here but they might not be everyone's you know going to sign right up -- but if some way to do a market based solution.

Even if it's not all in full carbon market, full schedule of secured constrained economic dispatch across the entire western interconnection. Even if it's a partial solution for some of these states I just want to throw out if you think that has any potential before we just say too hard.

MS. BREIDENICH: I guess I would say up front I think there are multiple ways you could do it. What's key is getting a carbon price on what I would say is important for looking at a region that's getting a consistent uniform carbon pricing so you have same signal on similarly situated generation across the state.

Otherwise you get distortions in where generation and transmission is demanded, you may get distortion if resources aren't included in terms of where those resources are sited. You know if one state includes them in the

program, market program, and other states don't that's going to incentivize siting towards the states where there are not carbon costs included.

But I mean there are certainly models that would probably work in any jurisdiction you could come up with. I mean bilateral markets, as long as somebody is imposing a price, either a utility requiring the -- excuse me a Public Utility Commission requiring utilities to reflect it in their plan so that you get change in dispatching investing over time.

The state models I mean -- people talk about them differently but any sort of fee approach or tax approach has the same effect in terms of what it looks like to a generator. Its carbon priced to generation. I think cap and trade well the cap and trade has developed more appeal over time because of the point you noted, because of the ability to collect revenue. In reality that revenue is -- can be very useful in the helping us sway political opposition.

I don't think and this is the point I made earlier that I think cap and trade tends to be a target because it's a transparent cost. It's very easy to say what the price of carbon, any other compliance mechanism is going to have costs. It may not be as visible, you know if you are building out -- if you are doing more energy efficiency

or you are building out renewable energy you might not have the explicit carbon price that goes into generation as either a tax or a permit that has to be bought, but there are costs there.

And I think it's very important that states when you look to this final rule that they look seriously about what are all those costs, where do they fall under the various compliance actions, what are the hidden costs, where are the distortions in the grid? How are you going to quantify those costs if you are getting distortions in the market in the grid? These are things that aren't as easy to analyze and aren't as easy to think about as the price based approaches.

But I do think there's a lot of attractiveness when you think about how revenue, either state-collected revenue through allocation or other sources and can be used to help with the political challenges. Now the EPA rule I think causes more complications because by setting individual targets it has already presumably made some decisions about some winners and losers between states.

Maybe you will be able to find some other clever ideas that will help states address those problems but I would certainly see that as a big political obstacle to the states coming together.

I guess the other thing I am thinking about

Commissioner Clark's questions -- I don't think of this as a short-time horizon problem. You know we are all very much focused on the deadline at the EPA rule dropping, the deadline for submitting state implementation plans, the interim target. I really don't think this dealing with greenhouse gas regulations power sector is going away from 2030.

So it may not be that we get the states clamoring for collaboration in two years or five years, but I would like to be optimist that over time we will be moving in that direction.

CHAIRMAN LAFLUER: That's helpful. If you look at like California set a very aggressive renewable target and then other states wanted to sell at renewables or not the states but merchants and others in those states wanted to be part of it. I understand completed that if the state has a high target, just go it its neighbor states and say hey let's all go in together and you take some of my burden. I understand why the states just couldn't responsibly say sure my customers will pay for that.

But if a state needed more than it could do itself and assuming you could get the resources built which is non-trivial, getting some help from regional resources, it seems like over the long-term we shouldn't just abandon it because I think you are right. Between now and 2020 is

so soon but these goals are long-term.

COMMISSIONER KAVULLA: Chairman LaFleur that is one of the things that you have heard more like a looney-tune in the so-called modular approach that the Western Interstate Energy Board is working on. The idea behind it being you know for purposes of political reality the state retains control over its own goal, it's theirs and their EGU's to achieve but they are able to reach out and possibly leverage existing attractive programs that verify traits that have gone on like REGIS the renewable energy credit tracking mechanism in order to sort of effectuate that kind of trade.

Whether or not it is allowable by the EPA absent to consolidation of state goals remains an open question. Some of the design concepts remain an open question but it is true as I understand it that REGIS and those other state tracking platforms that have been designed by APX already have design elements in them that can also follow the carbon footprint of those RECs.

But you know you have seen it in the state renewable portfolio standards which started off often being pretty liberal and free-trading and in their various iterations I worked on the California's my left and right, I have become all the more restrictive about which resources count to the very issue of political economy we have been

discussing which is that if my customers are going to be paid for this removal stuff or for this carbon avoidance, well I want to see my unions in my state get the jobs. I want to see my property tax revenue benefit.

And to their credit California utilities, one of them San Diego Gas Electric built a very large wind farm or invested in a very large wind farm in northern Montana. They took the RECs off of the deal, the energy itself flows north to Alberta to fuel some industrial processes up there but that became not a good deal from the California policy-making perspective and perhaps reasonably so.

So I don't know you know the fact is going back to the idea that there are these long distance bilateral relationships across the west, maybe it's in that more bilateral context where the utility like Puget's Sound has built coal plants in Montana that these deals unfold rather than one where it's really a more full state approach and I'm sure that's what PacifiCorp has thought about as well, more of a portfolio approach with cost allocation among their six states.

You still get back to the problem that Clare and everyone else on the panel has identified as that despite what Commissioner Moeller has pointed out that a molecule of carbon dioxide in one part of the atmosphere is the same as in another and the cost should be in the value of avoiding

it should be the same, that is not the economic reality of the Clean Power Plan where you know a coal plant in Montana's emissions are worth less or more or cost less or more than those in Arizona.

CHAIRMAN LAFLEUR: Thank you that's very helpful and you have anticipated my next question which was going to be what is the modular approach? But I do think that your admonition to think beyond the RTO's is an important one and I think we need to go beyond thinking that everything has to either look like ISO New England with an integrated pool and a full regulated market or like vertically integrated, bilateral completely autonomous because of course they are not autonomous now.

I mean and we have to look at all the methods of cooperation that are economically efficient for the citizens in the different states that are somehow in between those two pools. I'm going to turn it over now that my audience has left anyway, Commissioner Clark, I'll turn it over to Commissioner Moeller who has been very patient.

COMMISSIONER MOELLER: Well great panel. Thank you all for being here. It strikes me that despite the admitted efficiencies of a carbon price throughout either the entire west or per key load we could do it another way and I think Commissioner Kavulla you're referencing this given that say California imports 40% of its power, they

could pay Arizona to shut down its coal, build more pipelines, replace the goal with gas but I think we heard the figures were close to 5 billion dollars and I'm guessing that would be a political non-starter in California as well as so it highlights the challenge.

And the challenge is trying to sound constructive but asking some very tough questions that perhaps the Clean Power Plan care, at least in some ways are unworkable. I appreciated the answers to what can FERC do and particularly as it relates to how we move forward in our relationship with EPA, how we use the public forum in these conferences but it also struck me that part of the challenge in answering that question involves saying what we have already done.

In addition to the landmark orders of 888 which is probably the most significantly positive environmental policy that arguably this nation has ever implemented through at least the electricity sector in order 2000 where we again tried to make the grid more efficient in terms of interconnection.

I'm just thinking back on the fact that we adopted conditional firm wind access to the transmission grid a few years ago, very important to the wind industry then. We have been trying to be as amenable as possible in storage proposals that come before us, if they want to be

transmission we give them that status, a variety of other status.

We have implemented 15 minute scheduling in the west. We have tried to walk a fine line of encouraging the EIM but respecting the west so that big bad FERC doesn't tell them what to do. We worked gas, electric, encouraging the EIN, we have done a lot and that's good in the nuts and bolts category of how the Clean Power Plan is going to work. Of course we will take more ideas but I do want to give credit to the Commission staff and our predecessors for already implementing a lot of policies that will help make the Clean Power Plan work.

But those are already done and again we will take more but there are no easy solutions here given the hard work that has already been done. I think if anybody has any reaction to that I would certainly welcome it.

COMMISSIONER KAVULLA: Only Commissioner Moeller that I agree, FERC has done a lot and I guess the one thing I would say with respect to say the Order 764 and 15 minute scheduling, an excellent perform and it just needs I think FERC just needs to play to some degree monitor to make sure it doesn't you know, now it's a party and then no one comes to the party.

You know people have invested in a lot of software. They have upgraded their oasis systems, they have

opened the doors to this but it is the human transactional matter, you know if you want to get your energy from Montana to say northern California and you have to submit you know several different oasis reservations on a 15 minute basis, it takes a lot of effort and so making sure that that on the trading side rather than on the transmission reservation platform, making sure that the people who are trading energy have either staffed up or thinking about automation, things like that are really important.

And it's not necessarily something that FERC has to do through you know subsequent rulemaking, it's just something I think to be conscious of to make sure that market reforms are actually being given their voice.

COMMISSIONER MOELLER: That was an excellent point thank you.

Mr. Jimison?

MR. JIMISON: I was among those who forgot to thank you for all of the things that you have already done so I would like to make up for that. I think FERC has been a fabulous leader in these fields, and in particularly in the development of both power markets and regional integration. I think that the -- one of the key things is that the Clean Power Plan is just in draft form now and it won't be finalized until the end of this year, probably at the earliest.

And you have had great testimony today and at other places that make it pretty clear to me if not to you that regional markets in the west, the analytics are there to understand how we could do it, it's technically feasible, as Kara Clark said from NREL. It is probably economically beneficial. I understand that the first two months of the energy imbalance market with three out of the 38 balancing areas saved six million dollars. Well it could well be. Market forces are very invasive and they can change things where people do not even see them changing.

It could well be that a regional market will creep up and gradually offset the sort of traditional historic bilateral contract advantages that I think are a big part of why people resist it. And certainly, in the Order 1000 process you made it clear that planners need to reflect public policy purposes. The public policy is static and the Clean Power Plan is a major new element of the public policy purposes that need to be reflected in the on-going transmission planning.

And as that happens in the Order 1000 process I think that too will feed impetus back to the EPA to understand how transmission feeds into clean energy in those states and how a regional approach feeds it in best.

COMMISSIONER MOELLER: My last question is again directed to you Mark?

MR. ROTHLEDER: Just a couple of additional thoughts. I totally agree with you and I appreciate the work that is being done -- FERC has done in the rulemaking that has occurred to this point. I think the long traverse on the line I think continuing to make sure that the rulemakings are delivering what they were expected to deliver and be prepared to seek information about what needs to change to get them fully right.

I think the other thing is to anticipate what the changes are going to be doing in the future. In California we are anticipating the changes resulting in at times that California is not going to be a net importer anymore of energy. We will be a net exporter because we will have surplus energy and how do those changes translate and what other things need to happen to help facilitate management of those changes?

And yet anticipating and making things, making decisions early on so that you don't have to make drastic changes when they are upon you.

COMMISSIONER KAVULLA: I just want Mark's neighbors to know that we stand ready to take that export at its marginal cost.

CHAIRMAN LAFLEUR: I forgot that you were just asking a question when I recognized Mark.

COMMISSIONER MOELLER: So I will be very brief.

Those are great observations and in my humble opinion the Commission does great work, particularly grinding through day-to-day items. Our strengths are not as much looking long-term and anticipating problems, it's just a reality that has nothing to do with specific leadership, it's just the nature of our daily grind so continuing to remind us of that it is important.

And instead of asking a question I'll just make a request that builds on something Mr. Jimison said from the last panel as well. If you have ideas on how we can specifically recommend ways to make the transmission siting process more efficient, that we can recommend to EPA or other federal agencies I would ask that you submit those.

CHAIRMAN LAFLEUR: Thank you I will turn it back to Arnie I have a couple of closing remarks.

MR. QUINN: Yes I actually wanted to follow up on something Travis said in gest but I would like to understand more in the reality. There have been instances when California's real time prices have been negative because there has been too much generation on the system. And it's not unique to California. There have been instances when BPA has had too much generation on its system and has been looking to give away the power.

And I wondered what those anecdotes say about how the bilateral markets are working now. Do we know why

people haven't decided to take that power off of the owner's hands at that very low marginal cost? Is it something about our rules, or does it go back to just having the trading platforms available to identify those opportunities and take advantage of them quickly.

I'm really kind of hoping to take those very specific weedy issues and you know step back and see again what kind of issues will be coming to us as a Commission when potentially more renewables are on the system?

COMMISSIONER KAVULLA: Yeah I mean there are many times it's a fact in the western interconnection where you see large price differentials between two places and available transmission capacity nonetheless. And it's particularly disturbing when we have negative prices in part of that equation and positive prices elsewhere so what's happening I mean part of it is the difficulty of forecasting which is getting better and better.

A part of it is these fast reacting market platforms, I mean it needs to be said a lot has been said about EIM but it's important to point out that it is not a panacea and it really wasn't meant to reduce carbon it was designed to make the market work more efficiently it really had nothing to do with carbon compliance so I wouldn't want it to be a take away of this.

But the EIM as it is designed now is not a purely

flow based system. It only operates based on the amount of transmission rights that have been delivered up by parties that EIM had these bouncing parties participating in it for the EIM's operation and if EIM's somehow in its future iteration was allowed to more fully flower on the kind of flow based mechanism where it made use of the transmission system like other RTO's do we would see less of that type of thing.

And I know Mark addressed this very specific question in his comments and he is no doubt dying to say something about this.

MR. ROTHLEDER: I'm not sure about dying. And it's a great question and I think it does lead to the question the energy imbalance market is helpful but it only still is limited to what can be done to end real time and decisions will have already been made about things like unit commitment and those types of things.

And so in a way if you want to get broader ability to integrate those renewables and share in those resources, you have to be able to do some of those decisions a day ahead. And even today there is some ability to do that but there has to be an increasing level of certainty on everybody's part that they can rely on the energy that is coming and being scheduled a day ahead.

There is foresight about it and there is real

physical decisions being made about what are the resources that you are not going to turn on in anticipation of being able to access that energy and some of those things cannot happen in real time they have to happen before real time.

MR. QUINN: I didn't mean that to be certainly a criticism, the problem with our markets is that they are so transparent that when any little thing looks odd we all know about it. So with that I think does staff have any other questions?

CHAIRMAN LAFLEUR: Phil?

COMMISSIONER MOELLER: Again we want to thank the people who are listening on the audio for their attention but also everyone here who has put this together and Chairman LaFleur for your idea this happened. I think it's a very fair discussion and we look forward to continuing.

CHAIRMAN LAFLEUR: Well thank you and I'm very happy that we came to Denver and I learned a lot and one of the things that really stuck with me is the point that Clare made and others is that we are going to be at this for a while. This isn't something -- right now we are so focused on mid-summer the rule, the rule but this effort of how we change our energy economy is something that is much longer term than that and just taking a page from Commissioner Kavulla's playbook because I think somebody said we should have more tech conferences and I'm sure we should.

This is a very labor intensive way to stage one of these. To have 20 people get on a plane and have hundreds of people come, but I think we should look at also modular ways to continue the conversation. I happen to know the next President of NARUC is a westerner and a great guy but to be honest I fly over the non-California west to go to California more than I land here because I mostly get invited to California.

And if there are forums that we should be at where these things are being discussed or worked out, I think whether it is in connection with NARUC or the sub-groups of NARUC whatever they are called all the NAHUCs and NACRUPs or whatever the right places are because this discussion is going to be going on for a while and I think we want to be a constructive part of it. And I just want to again thank staff, I can't thank staff enough. I wish everyone who came safe travels home and look forward to continuing the conversation.

(Whereupon the meeting adjourned at 3:50 P.M.)