DOCKETED	
Docket Number:	21-IEPR-04
Project Title:	Energy Reliability
TN #:	240855
Document Title:	Transcript of 7-8-21 Joint Agency Workshop on Summer 2021 Electric and Natural Gas Reliability - Session 2
Description:	JOINT AGENCY WORKSHOP ON SUMMER 2021 ELECTRIC AND NATURAL GAS RELIABILITY, Session 2: Imports, Demand Response, and Multi-year Outlook
Filer:	Raquel Kravitz
Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	12/6/2021 6:56:33 PM
Docketed Date:	12/7/2021

IEPR JOINT AGENCY WORKSHOP

BEFORE THE

CALIFORNIA ENERGY COMMISSION

In the Matter of:	)	
	)	
2021 INTEGRATED ENERGY POLICY REPORT (2021 IEPR)	)	Docket No. 21-IEPR-04
	)	RE: Reliability

JOINT AGENCY WORKSHOP ON

SUMMER 2021 ELECTRIC AND NATURAL GAS RELIABILITY

REMOTE ACCESS WITH ZOOM

THURSDAY, JULY 08, 2021

2:00 P.M.

Session 2: Imports, Demand Response, and Multi-year Outlook

Reported by:
Martha Nelson

APPEARANCES

Workshop Leadership

Andrew McAllister, CEC
Siva Gunda, CEC
Karen Douglas, CEC
Patty Monahan, CEC
Marybel Batjer CPUC President
Marth Guzman Aceves, CPUC
Clifford Rechtschaffen, CPUC
Elliot Mainzer, California ISO, President and CEO

Staff Present:

Heather Raitt, CEC Program Manager

Presenters:

Mark Rothleder, California ISO
Marci Palmstrom, Southern California Edison
Scott Ranzal, PG&E
Steven Pruett, Los Angeles Department of Water and POWER (LADWP)
Timothy Vigil, Western Area Power Administration
Mark Koostra, CEC

Public Advisor:

RoseMary Avalos

Public Comment:

Issam Najm
John White, Center for Energy Efficiency and Renewable Technology

I N D E X

Items	Page
1. Introduction, Heather Raitt, CEC	4
2. Opening Comments from Workshop Leadership	5
3. Panel: Import Planning for Time of System Net Peak	
Moderator: Mark Rothleder, California ISO	9
A. Marci Palmstrom, Southern California Edison	15
B. Scott Ranzal, PG&E	19
C. Steven Pruett, LADWP	22
D. Jon Olson, Sacramento Municipal Utility District	26
E. Timothy Vigil, Western Area Power Administration	32
Discussion:	36
5. Presentation: Demand Response and Reliability	
Tom Flynn	59
6. Presentation	
Mark Kootstra	70
Discussion	81
7. Public Comment	
8. Closing Remarks	
9. Adjourn	93

P R O C E E D I N G S

JULY 08, 2021 2:00 p.m.

MS. RAITT: Okay. Well, good afternoon, everybody. Welcome to Session 2 of this Joint Agency Workshop on Summer 2021, Electric and Natural Gas Reliability. I'm Heather Raitt, the program manager for the Integrated Energy Policy Report, or IEPR for short. This is the first day of a 2-day workshop. And the workshop is being held remotely consistent with Executive Order N-08-21 to continue to help California respond to, recover from, and mitigate the impacts of Covid-19 pandemic. The public can participate in the workshop consistent with the direction and the executive order. To follow along with today's discussion, the workshop schedule and presentations are available on the Energy Commission's website. All IEPR workshops are recorded and with a written recording and other recording are going to be -- written transcript and audio recording, excuse me, will be linked to the Energy Commission's website in a couple of weeks. Attendees have the opportunity to participate today a few different ways. One is by asking questions through the Zoom Q&A feature, and you can upvote questions by clicking the thumbs up. Or you can make comments during the public comment period at the end of the afternoon, or

you're welcome to submit written comments, and those are due on July 23rd. And the meeting notice gives you all the information for doing that.

So with that, I'm pleased to turn it over to Commissioner Siva Gunda. Thank you. Commissioner, we can't hear you.

COMMISSIONER GUNDA: Thank you, Heather. Yeah, thank you. Double mute. So I had to do it. So just want to ask if Commissioner McAllister wanted to have any opening statements and then I will kind of just tee up the afternoon session. Commissioner, you are muted too. Double mute.

COMMISSIONER MCALLISTER: There we go. That should work . Yeah. Thank you, Commissioner Gunda. Really just want to welcome everyone again and, you know, to our part two of the first of two days on Reliability or Electricity and Natural Gas Systems within the Integrated Energy Policy Report series on Reliability. And so we introduced the context in depth this morning and I won't go into that again. But I just want to thank everyone for tuning in again this afternoon. Seeing really good attendance, so thank you all.

And also, I just wanted to make a little bit of an exhortation to please, please comment today and submit comments on anything you deem relevant. I'm talking here

to the attendees related to reliability. This is our, you know, really the number one issue of this summer, and beyond, and well beyond, and you know, years to come, but we really, I think, need to build a robust dialogue as broadly and deeply as possible going forward. That's our system, it will inoculate, you know, will be, will improve its resistance against all challenges if we have a robust process that make sure to be anticipatory and we need help with that. We need help across the board with that.

We have a lot of collaboration across the agencies, as we heard this morning, and will again today, or this afternoon, but you know, the more perspectives we bring to the table, the more inclusion the process can embrace, the better we're all going to be, the more critical thinking we get and the better we're all going to be as Californians and across the West. So with that, I think just to put a finer point on the need for participation, and please do submit your comments once you've heard the sessions today and tomorrow. And Heather will give you all the details about how to go about doing that. But just wanted to make sure to say that. So and back to you, Commissioner Gunda. Thank you very much, for your leadership.

COMMISSIONER GUNDA: Thank you, Commissioner McAllister. So again, just quickly, you know, thanks

everybody for being here. You know, CEC has an important role of ensuring a robust public process and important topic. So your participation and to all the panelists, you know, for your time, this is what makes the, this process robust and comprehensive and useful to the state. So just that, thanking everybody

Just a quick overview of what we're going to do this afternoon. You know we had a really good discussion on hydro and how do we think about hydro moving forward this morning? An excellent conversation. This afternoon, you know, we're going to be kicking off with Mr. Rothleder leading a panel, similar to what we did in the morning on Hydro. This will be on Imports, and how to think about imports in the short term during the net peak hours and in the future. And that presentation will follow -- will be followed by staff presentations by CEC, specifically looking at, you know, other important resources that we need to be tackling. You know, that, are the three things that we've been thinking through at CEC. We have the Imports, we have the Hydro as we think about the future, but also demand response. And then how do we think about demand response moving forward? In the decision on June 24th, CPUC has asked the CEC to hold a stakeholder process to inform how to account for DR in the Resource Program, again Resource Adequacy Program, again highlighting the

collaboration that we all have ongoing to ensure reliability. So that's we're going -- we're going to just tee that up. Discussion would love to hear comments from stakeholders. And then we'll move into another, you know, collaboration between CEC and CPUC. I'm thinking through the mid-term reliability, '23 to '26. And then how does the outlook look? You know, if you look at the LOLE Analysis under different conditions, and staff will present some information on that as well. So with that, thank you all for being here. And I would want to open up to the dais if anybody else want to make any comments. Seeing -- oh yeah, Commissioner Douglas.

COMMISSIONER DOUGLAS: Oh, no. No comment from me. Thank you.

COMMISSIONER GUNDA: Okay. Thank you. I don't know. Elliot, would you have any comment?

PRESIDENT MAINZER: No. I'm just fine. Thank you, Commissioner. Ready to go.

COMMISSIONER GUNDA: Okay. Thank you so much. Back to you, Heather.

MS. RAITT: Great. Thank you, Commissioner. Okay. We'll start with a panel On Import Planning for Time of System Net Peak. And it's being moderated by Mark Rothleder, from the California ISO. Mark is the senior vice president and chief operating officer at the

California ISO who's leading a cross-functional team that integrates policy planning, operations and technology. And before being named in his current position, Mark served as the vice president of Market Policy and Performance. Thank you for being here, Mark. Go ahead.

MR. ROTHLEDER: Thank you, Heather. And thank you, Commissioner Gunda, for inviting me to moderate this panel. I'm going to do a quick presentation just going over some observed trends regarding Imports, and then I'll introduce probably a few questions for -- that our panelists will incorporate into their presentation or their material. So if you can go to the next slide, I'll just go jump into the -- my presentation.

So historically, the California and the California ISO has been a net importer. I don't think that's a surprise. What's happened over the last few years, though, well, we're a net importer and we rely about 25% of our energy needs are come from imports. As supply and demand conditions have changed in California and across the West, we are observing some fairly significant changes in the trends of imports. While the overall energy still remains around that 25% mark, we're seeing more impactful changes in terms of the availability and -- of imports during high load or high net load conditions.

So what you're looking at here, in terms of the

first slide here, is just some trends, first off of the net load. And a reminder, net load is load minus wind minus solar. And the reason we focus on that is because it is the -- it's the remaining balance that we have to balance the system with, including imports. And you can see here over the trend since 2013, with the addition of renewables, the net load is getting lower and lower, especially during midday, midday periods in the spring. So this is -- these pictures of these graphics are really just a full year representation of what the net load is over the -- over those respective years.

The next row is the imports. And you can see here as well, this is the net imports. And so in 2013, we're running probably around between 5,000 and 10,000 megawatts of net import. And the band was relatively tight. And now as we again have additional renewables, we're seeing the spread, or the range of net imports significantly change and widen. In fact, you can see here that we're starting to see springtime periods where we're not a net importer anymore, we're actually a net exporter of energy when we have surplus, midday surplus of renewable energy.

But the upper end, if you just look at these graphs, seem to indicate that we're still getting around 9 to 10,000 megawatts on the upper end. What's interesting

is if you start graphing the relationship between the net import as a function or relative to the net load. And that's what these last set of graphs are illustrating. And I know it's hard to see, but I'm only wanting you to focus on the shape and the shape indicates that the trend lines, whereas before you'd, at higher load you'd just have higher amount of net imports supporting the higher loads, you start to see a curve off where above a certain level of net load, where you get to higher net load levels, the net imports start to actually reduce and taper off. And that's a concern because that is the time when we would most need the energy during those high net load periods, but it looks like we are experiencing observations where the availability of that net imports is actually decreasing as the net load increases.

And the next slide, if you go to the next slide, kind of more is more pronounced and clearly identifying that the overall trend line of the average imports during summer conditions, June through September during that 6:00 to 7:00 p.m. period. is a decreasing trend while the range is widening somewhat and in fact, it's even in the summer period, we're getting very close to actually net exporting at times, probably mid-day when the loads are relatively low, but there's plenty of renewable supply.

I'll just make a point here that this last week,

last Monday, when the Northwest was at very high temperatures and high loads, we were, this is the first time I've seen summer conditions in the middle of the day, we were actually net exporting out to the system to help support the Northwest by about a thousand megawatts during that time. Fortunately, the loads were lower in California, we weren't under as stress conditions, and we were able to support that. But it kind of raises the question is what happens when both the rest of the West is -- has high loads and high temperatures, as well as California having high temperatures and high loads? And that's the concerning part of this discussion.

If you go to the next slide, it just gives an illustration that of these imports, a large portion of them are contracted under Resource Adequacy. And we rely on the Resource Adequacy to give us some certainty that we can, those contracted imports are available to us and we can rely upon them. But even there, we're seeing a trend at least year over year relative to the Resource Adequacy Contracted Imports for the August and July period, we're starting to see a lower amount of contracted RA Imports relative to 2020 this year. It's premature to know what we have for September. It is notable that in September of last year we actually had a fairly robust amount of imports contracted under RA after the August events, about 8,000

megawatts were contracted, but we are -- we're not -- we won't know until next week how much contracted imports under RA we will have for September time period.

So I think that really sets up the observations and one, the reliance that we have on imports, that the observations of the tightness of conditions in terms of the supply and availability of imports and then the trends of what we're seeing in terms of Resource Adequacy Contracting. With that in mind, I've asked the panelists to kind of focus their discussion around, kind of four questions that I'm asking, and that is, given the historical reliance on imports and current trends that we're observing, what are the opportunities and challenges to contracting for our imports and for Resource Adequacy more generally, or for energy more generally.

And then two, when contracting for imports, what are the most important characteristics that the load serving entities are seeking? I know we are observing that we are shaping those imports to meet that evening peak as the sun goes down. But I'm interested in if that is coordinated or seeing in the contracting that shaping capability of those imports.

And the third question is, what are the trends that you're observing looking forward one to three years out that may be impacting the availability of imports going

forward?

And then the last question is, imports and more generally interchanges are increasingly -- is part of -- coming up in regional conversations. From your perspective, what are the, some of the regional coordination improvements and or considerations, considerations that should be taken -- taking place to advance operational planning assumptions regarding interchanges and imports?

So with that, let me introduce the panelists. Today we've got Marci Palmstrom. Marcia has been with Southern California Edison for 18 years and is currently the director of Trading and Marketing Operations. She provides oversight of bidding and scheduling of Southern California Edison's Power resources and expected energy demand into the wholesale energy market, as well as transactions for natural gas, power and emission products.

Next, you'll hear from Scott Ranzal. Scott is the director of Portfolio Management at PG&E. Scott has worked at PG&E for 13 years, serving in different roles related to finance and risk.

Next, Steven Pruett comes to us from Los Angeles Department of Water and Power, where he's been with the department for 33 years and is currently the manager of Settlements and Wholesale Energy Resources.

Next, John Olson is the director of Energy Trading and Contracts at Sacramento Municipal Utility District, where he leads the management of SMUDS Long, Medium and Short-term Resource Portfolio. John's team is responsible for execution in bilateral markets as well as in the California ISO's Energy Imbalance Market.

And then lastly, we've got some perspective from Tim Vigil, who comes to us as the senior vice president of the Colorado River Storage Project Manager. Tim leads all the Power Marketing and Operation activities for the Colorado River Storage Project Managing -- Management Center in Salt Lake City, Utah, and also manages the Energy Management and Marketing Office at Montrose in Colorado. The CRSP Management Center has 38 employees, manages sale, purchase of willing and interchange, transmission of energy for about 150 retail customers and other utilities in Arizona, Colorado, Nevada, New Mexico, Texas, Utah and Wyoming. And Tim has perspective because the Colorado River storage, he has some perspective about the availability, especially under the drought conditions of energy coming from things like Glen Canyon and the Colorado River System. So we look forward to his perspective as well in this discussion. So with that, I am going to turn it over first to Marci.

MS. PALMSTROM: Hi. Good afternoon everyone.

Thanks. Thanks, Mark. Happy to be here. As Mark mentioned, in parts are really a critically necessary part of the mix. I mean, they play a major role daily in meeting our RA Requirements, but they also have an important, you know, non-RA component. They do provide just energy when we need it the most. In the heat waves we saw last year, we were we were in the market looking to get imports really day over day. So definitely there's concern about the future. You know, we are also seeing the same lower net import levels in 2021 compared to previous years. And again, as Mark mentioned, significant lower on higher demand days.

Outages are also increasing. Another trend that we're looking at and, you know, looking at the CAISO outage -- CAISO-wide outages. Just in June alone, we saw outages, you know, 35 to 45% higher than in previous years. So this is all happening at a time when reliability is our, you know, our biggest concern and our priority.

So a couple of perspectives that I have going forward is, you know, when we start looking at import, let's make sure that we're the policy and regulatory efforts are targeting the right areas. And by that is, how can we just think more broadly? Because really the crux of this, the focus is who has the supply? Where is the supply, and how can we get it to California and how can we

get it to stay in California? I'll give you a little bit of perspective on our efforts in the daily market, you know, getting RA deals, you know, done for Q3 of this year has been very challenging. The markets lack liquidity, and supply is really tight for imports.

Everybody's fighting, you know, for the same -- for the same thing. And when you continue to see these heat waves where it's not only Southern California and Northern California, it's west wide, everybody's fighting for the same megawatts. So there's just been a -- it's been a tough journey there, and you know, there are -- there are current requirements that have been put in place in order to make sure that imports are coming to California, you know, and you know, even with that additional layers put on, you know it doesn't necessarily stop marketers from trying to export power when they're seeing $1,400 prices.

So you know, I think one of the areas is we've got to really be careful and thoughtful about how we layer on incremental requirements when we don't yet understand what the impacts are to serve reliability. In terms of characteristics like what we see in the market, it's essentially, what is the cost and who has the supply. So like I said, is everyone's competing for the same thing, and as California moves, you know, more and more toward

decarbonization and, you know, cleaner energy future. I mean, this just becomes a, you know, really a bigger grab.

So what are some of the things that we could think about going forward? I think that there is a real opportunity for more information and coordination across WECC. Are there products that could be available on a daily or intramonthly basis? And could there be market design and market expansion that could facilitate transfers among balance authorities if they decide in that hour or that day that that is not needed, but could be useful in another area, and how can we facilitate those, I guess, more quickly and more often, and just getting access to additional supply. So more coordination and communication could be driven within the current and even future energy and balance market participants.

In other areas, you know how -- is there -- is there a way for us to get more visibility outside of California on the available capacity? So again, as the fleet decarbonizes and we see retirements, you know, how can we, you know, see what supply is on the horizon and what's out there and just have visibility to what's available in the market?

So I would -- I would caution before, again, layering on additional requirements, you know, into bringing imports in. You know, let's try to get through

the summer. It's going to be -- it's already proven -- showing, Summer's already showing us it's going to be tough. I think it's really important that we do an After the Fact Analysis on this summer and, you know, how imports have fared. I mean, I think that's a given. I believe that that's, you know, that it, that is on the work -- in the works. But I think it's really important that we look at how have the current requirements for imports fared, how are they helping with reliability? Are they really contributing to bringing more imports into the state, you know, and is the current construct we have really meaningful?

And so I think working with the market just to make sure that as we do make changes, we're involving the market so that it's a robust process and, you know, we have all the right people having the conversation and willing to make the changes at the same time.

So I'll stop there. Thank you, that's all I have.

MR. ROTHLEDER: Thank you, Marci. Now, if we can go to Scott.

MR. RANZAL: Well, good afternoon. Thank you for the opportunity to speak today. As Mark mentioned, my name is Scott Ranzal, and I'm the director of Portfolio Management in Energy Policy and Procurement at Pacific Gas Electric

Company. In my current role I oversee the Management Wholesale Power Portfolio, including the Energy Capacity and Associated Environmental Products with that. PG&E is the company who's been working to deliver safe, reliable, affordable, and clean energy to California for over 100 years and to serve our customers while doing so. PG&E's 23,000 employees deliver resilient power and natural gas service to more than 16 million Californians and a resource portfolio that is more than 80% greenhouse gas free.

On to the Imports. The western U.S. has long relied on each other to share capacity and energy to meet the overall needs in the western half of the U.S. And until recently, this was fairly easy due to the diversity of demand needs, peaking area needs, as well as supply availability that was in excess of what the immediate needs were. And while the impacts at climate change, shifting generation resources from fossil to use limited renewable resources and storage option, as well as changing customer use patterns, may be felt more in California, these shifts and their impact will disrupt operations throughout the west for the coming decades.

This is having a very acute impact on the availability and cost of imports, as people in California, as people have already mentioned. As the retirement of fossil resources in California across the west continue, the availability of on demand resources often used to

deliver to neighboring areas with different peaks, is less prominent. Recent rule changes to the PUC and the ISO are impacting market supply and demand and changing what is a tightening Resource Adequacy Import Requirements and ensuring energy is delivered as well. It's become more difficult, and the electric system is really adjusting to the new normal.

PG&E has historically utilized capacity imports, for various reasons, with changes in the portfolio, Import Rules, Resource Adequacy, and energy needs, are compelling PG&E to continue to evolve and develop strategies regarding the use of imports to address its needs and serve its customer. PG&E, like many others, is adapting, and recent price surges in the market are a good indication of the market's reaction to many of these dynamics.

For California and the west, they continue to work to address decarbonization goals while maintaining a reliable energy infrastructure. We will all need to embrace the opportunity to rethink the future before us and react swiftly to the changing environment. The existing FERC Open Access Tariff Service paradigm throughout much of the west, and the ISO's transmission rate structure will also need to adapt to ensure that reliability is afforded to all at adjusted reasonable price. Efforts towards regional planning and coordination, balancing authority

agreements for normal and emergency operations, and clear and transparent rules and regulations are critical steps that should begin as soon as possible.

With that, I will thank you for the opportunity to talk and look forward to hearing from the other panelists.

MR. ROTHLEDER: Thank you, Scott. Appreciate those comments. Steven Pruett here. You're next up. Thank you.

MR. PRUETT: All right. Thank you. Can you hear me?

MR. ROTHLEDER: Yes.

MR. PRUETT: Great. Again, also, thanks for the opportunity to be here. I appreciate it. This is a lot of very interesting and very important stuff. L.A., like many others in California, is working diligently on meeting our renewable goals. And like pretty much everyone else, we are ending up with a lot of solar, some wind, and as much geothermal as we can round up. You know, those have very different characteristics. And two of those three, solar and wind, are variable. So at the same time, L.A. has found it increasingly challenging to maintain its traditionally reserved Supply Planning. L.A. plans with a lot of reserves in available and a stand-back, and let some things idle approach, especially on the more burdened days.

We plan, for example, against seasonal all-time peaks, average peaks, and then we divvied that up amongst months or quarters, depending on the trends and analysis we'd done. And we and particularly during the tighter periods, we make sure we have full reserves not just in operating or flex types, but also replacements, because as a lot of us know, when things can go wrong, they often do, and it's sometimes at the worst time.

So some of the ways we pursue our renewable and clean energy goals, while maintaining that level of redundancy, is when we go out for a power purchase agreement, which is the way we're doing the majority of our -- of our procurements right now, we always seek to own and operate. But the scale of it makes it difficult. But those contracts are mostly imported at intertie We make sure that there is firm clear transmission for bringing that energy into our load centers. And those contracts are tightly written so that there is a clear commitment to produce that energy according to a predetermined schedule and expectation.

Similarly, when we go to the various markets out there at our intertie, we always and usually are able to secure that import on firm transmission. We also ask that our suppliers bring it in on firm transmission, but sometimes we can't get that, so we settle for non-firm.

But again, we transact product that pretty much guarantee with relatively stiff penalties that this, we can rely on. We can rely on this energy coming in, and we can count on it.

As far as the evening ramp down, which is largely a lot of us, our new challenge point in, particularly in the summer months, L.A. generally doesn't import during the evening ramp down. We have found, through our analytics, that if we start to ramp up some of our combined cycle sleep a couple hours before, say 5:00 p.m., that really fits in very neatly to a lot of weather situations and weather conditions that allows us to enter the later night loads where we can then bring some of those combined cycles off or leave them in a lower multi-stage state. So that seems to work pretty well for now, however, as you know, the percentages of solar and wind and whatever else comes down the road increases, that ramp down is going to become more difficult and more perilous to deal with.

So L.A. has a few tools in its box that currently we're staying ahead of the amount of solar that we have, relative to our load and in those evening hours. We have a small fleet of simple cycle 100 megawatt fast start turbines we can use if the combined cycles are not doing it fast enough or if the solar, say drops off quickly. We also have our hydro storage facility, Castaic, which is

incredibly handy and useful and still has room to grow and be used. We also recently joined the CAISO's Energy Imbalance Market, which has been a really neat experience for us. It pretty much allows us the real time optimization of L.A.'s assets, while accessing real time economic opportunities across a really big footprint. So it's definitely very advanced and very interesting to us and we are really enjoying ourselves with that.

So as L.A. moves forward, you know, we're going to -- one of the stalwarts of our plan is to make sure that we're going to continue to plan with a very wide margin, I guess you can say, particularly on the tighter times. And it's not just, say, summer. In the springtime now, we're seeing the solar ramp up can be difficult to deal with. Our, I guess our customers like to sleep in. I do, too. But they don't get using electricity as early as the solar wakes up. So we have found that we have to deal with that, and again, we're fortunate to have a pump storage facility that allows us to take advantage of that. We also now have the EIM, which can make that energy available.

So I think going forward, as we all bring in more renewable energy, variable energy, as a share of our total portfolio, and as a share of our total load, you know L.A. is going to continue to be conservative in its approach and continue to leverage its abilities to bring projects online

that meet all those requirements, but also a regionalization and a look at joint opportunities, shared projects, like I heard earlier, that you know, pump storage is very expensive and very big with a long payback time, but maybe with enough participation, these things can become more feasible. So that's kind of L.A.'s posture going forward is kind of hold the line. But we are also excited to be able to currently meet our renewable goals and we're hoping to continue to do so. Thank you.

MR. ROTHLEDER: Thank you, Steven. Next up, Mr. Olson, you have the floor.

MR. OLSON: Thanks, Mark. And good afternoon, everybody. Thank you for the opportunity to participate in the panel today. My name is John Olson and I'm the director of Energy Trading and Contracts for SMUD Agency, consisting of SMUD, Modesto Irrigation District, Roseville, Redding Electric Utility, Trinity Public Utility District, and the City of Shasta Lake. This is just a check. There you go. I'm having some audio problems for some reason. It's going in and out.

MS. RAITT: You might want to off -- maybe turn off your video. Would that help with the bandwidth?

MR. OLSON: I'll try that. I'll try that. That's fine.

MS. RAITT: Right, Kelly, you could – you could

bring up the slides, please. It's worth a try anyway.

MR. OLSON: Okay. Sorry about that. I'll continue.

Essentially, SMUD is a member of BANC, Balancing Authority of Northern California, so we're outside the CAISO footprint, but we do participate in the EIM market and SMUD joined back in spring of 2019. BANC is the third largest BA in California. SMUD is dependent on imports for both to our BA, for both RA compliance, as well as the ultimately serving SMUD load. In addition to imports from CAISO, contracted resources -- in addition to CAISO contracted resources, we contract resources in the northwest and the southwest, which all need to ultimately end up coming home to SMUD from the various BAs. Example of contracted resources include traditional thermal plants, utility scale renewable projects, and small renewable projects.

Contracting for RA, simply put, has been very difficult in the current market. Market prices have -- Sorry, I'm not sure what's going on with the audio, but, the contracting has been very difficult, market prices have more than tripled for the calendar year products as compared to recently as 2015 and 2016 prices. Prices for seasonal commitments such as summer alone, are four to five times what we saw in 2015 and 16. Individual months, such

as July, or August, or September on their own, have completely blown out in our trading at six and seven times the equivalent of 2015 and 2016 pricing.

Scarcity of RA presents some additional issues than just price, however. Higher quality units, higher quality counter parties are aggressively pursued. In these times when we need every last megawatt, there's a higher likelihood that the remaining units and counter parties may come with less than desirable operational and business terms. This can become a contracting problem. Mark mentioned the shaping of imports. EIM is a perfect tool for shaping the op -- in the operational window. But from a Planning and RA perspective, we have not had much luck in the way of finding willing partners to shape products. This includes for entities inside the CAISO footprint, as well as at trading hubs such as California, Oregon, COBtrading hub.

As stated earlier, SMUD has been a member of the CAISO Energy Imbalance Market and it serves as SMUD's primary real time market. RA is largely a planning construct. EIM participation is largely an operational construct. For EIM participants, if you can show you are fully resourced for coming -- for the coming hour, for both energy and flexibility, the CAISO will optimally redispatch resources across the entire EIM footprint. That footprint

stretches from British Columbia to California, desert southwest to Wyoming and Montana. EIM is a rich regional diversity -- rich in regional diversity. Hydro in the northwest, solar in the desert southwest, wind in the basin area. California is a large geographic diversity area within itself, and regions within California have different wind, solar and geothermal capabilities.

In addition to this fuel diversity in the west, there is time zone and weather diversity. I think we all have learned a few lessons about weather diversity, given the events of last August and what Mark talked about earlier, about what we saw when we have a very large, uniform, hot, west from the, you know, from Canada down to the desert southwest. But there is typically weather diversity available. EIM has been a valuable market for the SMUD ratepayers, and in my opinion, much of the success of the EIM market is driven from the west wide regional diversities that I've alluded to.

In the relatively recent past, planning for that operational window, such as day ahead or real time, largely consisted of stacking energy resources in an optimal mirrored order. However, today's planning for that operation window is much more complex. For example, ramping requirements and managing the net peak have become equal aspects to consider in both day ahead and real time

timeframes as just energy alone. You saw evidence of this in Mark's earlier slides. What plant can catch a ramp? How can we, inside our -- with our -- inside our own entities manage the net peak, including distribution energy resources? As an LSE and as good as EIM has been, you cannot leave these details to that operational hour. This brings us back to the Planning and RA conversation.

All portfolios need energy, mapping flexibility, responsiveness. The more narrow you look at a footprint, the less diverse the utility, or the less diversity there is to utilize. The broader the footprint, the more diversity to utilize for everyone's benefit. I don't care what individual footprint you want to use as an example, it will not have the overall diversity as the entire WECC wide, or EIM footprint. It would be my opinion that any well-balanced portfolio for any LSE needs to be able to utilize regional diversity, which includes the ability to be able to use imports and exports.

We as an industry are undoubtedly in a period of transition to a decarbonized grid. Some states and organizational goals, organization's goals, differ on timing and maybe the aggressiveness of the timing, but the movement is absolute in nature. It's exciting time to be in the end, be involved in this transition. DERS, Distribution Energy Resources, and Bulk Energy System

Solutions are both needed aspects of any modern energy portfolio.

To specifically address Mark's question on how California can engage the California with the -- with the CAISO, or how California can engage with the CAISO, BA, the state, and the interconnect. I offer a couple simple thoughts. First, from the CAISO standpoint, continue doing what you're doing from a stakeholder perspective. The outreach that you did in an August 2020 heat event was much appreciated. While difficult decisions and conversations were had and needed to be made, I think all entities appreciated the outreach. Also, additional transparency of business practices, especially when, as applied to imports and exports, would be appreciated.

At a higher level from the state and interconnect level, I bunched them together because, I know there's a distinct difference, however, I think the need, each need, is very similar. Long-term Regional Planning for both Transmission and Resources would offer the highest level of benefit with the lowest level of cost for the broadest footprint. A regional day-ahead Market would also allow for the -- a more optimal use of region diversity in the operational window.

And that concludes my comments. Thank you, very much.

MR. ROTHLEDER: Thank you, John. I appreciate those comments. Next up, we've got Timothy Vigil. Thank you, Tim.

MR. VIGIL: Thank you for the invite. Glad to be here. And you know, I guess I have a slightly different perspective because I'm kind of outside of the state and basically trying to help with WAPA assets when times are lean when these hot days occur in the summer. So WAPA is committed to using their generation assets during energy emergencies in any way we can. As you know, we've been in drought conditions across the west, so we don't typically have surplus water, but we can run water now and buy energy later to cover our firm commitments to our customers, as long as we, you know, can make the financial -- the financials work to keep us from going upside down, we do anything we can to make sure that we do that, especially for reliability, and when we get to the point where the system is starting to have impacts and rolling blackouts are imminent.

You know, I'm going to primarily talk about Glen Canyon emergency assistance to California. Our other regions contribute to that too, of course. You're all probably familiar with the Sierra Nevada Region and Folsom and they're half in the CAISO, half out. But in the EIM also, so they interact with the markets during these, you

know, critical times in the summer on day-ahead and real time. The rest of WAPA outside of California usually interacts in the real-time markets when things are under emergency conditions, excuse me, conditions. So Sierra Nevada provides assistance in that way through those markets.

Our Desert Southwest region, which controls Hoover Dam and the Parker Davis project, they typically don't have the resources to participate when we have emergencies, but there are times such as last year when they can turn off pumps and free up some energy. And so they were able to do that somewhat last year. But Glen Canyon in the Colorado River Storage Project region of WAPA is -- has a long historical relationship with California, particularly the California ISO and the California entity that existed back in 2000, and that's kind of where it started.

The first time Glen Canyon was ramped up -- ramped up to provide emergency energy was back in the 2000 crisis. And since then, we've been making a lot of preparations to do that. And in 2016, we made a very strong effort. You know, I think at the time there was the gas storage facility that was making people nervous in the west, and we decided that we were going to make sure that we could make this happen in real-time because it does get

complicated. So we worked with the ISO, we worked with the Reliability coordinator at the time, with the BAs, to set up a system where Glen Canyon could ramp up and provide energy to California during those really bad times. And you know, we're -- we can't just generate out of Glen Canyon without being under these conditions. We have -- we run within a narrow bandwidth on Glen Canyon because it's emptying or releasing into the Grand Canyon. So there are lots of environmental restrictions, Record of Decision, and we have to follow that, unless there's an emergency and it's a true bona fide emergency.

So this only happens on the fly when these conditions are met. But, you know, there are several conditions, all non-firm energy sales have been terminated in the CAISO, interruptible loads have been interrupted. Things of that nature. We have a list of conditions that have to be met, and when they are met, then we'll ramp up Glen Canyon. And we have, you know, a contract with the Bureau of Reclamation to make all this happen and go outside those environmental limits during these emergencies.

And so there's a lot of coordination, like I said. You know, these days there's two Reliability coordinators. There are several BAs. We have to buy transmission to get across a couple of these different

transmission systems and get the energy into the CAISO market. And typically at the LMP prices, how we've done it. Now, we would provide energy, emergency energy to any BA in the west, and it's on a first come, first serve basis, so we, you know, it's open to all, but whoever calls on it first, obviously, is going to get that.

You know, and to talk a little bit about some of these questions. You know, we don't always have energy. You know, it's kind of on, if the CAISO calls us and asks for emergency energy, we have to look and see, you know, what kind of capacity we have available. As you know, we're in a drought. We've had loss of capacity from the elevation going down, loss of head on the lake. And so pretty much whatever we have will do, but you know, we can't ever guarantee that we'd have a certain amount. It all depends on the hour and the day. We don't really have any ability to shape anything. Again, it's what we have at the time.

You know, for the future outlook, you know, it's probably, it doesn't look like it's getting better for availability of our generation. All the data that we're looking at for water flows are getting worse. So, you know, we -- we'll do what we can while we have the water, and we do have to buy it back. You know, we buy energy for our customers when we use that water because it's a limited

fuel supply for us.

And as far as the regional coordinate -- coordination, we've managed to make it work. It's fairly cumbersome. You know, it would be easier if we were all, you know, in one market or in two markets that, you know, 4 RTOs that were, that had good SEAMs, 21 agreements across those boundaries. But I think -- I think that might make it -- make it easier in the long run.

And you know, I guess we're at the end here, so if we go to a question and answer session, I'd be glad to answer any questions anyone has.

MR. ROTHLEDER: Well, thank you, Tim, and thank you for -- to all the panelists. At this point, I think I'll turn it back to Heather or Commissioner Gunda.

COMMISSIONER GUNDA: Yeah. Thank you.

MS. RAITT: Commissioner, Go ahead.

COMMISSIONER GUNDA: Yeah. Thank you, Heather and just who all, that's really kind of important information. Thank you for sharing kind of your various perspectives. And Mark, thanks for setting up the presentation at the top. I think it was very informative to kind of set the context for this conversation. I'm sure the Commissioners will have a lot of questions here. I just want to kick it off by kind of a couple of questions that are connected to any of the members that might want to

take this on. So I think, one, is this transitional, right? This kind of trends that we are watching in terms of imports. I mean, the whole west is kind of moving towards a decarbonized future and hence there is retirements and such happening, but also the electrification goals are going on. You know, the trends towards imports right now, are we -- are we going to continue to trend downward as we move forward. How do we think about that? So I just want to get your high-level context, high level thinking on how should we think about imports moving forward, especially in Resource Planning?

MR. ROTHLEDER: Well, this is Mark, and I'll weigh in first and then I'll let others chime in. But I think our, I think there will be still a trend of broadening range of import patterns. There will be times where we will be a net exporter. But I think for those hottest days, highest load periods, while the supply and demand changes are transitional, we are going to still remain reliant on a fair amount of imports. I think the challenge is, is the availability of that supply feeding those imports is uncertain now, and that's as a result of the broader transformational changes that going on across the west. And that's why I feel, at least a level of coordination that if that doesn't take place today, in terms of supply, transmission, and coordination, is really

necessary to ensure that we're correctly making assumptions about the availability of that supply and transmission going forward. Because I worry that without that coordination, and if assumptions are wrong, it has real consequences in being able to meet the demand.

COMMISSIONER GUNDA: Thank you, Mark. Any other panelists might want to comment on this? Okay. I don't see any. Just some questions from the dais.

PRESIDENT MAINZER: Commissioner Gunda, this is Elliot.

COMMISSIONER GUNDA: Go ahead.

PRESIDENT MAINZER: Yeah. I do have a question. Yeah. So really, really interesting panel. Really appreciate all the different perspectives. I was, a number of you spoke about the importance of diversity, kind of wide area diversity, across the western United States, the value of the EIM has been producing. There's a lot of talk about Resource Adequacy on the generation supply side. Where does Intraregional Transmission Infrastructure play into your visions as well, in terms of accessing new supply resources, diversification, strengthening the value of the Energy Imbalance Market, and potentially day-ahead environment?

How are you -- and can any of you guys offer any thinking about how you -- how you're thinking about those

issues, and specifically how those relate to California's resource future?

MR. OLSON: Elliot, I'll take a crack at part of that. I think that originally, whenever you talked about Regional Planning, it typically had this transmission type of focus to it. And while that's obviously an important component of Regional Planning, I think the addition of having Resource Planning, Supply Planning to go along with the transmission side is important. And it's quite simply put, you know, we as a western community or western footprint, should build wind resources where wind blows. We should then build the solar resources where sun shines. And I think that the transmission and the resource part of that have to go together.

So in those conversations, I like one of the comments I heard earlier when we started talking about pump storage and the high capital cost of a barrier to being able to start looking at those kinds of resources. But if we come together and plan for the resource side and pool resources, and when I say resource I'm talking dollar resources and needs, now all of a sudden that might become feasible. So I think Regional Planning has to be not only transmission, but also resources.

PRESIDENT MAINZER: Yeah. Thank you for that, Jon. I'm interested, any of the other panelists like to

take a shot at that? Love to hear some diversity in perspectives.

MR. RANZAL: Elliot, this is Scott from Pacific Gas and Electric. I would agree with what Jon said. I think with coordination of the entire Planning Process, both Transmission and Generation, at least at a minimum transparency and visibility to what is happening in the different sectors of the west is important so that, to Mark's point, we can have a clear understanding of, you know, where those resources are, how they are made available to others in times, whether they be normal operating conditions that exist inside of EIM, which has, you know, produced a lot of benefit and robustness for the market.

Or, in an emergency condition, you know, as a couple of the other panelists have talked about, where it certainly becomes more critical to have from an operational standpoint, a really good understanding of what the capabilities are, how people can utilize the existing resources and transmission to serve the entirety of what's necessary is really important. And I think the Planning Process can do a job in looking at that.

And then there's the operational things that also need to be put in place to ensure that it carries clearly from the Planning Process into day-to-day operational

activities without a disconnect or a misunderstanding that happens when it's most critical, which is one of those real-time operational events.

PRESIDENT MAINZER: Yeah. Thank you.

MS. PALMSTROM: Yeah. This is Marci. I'll just add onto that. I mean, I think in an ideal state, yeah, for sure, you would want those, you know, in parallel, that that type of planning. I think, you know, my concern is just how do we how do we manage costs for things like that to our customers? I mean, all those costs that are then passed down to customers. So how do we manage those costs and just make sure we're still making it affordable for customers across the board?

And I think just recognizing that, you know, and I'll say a majority of the, you know, vast majority of the RA that we're bringing in is on firm transmission. There is generation that can get into the state on non-firm transmission, and it does happen. And so I, recognizing that non-firm is still an important part of bringing resources into the state, right. So not, you know, I don't know that we can have a world where everything is firm. You know, how do we -- how do we make sure that there's enough there to bring everything we can in? And again, like everyone was saying, really plan for it. If we're building the resources, we have the right transmission to

bring it in.

PRESIDENT MAINZER: Yeah. Great perspectives. And I know we want to move to some other questions. Commissioner Gunda, I'll just say that I really look forward to really continuing to deepen the dialogue with the Energy Commission and the PUC and stakeholders and, you know, and the other load serving energies in California. These concepts of aggregation, the understandings of the changing supply resources, diversification, increasing transfer value, economic optimization, environmental optimization. I think these are just becoming increasingly pressing variables for the state, and all the work that you guys are doing in the background on permitting and siting and then, you know, deliverability, access. I just want to, I'd appreciate creating some space for that, increasing the amount of space for that conversation. So thank you, guys. Again, I'll stop. Let the next Commissioner go, please. Thank you.

COMMISSIONER GUNDA: Yeah. Elliot, thank you for kind of saying that. I mean, I couldn't have said that better. And I think this just prompts both this morning conversation and this afternoon. I think we're just beginning to it. And it could be multi day conversations. And then kind of, I think we really need to dig into these conversations, you know, maybe, you know, do roundtables or

whatever to think through how best we can develop, you know, assumptions as we -- as we plan for the future. And I think an important point that came up today is really the importance of the rest, but coordination. So really thankful for, you know, the panelists for making those points. But I'll go to Commissioner Douglas.

COMMISSIONER DOUGLAS: Yeah. Thank you, Commissioner Gunda. You know, just really a quick follow up question from the last couple comments. When you talk about improving Planning and the visibility of both Transmission and Resources, of course, we're making an effort to do that here as, between the Energy Commission, and the CPUC, and the ISO, and stakeholders, and you know, particularly around our SB100 goals, but I wanted to ask in what way you see the need to incorporate kind of the broader west wide perspectives and what are the ways that exist of doing so? Or are there any specific steps that you recommend that would really enhance that kind of effort?

MR. ROTHLEDER: Maybe I'll take a cut at it and then I'll let others weigh in. I do think there need -- there is a role for WECC in this. Unfortunately, WECC doesn't really drive the Planning out of it, but I think convening and gathering information that is then shareable and I think, like Scott said, transparent to

everybody, that we're using a common set of data and information that is robust and useful is important. And maybe at a -- at a regional level, is there -- is there regional resource efficiency and if not alerting and maybe driving the different parts of the region to what is, our solutions are necessary, a solutions to that.

COMMISSIONER DOUGLAS: Mm-hmm.

MR. ROTHLEDER: I think we can -- I think if they have a concerted convening power to bring different states, different parts of the region together, and I think that would be at least one aspect of it, in addition to our own coordination and outreach with each other and continued collaboration on these matters.

COMMISSIONER DOUGLAS: Yeah.

COMMISSIONER MCALLISTER: Can I maybe. Oh, sorry. I'll wait.

COMMISSIONER GUNDA: I just -- no, Commissioner, I just wanted to check if anybody else wanted to comment and then kind of pass it down to the --

COMMISSIONER MCALLISTER: Just sort of jumping into that breach. I guess I wanted to maybe, so that, Commissioner Douglas kind of asked much of the question that I -- that I was going to tee up. But, you know, we do have some regional advisory kind of institutions already. Right? We've got the Western Interstate Energy Board and

we've got the WIRAB, the Western Interconnection Regional Advisory Body. So we do have these kind of WECC wide entities that could sponsor a west wide or, you know, sort of provide a platform, at least with member resources for having some of this discussion. I guess I'm wondering, you know to Commissioner Douglas's question, are there, one are needs for sort of that convening kind of beyond California out there to try to get a handle on this? And would those be potential platforms, say to WIRAB or something, you know, sponsoring a research project or something like that? Would that be, you know, helpful?

MR. ROTHLEDER: In my opinion, I think it would be, and I think we also have to be aware that there are organizations forming, collaborations forming, north of power pool resource adequacy efforts. So there's new bodies and structures that are starting to look at broader regional Resource Adequacy, bring them into a discussion, whether it be under WIRAB or whatever I think would be really productive.

COMMISSIONER MCALLISTER: Great.

MS. PALMSTROM: Yeah. I just agree with that. I mean, and you know, I think certainly the load serving entities having visibility to those planning efforts and those discussions. So it's certainly one thing for the Balancing Authorities to be able to coordinate and

communicate, you know, on the demand and the need and the supply. But to the extent you have, you know, large, you know, Ls like Edison, and PG&E, and others, you know, that have big loads to serve and big supplies to gain in order to meet that load, it would be helpful to know, like what could our role be in that communication? Like what could our, you know, how could we participate to have that visibility, to be able to contribute early on in the process, you know, as opposed to trying to kind of play catch up? I guess.

MR. ROTHLEDER: Mm-hmm.

MR. MCALLISTER: Great point. That's a great point. So a formal process with more involvement early on, from various stakeholders.

MS. PALMSTROM: Yeah, in fact --

COMMISSIONER GUNDA: Commissioner, thanks. Yeah. Sorry, Marci. Please, please finish your thought.

MS. PALMSTROM: No, that's OK. I was just going to say, I think that, you know, the earlier on we can get involved and the market involved, I mean, you get everybody then at the process at the forefront, and so we're all kind of working toward the same solution. I think the market transitions more quickly that way.

COMMISSIONER GUNDA: So yeah. I just want to go back to Commissioner McAllister and Commissioner Douglas,

if you have any follow up questions. If not I'll go to Commissioner Rechtschaffen and then Guzman Aceves.

UNKNOWN SPEAKER: [Background voices].

Yeah, I think somebody's voice is cutting in, so I'll go to Commissioner Rechtschaffen.

COMMISSIONER RECHTSCHAFFEN: Somebody doesn't want me to talk Commissioner Gunda because you put on the noise so that nobody could hear me. I know that you.

I have -- I have two relatively straightforward questions. One, the first is from Marci. And I think I heard you say at the start that you're seeing a lot more outages this year than before, 5%. So I hope I heard that correctly, and I want you to elaborate on that, what seeing and why we're seeing it. And then I have a question for Tim, a factual question after that, Commissioner Gunda.

MS. PALMSTROM: Yeah. So we -- I haven't dug into the reasons why we're seeing it. I think we could attribute it to a few things. You just, you have -- you do have more megawatts that are vulnerable to temperatures. We're in a drought condition right now. So you are seeing a lot of hydro facilities at reduced capacity contributing to outages. You know, when we're hitting these really, really high temperatures, your gas-fired units, you -- they just can't get to their max capacity. And so you ultimately have equipment failures and derates and other

things that happen. So I'm not -- I'm not -- we haven't dug into the details, you know, of exactly, you know, what particular. But those are two things that come to top of mind that, you know, we just weren't grappling with 110 degree weather in the L.A. Basin, you know, in previous years. So you just didn't have that level of ambient conditions to, you know, really kind of force some of these units, you know, offline.

COMMISSIONER RECHTSCHAFFEN: Scott, is PG&E seeing similar things? I just --

MR. RANZAL: Yeah. Yeah. And I would echo some of what Mark's just talking about. I would also think that, you know, some of the impacts related to Covid on completing work, calling in 2020. Did schedules get pushed into 2021 that may have been planned for 2020 and were not able to do it, execute on it, as a result of Covid restrictions or things like that. That may be also another contributing factor to think through. But as Marci mentioned, there's probably multiple contributing factors, but the reality is, is that that is -- that it's a true statement, the outage volume is certainly higher than it has been in the past.

COMMISSIONER RECHTSCHAFFEN: Thank you, and --

MS. PALMSTROM: It's --

COMMISSIONER RECHTSCHAFFEN: Go ahead, Marci.

MS. PALMSTROM: I could also -- I could also add, you know, we're also starting to see it, you mean normally we see facilities take outages in like the April timeframe and October time frame so that they can do maintenance to their facilities and be ready for the summer, you know. And we're seeing that there's just less opportunity because they're needed in those months. We're just having reduced supply. So I think you're seeing that these -- a lot of these projects and units are being -- are being pushed to their max to be able to contribute at times when they would normally be down for maintenance or other types of upgrades.

COMMISSIONER RECHTSCHAFFEN: Thank you. So from what the two of you have said, a little bit, some of it, a little bit may be Covid related, but a lot of it is climate weather related. [indiscernible] we're facing. Tim, I was going to ask if I could ask you, switch gear, about the use of the Glen Canyon unit, yeah, in emergencies. Is -- are you precluded, are you restricted by federal statute or otherwise for using it only when certain emergency conditions are met. Is there an ability to, or interest in loosening that? I don't know what the -- I don't know what kind of energy we're talking about here, what kind of capacity, how much is available. But I'm just wondering, are you -- what is the restriction that limits you to only

those emergency conditions?

MR. VIGIL: Those are our -- the Record of Decision. You know, it's tied to legislation, the Grand Canyon Protection Act is what set off the Environmental Impact Study that resulted in those restrictions on normal operations. Now, there are, you know we're, within the law there are exceptions. It's called the Emergency Exception Criteria, that describes it well. And that's what allows us to do this when all these conditions are met. That's why we're so serious about meeting all those conditions before we do it because we have to comply with the law.

As far as loosening any of those laws, that -- that's not very likely. You know, in fact, they could get more stringent over time, depending on the conditions below the dam, unfortunately.

COMMISSIONER RECHTSCHAFFEN: All right. Well, I can understand that. If part of it's feeding the Grand Canyon it's going to be heavily contested water that we're talking about. Thank you. That answers my question. Thanks very much.

MR. VIGIL: You bet.

COMMISSIONER GUNDA: Thank you, Tim. Commissioner Guzman Aceves, please. You're still muted on the screen.

COMMISSIONER GUZMAN ACEVES: Thank you. My

question also for the Munis, Steve and Jon. I know, you know, we recently for a couple of our proceedings, for a time limited, have increased our planning reserve margin. And I know that the ISO went through this exercise, obviously, and found a shortfall leading to the need for these authorities to do some of these CPMs, and I just wanted to understand from, you know, SMUD and LADWPs perspective, do you have an equivalent Planning Reserve Margin, or do you have a smaller margin because of different strategies that you use?

MR. OLSON: Thanks for the question, Commissioner. From a -- from SMUDs perspective, we generally follow the guidelines and the CPUC and that the IOUs are also following. So we have maintained 15% Planning Reserve Margins. We are considering whether to up that over the next year. I think the question for us is, as far as our renewable, penetration of renewables within our footprint, it's where we're probably comfortable at the 15% this moment. I think the question becomes, as we start or, restart, our portfolio starts to try to turn over and you have a higher density of local resources. I think that's when you have to consider going to those higher levels.

But I can tell you that all of the conversations internally are all about let's try to get to some industry

norms and follow along with what the general market is, and California best practices are. So we try to adhere to those.

MR. PRUETT: And Commissioner, I'm not certain, from my role in my company, exactly what the percentages are when we go into the longer term of, like Integrated Resource Plans. But I do know that in the 18 month lookahead timeframe, we try to be at least 20% above what we think our maximum conditions are going to be at all times.

COMMISSIONER GUZMAN ACEVES: Thank you. And Steven, a follow up question unrelated to you. In a earlier panel, we obviously heard about Hoover Dam and one of the questions I had was related to some feasibility studies you have been doing for pump storage that might be feasible there. And I think Mark said that that study turned out to be not cost effective, which is probably the case for many of these longer, heavier, and larger resources. But do you have a different perspective on that?

MR. PRUETT: Well, I really am a fan of pump storage. You know, L.A.'s had its Castaic Plant for quite a while now and has had a lot of time to optimize its use. And now with this big change coming with renewables and continuing to change and the loads being affected by not

just consumer growth or use, but also weather and things, a lot of moving parts here, that that long-term storage and that long-term reliable power that we can count on is increasingly valuable. And I don't know about the economics back in the day when Castaic was built, but it sure seems to me that the pump storage economics has to be looked at in terms of a very long-term payback, and also an immediate need to optimize the use of those variable energy resources and maintain reliability at the same time.

I don't have a lot of details on what the numbers panned out to be for the Hoover Pump Storage, but I do know that they did come in surprisingly high, and I was hoping they would come in, you know, something more reasonable. It just seems like it's such a obvious idea and you're just moving water up a hill. But I suspect the infrastructure and planning and, as was mentioned earlier, just the longer term payback becomes a difficult financial factor.

COMMISSIONER GUZMAN ACEVES: Thank you.

COMMISSIONER GUNDA: Thank you, Commissioner Guzman Aceves. I just wanted to say we still have another four minutes. I wanted to check with Commissioner Monahan, if you might have a question, or President Batjer.

COMMISSIONER MONAHAN: I don't. I just really appreciated the conversation and the dialogue.

COMMISSIONER GUNDA: Thank you, Commissioner.

Just want to check on the dais. Anybody else might have a question. I do have one quick follow up, but I want to see if anybody else have a question.

PRESIDENT BATJER: No. Commissioner Gunda, I don't. I thank my fellow Commissioners for the excellent questions they asked. So thank you.

COMMISSIONER GUNDA: Thank you, President Batjer. So then I just want to close up on one specific question. So as we think through Resource Planning and I want to bring it to the context of California for a minute. So as we think through especially Resource Planning, which is -- which is now kind of SB100 goal suggests, you know there is a need for potentially tripling, quadrupling, you know, depending on how we plan for reliability, the overall capacity on the grid between -- over the next 25 years, which is monumental in itself. But as we think through, you know, the Resource Planning in the next 5 years, 10 years, as we, you know, imports become an important point. You know, like you move 1,000 megawatts higher or lower, the resources needed on the grid are different than now what we need to procure, additional procurement.

So just wanted to get your sense on is, I mean, when you think about the historical nature of imports, I mean, is the last three years indicative of the next three years or five years? Are we, should we be planning, you

know, a little bit more conservatively on imports? I think, you know, I – it is a question that's like bothering me. How do we think about this? In the short-term we don't, I mean, there's a lot of questions on having collaboration's and then trying to have more data transparency and such, which I think, you know, could occur over the next two to three years in a robust fashion. But, you know, as we think through decisions today, how do we feel about thinking about imports over the next couple of years, at least? In your -- in your mindset?

MS. PALMSTROM: So I can start with that. You know my, it is my fear that the trend will continue if as long as we continue to see, you know, heat, high heat and high coincident demand across multiple states, everybody's fighting for the same thing. So if we're -- if we're going to continue with, you know, if the climate's going to continue throwing us, you know, the weather and the intensity that it has, my fear is that that trend will continue. Yes.

I mean, we have an increasing need to meet the net peak, which, you know, from my perspective, is the most critical times, you know, where we could really use imports onto the system. And you know, as we see solar come off, gas-fired for us is already on, and temperatures aren't dropping. So the only thing there is, to help with that,

is energy storage, which, you know, that's also a long-term vision. And, you know, I see that increasing tremendously over the future, in the future. But it's imports. I think our reliance on imports continues. So I think the big question is where is -- where is the supply? Where are we going to -- where are we going to tap into it and how can we all work together to make sure that we're using it when we need it?

MR. ROTHLEDER: Yeah. I think I agree with Marci in her assessment. Areas that used to be winter peaking or now summer peaking. That's a concern. The resources are retiring and appropriately so, and the mix of resources replacing them are a different set of resources and will have different profiles of availability that will affect import availability. So those trends, I think, will continue. This is not a -- the -- I think the end of the trend. I think this is the middle of the trend. And that's why I think we have to be more cognizant of, and aware of that availability of import, supply, and transmission to bring it here.

COMMISSIONER GUNDA: Thank you, Mark. I don't know if anybody else want to add anything from the panel.

MR. OLSON: The only thing I'll add and it's kind of echoing Marci's comment, is this is becoming a vicious game of musical chairs and it's a zero-sum game. And, you

know, we can move at the end of the day, there's only X amount of resources available in the west. Transparency would certainly help us understand exactly what we have. And you'd love to be able to turn to a simple calculation and just see what's out there. And I know that that sounds easier than, said than done, but we need to have that transparency. But right now we can move the, I guess if we're going to have rotating outages, we move it around the grid. But it's going to happen somewhere. And it's just this deficit of resources. You know, we have to address that, as an industry.

COMMISSIONER GUNDA: Thanks, Jon. Scott looks like you might have a comment.

MR. RANZAL: Yeah. I would -- I would just echo and agree with what the panelists and Mark have communicated already. It is -- it is a challenging time and I -- it's hard to answer the question of should we take a conservative approach? I guess the question I would ask there is what question am I trying to answer? Right. Am I trying to solve for tomorrow? Am I trying to solve for five years from now. The transparency will help. It will not solve the problem. And there will be generation and transmission needs that are going to be put on to actually address and answer or move forward towards answering these problems. But the sooner we get those lines of

communication open and working, the better information we get, the more comfortable we get with helping to define what is a planning answer, what is an operational answer. And those may be different for a little while.

If not -- dropped my headphone. I apologize. By different I mean trying to answer a little bit different questions, right? Do I add generation resources today, if you could invent a power plant right now, I don't think there's anybody on the panel that would say no, we don't need it. Right. I think it would be a great answer. Not as easy as we all know, whatever have --whatever kind of plant you're putting in place. So there's a lot of challenges in front of us. And I know that a lot of the folks are on the phone, as well as a lot of regulatory agencies are spending an enormous amount of time trying to solve these problems. And I think just opening up those discussions has, you know, raised the tension awareness and has helped people to start thinking through exactly the questions we're talking about. What will happen today and what do we need to do for the future, because they're both critical.

COMMISSIONER GUNDA: Yeah, well we’re right on time there, so I'm going to pass it back to Heather, but I just want to take a moment to thank all the panelists. Thank you so much for taking the time to discuss this. I

mean, it's really sobering. It's, I think, for all of us in this industry, I think, you know, there is, regardless of where we all fall in terms of specific priorities that might differ here and there, I know we're all pulling towards the same place. And I just appreciate each one of you, you know, in your own forums pushing this forward, but also bringing this collectively for the state, you know. And I think if we can solve this here, I think, you know, we can set a good example of both decarbonizing our state, but also, you know, for the broader rest of the country and potentially the planet. So thanks from the bottom of my heart for each of you, for your efforts to keeping the lights on and, you know, for all your thought leadership. Thank you. Put that back to Heather.

MS. RAITT: Great. Thank you, Commissioner. Thank you also, again, to Mark, for moderating and to all the panelists. So now we'll move on to, we have two presentations and the first one is on Demand Response and Reliability. And Tom Flynn, who's a principal at the Energy Commission's Energy Assessment Division will be presenting. So go ahead, Tom.

MR. FLYNN: Thank you, Heather, and thank you to those of you on the dais as well. Go to the next slide.

Thank you. So appreciate this opportunity to talk about some important work that we're about to embark

on relative to demand response. Wanted to cover four topic areas for you. One is, of course, this is a reliability workshop. So wanted to tie in or link demand response, the topic of this presentation, tie that in to its role and Reliability being part of the solution to help us maintain reliability. Second area I wanted to cover is a recent request from the Public Utilities Commission to the Energy Commission to launch a Stakeholder Working Group Process on demand response, specifically some issues associated with the supply side or Market Integrated demand response. Third area I want to talk about is the CEC's plan to satisfy that request. Our initial thinking on how to deliver on that. And then lastly, fourth area, wanted to tee up some questions, some topics that we want to engage with stakeholders on at the workshop that we're planning for the 19th, the afternoon of July 19, from 1:00 to 5:00 to formally kick off the CEC's work to respond to the PUC request and put some of our initial thoughts in the minds of stakeholders that plan to attend so that they can come primed and ready to help us work through some of those issues. Next slide, please.

So again, we're talking about supply side demand response. I have a couple slides here tying that into the reliability context. First, here is a simple diagram depicting a way of depicting demand response that is market

integrated or does participate in CAISO markets and is an important tool in terms of meeting the needs and maintaining reliability. The box on the left with the rounded corners is depicting the utility demand response programs, those that are not shown on supply plans, but are credit against the Resource Adequacy Requirements or obligations. In other words, the capacity of those demand response Programs is counted in a way that reduces the RA obligations or requirements of those LSEs.

And those utilities schedule those resources, or those demand response Resources into the ISO markets as one or both of a couple Market Participation Models that the ISO offers for demand response to participate in this market. Sorry about the acronyms. The RDRR is the Reliability Demand Response Resource, which is kind of an emergency product, and then PDR is Proxy Demand Resource, which is more of economic Demand response product. And then over on the right, the other bucket of resources that participate, Demand resources, that is, that participate in the ISO markets, are, of course those that are sometimes referred to as Supply Plan with DR resources. Those are the DR resources that are shown on Supply Plans of Resource Adequacy Supply Plans. And those are typically scheduled into the ISO markets by third party demand response providers as PDR Proxy Demand Resource. Next slide,

please.

So second of the two slides in the context of reliability, you know, over on the right, a very kind of simplistic depiction of a stack of resources available to maintain reliability. The point being here that demand response is a part of that Supply Stack that we rely on. And you know, when it comes to keeping the lights on, keeping the grid stable, maintaining reliability, obviously we all know that requires full use of every resource you have in that Supply Stack. In terms of some of the issues with respect -- with respect to demand response, there's you know, this is just a second point here to acknowledge that there are different perspectives on how we plan and account for demand response on the supply side in terms of capacity methods, performance metrics, that sort of thing. And so that's kind of a big area of the focus that we'll be undertaking in our engagement with stakeholders.

And then really the bottom line on reliability is, in this context here of demand response, demand response is an important resource. And we, you know, certainly get that it's very important as we embark on this effort, that we really need to collectively develop solutions that really unlock the benefits of demand response, both for consumers and also for the grid, also for reliability. Next slide, please.

So second of the four topic areas I wanted to talk about is the PUC's request of the Energy Commission. The, last month on the 25th, the Public Utilities Commission issued a Decision, publishing a Decision in their Resource Adequacy Proceeding. And the Decision they issued, for those who want the number, it's 21-06-029. The request for the Energy Commission to launch a stakeholder process, a Stakeholder Working Group Process to address some of these issues was contained in that Decision. And there is, you know, sort of broad descriptions contained within that request to the Energy Commission, but there's, and then in addition to that, there are very specific technical issues that the Utilities Commission is asking us to examine and address in the stakeholder process that we're about to launch.

But in terms of overview, I've listed, you know, on a kind of a summary level, three of the big ones, you know, that we are being asked to develop recommendations in these three areas. One is a more comprehensive and more consistent measurement and verification strategy for demand response. A potentially a new or improved methodology for determining the qualifying capacity of demand response, how we count it for, you know, in a planning construct, or in a planning sense, how do we count the capacity that demand response can deliver?

And then thirdly, to the extent the Decision requests that to the extent we are able, to develop a recommended qualifying capacity methodology for DR, that we apply that and develop, use that to develop or suggest some actual capacity values for demand response. And all of this for the 2023 Resource Adequacy Compliance year and beyond.

And lastly, we were given a deadline. The PUC's asking that we submit our recommendations back to them, no later than March 18th, 2022. Next slide, please.

So how are we going to satisfy that request? Here I just wanted to sort of preview, at a very high level, our initial planning and our initial thinking on how we're going to go about doing that. We decided to open a new docket at the Energy Commission on demand response that has now opened. And the number on that is docket number 21-dr-01. So that's now open. Its primary purpose is to serve as a place to build the record on our, you know, during our effort to develop these recommendations for the PUC. That's primarily the initial purpose of this demand response docket. And but then we also secondarily wanted to have a place to consider emerging issues beyond that, beyond the delivery of the work product to the PUC in March of next year. It gives us a place to consider emerging issues as well.

The next step that we plan to take to really kick this off is in a week and a half hold the first workshop in this Stakeholder Working Group Process that we're launching in response to the PUC request. So we'll hold a workshop on the afternoon of July 19th, as I mentioned. I want to get, plug that as many times as I can. We want to get lots of good participation there. And then at that workshop, we're planning to level-set. What the PUC's ask is get all the stakeholders on the same page in terms of an understanding in what the PUC's asking us to do.

And then secondly, build or propose a structure for actually responding to that. And that may involve working group processes. You know, this is a pretty compressed timeframe to develop our recommendations, so we're certainly trying to consider all structures that would enable us to generate parallel work streams and develop a high-quality product in a very short period of time.

So for the remainder of the year, beyond that first kickoff workshop on the 19th, we're anticipating likely many working group meetings, you know, technical subcommittee type meetings where people really roll up their sleeves and get to work and they'll probably occur at a very rapid pace as we'll need to meet very frequently to work through the issues and develop those recommendations.

Thirdly, we're thinking towards the end of the year of bringing this back into an IEPR context, potentially bring this back to an IEPR workshop towards the end of the year, maybe December, you know, to be determined when that would actually occur. But we would like very much to bring back our progress at that point, to the IEPR, and get that, kind of recap where we are and get that into the IEPR record.

And then the fourth point here is acknowledging that the due date for responding to the PUC is by the middle of March of next year. We want to take advantage of -- full advantage of all the time we have to develop a high-quality deliverability product here. So we're assuming if we make good progress through the end of this year, that we'll then be able to turn to the early months of next year, January and February, to actually draft up our recommendations and then submit those to the PUC in March. Next slide, please.

So this is really the last slide. The fourth topic area I wanted to talk about, and that is, again, to, you know, sort of pose some questions, tee up some topics, if you will, for that workshop. We want stakeholders to come prepared to help us make some decisions that day in terms of process, structure, schedule, expectations, work plans. We really don't want to leave that workshop until

we've put together a nice, tight structure for how this process is going to work, potentially setting up work groups, naming working group leads, setting expectations for those work groups, and the first states that one or more of those will meet and really, you know, make clear that that workshop is a place where we intend to all roll up our sleeves and really get to work.

So we're hoping that stakeholders will come to that workshop with their perspectives about how to structure our stakeholder process to respond to the PUC's request. We'll certainly, CEC staff, will certainly come there with some firm ideas and proposals on how to do that, but we really want to engage in a really productive discussion, conversation with, and dialogue with stakeholders on that day so that when we come out of that workshop, we have a very firm plan in place, scheduled meetings, due dates, potentially further workshops, occasionally, to track our progress and drive towards a set of, a good strong set of recommendations to submit to the PUC in March of next year. Next slide.

So, again, thank you for the opportunity to introduce here, in this reliability context, some work on DR that we think is very important. And happy to take any questions.

COMMISSIONER GUNDA: Tom, just -- President

Batjer, please. Please, go ahead. Please.

PRESIDENT BATJER: Thank you. I just wanted to thank Tom for the presentation. It was -- it was great to see the full layout of how you guys are tackling our request. So really appreciate that and appreciate that timeframes are being met.

COMMISSIONER GUNDA: Thank you, President Batjer. I think, you know, I was going to share the same spirit, which is, and I just wanted to thank specifically Simon Baker, Rob, you know, staff from CPUC who have been incredible in developing the collaboration on how to think about DR, and also conversations with CAISO to date, and all the stakeholders on the DRPs. I mean the two roundtables we held earlier this year to get their thoughts. And I'm just glad to see the responsiveness from CAISO on tackling this year's summer account, the baseline accounting, and then, you know, just looking forward to continuing the conversation on this.

So just thankful to the entire team, and as usual, thanks to Tom for his very diligent and then thoughtful work here.

MR. FLYNN: You're welcome. Thank you.

COMMISSIONER GUNDA: Commissioner Guzman Aceves, I don't know if you turned on your camera, if you wanted to see anything or.

Commissioner Monahan, or Commissioner McAllister.

COMMISSIONER MCALLISTER: Just want to thank Tom and express my excitement to work with you on this, Commissioner Gunda, and just to rope it back into the IEPR, you know, wrangle it back into the IEPR towards the end of the year and create something solid and lasting. We've got -- I think we have the team in place to do that. So it's going to be good.

COMMISSIONER GUNDA: I feel like we need -- we need to grow our staff by 150% for the next couple of years. We need a better PRM for our staff. It's just so hard working. The entire CPUC, CEC, and CAISO staff. It's been a marathon since last August, and I just want to take this moment to just thank all the staff across the three agencies for the incredible work because so many different domains and aspects. So thanks. Thanks all. I'll give it back to Heather.

MS. RAITT: All right. Thank you, Tom. Thank you, Commissioner. So our next speaker is Mark Kootstra and he's going to talk about multi-year Reliability. And he also, with him is Nick Fugate, who's the lead forecaster at the Energy Commission, and he's -- so Nick's available to help with any questions. And then Mark Koostra is the supervisor of Planning and Modeling at Energy Commission in the Energy Assessments Division. So go ahead, Mark.

Thanks so much.

MR. KOOSTRA: Thank you, Heather. Good afternoon, Commissioners and members of the dais. Today we're going to talk about the scope, inputs, and assumptions. Mostly it's phrased as input questions that we have for folks, which gives some insight into what we're looking at doing, but we're still pretty open to some of these things. We have the basic methodology down pretty solid, we think, but we want to get some input. So we're looking at an analysis that's driven in large part by the CPUC Decision to order procurement for 11,500 megawatts of net qualified capacity by 2026. And specifically, that capacity without any natural gas capacity in there.

Our analysis that we're looking at is really going to try to answer two questions. The first is if we need additional capacity to keep us beyond that recent order and the outstanding orders to get us to a loss of load expectation of less than one day of unserved energy, with unserved energy every 10 years. And if we do need capacity, really, how much is it? And assuming we do get some capacity needs; does incremental gas capacity improve reliability in a way that's more beneficial than preferred resources with the same NQC value. Next slide.

Our overall approach that we've been working with and building up over the past several months is very

dependent on publicly available data. We want to make sure that we can vet as much as we can and where we can't have publicly available data, we want to aggregate it up as much as we can. We've been working primarily with historic wind and solar shapes from CAL ISO subpoena data but aggregate it up so that it's impossible to tell what's from what. But we've been using six years of historic wind and six years of historic solar shapes and then having those separate but modeling all wind as one facility and all solar as another facility, which is the complexity that we're putting into a model that gets the same result as modeling everything all at once, or individual facilities.

We've have also been using 20 demand shapes based off of 20 weather years-worth of data that Nick and his team put together for us based off of the 2019 Demand Forecast and are working to update that to be consistent or based off of the 2020 Demand Forecast. And we're hoping to have that available and posted publicly in the relatively near term. It'll only be months, May through October, which is the focus of our study at this point.

We are also interested in adding some variability with hydro right now, and I'll talk about this later, we model hydro simply without any variability or probabilistic changes. But that's something we're considering. We pull these different variables together, and as you can see, we

get enough of a lot of possible combinations that we can run into, especially since we're not linking weather years for any variables at this point.

And then we draw against an essentially unlimited number of forced outage -- outages. Our goal with this right now is really to just look at, are the RA eligible resources able to provide the reliability that we need. Very similar to a supply stack, and that allows us to make a lot of simplifications in our assumptions and our modeling methods. And so it's probably good to start thinking, or to think about our modeling really as a stochastic supply stack that's run, or an hourly supply stack that's run for a full six months where we don't have to think about the PRM so much. The Planning Reserve Margin is really designed to cover outages, wind and solar uncertainty, those things, are built into it, demand uncertainty, as well as reserve margin, and we're accounting for those things directly in our modeling by building in a reserve margin, by building in uncertainty with wind and solar, and outages as well. The output that we're looking at is the loss of load expectation capacity shortfall if the loss of load expectation is above 0.1 and then characteristics of the outages if they do occur, such as wind, specific months and hours of the day. Next slide, please.

Once we determine whether or not there is a capacity shortfall through our modeling method, what we're going to start looking at, how to best meet that capacity shortfall. And really specifically, is gas capacity providing a benefit that preferred resources don't provide. For the sake of discussion, assume we end up with a 500 megawatt shortfall, what we'll expect to do is then incrementally add gas capacity, or combinations of preferred resources, or a combination of gas capacity and preferred resources in increments, say 100 megawatts, 200, 300, 400, to see how the reliability improves as you add that capacity in. Depending on how big of a shortfall we actually see, that'll dictate the size of our increment and how many combinations we can possibly look at. If we want to look at and say, you know what, gas capacity really adds a benefit for the first 100 megawatts, but then there's not as much of a benefit for the next 2, 3, 400 megawatts, let's filter in preferred resources and see if there's complimentary aspects for those, or if it really comes down to its NQC capacity. The NQC capacity, you know, it doesn't make a difference. Next slide.

Some specific questions we have on some of our core assumptions, starting off with some demand response. Right now we're looking at including about 2,200 megawatts of demand response in our analysis. And this is consistent

with the CPUC analysis that fed into the recent procurement decision. The trick is how you characterize demand response really makes a difference on how it can show up. As the study Tom's talking about before, is really going to show, unfortunately, our time frame is a little bit different. So we'd like to get some input, specific inputs we'd like from stakeholders is if there's a limit on dispatch for demand response that we really should be considering, number of hours in a year, month, day or consecutive hours, any kind of energy limitations. We're also curious if folks have ideas or recommendations for how we can model or should model demand response when called, if it increases energy consumption of other hours such as precooling buildings before a hot period.

And finally, should we be incorporating some uncertainty in DR into the model. This would be similar to a forced outage for a natural gas plant or something like that, where it may not show up the way we want, and we don't know what kind of uncertainty we should be capturing or if we should capture that at all. Next slide.

Turning to imports. We kind of looked at two different options for handling imports within our model because we're modeling very simplistically, we only look at the CAISO territory and only our resource adequacy resources, or plants, with NQC values or expected to have

NQC values. As a result, and imports are typically modeled, can be the modeled in a couple different ways, but it's generally a generic import number where we just say this amount can be delivered at any given time, or we add side by side to that some specific import. But on the net qualifying capacity list. So on the left is a table of the RA import showing that has been seen over the past six years, their maximum, minimum and average showings by month. You can see these vary, I will call it that specifically. That September numbers is a bit of an outlier compared to all the other values, but it's there, it showed up before. The other option on the left, you can see a 24-hour month average import graphic that shows the 10th, 25, 50th, 75th, and 90th quantile or quartile of, sorry, percentile of imports in August for the past three years. And this would be economic imports.

So we'd be interested if folks have a preference for which approach we take, if there should be some hybrid of that. I think it might be kind of excessive to put restrictions on the 12 o'clock hour. You know, similar to what we see in the net imports, because that's probably more associated with a lack of demand for imports at noon than it is, essentially, for lack of availability of imports. But we want to make those balances. Next slide.

In addition to just the general questions of how

we should be considering imports at -- and at what level, should we be looking at maximum import limit minimum, or somewhere in the middle, or even just something else. We would like to have some input on how imports should change over the steady horizon. Should we be seeing increased imports for RA, or decreased imports? So we want to be very aware of the discussion we had earlier this afternoon that imports may not show up in the way and how we expect in the future. But if we have some idea of what that may look like, that we can incorporate. And then also if we should have any uncertainty related to imports being incorporated in the model and if so, how? Next slide.

So for wind and solar resources and hydroelectric plants. Right now, as I mentioned before, modeling wind and solar from historic resource shapes and be linked to each, and not currently linked for weather years. If we wanted to link those for weather years, that's something we'd like some input on. To do that, we'd have to be able to extend the number of years we have beyond six, which means we need to shift towards some artificially generated solar wind shapes, such as the ones the CPUC has produced in the past and uses. That's an option whether or not we link over the years, but that's some input we'd like to have, like where we should go in terms of should we increase the number of distributions for wind and solar.

Additionally, how do we want to model hydroelectric? Right now, in our test cases, we've been modeling hydroelectric as just an NQC value with no restriction on generation up to that capacity, which means that a 10 megawatt hydro unit with an NQC value of 10 can operate at 10 megawatts 24/7 in those periods. There's obviously some errors with that, but is that something that we need to focus on and address, or should we just assume that hydro can show up at that NQC value in the hours of concern? That's the main goal at the moment. Or should we start moving towards historic average fixed shapes or some sort of distribution of historic profiles to account for uncertainty?

And again, if we do move towards historic profiles or even artificially generated profiles, should we be looking at linking weather years with wind and solar or even possibly demand. Next slide.

Forced outages is another really big assumption that goes into our model. So we've been tinkering with two different options for handling forced outages. Both use the forced outage rates that you see on the table right now, as well as the mean time to repair, which is the average time it takes for the forced outage to no longer be held on that plant. Applying these outages by each individual plant potentially captures more of the potential

chunkiness of some of those outages where you would see 1,000 megawatt plant out, when it is out as opposed to maybe a bit more of a smooth distribution when we try to do outages by the estimated standard unit size.

The way we use the standard unit size, so as for, say the thermal plant that are cogen. If there's approximately 29,000 megawatts of those types of resources in the model, or available to the model, we divided up into 290 100 megawatt units, which then allowed us to prepare a little bit more of a smooth shape potentially. On average, you see about, I think it was 21 of those units out at any given time, but that varies substantially up and down. This potentially allows us to capture better partial outages at plants in a way that our individual plant forced outage doesn't because it -- the plants are either out or not. But we'd like some feedback on that. If you go to the next slide.

One of the things that we'd like on that is really if we do move forward with the standard unit size, what's the appropriate standard unit size? And what should that be for each technology type. In general, for forced outages, we'd like to have information or thoughts on what forced outage rates should be used for each technology, what's the average duration we should use, as well as are we applying forced outages to all the technologies we need

to. Right now, the wind and Solar Shapes profiles, because we're using historic profiles, have outages, as well as curtailment already built into them. But we don't have any forced outages at the moment for batteries or hydro at this time.

And then also, should we be looking at more specific technology types? The forced outage profiles may be substantially different between peaking units and combined cycle units. And is that something that we need to account for explicitly, or can that be handled by some sort of averages? It's going to be a lot more easy to handle by some sort of average if they have the same mean time to be up again. But if both the forced outage rate and the mean downtime are different, that's where we need to start thinking about separating. That'll help in a substantial way. Next slide.

The last thing that we're really looking for input on is the straw proposal for a resource build. I want to be clear, this is a straw proposal and it's meant to facilitate discussion and comment. A couple of things to note with this is that we just assume that all wind and solar is paired with energy storage on a one for one basis, on a power capacity basis. That's in part because the marginal ELCC values for solar are, get really low there, about 2% going out to 2026, which means if you have 1,000

megawatts of NQC solar included in the model, you end up with 50, or you end up with about 50,000 megawatts of installed capacity, which just doesn't seem reasonable in the next five years.

And I also like to note that of the 2,500 megawatts of capacity specifically for the Diablo Canyon replacement, 1,000 megawatts of that is coming online in 2024, by these tables. So that we meet all the requirements, in essentially the most efficient way possible to minimize the total amount of resource build we're dealing with. Again, we want to do some more analysis on this. If you go to the next slide.

But some specific questions we'd like input on is. What's the right resource mix for this? For hybrid resources, what should the ratio be for energy storage generation capacity? Should it be different for wind and solar plants? And is there -- is it reasonable to expect significant capacity will come online prior to the required date? Otherwise we'll just assume that stuff comes on at the last possible minute if we can't find some way to be reasonable about those assumptions. If we go to the next slide.

Along with all the other comments for today, we are very interested in folks input by July 23rd, though I'm happy to get more input earlier. When you are putting

comments together, we'd really appreciate any opportunity you have to present, or to include sources, rationale, and numbers in your response and that will help us incorporate and analyze what you're suggesting faster. It allows to incorporate, where possible, in this effort rather than a future effort. And please identify any of the things we need to consider. We are hoping to release the final analysis in September this year. So we're definitely going in earnest and we're eager to get started.

With that, I'm happy to answer any questions you might have.

COMMISSIONER GUNDA: Thank you, Mark, for the presentation. I think, you know, I've been following this carefully with you, so I would really want to reserve some time for other Commissioners who might have questions and I'll come back at the end. So looking if anybody wants to jump in here.

PRESIDENT BATJER: I just got a little distracted. I got a little distracted because we had an earthquake during your presentation. So.

MR. KOOTSTRA: It was a little distracting on my end as well.

PRESIDENT BATJER: So you felt -- you felt it as well, Mark? I don't know where you are, but.

MR. KOOTSTRA: I didn't -- I'm a little north of

Sacramento. I didn't really feel it but the background chat that we have for administrative stuff just kind of lit up and that was a little like. My wife and kid also talking in the background.

COMMISSIONER MONAHAN: That's impressive, Mark.

COMMISSIONER MCALLISTER: Yep.

PRESIDENT BATJER: So I got a little jittery there for a few minutes. So I'm sorry, Commissioner Gunda. I don't think I have any questions, although I was following closely until we started shaking.

COMMISSIONER GUNDA: So you know, President Batjer, I mean, this is -- is what an amazing or incredible time that we're just going through. I mean, like, you know, so the drought, the heat, you know, with Covid, you know, they're kind of so --

PRESIDENT BATJER: Then the cicadas came. The cicadas came out this year too. The 17-year cicadas came out.

COMMISSIONER GUNDA: Wow.

PRESIDENT BATJER: I forgot we have them on the west coast.

COMMISSIONER GUNDA: Wow. Just incredible. So I think, you know, I just want to recognize, again, the partnership between the two agencies, you know, for since last August, September timeframe, the three, the two

agencies, CPUC and CEC have been very well coordinated on the supply side analysis and because CAISO is a party to some of these topics at CPUC, you know, sometimes they're not directly engaged with some of our conversations. But to the extent that CAISO are able to, they also are a part of this conversation. So I think overall, I just want to commend, you know, the opportunity for the two agencies to work together really well on this. This is an important ask, and I'm proud of the CEC team for putting the time to develop the necessary framework on how we want to model. So kudos to Mark and his entire team. But I just want to see if any of the Commissioners have any questions here.

President Mainzer. Okay. I'll start with Commissioner Monahan please.

COMMISSIONER MONAHAN: Yeah. I, Mark, I was curious. That's a lot. You were running a lot of scenarios, as you pointed out. And I'm just curious about why so many because of the perturbations, I mean, there's going to be so much so like almost more than one can figure out how to navigate.

MR. KOOTSTRA: Yeah. So we've been running it probabilistically. So we're looking at aggregated results. So we've been using PLEXOS, which is our modeling software, to randomly select the draws on each of those variables and the forced outages. And so we've been primarily focused on

a very limited number of outputs, which we can process in an aggregated fashion. So we're not looking at, I think the last set of test runs we were doing was 20,000 samples. We're not looking at each sample. We just, we can't. We're using some computer code to process it and pull out what we need, but that limits what we can look at in detail. But that's some of the analysis we need to do is to do smaller sets where we can look at some of the behavior more and then go back to the bigger stuff as well.

COMMISSIONER MONAHAN: When you do sort of, you know, worst case, best case, does that -- is that part of the modeling. Would you run a worst-case scenario?

MR. KOOTSTRA: Right. Yeah. So we don't -- we can run a worst-case scenario, what we hardwire and say, you know what, imports are at the minimum. Or we get no imports this year, let's see what happens. We can do that type of thing, but we're intentionally trying to capture the probability or the likelihood of events across the board, which means we aren't intentionally going through and saying, let's pick the worst solar shape, let's pick the worst wind shape, let's pick the worst forced outage. We want to look at it more as a probability because all those things together are going to behave differently than each one individually.

So we aren't necessarily looking at the worst

case within that; we'd be setting up our overall scenario to look at a worst case. And that may mean that we back out some of the randomness that we introduce, but so far, we haven't intentionally backed out randomness to get at worst possible cases is where it is. Because then that doesn't always make sense when we're looking at a probabilistic output.

COMMISSIONER GUNDA: Thank you, Mark. I don't know. Commissioner Rechtschaffen, did you need to go?

COMMISSIONER RECHTSCHAFFEN: Yes. I just wanted to thank you, Commissioner Gunda and Mark and his team for taking on this. And now it's going to be extraordinarily helpful to the work we're doing in the Integrated Resource Planning and our other procurement effort. I just want to express my deep appreciation for what you're doing.

COMMISSIONER GUNDA: Commissioner Rechtschaffen, you know we know. I mean I want to make sure that I'm making you proud. For those of you who do not follow that, that's an inside joke. But going, I don't know who else want to comment. President Mainzer, it looks like you want to comment.

PRESIDENT MAINZER: Yeah, just really quickly. I was going to say, Mark, you asked a lot of questions. I don't know whether those are -- those are questions that you, as the team are grappling with, or questions that you

actually wanted guidance on. I think my days of being able to provide you with technical guidance to those questions are long past, but certainly to the extent which our teams are available to provide you any insights, any assumptions, to sort, you know, kind of get the cleanest look, that gives its most insight, feel free to reach out to my crew and happy to support in any way we can.

MR. KOOTSTRA: Thank you. To be clear, we are interested in stakeholder feedback on those things. These are all questions we're grappling with. But we realize, especially when you get to like a resource build, we may be able to optimize for some things and make sure we're checking out some stuff. But that doesn't mean it's going to show up in the real world that way. And we'd like to incorporate as much stakeholder feedback as we can, recognizing the limited timeframe.

PRESIDENT MAINZER: Super. Thank you.

COMMISISONER GUNDA: Yeah. President Mainzer, just on the one, I would really appreciate CAISO, you know, being able to provide your feedback, and as a -- as a way just kind of asking the entire stakeholders who are attending, in attendance today, to just, we would really appreciate your input on this, on these questions. So. I don't know if we have any other questions from the dais. Commissioner Guzman Aceves, I'm just looking at you now.

Just looked like it. Great. So I think for me, I'll just say thanks to both you, Mark and Tom, for the presentations and the continued collaboration between the two agencies and just pass it back to Heather.

MS. RAITT: Great. Thank you, Commissioner, and thank you Mark, again. And thank you, Tom. So we don't have any questions from attendees from Q&A so we can just go straight to public comment. And RoseMary Avalos from the Public Advisor's Office is here, and she can moderate those for us. So go ahead, RoseMary. Thank you.

MS. AVALOS: Thank you, Heather. Okay. I'll go ahead and call on folks with the raised hand in Zoom. And please state your first and last name, and could you please spell it also for the record. And let's see here also, if you -- if you have an affiliation, please name the affiliation as well. And also do not use a speakerphone feature when talking, because we may not be able to hear you clearly. I'll go ahead and call on Issam Najm. You may speak now. And you may need to unmute on your end when you're ready.

Mr. NAJM: Okay. Thank you.

MS. AVALOS: Go ahead.

Mr. NAJM: Thank you. My name is Issam Najm. That's I-S-S-A-M, N-A-J-M and I'm a resident of Los Angeles. Commissioner McAllister made it a point to ask

for public input on the reliability discussion, and I would like to provide comment on that, if possible. For any operation, the goal of increasing supply reliability is in direct conflict with the goal of lowering operating cost. If an entity has a primary goal of lowering cost, then it will be forever resistant to ensuring supply reliability to the level they should. And the reason is simple. Raising reserve margin costs more money and does not generate income. You can hear the difference between the points emphasized by Southern California Edison and PG&E's representatives in the panel this afternoon about their cost centric focus, and the points emphasized by LADWP and SMUD about their operational strategies of maintaining reliability and raising reserve margins.

My suggestion is to make a genuine effort to take a closer look at the internal drivers at a public power agency, and at a minimum find a way to require it from the private power companies. But as long as power utility has the operational model that prioritizes cost over reliability, you cannot achieve the goals you have set for the state. This will require a cultural change at the CPUC, and I hope the Commission will consider this seriously. Thank you for the time.

MS. AVALOS: Thank you. The next commenter is John White. Just a moment here. And again, please state

your name, and spell your first and last name and speak of any affiliation you may have. Okay. Go ahead, John. You may need to unmute. Okay. There you go.

MR. WHITE: Thank you very much. And again, thanks to all the Commissioners for your participation today. It's really good to have these kind of joint meetings and discuss and debate and to get data on what's going on. We are very much encouraged by this examination of the forced outage rates on the gas side. And the -- what we think it tells us from what we've seen and what we already know, is that we're using the oldest dirtiest gas lines to keep the lights on, but that's causing other impacts, including price spikes on gas that flow through the electric system. If you look at the price of the City Gate or the Burner Tech Gas during the flex alerts, it's clear how expensive this strategy is.

At the same time, we have a mind set about resource adequacy and reliability that makes the alternative resources all have to look like and act like a gas plant in order to get paid. And in fact what we need are a series of attributes, that the system needs, over a cost many hours of the day, not just at the net peak. And the ability, particularly of hybrid resources where you have solar and storage often occupying the same near site and the same transmission, is an opportunity to take

advantage of these technologies. And we think once we get experience with them, we will see that there may be greater benefits to the resources in combination than the resources individually. So we need the PUC to have a holistic examination of the attributes and the ability of different combinations of resources to meet those attributes.

We know that we're going to have to see the performance in the field, that the ISO is going to have to know that they can count on these resources, but we need to get started and get experience with them. So we're hopeful that in the upcoming procurement, as well as the analysis that the CEC is doing on behalf of the PUC, will gain some new insights into the value, particularly of demand response. You know, it's unfortunate that we have less demand response today than we had five years ago, by a significant degree. And I, part of that comes from the sort of reluctance to pay for the demand response and the idea that we're somehow subsidizing customers to do demand response. But if you look up what the value of that demand response is and what it enables in terms of savings, particularly in terms of gas and promoting more stable reliability.

We've got to get good at demand response and flexible load because they're going to be increasingly important, both in terms of the type conditions we face

across the west, but also as we move to decarbonize, flexible load, and demand response. They're going to be really important tools in the toolbox, so we need to expand our understanding and get some experience. Thank you very much.

MS. AVALOS: Thank you. Now I'd like to move on to phone users. Just a reminder to dial *9 to raise your hand. I'll give a few seconds to see if anyone that is using the phone, would like to raise their hand and make a comment.

Okay. Seeing there are no raised hands, that completes public comment. And I'll turn to Commissioner McAllister.

COMMISSIONER MCALLISTER: I'll leave the close out to Commissioner Gunda who's actually here for the session today. So thank you, Rosemary. We really appreciate your help.

COMMISSIONER GUNDA: Yeah. Thank you, Commissioner McAllister. Just wanted to say just a couple of things. So first of all, thanks to all the Commissioners for being here as well as, you know, Elliot, for being here through the entire day to hear this discussion. And I know we are all kind of hearing this together to advance some of the core areas that we're all interested in.

I just want to note that the staff that put together this workshop are the same staff that has worked on reliability issues two weeks ago, and the same staff that are writing reports for the summer reliability. It has been a monumental task for a lot of the staff, both at CEC, CPUC, and CAISO. Just want to take one more time to recognize all of their efforts without whom any of this is possible. So thank you to the entire three agency staff on this on these issues.

I do want to specifically note a couple of staff members from CEC, Aleecia from, Aleecia Gutierrez, the deputy for the Assessments Division, and also David Erne, who is the Supply Office Manager, who has just -- we have been fortunate to have him in the -- in the Assessments Division and really doing a wonderful job pulling all this together. And as usual, to the IEPR team. Heather, I don't know how you do it. So thank you to you and the entire IEPR team for kind of making this happen.

So with that, I really would like to invite other, you know, Commissioners on the dais to just to share your – share your thoughts before we close today.

PRESIDENT MAINZER: I think you said it beautifully, Commissioner, thank you for the engagement this afternoon. I really appreciate it and I share your sentiments about all the incredible hard work of staff and

all involved. Thank you.

COMMISSIONER GUNDA: President Batjer.

PRESIDENT BATJER: I add my thanks and that of the CPUC too. These workshops are so important, and they do take an awful lot of work to put on. Lots of really good information, both this morning and this afternoon, some of it very challenging and very challenging. And it shows that we have a lot of work ahead of us and some of it is right in front of us, not far away. So I think we're well underway. But this is a lot of information that we need to digest, all of us together, working closely as we have been. So thanks to the CPUC staff, the CEC staff, and CAISO. Thank you all.

COMMISSIONER GUNDA: Thank you, President Batjer. I don't know if any other Commissioners want to comment. I don't see any.

So with that, I will pass it back to Heather. I think we are done for the day. Thank you.

MS. RAITT: Yep. We're done, and I'll just invite everybody to join again tomorrow morning at 10:00 for the second day. And our third session will be on Gas Reliability and Polar Vortex Impacts and Implications. And so thank you, everybody, so much for the day. And we'll see you tomorrow.

(Whereupon the Joint Agency Workshop adjourned at 4:17 p. m.)

CERTIFICATE OF REPORTER

I do hereby certify that the testimony in the foregoing hearing was taken at the time and place therein stated; that the testimony of said witnesses were reported by me, a certified electronic court reporter and a disinterested person, and was under my supervision thereafter transcribed into typewriting.

And I further certify that I am not of counsel or attorney for either or any of the parties to said hearing nor in any way interested in the outcome of the cause named in said caption.

IN WITNESS WHEREOF, I have hereunto set my hand this 8th day of October, 2021.

MARTHA L. NELSON, CERT**367

CERTIFICATE OF TRANSCRIBER

I do hereby certify that the testimony in the foregoing hearing was taken at the time and place therein stated; that the testimony of said witnesses were transcribed by me, a certified transcriber and a disinterested person, and was under my supervision thereafter transcribed into typewriting.

And I further certify that I am not of counsel or attorney for either or any of the parties to said hearing nor in any way interested in the outcome of the cause named in said caption.

I certify that the foregoing is a correct transcript, to the best of my ability, from the electronic sound recording of the proceedings in the above-entitled matter.

MARTHA L. NELSON, CERT**367

October 8, 2021