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BEFORE THE

CALIFORNIA ENERGY COMMISSION

In the Matter of:	)	Docket No. 17-IEPR-11
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Report Update *IEPR)*	)	

2017 IEPR Joint Agency Workshop
Energy Reliability in Southern California

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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MONDAY, MAY 22, 2017
1:30 P.M.

Reported by:
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Katherine Ellis, Senator Henry Stern's Office

Staff Present

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Panelists Present

Rob Oglesby, Executive Director, CEC
Lana Wang, CEC
Matthew Layton, CEC
Neil Millar, CAISO
Garry Chinn, SCE
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Panelists Present (Continued)

Kenneth Silver, LADWP

Update from Southern California Gas

Rodger Schwecke, Southern California Gas

Independent Third-Party Review

Scott Backhaus, Los Alamos National Laboratory

Panel Discussion

Lana Wong, CEC
Tim O'Connor, Environmental Defense Fund
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P R O C E E D I N G S

1:30 P.M.

MS. RAITT: All right. Good morning, again. Welcome to today's IEPR Joint Agency Workshop on Energy Reliability in Southern California. I'm Heather Raitt, the Program Manager for the IEPR.

I'll just go over a few housekeeping items.

Please go ahead and turn your cellphone to silent or vibrate mode.

The restrooms are located down the hallway across the auditorium entrance.

The facility is normally closed on Mondays, so the onsite cafeteria is closed; but there are a number of nearby restaurants and there's a listing of nearby restaurants at the entrance to the auditorium, where we have some other materials for today's workshop.

For the speakers, I would like to request that you put your microphone on mute until you want to speak.

And, for today's workshop, please note that it is being broadcast through our WebEx conferencing system, so you should be aware that it is being recorded.

We'll post an audio recording on the Energy Commission's website in about a week and a written transcript in about a month.

We do have a very full agenda, so I would like to

remind our presenters to please stay within your allotted time.

There will be an opportunity for public comments at the end of the day, and we will limit those to three minutes.

And, for those on WebEx, you will also have an opportunity to comment; just go ahead and raise your hand to let our coordinator that you would like to make comments.

And then just a few words about the scope of today's workshop. The workshop will address reliability issues related to the two major disruptions in California's energy infrastructure.

The morning, we'll review issues related to the closure of San Onofre Nuclear Generating Station that closed in 2012, which was compounded with the planned phase out of once-through cooling facilities.

In the afternoon, we'll move on to review the energy reliability issues for this summer related to operational limitations of the Aliso Canyon Natural Gas Storage Facility.

Discussion of the role of gas storage facilities and natural gas infrastructure and the state's long-term greenhouse gas reduction strategies is not a topic of discussion for this workshop.

Those issues and long-term solutions for the reliability related to the Aliso Canyon Storage Facility are being addressed in the proceeding led by the CPUC.

So, just to recap, the afternoon will be, in regards to Aliso Canyon, is on summer reliability issues.

And one more comment is that written comments are welcome and they're due June 5th.

And, with that, I'll turn it over to Chair Weisenmiller for opening remarks.

Thanks.

CHAIR WEISENMILLER: Great. Thank you.

First, I'd like to thank the South Coast for letting us use their facility today, and, particularly, as Heather said, on a day when they're not even open.

But, anyway, we find this to be a very convenient location because, as you know, oftentimes when we come to Southern California, we bring down our audiovisual staff to try to get things set up and working. And it's always amazing how something goes wrong. And this one seems to be pretty flawless.

So, thank you in terms of the South Coast team, and I certainly again thank them for allowing us to use this facility.

As Heather said, in my tenure as Chair of the Energy Commission, we've had two critical pieces of

Southern California infrastructure fail. Both of them were not anticipated.

I mean, we'll start out with San Onofre. And, in fact, when it failed, much of the transmission system in Southern California was built around the assumption it was always going to keep operating. And, when that happened, we were directed by the Governor to put together an action plan and to basically deal with the situation we had.

And, in the case of San Onofre, we weren't quite sure how long it was going to be out, if it was going to come back, or when it was going to come back. But we worked pretty closely with the California Public Utilities Commission (CPUC) and the California Independent System Operator (Cal ISO) to really put together an action plan, you know. And, through whatever combination, so far, we're doing pretty well. And each year as we move forward, as we put -- you know, the various pieces of the action plan are more and more in place, we're more and more comfortable with where we're heading in that context.

Today's morning conversation, then, will be looking at San Onofre. It will be looking at basically the implementation status of the action plan. And, you know, I think we've been doing this every year now for -- I've lost track of the years we've done this. I suspect we probably will have one more event next year on this review; but,

literally, we're getting to a stage where it is pretty mature.

In the case of Aliso Canyon, again, when that failed, you know, and that's sort of a historic leak, you know, that there was a long period of time scrambling to deal with the leak. And, at this point, we're sort of in a situation, there are myriad proceedings trying to address different aspects of that.

You know, I think there's the CPUC, Division of Oil, Gas and Geothermal Resources (DOGGR) investigation on whether or not to allow reinjection and when. There is the CPUC investigation on long-term future of the facility.

This, again, is very focused on reliability this summer, mitigation measures. And we put in place a number of mitigation measures. I think there is about 20. And part of what we want to do this afternoon is see what worked, what didn't work, what we can do better, and also to figure out if there's any other actions we can take.

You know, I think, generally, the one thing I would say, particularly in both context, we really -- one of the things that's very important, we've reached out as part of both efforts to really encourage people in Southern California to adopt energy efficiency measures. I mean, it is, you know, talking about (light-emitting diode) LED lighting. There's a whole variety of options which you can

take in your hands and do which basically reduce the amount of power we need or the amount of gas we need. All of which help in this situation; and all of which, frankly, save you money, are good for the environment, and good for greenhouse gas.

So, it's certainly one of those things, if you've been thinking about doing it, the basic message is go out and do it now.

So, again, thanks for being here. We're looking forward to these discussions today.

Commissioner Randolph.

COMMISSIONER RANDOLPH: Thank you, Chairman Weisenmiller.

I am happy to be here on behalf of the PUC. Very interested to hear the update on (San Onofre)SONGS reliability issues. I mean, that provided for an unprecedented level of inter-agency coordination, which proved to be useful when it came to the Aliso Canyon incident and coordinating on issues related to that.

And, so, I'm looking forward to the detailed discussion of both.

I am the assigned Commissioner on the CPUC's long-term look at the viability of the Aliso Canyon Storage Facility. And, so, as both Chairman Weisenmiller and Heather noted, it's important to note that the summer

reliability issues we are talking about this afternoon are not the same as the long-term viability issues for the facility generally.

For instance, the summer reliability analysis explicitly doesn't talk about the cost associated with running the system without Aliso Canyon. And those will be issues that we'll be covering in that proceeding. That's just one of the examples of the differences between those two discussions.

The other interesting issue is that the analysis notes that we may have to depend a lot on energy coming from other areas to maintain summer reliability.

And, on May 3rd, there was a Stage 1 reliability emergency. And one of the issues noted in that was that imports that were expected, did not show up on the system.

And, so, as we go forward, it's important to understand why that occurred because it may be an important issue for looking at summer reliability issues this summer.

And, so, I'm looking forward to the detailed discussion this afternoon about the challenges that we face over the summer.

Thank you all for participating.

MS. RAITT: Okay. Thanks.

So, first, we'll have a presentation -- or a series of presentations on an update on reliability issues

associated with the San Onofre Nuclear Generation Station closure and phase out of once-through cooling.

The first presentation from the Energy Commission by Rob Oglesby, and then followed by Lana Wong and Matthew Layton.

MR. OGLESBY: Thank you.

This is Rob Oglesby, Executive Director of the California Energy Commission.

And I'm here today at this panel to talk about the latest evaluation on reliability and progress related to the Statewide Advisory Committee on Cooling Water Intake Structures, which roles off the tongue, and most people refer to it mostly as SACCWIS, which is what I will do.

The overview's been covered by previous speakers, and, as you observed, there have been a number of unusual events that cause us to give attention to reliability in this region. And, as part of that, my role is to report on the progress to implement -- and implications of implementing the one-through-cooling (OTC) policy adopted by the State Water Resources Control Board.

Now, the once-through-cooling policy established by SACCWIS, by the Water Board, created SACCWIS to keep an eye on the progress towards SACCWIS and take into account the impacts on reliability for the electrical system.

And, as a result, there has been a technical

advisory group and inter-agency coordination that includes many of the agencies that deal with energy and, as also, water and air.

And we do a review every year of the status and progress in order to advise the Water Board if a correction or adjustment is needed to be made in the schedule for the phase out of the once-through-cooling plants, once-through-cooling technology used at power plants.

So, progress to date has been impressive.

The blue line -- this is water use at the power facilities, and this is statewide. And the blue line, basically, is the decline in once-through-cooling-water use as projected in compliance with the schedule adopted by the Water Board originally.

The green line is the, basically, the projections, actual -- or projections of the design of the facilities as they've come to be because of plans put in place and because of retirements and such.

The red line is a line from the Environmental Protection Agency (EPA), which is the actual water use recorded historically. And you can see that we are, in actual practice, far ahead both the original and modified projections for the decline of once-through cooling.

So, this -- just quickly, this is our target area that we're talking about today. It's the Southern

California region. It, basically, has two local reliability areas: The Los Angeles Basin and the San Diego Basin.

One thing to draw your attention to is there an are number of energy resources in the Los Angeles Basin that are impacted by the once-through-cooling policy, San Onofre is highlighted, although it's down just for reference, and the Encina plant that we're going to talk about more today is one of the few resources that are available in the San Diego local reliability area. Excuse me.

So, as the once-through-cooling policy has been implemented, the challenge faced by the replacement of the once-through-cooling energy resources has fallen into a few tranches to achieve.

The first, of course, is preferred resources, which includes energy efficiency, demand response, distributed generation, and storage.

And then, second, basically, grid-support solutions, which include reactive power, including synchronous generators, and other strategies, as well as, transmission lines and grid upgrades.

And then, finally, non-once-through-cooling conventional generation.

These are some key power plants that are impacted

or will have an impact on reliability to varying degrees as a result of the once-through-cooling policy. One of the things I want to draw your attention to is that the existing, or initial capacity, on the left half of the chart is much higher than the replacement capacity. That reflects a number of things -- improvements in the grid -- but also the change in generation mix that is serving the Southern California region.

And, finally, the yellow highlight is the Encina plant, which I'm going to talk about in a moment, because that is one of the more significant developments and most recently with respect to the schedule on once-through-cooling phase out.

So, during the course of our review, since the regulation's been adopted, SACCWIS has been examining and tracking progress at all of the power plants along the coast, the once-through-cooling power plants. But, as a result, there are a few power plants that kind of elevate themselves to a watch list that are critical and more on -- with more pending measures that may have an ultimate impact on their phase out, and those are Alamitos, Huntington Beach, and the Encina/Carlsbad plants.

And the key is that we need to make sure that we have energy resources in place, both preferred, or, in some cases, the traditional power plants, before the plants can

be retired for the sake of reliability, of course.

Up until recently, SACCWIS has had no recommendations. This goes over the past several years. No recommendations for a change in course for any of the OTC compliance dates, until now. And, right now, we are recommending to the Water Board that they delay, defer, the compliance date by a year for the Encina plant.

I've got a couple of slides here that I don't really ask you to read, but what they are, are a chronology of the process that's gone through for the Carlsbad plant that would replace Encina. And it's been long history of both licensing procedures, as well as, legal challenges.

And the bottom-line takeaway from these two slides is after this long road of process, it has resulted in a delay on the commencement of construction for the Carlsbad Power Plant, which is to take the place of Encina.

So, Cal ISO relied on -- the analyses show that we still need energy resources under various scenarios and that some energy resource is needed at the Encina site, which would be to -- absent the Carlsbad site being in operation in the summer of 2018.

And, so, earlier this year, SACCWIS met with the Water Board at one of its proceedings and made a recommendation to defer the Encina OTC compliance date from December 31st, 2017, for one more year, December 31st,

2018, for the Units 2 and 5; 1 is already retired.

So, Cal ISO, CEC, and CPUC will continue to monitor the developments on the conventional generation preferred resources and transmission upgrades and will keep an eye to further compliance and the ability to comply with the schedule going forward.

There is still some other variables, which I think you'll hear about shortly, that have us keep an eye on the ball as we go forward and implement once-through cooling.

So, to continue this story, I'm going to turn the microphone over to Lana Wong.

MS. WONG: Okay. Hi, I'm Lana Wong with the Energy Commission.

A few years ago, we developed a tool called the Local Capacity Area Accounting Tool (LCAAT), and for the last couple of years, we've produced results for a base case and multiple sensitivities and scenarios. It's a low-resolution tool that allows us to look at annual local capacity requirements and resources in the ten-year planning horizon.

One of the key things that the tool does is it will calculate the surplus or deficits in the local capacity areas in the Southern California region. And, by looking at the annual results over this planning horizon,

we can see whether a surplus or deficit is persistent or temporary, which allows us to consider which contingency measures are appropriate.

This is an example of the output from the tool, which gives an illustrative example of a one-year delay of the Carlsbad plant in the San Diego sub-area. So, when you look at this, you can see that a one-year delay in Carlsbad coming online creates a deficit in a single year, that it's not persistent over time.

And, as we've heard from Mr. Oglesby, that SACCWIS has been pursuing a one-year OTC deferral to deal with this reliability issue.

And, so, in this year, we did not do an update to LCAAT, as we've done in the past couple of years, in part, because we are dealing with the near-term issues in this 2017 to 2018 time frame.

We'll hear later this morning about a potential delay of the Mesa Loop-in Transmission Project, which is further out in the 2020 to 2022 time frame.

So, we do plan to do an update of LCAAT in the next Integrated Energy Policy Report (IEPR) cycle, which will allow us to look at that project and any other issues that may surface.

Thank you.

MR. LAYTON: Good morning. This is Matthew

Layton. I'm with the California Energy Commission in the Siting Division, the Siting Transmission and Environmental Protection Division.

I'm here to talk a little bit about the conventional generation permitting that's going on in Southern California right now.

We looked a little further north and south of just the L.A. area just for some context.

The Pio Pico Energy Center that came online last fall, 300 megawatts of quick-starting simple cycles. They were commissioned in late 2016. They do rely on gas both from the north and the south. So, they are, I guess, ideally suited for Southern California.

You heard a lot about Carlsbad. We did finish the permitting of that earlier -- I guess in 2015. Construction has been delayed, but is currently underway. The tentative online date is October of 2018. And that does seem to conflict with the once-through cooling (OTC) date, the current OTC date, of December 31st, 2017.

The El Segundo Units 3 and 4 were scheduled for replacement. The permitting process made it all the way through, but the petition was withdrawn, I think last year. It was going to be a combination of simple cycle -- a couple of simple cycles and also a combined cycle. So, units 3 and 4 are both retired but one-half of unit 3 MW

boiler credits are already used. I guess it would be half of 3 and all of 4 MW boiler credits are still available in the boiler offset program. But, currently, there's no schedule for what is going to be done with those megawatts.

Alamitos was just completed. The review of the permitting was just completed. One thing to note is that there is a power purchase agreement for 640 megawatts. There's not a power purchase agreement for Phase 2. The 400 megawatts of four simple-cycle LMS100s, they are in pre-construction and their online date is June of 2020.

Huntington Beach is similar to Alamitos. It has a simple cycle -- excuse me -- combined cycle of 644 megawatts. It also has a Phase 2, which does not have a power purchase agreement, of 200 megawatts, two LMS100s. Again, the online date is June of 2020.

The OTC date for both Alamitos and Huntington is December 31st of 2020.

Redondo Beach, the boiler units 5 through 8, we're going through review. The proceedings have been suspended. The megawatts are, I guess, owned by AES. The boiler megawatts are owned by AES Corporation. And it's unknown what they're going to do with those megawatts at this point in time.

Inland, is not an OTC plant. This is a Pomona repower. AltaGas was proposing 100 megawatts one single

LMS100. The decision date is unknown. It seems to be going slower than anticipated. Again, how much demand there is for conventional generation I guess is unknown. It does not have a power purchase agreement at this time.

The Stanton Reliability Energy Center is also inland from here. I guess not from here, but near here. It is interesting because it is a -- two LMS6000s, two simple-cycle turbines, integrated with a battery. It's on a greenfield commercial site. It's in discovery. The proceeding is going slowly. The decision date is out in Quarter 3 of 2018. It does have a power purchase agreement.

Going up to Ventura County, the Puente Power Plant is a replacement of Mandalay 1 and 2, OTC units. We're still in the evidentiary phase. I think a decision is expected Quarter 4 of 2017. There is a power purchase agreement for the 262 megawatts.

Also in Ventura County, Calpine is proposing a peaker plant, five simple-cycle turbines. Each turbine would have a clutch and synchronous condenser. And there are also 2 -- 100 megawatts, 25 megawatts of battery, 100 megawatt hours of battery integrated onto the site. Again, it's in discovery, early in the decision process. The decision is expected Quarter 1 of 2018. It currently does not have a power purchase agreement.

Thank you.

MS. RAITT: Thank you.

Next is Neil Millar from the California Independent System Operator.

MR. MILLAR: Thank you very much.

Good morning. I'm Neil Millar with the Cal ISO. Pleasure to be here.

I'm going to walk through a bit of an overview of the various projects that were part of the original SONGS (San Onofre) mitigation, as well as, also meeting the needs of the retirement of the once-through-cooling generation.

I will try to avoid or minimize any duplication with Mr. Oglesby's presentation. There are a few points though I will try to put some additional emphasis on leading into the subsequent presentations.

So, first, just to kind of reset on this, the loss of SONGS, as well as, the retirement of other in-basin generation really created two different sets of reliability issues for us.

One, is that the in-basin generation addresses thermal flows into the area by reducing the need to import power from outside of the Basin or San Diego.

By reducing the flows, there's also a reduction in voltage support requirement in the basin itself.

And, thirdly, the generators themselves provide a

source of -- for the reactive power we do need.

So, when we've been looking at the reliability issues, it's always been a balance of thermal and voltage stability issues in managing reliability moving forward.

Now, just to reiterate what Mr. Oglesby said earlier, there is a significant reduction anticipated in gas-powered generation in the Basin and in San Diego, with less than half of the retiring generation that's forecast to retire being repowered. And that also accommodates the loss, of course, of the San Onofre Nuclear Generating Unit.

That's been made up through a combination of resources. But the key point I wanted to drive to here was the significant reduction in in-basin gas-powered generation that's anticipated.

Chairman Weisenmiller referred to earlier, the basket of solutions that were being explored through the various agencies, and it really did require firing on all cylinders to get a mitigation program in place. So, there's been a significant reliance on both resources, conventional and preferred resources, as well as dynamic support to provide that voltage control I was talking about, as well as a number of transmission projects that were helping with some voltage issues but also helping address thermal loading challenges.

Thank you.

The various mitigations working together -- now all of this analysis to this date on the long-term planning perspective has not been taking into account any gas limitations, gas access limitations, associated with Aliso Canyon or any of the other gas fields. At this point, we're still assuming business as usual in that regard. And we will be participating, of course, in the CPUC proceeding on the investigation into the Aliso Canyon situation. But that was not addressed in this material.

So, as we look at the various solutions moving forward, when we look at those solutions and the challenges that we've had to this point working collectively, these mitigations are the right mitigation. They are getting us to where we need to be.

Now, there are certain scheduling issues that are coming up that we're having to keep a close eye on. Mr. Oglesby has already touched on the Carlsbad Energy Center issues. The other two projects that we're keeping a close eye on working with the state agencies and with the utilities are the Mesa 500-kV Loop-in Project. This is a project targeting service in -- to be available for the summer of 2021, and it -- the current schedule from Southern California Edison looking at the various risks is shifting to March 2022.

Now, if we're unable to mitigate through any

other means, that could, in the worst case, result in a need for an OTC compliance date extension to cover the summer of 2021.

Now, it's too early to make that sort of decision. Edison is working with us and with others reviewing the schedule, the phasing, and the mitigation options available to try to avoid that sort of outcome.

The other project that we're keeping a close eye on is the San Diego Gas and Electric Sycamore-Penasquitos 230-kV Transmission Line Project. The approvals are in place. The current in-service date is in June of 201. And the project is needed for the summer of 2018. So, we are also looking at options around what could we do if there is a delay to that project.

Now, there isn't a delay into the higher temperature periods at this time, but we are wanting to keep our eye on that and consider options.

So, our path forward is to continue to work with utilities and state agencies to monitor several key transmission projects, in particular, Sycamore-Penasquitos and the Mesa Loop-in Project. We will also be taking on more study around the -- looking forward from a planning perspective on the availability and flow-rate issue for gas storage.

And I do just want to reiterate that our results

to this point on the longer-term planning basis have not started to take into account limitations on gas storage or delivery as we're going to be participating in the CPUC process where we hope to see a new normal be established.

So that's my presentation. Thank you very much.

MS. RAITT: Thank you.

Next is Garry Chinn from Southern California Edison.

MR. CHINN: Good morning.

I'll be presenting Southern California Edison's (SCE) transmission projects, the Mesa Loop-in and the Santiago Condensers.

So, the first one is Santiago Condensers. Since the SONGS retirement, Cal ISO approved this project back in the '13/'14 transmission plan, for a need for a dynamic reactive support in the area.

San Diego has about half of that capacity, actually, exactly half the capacity, 225 megavars, to be located at San Onofre substation.

SCE is to build the remaining half, the 225 megavars, at the Santiago substation, which is immediately kind of northwest of San Onofre.

The current status of that project. General Electric (GE) has been selected as the vendor for building that one at Santiago. Physical construction began last

year in August. And it's expected to have start-up and commissioning tests Quarter-3 of this year. So, it's currently on schedule to meet the end-of-year in-service date.

The next transmission project SCE is working on is the Mesa 500-kV Substation Project, also known as the Mesa Loop-in, since it is designed to loop in the 500-kV lines into the substation.

A little overview of the diagram.

All those dots are SCE substations, except for the ones to the south, which is San Diego.

About half of SCE's load is served by those blue dots on the diagram.

The predominant flow is kind of -- you have a desert towards the coast, so all those 500-kV lines basically bring a lot of power into those blue dots. And then those blue dots further transform the voltage down to serve about half of SCE's load in this service territory. It's primarily the Western L.A. Basin.

The green kind of power-plant-looking symbols are the OTC units and SONGS. Once those go away or are repowered to a lower capacity, it's a burden on the transmission system. And the Mesa is designed to enable another import route into the Western L.A. Basin by going to the north there at Mesa, which is currently a 230-kV

substation, expand it to 500-kV and loop in the Vincent/Mira Loma line.

Current status. We filed the Permit to Construct (PTC) back in 2015. The draft environmental impact report (EIR) was published the following year, followed by the CPUC approval in February of this year.

So, given all we know as of today, the operating date is currently March 2022; but SCE is investigating accelerating that schedule to a potentially earlier time frame.

So, there is a potential, as I assume was previously mentioned, a reliability gap in the summer of 2021.

The next slide has some descriptions of what the concerns are, but I would like to stick with the slide since it has a diagram here.

The reliability concern for 2021 is going to be the Serrano Corridor. The Serrano Corridor is those lines west of the Serrano Substation. If you look at the diagram, there's a red dot at Serrano, kind of the middle of the diagram there. That's the 500-kV substation.

Power flows westbound toward Barre and Villa Park and Lewis substations. Those 230 lines are what we call the Serrano Corridor. It's one of the corridors that kind of feeds the area.

So, the 230 lines, as well as the transformation at Serrano, is what we're going to label as the Serrano Corridor.

Based on the current planning assumptions, meaning the low forecast, available generation inside the Western L.A. Basin, if there is no 500/230 kV transformer banks at Mesa Substation, if Mesa is not able to complete by the summer of 2021, we're going to have bank overloads at Serrano. Meaning, that, without Mesa, the Serrano Corridor is going to load up and overload the transformation at Serrano Substation.

The caveat, I guess, for that analysis is that this is still four years out. There is some variability of where generation is going to be located outside the Western L.A. Basin, the location of renewables actually impacts this problem.

The second item is the forecasted load in the Western L.A. Basin, if that continues to go down or up, that's going to change the results.

Generation retirements in the Western L.A. Basin. I think Cal ISO had a slide that showed potential additional retirements in the Western L.A. Basin, so that's going to be another variable in trimming the magnitude of this problem.

The last one that I listed was Aliso Canyon.

That also will affect the gas availability in the Western L.A. Basin.

So, all those variables combined could change this outcome, either up and down, in terms of magnitude of overload on the Serrano Corridor.

So that covered that slide.

The last slide there is mitigation options that SCE is looking at in developing.

First of all, as design considerations, we're really focused on enabling the OTC retirement on the schedule date of 2020, so we're developing mitigations that cover the summer of 2021.

Second point, we do want to avoid load shed in the West L.A. Basin. It's considered a high-density urban-load area, so that's something else we want to avoid.

Last point there, we're trying to find low cost options, and that could be online by summer 2021.

The options being considered is -- One, is an OP, Operational Procedure. So, as of current assumptions, there's a potential to operate around the contingency. The critical contingency is N-1-1 condition, so we lose one transform bank at Serrano. We could take an action before the loss of the second bank. So, the critical problem is the loss of two banks and the last banks overloads at Serrano.

So, the operational procedure would manually open up the entire Serrano Corridor to push back on the flows to the remaining corridors in the Western L.A. Basin. Not the perfect solution because we are going to give up the corridor in its entirety and then redirect power to other corridors. That could be done manually after the initial contingency.

The second option is to wait for the second contingency. So, a remedial action scheme would register the first contingency; wait for the second contingency; after that one occurs, then open up the Serrano Corridor to reroute the power.

A little more equipment involved in that we had to install relays and maybe some telcommunication equipment.

The last option listed is potential upgrades in the corridor itself. Based on current assumptions, we don't see the corridor overloading now, but this is another back-up option in case some of those variables change and the Serrano Corridor actually starts to overload on lines themselves.

There is some potential to upgrade the terminal equipment. I think there is a potential for maybe a six-percent increase in the line rating, which was terminal equipment.

So, the -- some of the lines have limitations both on the conductors themselves and the terminal equipment. So, with some minor, I guess, within the substation modifications, we could gain a small percentage increase in terms of rating the lines.

So those are the options we're investigating. We'll probably finalize them this year and kind of present them to the ISO as part of this upcoming transmission planning process.

So, I think that's all I had.

MS. RAITT: Thank you.

So, next is Sergio Islas from the Southern California Edison.

MR. ISLAS: Thank you.

This morning, I am going to be sharing with you additional steps SCE is taking to ensure reliability in Southern California, in particular, what we're doing in terms of adding capacity to the system from preferred resources. And, as previously described, we're talking about energy efficiency, demand response, distributed generation, energy storage.

I'm also going to be sharing with you an update on our preferred resources pilot, and what is going on and what is the latest update there.

Let's see if I know how to work this high-tech

gadget.

So, in terms of capacity, we've added to the system since our last procurement from our local capacity requirements (LCR) request for offer (RFO), we've added, or have in the pipeline, about 30 percent more preferred resources, about an additional 200 megawatts, that are expected to come online through 2020.

And a lot of the acquisition from these additional resources stem from the acquisition we've been doing to support the objectives of the preferred resources pilot, as well as in response to Aliso Canyon. Our own energy storage targets, that has driven a lot of the acquisition that you see summarized here in the table format. And you can see also in the table in the sums that about 30 percent of the 650-plus megawatts we have in the pipeline are scheduled to be deployed in the preferred resources pilot (PRP) region.

And just to get grounded, get us all aligned, the PRP is being implemented in SCE's southern portion of its territory, encompassing two substations, Johanna and Santiago makes up about five percent of SCE's territory.

So, of course, the deployment of the resources has been somewhat delayed for various reasons, particularly for the PRP region. In the PRP region, the resources expected to come online were allowed to come online

earlier, so -- if they were to come into the PRP region, both -- we've had a bit of a delay in response to that. And that's important because, in order to be able to prove out the objectives of measuring the performance of preferred resources, you need the deliveries of these resources that will ultimately not only help prove out their performance, but there's additional value that will help us prove out in terms of understanding their locational value, help us understand how to improve urban acquisition and deployment of preferred resources, and how to integrate and operate them for the benefit of the system.

So, as I mentioned, while we have a good amount of preferred resources procured. Their deployment in the PRP region for purposes of supporting the pilot are necessary and, again, a challenge.

Here we go.

So, the next slide provides you an update on -- let's see -- if I point to it. Up. Down. Yup. There we go. Perfect. Thank you. Sorry about that. Don't trust a guy with the gadget here.

So, in terms of preferred resources, there's a slide here that represents what we were expecting to see in the PRP region itself only. This is not the entire Western L.A. Basin; it's just a subset of that. And this is in

relation to the preferred resources pilot.

So, what you see here is a comparison of what we expected to see prior to the delays and what we're going to see now. And, as you can see, in 2015 -- through 2015, we have had quite a bit of success through our demand-side management (DSM) programs, energy efficiency, demand response, distributed generation, in terms of being able to get resources in the system quick.

But, from a measurement standpoint, while a lot of the resources from our DSM programs, they're tied directly to the performance of the programs. And, like some of the attributes, we need to be able to measure them down at the system level, what is the objective of the PRP.

So, what we're going to see in 2017 is slightly less than what we were expecting to see. We are going to see an uptake in the year 2018, and you see that deployment rate here through 2020.

So, in terms of the measurement work the PRP is doing to prove out their performance, we are not going to receive the -- we won't be able to obtain the additional insights we were looking for in 2017, probably until past the summer of 2018 when we see a bigger bulk of the resources will come online, will give us the capabilities to be able to measure them.

Another interesting fact that I wanted to share

with you is the amount of resources expected from behind the meter. Of the 260 megawatts or so expected to come into the PRP region, about 200 of those are going to target -- they're going to be behind the meter. And they're going to target predominantly CNI customers. In this region alone, the commercial and industrial (C/I) customer base is about 30,000 customers. So, you could image that we're likely to face some challenges from the customer-adoption standpoint, as well as integrating them into the system, and, as well as working with third-party developers in how they get integrated.

All right.

Quite a bit of insights we've learned since we launched the PRP in terms of how we acquire and deploy resources into the region.

For instance, foremost, as I have mentioned and you have seen from the prior slide, the -- our DSM programs have been instrumental in our ability to getting resources deployed in a quick time frame.

The other key, inside, we've done two targeted solicitations in the PRP region. And the second one we saw the most amount of success in terms of a robust response. And we attribute that mainly to having a broad solicitation with pretty much a resource agnostic solicitation, as well as having flexibility in the bidding process for the

solicitation.

And, lastly, the ability to anticipate grid needs when we do an acquisition of resources is key to be able to anticipate when perhaps the system and the local up-peaks don't match and how do we attribute and manage resources to be able to manage a local need, as well as a system need.

So, having the ability to foresee some of these issues and anticipate that and work that into our procurement process, it's critical.

What we're doing next in terms of the preferred resources pilot and SCE to -- let's see -- thank you.

In terms of what we're doing to continue the reliability in the Southern California region is take proactive steps to work with our developers to ensure the behind-the meter-, and other preferred resources are successfully deployed. We're also continuing the measurement of the preferred resources to help inform the development of grid standards, and, as well as understand the locational value of distributed energy resources (DERs) and acquire some best practices in how we go about integrating them into the system and operate them.

That's the update I have for you today.

MS. RAITT: Thank you.

Next is Patrick Charles from San Diego Gas and Electric.

MR. CHARLES: Well, good morning. And I want to thank you for the opportunity to provide an update on our procurement activity since the closure of SONGS.

I'm Pat Charles. I work in Electric and Fuel Procurement at the utility. So, I've been involved in the solicitations we've run.

And I don't think I'm going to have a whole lot of news for you this morning. I think you're probably well aware of all the issues I'm going to talk about. And I'm heartened to say that the different dates and status updates that we've heard so far this morning jive perfectly with the information that I'm going to give you, so I'm happy to see that.

So, by way of background, just so we can level set perhaps for this afternoon, you're all aware of this, but with the early retirement of SONGS back in 2013, the Public Utilities Commission added a track, a procurement track, to the 2012 Long-term Procurement Plan (LTPP) proceeding -- they called it Track IV -- in which they authorized Edison some additional capacity to go out and procure and they authorized SDG&E to go out and procure between 5- and 800 megawatts of in-basin, that is in the San Diego local subarea, capacity to help keep the system reliable. So, that's how we got started.

And the first thing is the Carlsbad Energy Center

that's been discussed at some length already this morning. In June of 2015, we signed that contract. Is for five GE LMS100s. And, as has been stated, the first unit is expected to be online in May of 2018, with plant completion in October of 2018.

So, with the approval decision of the Carlsbad Energy Center, the Commission directed that -- we had originally requested a 600-megawatt plant -- that the additional 100 megawatts be preferred resource, and, that for the remaining authorization, SDG&E focus procurement on preferred resources and energy storage.

So, at that point, this diagram kind of shows where we were at. We needed at least 25 megawatts from energy storage and at least 175 megawatts of additional resources that were either preferred resources or energy storage.

Thanks.

So, what we have done? Well, the first thing was to issue an all-source request for offer (RFO) in September of 2014. And once the Carlsbad contract was signed, it wasn't all-source RFO, so all the preferred resource types that have been mentioned -- energy efficiency, demand response, renewables, energy storage, and distributed generation and a conventional product type. And once the Carlsbad plant was signed, the Carlsbad -- or the

conventional product type was off the table and we focused on preferred resources.

Out of that RFO, we signed two contracts in 18.5 megawatt energy efficiency, contract with Wildan Energy Solutions, and a 20-megawatt energy storage contract that has since terminated. But the Wildan contract is ramping up as we speak.

Next in our story, we had the CPUC Resolution 4791 that came out in response to the Aliso Canyon situation. And San Diego Gas & Electric (SDG&E) worked to procure two large energy storage resources; one of which, the 30-megawatt plant in Escondido, I'm told is the largest lithium ion battery facility in the nation I think. And alongside of that, was a 7.5 megawatt energy storage facility out at El Cajon. So that came out of the Aliso Canyon Resolution.

Next slide, please. Thank you.

So, next, in February of 2016, we issued a preferred resource RFO. This, again, was relying on the Track IV authorization, working toward continuing to fill the in-basin capacity need; again, soliciting for energy efficiency, demand response, renewables, energy storage, and distributed generation.

We have signed those contracts, and, last month, filed an application seeking approval of 88 megawatts of

resources; eighty-three-and-a-half of which are energy storage and four-and-a-half of which are demand response resources.

These are flexible resources that we believe will help us to more effectively integrate higher levels of renewable power on the grid. And with approval of these, we will have substantially met our Track IV target and will be pausing to see what our next steps will be.

Of note, the year of interest for us out of the Track IV decision was 2021. So, we have a bit more time to see where we need to go from here.

So, this chart summarizes all the activity that I've talked about. The ones with two asterisks are the resources that were in this most recent application, which, of course, is an open proceeding in front of the Commission.

And, together, we have procured 644 megawatts of resources.

Next slide.

So, these are the objectives that we've kept in mind as we've moved through these various procurement activities.

First and foremost, we're looking to procure cost-effective resources that help meet our customer needs and where possible try to leverage procurement toward

meeting multiple procurement goals or mandates that are out there, such as the storage mandate and the in-basin preferred resource mandate, things like that.

These, as I've said, are all flexible resources that help to enhance reliability and help us to integrate higher levels of renewables, which is important for us because over the last 12 months we've delivered about 43 percent of our customers' power from renewable sources.

At this point, as I mentioned, you know, we're pausing to see what need remains and where loads go and what studies that the Cal ISO and others will do, have to say. So, we'll see what's next.

And, of course, we're committed to ensuring that our customers in the wider community have access to clean, safe, and reliable energy.

And I see by my watch we're ahead of schedule, so if anybody has questions, you're welcome to entertain them.

CHAIR WEISENMILLER: Sure. I'm going to ask actually a number of questions of folks on the panel. And I'm going to try to do it by a specific area and then sort of welcome everyone to jump in under that area. And after I finish my list, then I believe everyone else has a list, and we'll see if we're all covered.

So, actually, I mean, first thing I was just going to note, I mean, sort of a correction on my order of

comments; the San Onofre plant we also had a lot of great assistance from the South Coast Air Quality Management District and the California Air Resources Board. Obviously, you can't do anything in Southern California without their assistance.

And, also, I would want to note that the Marines, particularly Secretary Dennis McGinn [phonetic], were very important on getting the synchronous condenser done at San Onofre. It's a very valuable real estate for them and took a lot of support from them to get that moving.

I guess the first one, and I'm going to look to Rob and Lana and maybe we have to pull Mike Webster forward, but just for context we've been talking a lot about the OTC repowers, Edison side of the equation. We haven't really mentioned the Los Angeles Department of Water and Power (LADWP) OTC repowers, you know, situation. At least for context, I thought it would be good to get that on the table.

MS. RAITT: If I could just jump in and ask the panelists to identify yourselves before you speak. Thanks.

MS. WONG: This is Lana Wong.

So, LADWP, they do have a plan for phasing out the OTC plants. When the policy was passed, L.A. had worked with the Water Board to revise some of the dates of the OTC -- well, some of the OTC compliance dates.

So, currently, they do have a schedule in place. And I believe their schedule takes them all the way out to 2029, as far as Water Board compliance dates.

I know that LADWP., in their Integrated Resource Plan, may have a plan to replace some of the units earlier than the Water Board compliance date, but they have a plan in place and are on track and, possibly, LADWP could add more on the specific dates because I don't recall all the individual plants. But I know there is a schedule and they have achieved compliance with some of their OTC plants, Scattergood, Haynes. They've had individual units that they've repowered or replaced and still have come additional units to -- that they'll achieve compliance with over the next decade.

CHAIR WEISENMILLER: Yeah. And, again, I want everyone to know, my recollection was that it's sort of a one-for-one replacement, it was a megawatts, that it go sequentially. Some of the plants are done now and others will continue through now to the end of the decade; is that right?

COMMISSIONER KERR: If you would like some additional information, we do have Ken Silver here who is our Director of Power Supply Operations that could speak to the OTC units that have been completed, as well as some of the plans going forward.

CHAIR WEISENMILLER: No. That'd be good. Again, I think just for context. We spent a lot of time on part of this system down here but nothing on that part.

So, please, come up and identify yourself.

MR. SILVER: Good morning.

I'm Ken Silver. I'm the Director of Power Supply Operations for LADWP.

And, as stated, we were -- when the policy came out, we negotiated a schedule that allowed for us to maintain reliability as we repowered our units.

And, as you stated, it is a -- our studies show that it’s a one-for-one replacement, that each megawatt that we decommission, we need to have a corresponding resource of some type for -- equal to it.

Our plan is sequenced such that we can construct the new before we retire the old. And due to space limitations on our sites, we can't just repower everything all at once.

So, we've completed two repowers under the schedule already: One at Haynes and one at Scattergood. Our next repower is the second one at Scattergood, which has a schedule date of 2024. We are on target for meeting that. And that will -- that second repower will take Scattergood completely off once-through cooling, so that will be quite a milestone for us.

The additional repowers are sequenced out through 2029, as was stated.

CHAIR WEISENMILLER: And I guess the other two questions -- so the total number of megawatts being repowered, again just for the record?

MR. SILVER: I could --

CHAIR WEISENMILLER: Oh, you could submit it the later.

MR. SILVER: I could add it up real quickly, but it's probably about 2,000 megawatts, I believe. I don't know.

Does anybody know?

No.

CHAIR WEISENMILLER: That's fine.

MR. SILVER: Yeah.

CHAIR WEISENMILLER: Yeah. And, so far, there's been no issues on that. As I recall, if there were issues, you could go to the Water Board for working out potential delays, if there were any issues with the specific project.

MR. SILVER: Yeah. As we attend the SACCWIS meeting every year and we present our Grid Reliability Report. If we had any issues, we would -- it would show up in our report at that time, although we would be discussing it much sooner if we saw a problem coming.

CHAIR WEISENMILLER: And, so far, everything is

going pretty smoothly?

MR. SILVER: Yeah. All of -- our first two repowers have been on schedule, and we're already working on site preparation for the next repower, although we haven't firmed anything up. But we are working on the site preparation already, which involves tearing down the other unit that we repowered.

CHAIR WEISENMILLER: Okay. Great. Thank you.

MR. SILVER: You're welcome.

CHAIR WEISENMILLER: Thanks.

I guess the other thing I want to talk about some is Mesa Loop-in.

My understanding -- you know, thanks for the summary at this stage. My understanding was that, you know, you got the CPUC decision, you were looking at the decision, and that the Securities and Exchange (SEC) filing was indicated that there was some risk with delay and that Edison was going to try, A, to see if they could keep the construction on schedule and/or then have the back-up plans if not.

And, so, I thought the first question was just in terms of, with the decision you got, why can't you make the prior schedule? What are the issues there?

MR. CHINN: This is Garry Chinn with the SCE.

I think there's always been the risk with Mesa.

I think this is really a risk recognizing the potential of delay. I think the last number I heard was this is a kind of 50/50 schedule. If we're unable to meet the original date, therefore we would push out the date to 2022 to kind of recognize that risk. So, this is kind of a risk-weighted schedule for the new OD. That kind of triggers the whole planning process to investigate mitigation options for that potential window in 2021.

So, I think that that risk has always been there, but I think we're just recognizing it in our schedules now.

CHAIR WEISENMILLER: Is there any --

MR. MILLAR: Neil Millar here with the ISO.

There is someone from Edison here who could talk about the details of what created that risk, if you're interested.

CHAIR WEISENMILLER: Yes.

Please, come on up.

MR. ADAMSON: Should I go up to the mic?

CHAIR WEISENMILLER: Yeah. Come on up and identify yourself.

MR. ADAMSON: Yeah. My name is Chuck Adamson. I'm with Edison's Project Management Group, and the construction of the Mesa Substation Loop-in is under my responsibility.

So, we have a very detailed schedule. If you can

imagine, Mesa is a complete 220 to 66 to 16 kV substation. We're going to entirely rebuild it on the existing site.

So, there's a lot of sequencing that has to go on, outage planning that has to go on, environmental concerns that we have to deal with, seasonal bird nesting, all those sorts of things.

So, we have about a four-year construction schedule. It is conceptual and preliminary based upon what we know. We were originally hoping to get started before the nesting season this year. That didn't happen. So, now, we're working through getting all the follow-on permits and the notice to proceed from the Public Utility Commission.

Once, we have all of that and get in there and start the construction, we'll able to have a much better idea of when we'll be able to finish.

What we did in creating the risk-adjusted schedule was, we were not able to start early this year, we moved the start date to September because that's when the bird nesting would be over. And it just simply pushed the whole thing to the right to after the summer of 2021.

So, that's what the basis of the delay was in SEC filing, but we are still doing everything we can to look at that construction schedule and try to find ways to accelerate it where possible to keep it before June of 2021

for completion.

CHAIR WEISENMILLER: So, as I was going to ask, what are the options you're looking at to maintain the construction schedule and when will we know whether they're viable?

MR. ADAMSON: So, we will look at things, such as double shifting; that may require a modification in the license from the CPUC because that was not considered in the original environmental review. We'll also be looking at trying to compress some of the outages and just compressing the construction time itself by putting more crews on the site and doing more of the work at the same time.

So, those are sort of the construction options that we're going to look at.

And what was the rest of the question? I'm sorry.

CHAIR WEISENMILLER: When will you notify the commissions, the results of that assessment?

MR. ADAMSON: So, we are going to be going out to bid for our construction contracts. Once we have our construction contractors onboard and we're able to work with them and look at the best schedule that we can come up with together, we'll be able to make a much more definitive assessment. We currently expect that will be in the

September time frame.

CHAIR WEISENMILLER: Okay. Now, assuming you can adjust the schedule, then we come up with what are the options to maintain reliability there. I think all of us are interested in not having to keep the thermal units around.

MR. ADAMSON: Uh-huh.

CHAIR WEISENMILLER: And so, again, trying to understand when that assessment -- assume that assessment will be more sequential to the construction, when will you know the results there?

MR. ADAMSON: That's happening at the same time.

CHAIR WEISENMILLER: At the same time?

MR. ADAMSON: That's in the AES purview, the reliability assessments of what we can do with the operating of the system to maintain the reliability if Mesa is not ready by June of 2021.

CHAIR WEISENMILLER: Okay. Great.

Anyone else have questions on this specific topic?

MS. KERR: This is Reiko Kerr from Los Angeles Department of Water and Power, and I would like to clarify some comments.

The initial studies that we did on the once-through cooling did indicate a one-for-one megawatt,

but we are taking a look at that again and looking to see if there are other alternatives or combinations of alternatives that can be used to -- for what other plants, ultimately, are constructed on the remaining OTC units.

The ones that we have done, these plants are 60-, to 70-years old. They're very inefficient. And the ones we have done have realized a 20-, to 40-percent reduction in emissions, as well as being flexible to assist us with integrating renewables.

So, I wouldn't say today that it's a one for one. I think we're taking a hard look at that right now.

CHAIR WEISENMILLER: Do you have a sense of when that assessment might be done?

MS. KERR: By the end of this year, hopefully. We've done some studies, but we want to run some additional ones. So, hopefully, by the end of this year we will have a better idea of what we'll bring forward for recommendations.

CHAIR WEISENMILLER: So, anyone have any follow-up on the L.A. or the Mesa Loop-in?

Okay. Thank you.

Let's talk about the preferred pilot. I guess one of the things -- just, you know, obviously, I always appreciate candor on these things in terms of where we are. On the one hand, in the San Onofre situation and Aliso

situation, we're really trying to ramp up the preferred resources, you know, in sort of a geographic area, which is sort of a -- anyway, this has always been sort of a novel, groundbreaking approach. But, you know, what can we do to move -- speed things up, you know, to really get more, as they say steel on the ground, although, obviously, we're talking about solar, we're talking about demand response, we're talking about storage, down here when we really need it?

MR. ISLAS: So a few of the things SCE has started doing -- sorry, Sergio Islas with Southern California Edison.

A few of the things we've started doing is working more closely with our counterparties, our partners that have contracts under the LCR, to ensure they have the right tools, that we are also supporting them by doing customer outreach within what the contracts allow.

So, we're working with them gathering feedback, trying to get a better understanding of what additional support they may need from SCE to get them deployed.

The particular LCR resources we were expecting in the PRP region where predominantly delayed through some of the approval process. And, so, that has delayed when they're coming online now. So, that's one area, you know, we're always interested in exploring, obviously.

But, in addition to working with our partners, we're working and finding out what other solutions we may need. So, we're in the early phase right now of trying to identify what other steps we can take to partner with our developers to ensure they're successful in the deployment of the DERs.

CHAIR WEISENMILLER: Since you started this effort, the Cal ISO has also put in place a DER procurement program. And I'm, again, trying to figure out if there's a way to make things fit together better because, again, we need to be ramping things up. We're at a time where ticket cost of solar is down phenomenally, photovoltaic (PV) is coming down, LEDs. I mean, there's a lot of options here.

COMMISSIONER DOUGHTY: Chair, this is Tom Doughty with the ISO.

And I couldn't agree more. I think most of us would agree that the demand response has not, by any means, hit its apex that we seek.

Many of you know we had a Stage 1 alert on the system for the first time in over a decade in the last couple weeks, and called on DR, got some good response.

But DR means more than just being available to respond to emergency circumstances. It needs to be a part of our market. And we're committed to working with the CPUC, the Energy Commission, and others to find new

vehicles to further develop demand response (DR) resources and make market enhancements to make that more lucrative.

So, I guess, not so much of an answer to your question as just an acknowledgment that you're right, we don't yet have DR working the way it needs to.

CHAIR WEISENMILLER: Yeah. I need to be careful in the sense, I think all of us have applauded Edison and certainly support Edison's activities here, which are very visionary in, you know, setting pretty aggressive goals and all that. And part of it is just trying to figure out, you know, how can we help you get there. You know, meet and exceed, as opposed to sounding critical on just the real-world realities.

MR. ISLAS: I think we have, as you mentioned, successfully proven the ability to acquire a portfolio of DERs. The acquisition part has shown that we can acquire them and we can acquire them for a local. For instance, in the PRP region.

The challenge does become, with a large set of behind-the-meter resources, the acquisition is largely dependent as well on customers, their willingness to adopt, and their willingness to try new things, as well as our developers.

And I think our developers are committed. We've been working with them to get them deployed and on a timely

basis. And, so, they have been reaching out to their customers and laying out a strategy for how they're going to acquire customers. And there are probably things we could do as well. You know, ensure the customer has the right information. Ensure the customer has the right ability to make a correct decision that's in their best interest.

So, that's definitely some of the areas that we're exploring, in addition to exploring what additional support we may need.

The flexibility I think we gain from our DSM programs, as you saw from our early slide, they have, in my point of view, provide us the flexibility to be able to deploy resources quickly. To a large extent, you may hit a limit in terms of what you can do. We've seen -- since we launched the PRP, through our DSM programs, about 50 megawatts of resources deployed in the PRP region, energy efficiency and distributed generation. So, that has been key.

What the PRP is doing is trying to offset incremental load growth of 238 megawatts plus through the year 2022. So, for that, you need additional type of mechanisms to get resources in place.

So, I think the DSM programs play a critical role to be able to get them in service and get them where you

need them quickly, because they're already approved programs, you just need to shift them and be able to adapt them to what our grid's needs may be.

But, also, having a close partnership between all the agencies, SCE, developers, and customers, I think is another key to be able to make sure that there's clear communication. For instance, one of the things we hear from customers is, We need clear communication as to what you need from us and what is in the best interest for us.

From our developers' side, we're hearing a strong call to action would be beneficial. One of the feedbacks we got was in response to Aliso Canyon, one of the things that was successful was it was an emergency need. And, so, it helped folks see that there was a need and be able to respond to it. So, a strong call to action is one of the things we hear would be beneficial, and that's why I think the partnership between the agencies and SCE developers will be key.

COMMISSIONER HOCHSCHILD: Just a question about vehicle electrification and how you see that being part of the solution. We have almost 300,000 electric vehicles in the state now, and that transformation is gaining momentum. I'm curious to hear how you think intelligent charging protocols might help, in particular, either slowing or temporarily halting the charging of fleets or even, as

we've seen with the Chair's leadership, getting the L.A. Air Force Base actually vehicle-to-grid up and running. Your thoughts on that.

MR. ISLAS: I'm not a big expert on the electric vehicles, but what I can tell you is there's development of pilots within SCE to integrate them and to be able to use the resource -- or the electric vehicles as to manage the grid.

MR. CHARLES: Yeah. From San Diego's perspective, I would agree with that. I think unidirectional power flow for vehicles to charge from grid (V1G) is certainly something we need to look at in the near term. You know, vehicle to grid or two-way power flow (V2G) is down the road a ways. But, as those numbers grow, as you point out, it certainly has to be part of the solution.

COMMISSIONER RANDOLPH: Can I ask a question about the -- the grid needs that you were talking about?

Does SCE sort of try to identify those needs and solutions for them? Are you asking the developer? Like, how is that process working?

MR. ISLAS: What we've done in the PRP region is to the design and the analysis up front. And, through the acquisition, we list a set of attributes we look for developers to be able to fill.

And, in this case, if we see a need at a particular substation or a circuit and we identify that peak need versus the need at the A-banks. There's a discrepancy there, right? And, so, we need to have the flexibility to be able to dispatch a resource when it may not be needed for the system but it's needed for the local need.

So, it's in terms of the timing, the capacity that's needed, the duration that's needed. Those are the type of attributes we have listed in our solicitation process to be able to inform developers in how to spec out their projects.

CHAIR WEISENMILLER: A couple of things. I mean, one, I was just going to ask Heather if she would check with Commissioner McAllister -- I think he's on the phone -- to see if he has any comments on this area.

The other thing I was going to offer to Edison, I know from the Aliso context, we sent -- I sent out notes or letters to general services, you name it. You know, I think I spammed half of Southern California to try to get agencies to step forward and do energy efficiencies and fluor [phonetic] technologies now.

So, certainly, if there's some way we can help you reach out to your customers to again get the message out about the importance, I'd be happy to help there.

Again, I think this is an important effort. You know, we have to make it work. And, so, the question is how we can all work together to get there.

Commissioner McAllister, do you want to chime in or not?

COMMISSIONER MCALLISTER: Sorry about that. Can you guys hear me?

CHAIR WEISENMILLER: Yes. Go ahead.

COMMISSIONER MCALLISTER: Yeah. I was just nodding my head in agreement to your question on energy efficiency (EE) and Tom Doughty's observation on DR. I think everybody knows that I have, you know, strong feelings about both of the above.

I guess, you know, I think this issue came up in the En Banc on Friday as well actually, and I think half -- the question is how do we get the marketplace to do more with less and avoid overinvesting in admittedly wonderful technologies that are getting cheaper every day, but I think, you know, the rate base can only take so much. So, how do we use a combination of investment in hardware with good planning and implementation over time to get to a place where, you know, power costs can remain reasonable in the long term as we decarbonize.

MR. ISLAS: Sergio Islas with SCE.

And I think one of the critical first steps we

have to take is have a better understanding of the performance of preferred resources in general, so that we can inform the right sizing of the grid investment we need to make for reliability. And I think that's one of the first steps, which is the main objective of the preferred resources pilot, is to be able to identify their performance, do they show up when you need them, where you need them for as long as you need, and have that capability so that you can right size your grid reinforcement and you can also right size your procurement. And I think that's one of the first steps we have to tackle.

COMMISSIONER MCALLISTER: I certainly appreciated the (unintelligible) and the Wildan Group pilots. But they're both pretty modest in size compared to the rest of the resources, even the storage that are -- you know, round out the procurement after Carlsbad.

So, you know, certainly want to just encourage all of us to think creatively and implement this as posthaste as we can and then learn and then reinvent.

COMMISSIONER RANDOLPH: Can I ask a question about the Wildan EE project? I just wanted to hear a little more detail from SDG&E about what that project entails.

MR. CHARLES: This is Pat Charles from San Diego.

Yeah. I was part of the RFO that solicited that

project, and we evaluated it and signed the contract for it. I know we're in fairly early stage ramp up for that. The year of need, again, that we identified was 2022.

So, I believe that they will ramp up toward that full eighteen-and-a-half megawatts between now and then. I don't know exactly where they are today. And, off the top of my head, I can't tell you the measures that are included there.

I can tell you that one of the issues that we've struggled with is the synchrony mentality issue. That is, if you're already depending on a resource to keep something reliable, you know, and then it gets offered into an RFO, you know, Hey, I was already counting on that being there. And that's been a struggle for us, not just San Diego, but, you know, the larger group here. All of us I know have struggles with that.

And energy efficiency, in particular, is a tricky one because of the additional available EE that isn't identified necessarily as we're looking at, you know, fairly longtime horizons.

So, if you'd like, I could take that down as a "to-do" and we can certainly get back to you with more detail. We'll do that.

COMMISSIONER TISOPULOS: Sergio, you may have already covered this, but it's not clear in my mind. I

know you have four peaker plants, smaller ones, 50 to 100 megawatts, perhaps, scattering the basin here that you're modernizing and upgrading to make it more flexible and combining them with storage capacity. And I note two of them have already got their permits and perhaps they're already deployed. And I remember for the other two, we just got permits like a week ago or two weeks ago.

Were those included in the tally, and how do they fit into the puzzle? Are they predominantly for the local response, local demand response, or the regional response?

And my second question is, some of the AES projects that we talked about, I thought one of them had a pretty sizeable storage component as well, battery storage component. Can you elaborate on that a little bit?

MR. ISLAS: I can definitely elaborate on the tally.

COMMISSIONER TISOPULOS: Okay.

MR. ISLAS: Sergio with SCE.

And I should have someone here that could probably give you some additional details about their market function.

The tally I showed on Slide Number 2 includes the projects you just mentioned, the energy storage projects, so it does. So, in the context of Southern California reliability, they play a key role in helping support

reliability throughout.

The dispatching, the functionality of how they get used, I'm looking to the back to see if there's somebody that has any additional information. If not, I can definitely get back to you on that point, if that's okay.

Thank you.

CHAIR WEISENMILLER: I guess the one thing following up on Commissioner's Hochschild's point for a second. Both utilities really are becoming very much centers for charging networks at their headquarters, and, you know, both employees I assume as we have more electric vehicles in the fleet. And, so, one question is, how quickly can we get vehicle-to-grid demos there?

I mean, it's not like you're dealing with the Navy or Air Force or any number of outside parties. It just seems like that's an easier one to try to move than either one.

MR. CHARLES: Yeah. Pat Charles again from San Diego.

Since I think I'm the only one from SDG&E here, I think I'll respond, although I don't work in our Clean Transportation Group.

My colleagues in that area that I've spoken with, I know that they're looking at a V2G pilot with a small

number of vehicles. And, again, I would be happy to take down that as a "to-do," and we can give you good information soon.

CHAIR WEISENMILLER: Oh, that would be good. We'd like to hear that.

MR. CHARLES: That's what we'll do.

COMMISSIONER HOCHSCHILD: I would just commend you to talk to the folks at the L.A. Air Force base. I believe there's 43 electric vehicles (EV) connected to V2G, and it's been a success.

I don't know, Mr. Chair, if you wanted to share a little bit about that.

CHAIR WEISENMILLER: Yeah. I mean, for one, I was going to say actually it's been a project. We've used Lawrence Berkeley Lab as sort of a consultant to the Air Force in that project, particularly in the setup. And, again, that's been a project which Energy Commission responded would be happy to, you know -- and, actually, we're now talking about another sooner project the Miramar, but it's one-way instead of two-way.

So, again, our people would be very happy to meet, our experts in this area, with your experts in this area and try to figure out how we can move things along.

MR. CHARLES: Thank you very much.

CHAIR WEISENMILLER: Okay. Looking more at Neil.

Sycamore-Penasquitos. So, should we -- how sure should we be about that being on time?

MR. MILLAR: Sorry. It's Neil Millar with the ISO.

At this point, San Diego has indicated that they are on schedule but have just highlighted the various risks associated with a significant underground transmission project in a relatively high-density high-traffic area.

So, our concern has really just been focused on the fact that we're starting with a schedule that is already at the last minute and that there are practical concerns around that scope of project.

So, as I said, they haven't identified any specific concerns that will cause the delay, but we're being cautious because of the time line already being into the summer season and just the scope of the project overall.

CHAIR WEISENMILLER: I asked two questions. When have they mentioned that in an SEC filing?

MR. MILLAR: Sorry?

CHAIR WEISENMILLER: Has SDG&E mentioned that in an SEC filing?

MR. MILLAR: I am not aware of that.

CHAIR WEISENMILLER: Okay.

MR. MILLAR: We've received formal communication

from San Diego Gas and Electric just indicating the potential, given the nature of the project. And that was enough for us to start looking at possible mitigations.

CHAIR WEISENMILLER: Okay. When will you know how worried we should -- whether we should be worried or not?

MR. MILLAR: Again, I'm hoping that by the, certainly, fall and the end of this year we'll have a much better picture. But we're really relying on information from San Diego Gas and Electric.

CHAIR WEISENMILLER: Okay. I think I've covered my questions.

Who wants to go next?

Let me thank the panel. You've been very helpful. We've covered a lot of ground. Obviously, it sounds like we'll be back again next year on this topic, but, you know, keep helping us work forward on this.

I believe at this point we have maybe a representative from Senator Stern in the room.

Please come forward.

We're in the process now of pivoting from San Onofre to Aliso Canyon. And, so, let's start with legislative comment on Aliso Canyon.

MS. ELLIS: Good morning. My name is Katherine Ellis, and I just want to thank you all for the opportunity

to speak to all of you today.

I would like to read a statement on behalf of Senator Henry Stern.

I would like to commend all the agencies, the California Independent System Operator, the Energy Commission, the Public Utilities Commission, and the Los Angeles Department of Water and Power, for working together to identify and implement strategies to ensure the energy grid in the Los Angeles Basin remains clean, safe, and reliable.

It has been about 19 months since the leak was discovered at Aliso Canyon, and we do not yet know the root cause of the blowout.

While those unanswered questions are pursued, a cooperative inter-agency effort in newfound capacity and demand response, energy efficiency, distributed solar, and most notably, clean energy storage.

These alternative supplies have allowed us to manage the grid reliably in the L.A. Basin through a summer and a winter season without Aliso Canyon in full operation.

As we head into our second summer, we should feel confident, but ever vigilant. Everyone needs to step up and do everything they can to maximize gas-demand reduction overall, whether through alternative

generation and storage or efficiency and demand response.

None of this is out of line with the 100 percent renewable energy goals both California and the City of L.A. have begun pursuing.

As we chart forward in our zero-carbon future, we must ensure reliability in the present. That's why the vision at Aliso Canyon is key. There's still about 14.8 Bcf of gas in the storage facility. The minimum operating pressure is 5 Bcf, leaving Southern California Gas Company (SoCalGas) about 9.8 Bcf of gas to use if needed.

So far, it has only been needed over a two-day cold snap this past January. Only about 0.025 Bcf of gas was tapped from Aliso each day.

If another demand spike occurs and Aliso must be tapped again, at that prior rate, that field could provide gas for over one year without hitting the minimum operating pressure; 392 days to be exact.

Keep in mind, also, the new 200 million compressor the gas company found in time to install at ratepayer expense, all while the well blowout response was underway on the mountain. That will speed up the time line should any new injections be required to ensure minimum operating pressure.

Ratepayers ought to get some relief from their massive investment here.

However, this entire response cannot, should not, and under current law, ought not be paid for by ratepayers.

As we approach the summer months, we expect the gas company and its parent company, Sempra, to step up in a big way to right this wrong. Let's set the record straight on environmental justice, ratepayer risk, pitting other communities against Porter Ranch belies the ageless axiom that, "All justice, especially environmental justice, is indivisible."

If all of us, from the individual customers to utilities and regulators to the clean energy industry, work together we can move through the summer safely, reliably, and consistent with our shared vision for a sustainable future.

Thank you.

CHAIR WEISENMILLER: Thank you.

Any other legislative comments?

Actually, the other thing I was going to do, since we're a little early, if there are any public comments on San Onofre at this morning's session, we're happy to take you now instead of at the end of the day. And then we'll go for an early lunch and come back early.

So, yeah, okay. Let's take an early break. Let's come back at 12 45.

Thank you.

(Whereupon, the luncheon recess was taken from 11:40 a.m. to 12:45 p.m.)

CHAIR WEISENMILLER: And, so, I'm looking at Evie, the court reporter to make sure you both are ready.

You're ready?

Court reporter, you're ready?

Heather, let's go.

MS. RAITT: So, after the break, we were going to hear legislative officials, but we already heard from our --

CHAIR WEISENMILLER: Let's just call out.

Is there any other legislative officials?

Let's go.

MS. RAITT: Okay.

So, we have a joint agency presentation for an update on reliability issues associated with Aliso Canyon Natural Gas Storage Facility.

Presenters are Rob Oglesby from the Energy Commission, Mark Rothleder from the California Independent System Operator, Edward Randolph from the CPUC, Kenneth Silver from the Los Angeles Department of Water and Power, and Catherine Elder from Aspen Environmental.

MR. OGLESBY: Rob Oglesby here, Executive Director for the Energy Commission, and I'm leading off this panel where we're going to give you the update of your team's work on the Aliso -- the status of the action plans related to Aliso Canyon.

So, this effort indicates a great deal of cooperation and coordination among the various energy agencies and entities that have been working year after year on the -- since the issue erupted, and involves the California Public Utilities Commission, the California Energy Commission, the Independent Systems Operator, and Los Angeles Department of Water and Power, and others who have provided input.

So, this slide is useful, although small, to emphasize the significance and inter-relationship between the storage facilities, the backbone pipeline, and the pipeline that is the distribution system, with the backbone pipeline being the red lines and the distribution system being the black lines.

And, if you look close enough, you can pick out in the triangle with the dark center, the Aliso Storage Facility. And you can see that it's ideally located to be a distribution point for stored gas. But, also, today, you're going to hear a lot about the other storage facilities within this system that are also indicated on

this map by the triangles that have the dot inside.

And you could see that it's a compact and limited system, both in terms of pipeline locations and capacities, as well as storage fields that we've come to rely on.

So, the status of the facility as it now stands, there are the moratorium on injections at Aliso Canyon continues. At this date Aliso continues to hold very close to 15 billion cubic feet of natural gas. This was the amount that was held in reserve to help support the system if needed; largely, has not been utilized.

Aliso inventory remains available for withdrawal at critical times, if necessary. And a new storage safety enhancement plan is being implemented across all the facilities.

The inventory at other -- and this is an important point. The inventory at other Southern California gas natural gas storage facilities, are below levels needed to achieve the target inventory needed to support summer needs. And you'll hear quite a bit about that with subsequent speakers.

I'm going to turn it now over to Caty Elder.

MS. ELDER: And, hopefully, I got the button right. It sounds like I did.

And I have a button. And if I push this, will I get -- or it just advances it?

UNIDENTIFIED SPEAKER: It advances it.

MS. ELDER: Okay. Got it. Sorry about that.

You may remember a year ago, some of you will remember a year ago, the analysis that we had done looked at four specific days. And we looked at days that we thought might be trouble days. And we ran those through hydraulic analysis accompanied by power-flow analysis on the electric side. And the key finding from that analysis was that, on days where we had a mismatch between supply and demand of as small as 150 MMcf per day, we were afraid that we would run into natural gas curtailments that could be large enough to cause power outages.

And, so, later on, we'll talk about mitigation measures that we put in place to remedy that. But one of the key mitigation measures to deal with that specific issue was to tighten up the balancing rules.

In the winter, we did an analysis for you that didn't look at specific days, but was a capacity analysis.

And I guess I could already push to the next slide. There we go.

We did a capacity analysis to look at what was the maximum amount of demand that we thought we could serve. So, we did something similar to that this summer. Given that we'd already looked at the four specific days before, we didn't need to look at those again. Instead, we

did, what's the maximum amount that we can serve kind of analysis.

Essentially, we -- I'm trying to hit the right button. There we go. And I'm -- why am I not on the right page?

Clearly, I'm failing at clicking buttons properly, so I must need to go back to kindergarten. All right. Yeah. Save us from me, please, somebody. I can drive a race car, but -- anyway.

So, let's go on to the next one.

So, we assumed that all of the available capacity, pipeline capacity, into Southern California was operating. That number comes out to be about 3.158 Bcf per day. That represents all of the capacity that flows into Southern California, except for the Line 3000 outage. So, it's about 250 MMcf per day ?cf lower than what it otherwise would be if Line 3000's work were all finished and it were available.

We also assumed that they could pull from their other three fields, basically, at maximum capability. That number works out to be 1.47 Bcf per day.

So, we take those numbers and we throw them into the hydraulic analysis. And SoCalGas -- we're in the hydraulic again. And they ended up finding that there are certain hours in the day where the storage fields would

have to pull at their maximum capability, but there are other hours where there wouldn't be enough demand to place all of that gas. And the bottom line is that -- and I think this appears actually on the next page -- is that they can serve about 3.6 Bcf per day maximum capability.

Yeah, go ahead and -- there you go. So, I'm not the only one who hits more than one. Okay. It's the clicker, not me.

So that 3.638 Bcf per day is what we found is basically the maximum demands that SoCalGas can serve this summer. Now, a couple of caveats to that. The key caveats are that that assumes that on the electric side, everything is all perfect, the transmission lines are all available and operational. It also assumes that there are no other outages on the gas side. In other words, that the pipelines that come into Southern California, but for the Line 3000 that's got some work ongoing to deal with, some required reliability work that it needs, that everything else works perfectly. It also assumes that the 1.47 Bcf per day at the other three fields is available.

If long supply drops below those maximum assumptions or we can't get a whole 1.47 Bcf or the hourly equivalent out of the other three gas storage facilities, then the maximum that we could serve would be correspondingly lower.

And, with that, I'm going to turn this over to Mark Rothleder.

MR. ROTHLEDER: Thank you.

This is Mark Rothleder. I'm the Vice President of Market Quality and Renewable Integration.

So, from the gas analysis, we then took and looked at from the electric side, what is the minimum generation level that we need to generate with in order to support reliability in Southern California.

And this is similar to what we did in the 2016 summer assessment, in the sense that we did a power-flow study there, too, to look at the minimum electric generation.

However, this year, we also took into consideration some additional transmission upgrades, which I'll be discussing later in the presentation.

We also considered the electric storage facilities that were added to the system. The hydro conditions, as well as other renewable energy resources that were added since 2016.

We focused our attention, not around the entire day, but around the eight peak hours because that's when the electric generation would be having to pull the maximum amount of gas and put the most stress on the gas system.

What we found was that our minimum electric

generation need in terms of gas utilization would be 1.87 billion cubic feet per day, and focusing on those eight peak hours, 976 million cubic feet for those eight peak hours.

We then assumed 100 percent electric transmission import utilization. So, what we mean by that is that we assume that the entire import capability into Southern California was available and there was supply able to be imported in at the time.

When we looked at it from that perspective, what we found is that, even if we had to take electric generation curtailments of gas down to the minimum levels identified in the study, there would be sufficient capability and sufficient supply, assuming 100 percent utilization, such that, assuming we used demand response and other measures, we would be able to meet reliability requirements for summer 2017.

However, I want to make sure, this is predicated on the fact that we would be able to withdraw sufficient gas generation from the other storage facilities at a sufficient rate over those eight hours.

Based on actual conditions, we know that, generally speaking, at high load levels, the electric generation actually, from an economic dispatch level, uses more gas than what was the minimum identified in the

studies.

The end result is that, while we found that if we can use the 100 percent maximum utilization of the transmission system, if there's limitations on the electric transmission system or if there's not sufficient electric supply to bring in during these conditions when we have high generation needs or if there is insufficient withdrawal capability from the other storage facilities, there is still a risk to electric reliability in Southern California.

That risk can be mitigated by several measures, including emergency assistance, potential electric load shed in Southern California, and potential withdrawal from Aliso Canyon when necessary.

This graph is an extrapolation of the study scenarios and the sensitivities that we performed in the study.

The orange line, the top line, is a line that represents what I just described, assuming 100 percent electric transmission utilization.

And the vertical line, which is 1470 MMcf per day withdrawal capability from the other non-Aliso storage facilities, but this indicates on the XY axis, the fact that that's positive, indicates that we have a surplus of gas capability relative to the minimum generation needs.

However, what we can see from this is that, if we don't reach 100 percent electric transmission and utilization, as represented by the gray dotted line and the yellow dotted line, then you can see here that there's potential where we can go negative, or we have insufficient gas delivery capability relative to the electric generation needs.

And that indicates that there is still a risk, again, if we cannot make full utilization of the electric transmission or there's insufficient electric supply.

In addition, this graph indicates that if you look back from the vertical line at the 1470 MMcf per day line, this indicates that if you have insufficient withdrawal capability, in other words, you do not have enough inventory in the other storage facilities, you can get to the point where, again, on the gray line, or even on the orange line, you would have insufficient withdrawal capability when needed and you could still be at risk.

So, the bottom line is that, what this graph illustrates, is that if you can make the target levels, again, of withdrawal capability by having enough inventory, gas inventory, in those other storage facilities, it largely mitigates the risk. However, we also have to be prepared for the fact that we don't use 100 percent electric transmission and there may be supply

short -- supply insufficiencies getting electric supply when needed into the Southern California system.

So, it's prudent, based on this information, that Aliso would still need to be available for at least some amount of withdrawal capability for this summer to mitigate those risks.

The question, obviously, is how much. And this graph does help illustrate that question. It looks like around about 350 million cubic feet of additional capability, withdrawal capability, when we're in those emergency conditions would be helpful. Again, assuming that there is sufficient withdrawal capability from the other storage facilities.

If there's insufficient withdrawal capability, then there's additional need for Aliso, kind of on a one-for-one million cubic feet basis.

With that, I'll turn it over to Ed Randolph to talk about the measures.

MR. RANDOLPH: Thank you, Mark.

Edward Randolph, Director of the Energy Division of the California Public Utilities Commission.

Last summer, or last spring going into summer, as we had done the technical assessment looking at risks for last summer, the joint agencies also prepared an action plan of mitigation measures to help reduce the risk of

natural gas and of electric curtailment during the summer. And then we did a similar action plan for the winter of 2016/'17.

Those action plans initially had 21 mitigation measures for the summer, and then added an additional nine for last winter.

In the 2016 action plan for last summer, we found that it largely mitigated the risk last summer. And, that, coupled with the fact that it was a mild summer weather pattern with only four extreme heat days and two of those extreme heat days being on Sundays, we were able to get through last summer without any major significant curtailment on the gas side and no curtailment on the electric side.

Those measures, the mitigation measures, largely reduced the risk or greatly reduce the risk of the main risk we saw in the technical assessments last year, which was big fluctuations in the intraday demand in gas.

For this year, going into 2017, we're recommending adding one additional measure, which is focused on adding the storage -- you know, increasing the storage from the current level in the other storage fields in the region to make sure that those storage fields are at maximum withdrawal capacity.

Right now, after a colder-than-average winter,

with withdrawals throughout the winter to keep the system balanced and no ability to withdraw from Aliso -- or, there's ability to withdraw from Aliso, but the protocols only withdrawing in the most extreme circumstances, those fields are lower in storage capacity than then normally would be at this point.

The CPUC has ordered SoCalGas both to implement their well upgrade projects on those fields in a manner that will have sufficient withdrawal capacity for the summer to meet demand, and now, to more aggressively inject gas into the fields over the next coming weeks so that the storage capacity is up at a sufficient level by the time we get into the summer season.

Nineteen of the measures from last year required no further action; however, we continue to benefit from those measures this summer. I'll get into more detail of those in a second.

And ten of the measures that will be in place for this summer, as we go forward through this summer and the next fall, we'll have to consider further action because some of those had time limits on them and may need to be extended.

And then there are two measures that are still actively being implemented.

Heather, can you move the slide? Thank you.

Out of the new and active measures, right now, one of the active measures continues to be the effective completion of the required safety review at Aliso Canyon. That continues to be underway.

Forty-five wells have now passed the required DOGGR test, and an additional 69 have been taken out of service.

With the wells that have passed and are available for withdraw, that leaves that field right now with a withdrawal capacity of 440 million cubic feet per day of withdrawal capacity.

It's worth noting -- and I don't know if I have it in a future slide, so I'll hit it here. It's worth noting that withdrawal capacity is also based on the inventory that's in the field right now, which is 14.8 billion cubic feet. The withdrawal capacity is a factor of both the number of working wells, but also the pressure in the field. As gas is -- if gas were further withdrawn from the field with no injection, that 440 MMcf withdrawal capacity would continue to go down. As the inventory goes down, the pressure and, thus, the withdrawal capacity goes down.

Additionally, we continue to monitor the core balancing rules, which are the most effective of the mitigation measures so far.

And, most critically, there is agreement to further refine the balancing rules for core customers going forward into this fall. SoCalGas, in a settlement agreement, has agreed to submit proposals by September on further modifications on the core customer balancing rules that should help further increase effective utilization of the system.

And then, finally, we've already talked about this, on the need to increase the gas inventory at the other storage facilities.

Next slide, please, Heather.

Just skipping through this fairly quickly. Of the mitigation measures from last year that are completed but we're benefiting from now, the categories, they were broken up into were prudent use of Aliso Canyon and the remaining gas that was in there; tariff changes, both on the CPUC side as they regulate the balancing rules for SoCalGas, and the Cal ISO working with Federal Energy Regulatory Commission (FERC) to change tariff changes there to better coordinate on the electric side; better coordination of the operating system between the ISO LADWP and the gas company; reducing natural gas and electric usage and reducing maintenance downtime further.

Going back up to the top. Yeah. Just to call out there, one of the big ones on prudent use was the

updating Aliso Canyon withdrawal protocol. That will need to be further refined going into this summer. It's been the product of settlement agreements, and I -- we are right now, CPUC is taking a look at those rules to make sure that they -- what was effective for the winter will be effective for this summer and as it relates to last summer. And then just also noting down there on reduce natural gas electric usage, a number of those programs were demand response and conservation, but a very key program is flex alerts, which will continue to be funded into this summer.

I also bring it up here because the key to making flex alerts work is public participation. So, on days flex alerts are called, people are very much needed to reduce their electric usage to help reduce the need for curtailment.

Next slide please, Heather.

And I've hit on all these. Can we go ahead and move to the next slide?

This chart here is based on CPUC analysis on the impact of the demand side mitigation programs developed in response for Aliso Canyon for the entities that we have control over.

It does not incorporate the analysis or any efforts that LADWP or the other publicly-owned utilities in the region have taken. And it looks only at programs that

were specifically implemented in response to Aliso. But you can see on this chart that when we initially -- our initial estimates on the need for Aliso Canyon on a peak demand day would be 900 million cubic feet per day. But once we implement these mitigation measures here, that reduces the need for Aliso Canyon to about 415 million cubic feet per day.

So, the combination of all of these mitigation measures have reduced on a peak demand day of Aliso by a little over half. We could probably take that number down further because this doesn't take into impact into consideration other efficiency programs that have been in place for some time that continue to lead to reductions in the region, you know, out there that reduce it.

The reason why we don't include those in there is some of those are also already incorporated into long-term demand forecasts, so it's hard to separate out what was already in the forecast, what's not. But, you know, we do know that those actually have an impact over that 54 percent reduction.

Next slide, please.

And this is just an example of one of the specific mitigation measures. And, you know, a big success on the demand side of the equation. Actually, all of these were more of a supply side resource here, which was

SoCalGas -- or Southern California Edison and SDG&E both went out and did quick solicitations for additional battery storage that could be located at substations and, thus, serve to look like a gas-fired peaker plant. And that's to be available on those peak days to reduce some need for natural gas.

Next slide.

And, again, CPUC activities beyond the action plan. We continue to develop a number of demand side resources that will help reduce gas demand, especially peak gas demand in the region. And then there is a long-term study being conducted by the California Council for Science and Technology looking at statewide viability of natural gas storage. So that's not just looking at Aliso Canyon, but all storage facilities across the state.

And then there is an order instituting investigation, an OII, that has been opened with Commissioner Randolph as the Lead Commissioner on that looking at the long-term feasibility of reducing or eliminating the need for Aliso Canyon.

And with that --

Does this go back to you, Mark?

MR. ROTHLEDER: Yes.

So, in addition to the balancing rules, which were identified as one of the key mitigation measures, I

think that probably the next key mitigation measure is the level of coordination that occurred between the California Cal ISO, LADWP, and Southern Cal Gas as the gas operator.

From the Cal ISO's perspective, we enhanced our markets to provide two-day ahead information to inform the generators how much gas would potentially be needed. And this information also went to Southern Cal Gas, so that this interplay between gas purchasing and electric operations and needs really was a very intensive, increased amount of coordination.

From a ratepayer's perspective, the Department of Market Monitoring within the Cal ISO has been watching over gas prices. And what they found is that, despite the limitations of Aliso Canyon, there wasn't a significant overall impact on electric markets as a result of the gas prices and gas limitation at Aliso Canyon. The Department of Market Monitoring will continue to monitor for significant events in 2017.

The end result of the coordination is illustrated by this graph. Just to orient you, the blue line is effectively 2015; so, before Aliso Canyon. And the dark black line on the Y axis is the amount of gas burned difference between what we expected a day ahead and what was actually occurring in real time. And, so, a positive number indicates there that we missed the gas expected burn

day ahead and the actual real-time gas burn was greater than what we expected. So, that dark black line is at 150 million cubic feet per day.

And what that indicates, and the reason that's important, is because in a 2016 study, that was an identified risk; that if there was a mismatch of more than 150 million cubic feet, that was one of the triggers of risk that was identified in the system.

And you can see here that in the orange in 2016, we never got to the 150 million cubic feet additional gas burn beyond what was expected a day ahead. So, effectively, this information provided and our better forecasting allowed for sufficient gas to be brought in a day ahead versus real time. And this trend is continuing, as represented in the red line, it's current. We have not seen misses in terms of the electric generation on the California ISO under the Cal ISO responsibility approaching the 150 million cubic feet. And the table there just illustrates the difference between the 2015 and the 2016 maximum difference between real time gas burns and expected day ahead gas burns. And you can see there, again, 2016 never exceeded 150.

In addition, for 2017, as I mentioned, there's several transmission upgrades. And you got briefed about some of the upgrades coming in the future from the earlier

panels. But, in the SCE area, there's been most notably a 500 kV line addition, in the San Diego area, some synchronous condensers.

In the Pacific Gas and Electric (PG&E) area, there are some things that happened at Midway, which is kind of the interface point between PG&E and Southern Cal Edison system that has also helped.

And, coming in from Arizona, there has been improvements on series capacitors between Palo Verde and Hassayampa coming into the San Diego area.

In addition to that, in the future we are expecting some additional condenser additions. That will also help some of the localized reactive constraints that result in needing additional minimum generation on in the area. And these are just a few of them that are coming in 2017 and 2018.

Before I hand it off, I do want to point out that in 2017 there is a special event coming up in August 21st. It is a solar eclipse. And the solar eclipse is on a Monday. It will result in about 5500 megawatts of reduced solar generation on the grid for about a three-hour period, between 9 o'clock and noon. Obviously, this far ahead, we don't know what the load will be that day. But if it's a Monday and it's a hot Monday coming off of a hot weekend, those tend to be days that oftentimes are our peak load

conditions.

So, it's just something to point out. It's nothing that we specifically studied in the report. But it is a one-day event that we should be cognizant of, that losing that amount of generation could, at least on that particular day, force us to rely more heavily on the gas generation fleet than what we normally would have done.

And, with that, I will turn it over to Ken.

MR. SILVER: Kenneth Silver, Director of Power Supply Operations for LADWP.

Okay. Where are you pointed?

Next slide, please. I know we jumped ahead a couple.

UNIDENTIFIED MALE SPEAKER: Which slide do you want to be on?

MR. SILVER: 22. Back one more, please.

So, as has been mentioned, there's been increased electric and gas cooperation between the gas company, the Cal ISO, and LADWP.

We're continuing several of the things we've done in the past. We've changed our hedging, our gas hedging program, so that we don't LOCK ourselves into amounts of gas that we may not be able to burn or that are not the right amount for that day.

We've also updated our economic dispatch. We're

basically trying to optimize the available gas that we use each day. That gives us additional flexibility. And we've done that also by making some block energy purchases to ensure there's energy that we can bring into the area, as well as being more -- being more careful on energy that we would be selling.

Next slide.

We're maintaining our dual fuel capability at several of our generating facilities. We have about 1500 megawatts that can burn, alternate fuel, as a very last resort. And that would be only immediately prior to having rotating blackouts.

We're also continuing to work on our energy efficiency program. The values that are listed here are cumulative savings, and they include such things as air condition tune-ups, more efficient lighting installations at residential and commercial.

We also have a program that we implemented last year called Summer Shift, where some of our large customers have moved their load profile so that they move it away from the peak of the day. And we realized about 100 megawatts of load savings on the peak. And that helps smooth out that gas usage ramp also.

Next slide.

Some of the future things that we're looking at

is continuing our utility and residential solar. We've got about 945 megawatts of utility solar now with another 144 MW coming on this summer. We're adding to our net metering, the behind-the meter solar. And we've also gone out trying to get additional feed in tariff, another 65 megawatts, in new proposals.

We've accelerated our plans for energy storage. We have a 20-megawatt project scheduled for our Beacon Solar Station that will be in right at early 2018.

We also are, among the pilot projects, is we have a program at one of our local fire stations. It's a combination solar and battery installation. We've increased our demand response up to 50 megawatts. And we've also completed a study to determine how much distributed energy we can manage on the system and still operate reliably.

And that's completes the LADWP efforts. And I'm not sure who gets it next.

MR. OGLESBY: That's me.

MR. SILVER: Okay.

MR. OGLESBY: So, just to give a report on the assignments that the Energy Commission had, which basically focused on supply and demand of natural gas to the system. And the Energy Commission determined that the feasibility of increases in California production are limited and could

not effectively increase gas supply into SoCalGas.

We also completed our studies of what it would take to bring in LNG to the state, and did an analysis of potential with that.

And, finally, we will continue to do our monitoring function to look at natural gas use at refineries and also monitor gasoline prices should they be impacted by energy issues.

Next slide.

And, now, speaking for the group, we will continue to monitor the plan for increasing storage inventories and also to continue implementing the many mitigation measures we have.

The CPUC will complete their OII on the feasibility of reducing or eliminating the use of Aliso Canyon, and complete the long-term study of the -- the Energy Commission will complete the long-term study of statewide viability of natural gas storages.

CHAIR WEISENMILLER: Thanks again.

I'll start asking questions. Try to do it by topic, and then try to move by topic to give everyone else a chance to chime in.

So, the first question is really to, let's see, LADWP and Mark, although it might be Ed instead. We generally talk about moving away from least-cost dispatch.

And LADWP has some very specific things in terms of hedging, et cetera. Do we have any sense of what the -- all of which lead to hire costs. Do you have any sense of the higher cost of the way what we're doing operationally now compared to what I'll characterize as business as usual?

Mark, do you want to start?

MR. ROTHLEDER: Yeah.

I don't have a cost estimate for that. I will say that we have an obligation to still do a minimum cost dispatch based on economic bids. That said, the resources and some of the load-serving entities may take a strategy where they basically buy more gas, generate more, or offer their resources to generate more than they would have otherwise generated to effectively hedge that risk of a curtailment by burning more gas in the first place. And that's something that would be maybe something that could be answered by the load-serving entity, Southern Cal Edison, San Diego Gas and Electric, about their strategies from that perspective.

LADWP is in a little different place because they are the utility and load-serving entity as well.

CHAIR WEISENMILLER: Yeah.

MR. SILVER: Ken Silver.

I don't have an exact dollar amount, and there's

many factors. It's hard to predict what the cost is ahead of time. Last summer was pretty mild. So, I know that mitigated some of the costs that -- some of the excess costs. But there are a lot of variables, and it's very different to forecast.

I know we did a back-cast, but, unfortunately, I don't have the dollar value right at hand.

CHAIR WEISENMILLER: Actually, I guess, while we have you at the microphone, you want to fill in the one number that you didn't know this morning when I asked you a question?

MR. SILVER: The amount of repower remaining on our system is about 2600 megawatts.

CHAIR WEISENMILLER: And how much has been so far?

MR. SILVER: We've done about 1100.

CHAIR WEISENMILLER: Okay.

MR. SILVER: Or -- I'm sorry -- 900.

CHAIR WEISENMILLER: 900.

MR. SILVER: 900.

CHAIR WEISENMILLER: Okay. So, if you do have any quantification, if you could submit it in the record, that would be good.

I don't know if Edison or San Diego had the right people here to answer that question. Certainly, if so, I

would encourage them to come up. If not -- okay. Catherine is pointing. If not, certainly, you can chime in in writing later.

Come on up.

MR. FRONTINO: Hi. Good afternoon. Tony Frontino, Southern California Edison. I am the Principle Manager of Trading and Energy Operations.

To address the question about incremental costs, it's very hard for us to quantify as well. And, so, what we have been doing is coordinating the best that we possibly can in terms of managing our gas burns with what we think the Cal ISO is going to dispatch. Based off our forecast, we'll buy gas accordingly as well.

So, we're managing our gas burns the best that we possibly can. We'll forecast what we think the gas burns are going to be. We'll buy to that forecast, and then adjust intraday if we need to.

So, the variables associated with incremental cost, to the extent the Cal ISO does implement any nomograms of constraints for natural gas, we would also look at that and see how that impacts our portfolio. But don't really have the specific number in terms of incremental costs related to all of Aliso Canyon mitigation measures.

CHAIR WEISENMILLER: Okay.

SDG&E, is anyone here that can answer --

Anyone else, questions on this specific topic?

COMMISSIONER DOUGHTY: Chair, just observation.

As I was preparing to come today, I looked back a year ago at our time here, and I thought it was important that we acknowledge these speakers and the organizations that they represent. This really has been an all-hands-on-deck moment. And thanks to good planning well in advance, we have over three dozen mitigation measures that we're managing, good coordination, both in the periods before real time and in real time, unprecedented from my advantage point, and, quite frankly, a little bit of good fortune, good weather over a summer and a winter, and good performance by existing infrastructure.

So, Mark said some points at the end of his message that I wanted to reiterate. The assessment that we're looking at now is cautiously optimistic. Infrastructure still needs to work both in the gas and electric system for us to weather this challenge this coming summer. But we should make no mistake that our situation still remains urgent and in need of continued diligent monitoring.

CHAIR WEISENMILLER: Anyone else?

Now, yeah, I think certainly -- oh, go ahead.

COMMISSIONER RANDOLPH: I would like to ask a

question.

Obviously, this last year has been really wet. In the past, we've had with Aliso and gas availability the ability to assist each other and help each other when either system is under strain. That, obviously, is impacted now. And one solution I keep hearing is Castaic as a solution. So, I would like to ask Ken to clarify the flexibility or ability of Castaic to help solve some of these challenges we're encountering.

MR. SILVER: So, the operation at Castaic is, while the plant has a large capacity, over 1200 megawatts, it's an energy-limited resource, as all hydros are. And the ability to operate it at high loads for multiple days is limited.

One of the things is as the water passes through the west branch of the California aqueduct and we generate it with it, the initial energy actually belongs to the California Department of Water Resources, so we don't even benefit by it.

The benefit we receive is only in our ability to optimize when we generate it and the ability to pump back. But the ability to pump back is constrained by -- you have to have the energy available to pump. And it's about a 1.5 megawatt of pump for every megawatt it generates, so it's not a very efficient process.

So, the reservoir, Pyramid Reservoir, we have elevation constraints and daily and weekly limits on how much we can vary that. So, we don't have an unlimited capability. And, so while it looks like a huge resource, it really isn't, particularly for multiple days. You can lean on it pretty hard the first day, but the second day, it's not -- you're not nearly going to have the available energy. So, it's -- so I wouldn't call it a one-and-done, but it's not an unlimited resource and certainly not for multiple day usages.

COMMISSIONER RANDOLPH: Thank you.

CHAIR WEISENMILLER: Just to give people a sense of scale, one of Ed's slides, I think, there's been about 100 megawatts of new storage added to the grid because of Aliso. How much is the capacity at Castaic?

MR. SILVER: The usage -- the realistic useable storage is about 10,000 megawatt hours. So -- which is looks like a lot. But if you run several hundred megawatts for several hours and you can't pump it back up that night or you can't pump -- you can only pump a portion of it back out, up that night, then it's one-for-one less the next day. So, it is much bigger -- it is much bigger than a battery, but may not have the overall flexibility.

CHAIR WEISENMILLER: Yes. I guess I either need Ed to convert the 100 megawatts into megawatt hours or I

need you to convert the 10,000 megawatt hours into megawatts.

MR. SILVER: The plant's about 1200 megawatts. You can run it full load for eight hours. It's eight hours, essentially. You know, a battery, when you talk about -- when people talk about batteries, you got to talk about megawatts and megawatt hours, and people keep forgetting the second part of it.

CHAIR WEISENMILLER: Yeah. You know, just trying to give people a sense of scale of Castaic.

So, obviously, one of my focuses is risk mitigation, which gets to mitigation measures. I think you've done some analysis. I think, as Tom said, we're sort of operating in an unprecedented fashion now in terms of, do we have coordination between the Cal ISO, LADWP, and the gas company. Again, who would have thought, you know, five years ago that any -- the three of you would even speak to each other, much less operate daily together.

COMMISSIONER TISOPULOS: Yeah. I have a question.

So, when we calculate peak demand, are those one-day scenarios or multi-day scenarios?

MR. ROTHLEDER: The way we did the analysis was just take a one-day scenario.

COMMISSIONER TISOPULOS: One-day scenario.

MR. ROTHLEDER: You bring up a good point, and that is, if you have multiple days where you're drawing on storage of gas or you're drawing on the gas capability of the pipeline, you could get into multiple-day situations that could be exacerbated over multiple days. But we looked at one-day events.

COMMISSIONER TISOPULOS: Uh-huh. Uh-huh. Thank you.

And all scenarios, if I understood them correctly, assume that the pipeline capacity is there too 100 percent of the time, right, at least from (unintelligible)?

Is there a situation where we may be competing, this region may be competing with other parts of the country? I know it's a very realistic scenario during winter at times when there is a cold spell experienced by say Midwest. You know, they can pull the gas to meet their needs. Are we having similar scenarios or are they likely scenarios during summertime that may impact our region?

MR. ROTHLEDER: From a historical experience, you're correct that those -- the competition for gas across the nation is more of a winter phenomenon. That said, what's more of a summer phenomenon is that you could have equipment issues, whether it be on the Southern Cal Gas system or on the pipeline system out of state, that can

affect the pipeline capability. And that is, in part, why we -- that is a risk in terms of unplanned outages. That needs to also be considered.

In the study, we studied both 100 percent gas pipeline utilization, as well as a 90 percent gas pipeline utilization.

The 90 percent gas pipeline utilization was based on recognition that there could still be errors in the amount of gas coming in, and also recognition that even on high takeout days, rarely, do you get up to 100 percent utilization of the pipeline. So, we took that into consideration. But whether it fully takes into consideration unplanned events and outages on other parts of the gas system, I think the independent review has some opinion about that and some suggestions.

CHAIR WEISENMILLER: Thank you. Okay.

Just following up, so what's been the historic level of flowing gas in terms of "C" points? Is it close to 90 or 100 percent?

MS. ELDER: It's hard to answer that in a comparative way that makes sense; it's a real apples-to-apples comparison because the historical rates that we'd observed were when Aliso was available.

And, so, if you just looked at flowing supply into the SoCalGas system versus its available pipeline

capacity, you're probably going to see a number that is somewhere between 70 and 85 percent, depending on exactly when you look.

But, this past winter, with the mitigation measures in place, we were able to get that much higher.

MR. RANDOLPH: It's worth noting that you're trying to look at it from a historical basis on just the flows. We know from history that no system operates at 100 percent capacity day after day after day all summer long or all winter long.

And the 100 percent lines on Mark's graph assumed both the electric system and the gas system are working at 100 percent capacity. That means no fires taking out transmission lines. That means no technical issues on the gas system. For example, last summer, there was a one-day event where some compressors on the gas system went out due to an electrical system, you know, failure there. Those things happen. I think it's unrealistic for us to assume that the system works 100 percent to capacity every day.

CHAIR WEISENMILLER: Yeah. So, basically, it's the best-case bookend.

And what's your sense of how much gas is in the other fields today? I mean, obviously, we recently found the issue of the --

UNIDENTIFIED SPEAKER: I'm going to pass that to

Katy just simply because this morning as I was preparing for this, I asked her, What's our sense of how much gas is in storage?

MS. ELDER: And I pulled up the magic Envoy web page and it says 44.3 Bcf. And that includes the 14.8 at Aliso. So, roughly -- do the math, roughly 26 Bcf.

CHAIR WEISENMILLER: Relative to?

MS. ELDER: I think where we'd like to see those fields going into winter on November 1st would be more like 60 Bcf.

CHAIR WEISENMILLER: And where we would like to see them going into summer? June 1, what do we want -- where do we need to be June 1?

MR. RANDOLPH: I, unfortunately, don't know the number off the top of our head. We have given them a number I think on where we would like them to be July 1.

CHAIR WEISENMILLER: Okay.

MR. RANDOLPH: And I can get back to you on that, but I just don't remember it off the top of my head.

CHAIR WEISENMILLER: Okay. That's fine.

MR. RANDOLPH: I'm sure Rodger will know when he comes up.

CHAIR WEISENMILLER: Okay.

So, anyway, trying to let the framework -- we've got sort of the best case. You know, one of the things we

have to focus on is getting the other storage up, so, you know, we're at least in better shape.

But, again, on the mitigation measures, I think the metric Picker kept using last year was about 60 percent of gas loads in the summer is electric generation and about 60 percent in the winter is core loads.

So, at this point, we need to be focusing on how do we do electric generation in the summer. And we -- and I don't think today was spent much time on the winter question.

So, you know, again, looking at the programs, and this is probably a good question for Ed, what more can we do in terms to up the storage energy efficiency? Demand response? Solar take? You know, what can we do to get closer? It looks like we got about half of the target there. How do we get better there?

MR. RANDOLPH: That's a good question. And it gets increasingly challenging to do incremental. Part of the challenge, in a lot of these areas -- it's both a challenge and a blessing that we already had the gas pedal the way to the floor. We are ready, as a state, doing all cost-effective energy efficiency we can and have statutory mandates to double that, those efforts.

We are ready. We're aggressively developing demand response programs.

What we did last summer, which got us to where we were, was to take a lot of those programs and accelerate them. So, that acceleration would be a one-time acceleration. It was beneficial. It's good that it's there. You can't keep accelerating it year after year after year, but we can keep the programs going, so you'll continue to see that incremental reduction in electric demands and gas demands down.

There are other places, such as storage, the electric storage, we could put more storage online. The challenge there then does become cost, which you were asking earlier. If you look at longer term cost of battery storage, you see a cost curve that's going down. But they're still a relatively expensive resource compared to other ways to provide reliability right now.

And the more we accelerate battery storage now, the more ratepayers are paying for a more expensive resource; where, if we waited until 2019, 2020, 2021, those resources would be far less expensive.

I think the biggest place where there is room for continued improvement is what I talked about in terms of the core balancing rules. The non-core, if we look at the numbers and the analysis both in the CPUC's kind of more in-depth analysis of the impact of the mitigation measures, and in some of the report, you'll see that the non-core,

with the balancing rules that went into place, very effectively balanced their demand -- their supply and demand, where the core procurement was not nearly as effective.

So, I think we really need to focus on the rules that apply to how SoCalGas is procuring for their core customers, and making sure that what they're procuring on that day actually meets demand on that day.

CHAIR WEISENMILLER: And you said there's going to be a filing -- I'm trying to remember. How long do you think it's going to take to get an answer in that proceeding?

MR. RANDOLPH: The settlement agreement from last year required SoCalGas to file proposals by September of this year. We know standard CPUC proceedings can go anywhere from nine months if it's not controversial to 18 months if it's fairly controversial. I think on this one, along with the priorities were put into other areas, the Commission needs to put some priority on this, since this is the low-hanging fruit. And it's my intention to put some pressure on SoCalGas throughout the summer to make sure that they come forward with a fully fleshed out proposal in September so we can move quickly.

CHAIR WEISENMILLER: Yeah. Although, obviously, it's not going to help us this summer, and it's going to

take a miracle to get it in place for next winter.

MR. RANDOLPH: Yeah. For the summer, it wouldn't help much. But, in the summertime, I -- since the core procurement is such a small percentage overall, I don't think it makes a difference. And next winter there may be some interim things we can do while you're looking at longer term solutions.

CHAIR WEISENMILLER: Okay.

LADWP, what more could you do? Yeah, again, assuming you could do more in terms of trying to do energy efficiency. You listed additional things you're doing, which is good. I'm just asking, you know, if could you press the pedal more for storage or other areas?

MR. SILVER: I'd almost like to defer to my boss on this one. But, yeah, you know, we're looking really across the board at -- there was mention that we've got a study going to, basically, alternatives to repowering with gas, what other things we might be able to do.

And, certainly, demand response, energy efficiency, storage, increased renewables are all part of that puzzle, and we're actively working on all of those areas.

COMMISSIONER RANDOLPH: One more thing I would like to add. In a discussion earlier this week with the mayor's staff, we talked about doing the same similar

program we did last year with the municipal buildings, where it was a call to action and a competition amongst the city-owned buildings to reduce consumption. And the admin building reduced by five percent. But we talked about expanding that as a call to action to all commercial facilities. So, it is something that we're looking at implementing.

CHAIR WEISENMILLER: No, that would be good.

Edison, do you have any -- or San Diego, obviously, if you have anything else to chime in that we could do?

COMMISSIONER DOUGLAS: Could I ask a question?

CHAIR WEISENMILLER: Sure. Go ahead.

COMMISSIONER DOUGLAS: So, just as a quick follow up on all of this. You know, as Ed said, we already had the pedal to the metal and then we had this additional Aliso Canyon issue that really highlighted the importance of moving forward with these kinds of programs.

You know, as we've now been implementing these mitigation measures over time, has the Aliso Canyon issue caused any of you to either, you know, focus on some measures more than others, for example, move more heavily into storage or more heavily into some mitigation measures that are -- are particularly well-suited to help address this issue or shift resources geographically or anything

like that?

MR. SILVER: For L.A., I think what we've really done is we've looked at what we were planning to do and see, can we do it sooner, and try to look for the so-called shovel-ready projects that we can bring online more quickly.

But many of these things were initiatives that were already in the works and now they've just taken on more urgency.

MR. RANDOLPH: I think similar on the -- the entities that we regulate. The electric storage was an obvious last summer low-hanging fruit that proved to be, you know, both something that could happen fast and was very particularly well-suited to meet this. In the future, that may again be a great benefit.

There are other areas and programs we experimented with last year. We accelerated rooftop solar thermal programs, and gave a greatly heightened rebate to people who could put solar thermal on their roofs before the end of last year. That met with some success. We did get some more solar thermal out there.

But there's a program that's designed at market transformation. And by accelerating that high of rebates, most of the proponents of those programs were afraid that you were using money that, you know, for a one-time thing

that wasn't going to help for market transformation. So, they actually asked that we not continue to accelerate it and let it play out in its normal course of business.

Last summer, we did look at another issue such as that that I think are worth looking at in the long term that aren't in the short term. I mean, things that -- a lot of the fuel switching requires plumbing and changes, other changes to households you can't do and get them in place in six months. But if you develop a program that's got a six-year or eight-year horizon, you can start doing that very effectively.

COMMISSIONER DOUGLAS: Thank you. That's really helpful. Those are both helpful answers and just --

MR. ROTHLEDER: I've got one additional --

COMMISSIONER DOUGLAS: Oh, I'm sorry. Go ahead.

MR. ROTHLEDER: So, not specifically called a mitigation measure, but I would like to highlight that this summer versus last summer, the Western Energy Imbalance Market, which allows us to dispatch other resources outside of the California, Southern California area in real time, we've got additional participation in that energy imbalance market from Arizona Public Service that we didn't have for last summer.

And, so, that's an additional measure. But, at the end of the day, you're still limited by the overall

transmission capacity. And what we've learned is that they could also be experiencing gas limitations or gas constraints even into the Arizona area that could impede our ability even to get that re-dispatch available even in real time. But, nonetheless, it is an additional tool that is available this year.

COMMISSIONER DOUGLAS: Thank you.

Just real related quick follow up, can you point to any sort of unexpected successes or just lessons learned out of this that might help -- that you might want to build on in the next years?

MR. RANDOLPH: I think the biggest unexpected success is how effective the balancing rules were. And it may be the least exciting of them to say, Oh, my God, managing the gas system better really went a long ways to solve the problem.

(Laughter.)

COMMISSIONER DOUGLAS: It was pretty interesting from the chart. Actually, that was by far -- it dwarfed the other measures.

And is there a lot more we can do there, or is that a, you know, done and now we're managing it better and move on to other measures, or is there more we can do there?

MS. ELDER: I would say that the number that you

saw in the chart reflects, not only the success of the gas balancing measure, but it's also a little bit higher because people knew that they could -- that Aliso wasn't there to fix their problems, if you will. You know, we lost that degree of freedom, and so they behaved better.

COMMISSIONER SCOTT: I had one.

MR. RANDOLPH: Well, I had --

COMMISSIONER SCOTT: Sorry. Go ahead.

MR. RANDOLPH: Just to build on that a little bit. You know, going forward, I mean, I've said working with the core to balance that better will probably help move it more. But I also think it's something we need to continue to monitor and tweak over the next couple of years. I mean, there's already some examples of some folks who, now that they understand the rules better, are starting to dispatch gas in a way that is not affective. So, as they do that -- you know, as they go this way, we're going to have to move the rules that way.

And it's not showing up in this PowerPoint presentation because we thought it would be a little confusing, but it is spelled out in our mitigation documents, that in the wintertime, we actually saw, we think because of the operational flow orders (OFOs), in some cases gas usage go up. And, so, we got to better understand what's going on there and maybe tweak some of

that. And that has to do with days when there's a high -- or a low reduced flow order (RFO), where people, to protect themselves, are now bringing in more gas. And we aren't quite sure where that's going at the moment, so we need to better understand those and continue to tweak with the rules.

COMMISSIONER SCOTT: I was going to ask about one of you mentioned during the presentation that in some instances it was necessary to call on the public to help out. And my understanding is that actually went fairly well last year.

I'm wondering if that is still something we would like to continue into this year and how we'll carry that message forward.

MR. RANDOLPH: Absolutely. And I may turn to Mr. Doughty a little bit to prompt that since it's one of -- the ISO actually controls flex alerts at this point in time. But we have seen year after year in Southern California when flex alerts are called that they result -- it's a little hard to measure because there's other things going on the same days, but between 400 and 600 megawatts of load savings on those days.

So, it can be a very substantially successful program. And, as I brought up before, and I think it is incumbent on all of you when speaking in public in Southern

California, it works because people voluntarily respond to it. And people need to understand that when it's called there are real risks of curtailment. And, so, they need to participate in that.

The one downside to that is, and we haven't seen it in a long time, if it's called day after day after day, the effectiveness is going to go down every single day as people get a little tired of hearing that day after day after day.

COMMISSIONER DOUGHTY: Commissioner, if I could add, flex alerts have been incredible program for us. I think maybe 17 years of flex alerts have been operated by the Cal ISO and the utilities.

Ed's right, if we call it too frequently, we have consumer fatigue. And it's not a linear drop; it drops very quickly. So, we try to reserve flex alerts for the times when they're really needed. But it's an opportunity here in this room to acknowledge millions of Southern Californians who have become acclimated, even conditioned to this concept of flex alerts. And a hearty thanks go out to those who have responded, and a hearty request goes out to those as we look ahead because there's a likelihood we'll be calling them this year for any number of reasons, including gas shortages.

COMMISSIONER KERR: I have a question.

So, some of the kind of last-ditch efforts include doing withdrawals from Aliso Canyon, also include, you know, purchasing for imports. And, as I mentioned in my earlier comments, on May 3rd, we saw some of those imports not materialize.

And, so, I want to know, first, do we have any visibility into why that was, and, Number 2, any thoughts about how to deal with that so that if we need to, to access those resources in the summer, that we're able to?

MR. ROTHLEDER: So thanks for mentioning May 3rd, and yeah, it was a Stage 1 event.

In part, some of the imports that were expected to come in didn't come in. We're still looking in to answer why that is, whether the conditions outside the area caused them to not be delivered. There were some internal resources that were also tripped or were unavailable that we expected to be available. And, then, lastly, overlaying with that is we are seeing in the evening condition, we're seeing as the solar production goes down, we're seeing a large ramp in of needing that other supply. And, so, it's those three combinations that played a role on May 3rd.

I will say from a gas system, it's my understanding that the gas system, even though we had to lean on it a little bit more, my understanding, and maybe Rodger can confirm this, is that there wasn't a gas

shortage situation at the same time. So, it was more of electrical in nature. Maybe we end up burdening on the gas system, but the gas system was sufficient, available on that particular day. But I think --

CHAIR WEISENMILLER: Well, it might help if you just walk through what happened --

MR. ROTHLEDER: Sure.

CHAIR WEISENMILLER: -- for people.

MR. ROTHLEDER: So, on May 3rd, which, basically, was a hot day, it was probably the hottest day of the spring going into the summer so far, we were forecasting loads a day ahead. We were forecasting about 2,000 megawatts of lower load than what actually materialized.

What cleared the market was actually closer to what actually materialized, so we thought we had sufficient resources at least a day ahead.

When we got into the peak hours, roughly around, I think around 17 or hour ending 18, what we started to see was some of the supply that was committed or expected to be delivered start to not be delivered, whether it be some imports or some internal generation. And then overlaying with that, again, we were just beyond actually the peak, but we had the evening pull still because the solar production was going down after the system peak.

And it was those three combinations put together, loss of supply and then the high-ramping needs that basically created a condition where we had to draw upon our operating reserves.

And, once you draw upon your operating reserves, your reserves run short. And that is, by definition, a Stage 1 event. We're not able to maintain your required operating reserves. And, so, we declared that event.

And then once we declared that event, we then subsequently went into calling some demand response. And, so, we had about 800 megawatts of demand response kick in. This is a demand-response program, so they've signed up for this. But, in this particular case, they had to act very quickly on very short notice, and we got about 800 megawatts of relief.

And then as the load continued to go down, we were recovered in about an hour or two-hour period and was able to then stop the Stage 1 event.

But that's an example of unexpected conditions changing from what was the expected plan and then suddenly you're in a condition where you're short from what you expected and you're drawing upon those reserves.

COMMISSIONER DOUGHTY: Chair Weisenmiller, this was a unique circumstance in a number of ways. It's the first Stage 1 alert we've called in over a decade.

And we learned that as we were coordinating with other entities, many of the parties who we were coordinating with had never experienced a Stage 1 before. So, it leaves the opportunity now for us, as part of our lessons-learned exercise, to reach back to parties with whom we collaborate during alerts and warnings and make sure they understand what the stage alerts are about and what's likely to happen.

There were some parties who thought the grid was at risk of imminent collapse. And, of course, Stage 1 is our lowest level alert. So, we'll be reaching back around and making sure that we set much more clear expectations with individuals and organizations that we coordinate with during those circumstances.

COMMISSIONER TISOPULOS: Ask one more question, and I don't know how fair this question is, but I'm going to go ahead and ask it anyway.

You guys are the best in estimating risk for a given set of assumptions, weather assumptions and what have you. So, as you look back to 2016, going 12 months back, and trying to forecast risk for a curtailment for the summer of 2016 versus sitting here today trying to forecast for the summer of 2017, is the risk today lower compared to what it was last year, or is it higher? And I realize facts on the ground are changing in terms of capabilities.

MR. SILVER: This is Ken silver.

We're a little more -- we've had a year to practice, so, on that basis, we're probably in a better shape. But we need to recognize that last summer was not much of a summer, other than June 20th. I know for L.A. we had -- even June 20th was 400 megawatts, which is well over five percent off of our peak, and that was the highest for the whole year.

But, you know, we are more practiced. But the overall risk is still there. We also didn't have any significant events on the interconnection during high-load periods. We didn't have any major fires taking out transmission -- well, we did have, but it wasn't on a high-load day where we lost transmission. And we didn't have any regional heat waves. So, there are times when the whole Western United States is under a heat wave and the northwest doesn't have anything to send, Arizona doesn't have anything to send. So, even if we have transmission, we're not going to get to 100 percent transmission utilization because there's nothing to put on it.

You know, this summer is projected to be a hotter than normal summer. Of course, we know weather forecasts are not that good, particularly, beyond an hour from now. So, it's hard to really predict what's going to be. But, yes, last summer was ideal. And, so, while I don't think

we have the same opportunities for problems this year and this year they may materialize.

MR. ROTHLEDER: I guess I would -- in the positive category, I agree with Ken. We've learned a lot from last year. And I think we can put that learning to experience going forward this year.

I mentioned earlier, we've got some transmission upgrades, which gives us a little bit more maneuverability room on having the minimum amount of generation in the area.

What concerns me the most is the balance of the non-Aliso storage facilities and the fact that we are going into this summer with much less inventory, much less withdrawal capability than what we had going into last summer.

And I think that is probably the pivotal risk in terms of this summer versus last summer. It doesn't mean that we can't still resolve it, and we added a mitigation measure to try to address it. But, to me, that's the big difference between this year and last year.

MR. RANDOLPH: It shows up in the press and some of the consultant reports that look at the joint agencies' technical analysis that state that, you know, first we had SONGS and there was going down and the agencies were talking about risk of blackouts and there were none. And

then we had this and the agencies were talking about blackouts and there were none. So, therefore, the agencies are overly concerned about blackouts and the risk isn't really there.

You know, I started out in my current job right as SONGS went out unexpectedly. And what I will remember most over these last six years is we have not had an extended heat wave in Southern California. You know, so if you look at we plan for a one-in-ten summer, we have not had a one-in-ten summer in eight years. Does that mean we're due for one? That's not the way statistics work. But we also haven't had a summer that completely tests the system in a way for some time.

Now, that said, with the mitigation measures that have been put in place, with what we've learned about operating the system, with the transmission upgrades, with all those combination of things, the system this summer is far less dependent on Aliso Canyon than it was last summer.

CHAIRMAN WEISENMILLER: Katy, what's your assessment?

MS. ELDER: I would say the balancing rule change that we made helped enormously, and that a year ago I was worried that it wouldn't work, that non-core customers were so used to the enormous flexibility that they had here in Southern California with the balancing rule, that it would

be very hard for them to adjust to being in balance whenever SoCalGas called the low OFO.

So, what we saw is that customers did respond appropriately to try to get into balance quickly when we needed them to. So, to me, it's that. You know, I'm not as nervous about that as I was a year ago.

But, on the other side, we have roughly 19 or 20 Bcf less in storage than we had a year ago at those other three fields.

So, it's those two things that I think are the biggies.

COMMISSIONER DOUGLAS: So just as a quick follow up, one thing that is obviously better this year than last year is the states hydro situation. Can you just briefly talk about how that might help or what impact that could have?

MR. ROTHLEDER: Well, I think Ken discussed that it from a Castaic pumped storage perspective. Let me discuss it from another hydro perspective.

So, yeah, we're in a much better hydro condition. Our studies accounted for the fact that we're in a better hydro condition. But you also have to remember that where the hydro is produced and injected into the network is not necessarily in the localized areas that cause you to have some minimum amount of generation on for managing

contingencies and flows in the system.

Even in a dry hydro year, you can usually get the maximum amount of hydro out of it for short periods of time.

So, in the end, the hydro condition I don't think is that significant of a difference, but at least you got more megawatt hours over a longer period that you can utilize and rely upon. And, obviously, that displaces some of the gas burn in the system.

CHAIR WEISENMILLER: Okay. Let me follow-up.

We talked a lot about flex alerts. We've talked a lot about what we've done on the power system -- demand response. Last year, and this is a little bit ahead of time, but we talked about trying to put in place a gas alert system, some sort of gas demand response. Obviously, that's more of a winter, but I thought it would be good to get Ed's perspective on how that worked or didn't work.

MR. RANDOLPH: That's more of a winter issue.

We did have something that resembled a gas flex alert last winter. It was triggered two days last winter, two particularly cold days last winter. You know, we honestly haven't done a deep dive into it, so some of this is a little bit more anecdotal observations.

It did seem to help reduce gas demand in the evenings on those cold days. Something, a lesson learned,

why you got to continue to look at this stuff is, it may not have had any effect on gas demand in the early morning hours. And this is anecdotal on my part, but a lot of other people kind of agree with this analysis, is, people responded to the flex alerts they heard on the radio and did what they were told to do, which is to turn down their thermostat a couple of degrees, from 68 to 65.

But, now, so many people have electronic thermostats that if you override the programming it stays overridden for two hours, then it goes back to the programming.

So, people got home that night, said, I'm going to turn my thermostat down to 65 degrees like I was told to; they went to bed; that morning at 6:00 a.m. when the thermostat turned on for the morning, it went back to 68 or 70. So none of that savings showed up in the early morning hours because everybody defaulted back to where their thermostats were.

So that likely impacted some demand there. That's something I think we need to continue to work on and think through.

We also did what we believe is the first ever gas demand response program in the country this summer -- or this last winter, where the utility did two different pilots out there. You know, one was, had customers sign

up, and then on the day they needed a demand response, send them an e-mail, send them a message. Those folks, if they saved gas as measured by their smart meters, would then get payment at the end of the month. And then others, you could take advantage of the Nest-type smart thermostats that have remote access to them to just automatically turn down the numbers.

Right now, I'm personally a little disappointed in the results of that, but that has more to do with the number of customers that signed up, not over the effectiveness of those customers. So, I think that's something we need to continue to work on with the utilities to more aggressively get customer enrollment in those programs.

CHAIR WEISENMILLER: So we're going to switch gears.

Mark, would you explain exactly what the Cal ISO will do during the total eclipse?

MR. ROTHLEDER: Watch it. No, I'm just kidding.

(Laughter.)

CHAIR WEISENMILLER: Special glasses, please.

MR. ROTHLEDER: No. We're preparing for the solar eclipse. We've already put together a report mainly forecasting what the event will do over the time period, both in terms of grid side solar production, also

behind-the meter solar production, rooftop solar production, as well as our solar production in our energy imbalance -- Western Energy Imbalance partners that are now participating in the Western Energy Imbalance Market.

We will take several measures, some of which will be informational, getting information about what's happening, the expectation around it. We may call a flex alert. If, in combination, that's a high load day, we may need to call a flex alert. We may end up pre-dispatching solar down to avoid having larger ramps coming in and going out during the solar eclipse.

We will probably carry more reserve. So, we'll start more resources on that particular day with the anticipation that we're going to have to use those resources for that solar eclipse period, and those maybe gas resources on those particular days.

We will, obviously, set up or day-ahead market in anticipation of it. We will forecast accordingly. And we will pick up additional resources in import capability as necessary to mitigate that.

It's an event that will affect California by roughly around 60 to 70 percent, so we lose about 60 to 70 percent of the production as a result of the solar eclipse. It's 100 percent and a little bit north of us between Oregon and Washington.

CHAIR WEISENMILLER: You know, this happened in Europe a couple of years ago. The Italians just disconnected all the solar from the grid, and the Germans rode it through, but it was a cloudy day in Germany so it was not as much of a stress.

What is LADWP going to do on the eclipse?

MR. SILVER: We're looking at -- you know, we're still studying. I think we're a little bit behind on our study.

But we've looked at what we expect. And with the amount of solar we have, we've actually seen some swings of that magnitude just from the clouds. You know, so this will just be probably a longer duration, but we'll know it's coming. So, we should easily be able to mitigate that with the resources we have.

But, at this point, I don't believe we'll do any pre-curtailing, but we'll just have resources positioned to come in behind it when the drop off starts.

CHAIR WEISENMILLER: I was going to ask either you or Mark to describe, obviously, Western Electricity Coordinating Council (WECC) and Peak Reliability (Peak) have tried to be helpful, too, and sort of what they're doing and if there's any more they can do to help. But not just in the solar eclipse, but, generally, as we're going to the Aliso situation.

MR. ROTHLEDER: Yeah. I know WECC is actually conducting -- they've been following the results of what we've been doing in this analysis, but they're also undertaking a kind of a west-wide gas electric coordination risk analysis. And they're just getting that kicked off. I don't have the exact date when that will be complete.

Separate from that, on the solar eclipse, actually North American Electric Reliability Corporation (NERC) has just put out a report around the solar eclipse as well, finding similar things that we identified as well. But we're going to review that report, see if there is anything else we can learn from their analysis.

MR. SILVER: The Peak reliability coordinator last week had a meeting of a number of utilities, and they -- that was one of their topics. Several of the utilities made presentations on what they're expecting.

So, they're looking at putting all of that information together to look at it from the entire West Coast. And, since their overview goes all the way up into the Northwest where they're going to see 100 percent, the total eclipse, although they probably don't have as much solar up there as we do down here, but they're looking at it from what will be the impact on the regional interconnection, not only in supply, but what that does to the transmission system as lines suddenly become loaded or

unloaded in a non-typical fashion.

COMMISSIONER TISOPULOS: Just to switch topics a little bit.

One of you had referenced liquefied natural gas (LNG) in one of the slides. Is LNG being looked upon as a potential short-term solution, or is this more of a longer-term tool in the toolbox?

MR. OGLESBY: The Energy Commission just looked at LNG as one option to bring gas into the state. And just, basically, did the study to prepare to see what would be required in order to do that.

COMMISSIONER TISOPULOS: Does it look realistic, a realistic tool, or -- and we can speak offline. That's --

MR. OGLESBY: I won't go into detail. I mean, it's going to be. It's not an overnight fix and wouldn't be particularly helpful for this summer.

CHAIR WEISENMILLER: Okay. I mean, part of it, as I understand it, and, again, just to dig in a little bit further, Sempra has an LNG facility down in Baja that -- you know. And one of the questions on using it, you know, bringing in gas from there and up here, is the Commission has in place a number of affiliate rules that SoCalGas, negotiating with whatever the appropriate Sempra affiliate that has the LNG part, there is a number of

different conditions.

So that is at least one of the barriers we're poking around to try to understand. I think, actually, FERC [phonetic] was looking at that issue some, too: You know, were there any conditions where the CPUC would feel comfortable dealing with affiliate transition.

I think actually physically moving gas -- well, the LNG terminal has not been used particularly much, you know, it's like maybe once a year someone does something there. But, at least in theory, you could use it. And, so, I think physically, again -- I think the physics are probably pretty straightforward with engineering. I think the affiliate rules are there. And God knows what the price of LNG is today, you know.

COMMISSIONER TISOPULOS: Got it.

So, it's the Baja plant that is being looked upon as, you know, a potential solution. I mean, in theory, you can ship it, right? I mean, there are ships. They can deliver LNG. Or you can build an LNG facility somewhere -- you know, in the near -- in the region. But it's more of a longer-term solution. You know, you cannot build it at the snap of a finger.

CHAIR WEISENMILLER: Or, again, you might bring in some LNG, have it there as sort of quasi storage, I think. You know, assuming that's what we are looking at.

I'm looking at Katy to see if I'm adequately -- accurately characterizing the situation and the issues.

MS. ELDER: You are.

So, to put a little more color on it, Chair Weisenmiller mentioned the facility that sits in Baja, California. And, of course, with natural gas prices in the U.S. versus world, there's no reason for somebody to bring a cargo in.

Could you use it as a backstop on a bad day if you were willing to go out and pay the higher price for the gas and bring a cargo in, could you sit it there and use it to serve at least a little bit of demand on a cross-border basis. It appears from the research that Energy Commission staff did, CPUC staff did, we also had a conversation with FERC staff, we could not identify any real affiliate barriers to doing that. It's more of a matter of people deciding they're willing to pay the price and getting it done. At least, that was our assessment.

MR. OGLESBY: And having enough foresight to have the -- because it takes a long time to move gas.

CHAIR WEISENMILLER: Well, I hate to ask, so how long would it take us to get a tanker of LNG from somewhere to there?

MS. ELDER: I haven't called a broker to ask that

question.

You know, it might take a couple -- a few weeks would be my guess, but, you know, that's without calling up British Petroleum (BP) and asking them how long to get a spot cargo. And I just choose BP off the top of my head.

CHAIR WEISENMILLER: Any other questions from anyone on the panel on what we've covered so far?

Well, I would like to thank the panel, appreciate your hard work on pulling this together. It's not easy. We wanted to make sure we got this in a timely fashion but that you had as much data as you could. So, again, thanks.

Who is the next speaker?

MS. RAITT: Thank you very much to our panelists.

Next, we'll be hearing an update from Southern California Gas and Rodger Schwecke from the Southern California Gas, please.

MR. SCHWECKE: Good afternoon, and thank you for allowing me time to speak with you today.

The panel behind me did such a great job explaining the gas issues, I don't know if I have anything to add. So, I might be repeating a few things.

But, from our perspective, there are some things that we want to address. And I do have a presentation.

So, you know, we have some concerns about the summer operating season. Any operator, obviously, has

concerns when there is limitation on resource availability, whether it's electric side, whether it's the gas side.

An operator, as we like to say, is not in the hope and pray business. We plan for the worst. We hope for the best, but we still plan for the worst. And to hope that we have a mild summer like we had last year or to hope that we have all the resource available as modeled is not, in our mind, the best planning practice.

So, when we look at the concerns for this summer, the analysis that was put together -- and what we did is we did the hydraulic modeling and we provided it to the team that presented before on the technical assessment -- we provided one scenario, one very optimistic scenario. And I think they talked about what those assumptions were and just how optimistic they are.

And two items stick out in that assumption that we used in our hydraulic modeling, and that was that we had a hundred percent of our receipt point utilization. When I say a hundred percent, that means we had a capacity and it was 100 percent utilized.

I think there was a question before about how much do we typically see. And it's really not a ratio of the capacity as much as a ratio to the demand. And the balancing rules that were supplemented, really, it's to the burn or the usage and demand and not to the capacity.

So, in this case, we assumed 100 percent of the capacity was utilized and then determined how much demand we can serve.

The next item that was critical in our analysis was 100 percent of the usable storage space. There was withdrawal numbers that were provided to us that should be used by the Public Utilities Commission. And they mentioned the number 1.47 Bcf. We maximize utilization. And I'll get more into the how we maximize those during our modeling characteristics that we came up to get the results. My concern about the assumptions is the overly optimistic feeling for this summer could be betrayed by the numbers that were presented. It's just a concern that we have to be aware of because of those very extreme optimistic assumptions.

It also assumes that we had storage inventory levels. I think it was mentioned by the last panel quite often, we have come into this year at lower storage inventory levels at our other three fields, primarily, our other two.

We have one field, our Playa del Rey field, that is a very small field. We pretty much keep that full all the time. So, it's really the other two fields, one in particular, Honor Rancho, and then our Goleta storage field up along the coast of San Barbara.

Those were lower coming into this year. So, there is an impact, because there is a -- and Ed mentioned this -- there is a direct relationship between inventory level and withdrawal capability. It's simple. It looks at it from the standpoint of pressure, the more pressure you have in the reservoir the more inventory and the more driving force you have to create withdrawal capability. And we, typically, have a withdrawal, what we call a withdrawal curve, that starts at a certain level and declines as the inventory declines.

And, this year, we have to figure out what is that inventory decline based on some of the characteristic changes of the storage field, such as, how we look at our well configurations.

If you're familiar with some of the new DOGGR rules that have come out, it's looking at a different well configuration for a double barrier scenario, which means you have a smaller piece of pipe sticking in the ground that can flow gas.

So, that's another concern on how our fields perform over time and whether they'll see a drop off faster or sooner in that inventory curve.

The other difference that we're concerned about is the impact between forecasted demands and actual demands. There was some discussion already by the prior

panel on some of the questions that you had with regard to that forecast differences.

If you would go to the next slide.

And you mentioned the May 3rd incident. One of the most recent incidents. And this is just an example to show how things change fairly quickly. And this is the case where we had -- the forecast that we had from the Cal ISO for the gas system was the yellow line, and then what actually occurred was the red line. You can could see there's that difference that basically started occurring right away in the morning. But that's just a difference.

This was a day that was actually a fairly low demand day. But you also see the difference just within the L.A. Basin, from the Cal ISO forecast for the L.A. Basin area, and what the actual burn was. This day, in particular, as was mentioned, we had no problems with the gas system. We had plenty of gas available. We were on minor amounts of withdrawals to meet this additionally [sic] load, and that's because the demand was not that high.

But this is just an example of where we could have differences between those forecasts.

So, let's go to the next slide.

So, when we looked at the hydraulic modeling -- what hydraulic modeling is, is a simulation of

the physical operation of our system on how transmission pipelines flow gas, how storage reacts to demand, how demand changes and profiles across our system, and operating within the safe limits of the system.

And the safe limits are defined by an upper bounder of the maximum operating pressure or the minimal operating pressure, which is a lower bound. Because you start approaching the lower bound of pressure, and you start losing, potentially losing, gas -- parts of your gas system.

We did the hydraulic analysis, you know, Kathleen using the maximum -- we calculated the maximum theoretical system capacity. How much could we serve on a given day with those assumptions, with the characteristics that we saw as historical load profiles from electric generation customers, along with our non-electric generation customers, which is, you know, the commercial, industrial, and the residential.

Residential is fairly flat during the summertime. There's not much profile to that load. But the one thing I want to mention, running a computer simulation, I like -- and every time we run it, it's like you're running a flight simulator on your computer. You're trying to land the plane such that you land safely. And it's operating the system in that fashion. You're trying to operate the

system so it lands safely, gets back to a characteristic. Since this is only one day, we have to get back to square one every day.

So, as you're landing it, if something happens, unlike a computer simulation in which you can just hit, you know, rerun the simulation or hit the reset button, the difference is, on the actual day when we're operating the system, you can't necessarily reset the system. And you have to play it a little more conservative because you don't know how demand will change or will you have upsets on the system.

And, remind you, that these assumptions for the modeling assumed a perfect case. We had -- everything was operating, nothing broke, everyone was acting appropriately. But it was different than the 2016 is we took actual historical days where we know the system actually operated, and then modeled it without Aliso Canyon. This case, we start from square one and we model it, assuming no Aliso Canyon and the other assumptions, and how much we can maximally serve.

Go to the next slide.

And that's where, you know, again, the hydraulic modeling assumptions were directed by the CPUC for the amount of withdrawal capacity, the 100 percent utilization, the storage fields. We had no other additional outages.

We had the current Line 3000 outage, which someone asked the question about what's different this year than last year. Last year, we had Line 3000 in service most of the year. This year, we don't, which affects about 300 million a day. And the receipt point utilization with that Line 3000 outage and the diminished California production, it's about 3.2 Bcf of supplies that we received in the system on a day. And then we used the 1.47 Bcf of withdrawal capability, which is effectively 100 percent of the other three storage fields' capabilities, and, again, no utilization from Aliso Canyon.

So, what we didn't model is some of the contingencies that really need to be considered. I mentioned no other outages. You know, a lot of our compressors are old equipment. When I talk about new equipment, I'm probably talking about more in the 30-year-old time frame as new. When we have older compressors that are 50 or 60 years old, they just don't run as well as they used to. And you can't run them as hard as you used to. Also, because of the air quality permit requirements, we can't run them as fast as would we would like to run some of those units as well.

So, any unplanned outages in those compressor stations will have a direct impact on the amount of gas that we could serve on a given day. Likewise, planned

outages, such as -- unplanned outages, such as the loss of a dehydration storage field, which would limit the amount of withdrawal capability.

We also have to keep in mind, and I think it was kind of mentioned before, the system is integrated all the way back into the supply basin across the entire Western United States. So, when you look at a failure on the system, it's not just within SoCalGas' system. You have to take it all the way back that there could be a problem that exists on the interstate pipeline, could be a problem that exists in a gathering system in the supply basin or the producers themselves. It's the same thing that I think Mark was mentioning with regard to the transmission capacity and the available resources. If those supplies on the gas side and the electric side are pulled off into Arizona because you have an extended heat wave that stretches its way all the way into Arizona and Nevada, there is competition for gas supplies, there is competition for electric generation resources. And everything gets stressed.

There is no natural gas storage in Arizona. Effectively because of the integration of the system, those customers have been able to pull on the pipeline historically because California was able to use Aliso Canyon and its other storage assets, not only in

Southern California, but in Northern California. So, that now has changed the dynamics of how the entire system operates.

Supplies at 100 percent. That's not a real -- in my mind, that's not a realistic scenario. I'll talk more. Mark looked at some of the scenarios where they were at 90 percent supplies and I think Caty was mentioned something more to 75, 80. How much those are on a given will vary. And whether it's a mismatch of nominations across the system, customers not buying the amount of gas, or a demand swing -- I mean, if you look at our system today, I mean, we're talking today's flow day, we started this system today over 300 billion cubic feet a day short because there was a hot weather weekend. We called the low LFO, part of the balancing rules, and then we ended up with a system that had too much gas. It swung that fast in a given day. And that's the concern that we have with regard to forecasting demand, it could change up or down on a given day rather quickly, probably more so during the wintertime where one-degree difference is about 100 million cubic feet a day of demand on our system.

Next slide, please.

So, with that, our results came out, and they're already mentioned, about 3.6 billion cubic feet a day could be met with those assumptions. I'd like to point out, that

also had an hourly sendout of over an equivalent of 5.3 Bcf on that hourly day.

We also did, even though it wasn't concluded in the assessment, we did a second analysis, taking a look at a loss of a potential storage field. We started that analysis when we were looking at our storage safety enhancement plan before we were asked to change that plan. And we assumed that we lost about 400 million a day of Honor Rancho supply capability, which reduced the system capacity about 3.2 Bcf. So, that's some of the sensitivity that we looked at, and it also confirmed a sensitivity that, if you lose foreign supplies, you lose storage capacity, it's about a one-to-one relationship between the loss of supply and the amount of gas you could deliver on that given day, which is what was also mentioned before.

So, we confirmed that with an analysis. That analysis was not included. We looked at the 3.6, which was included in the technical assessment.

Next slide.

This is graphical representation of the hydraulic modeling. The demand line is the red line. What I've included in there is the green line, also, which is really the demand for the non-electric-generation customers which, you know, is fairly flat. There is an uptick during the day with, you know, commercial, industrial loads. But we

don't have the same Peak in scenario.

The blue line itself is the supply that's delivered into the system. And you could see it's fairly flat up until about noon, and then you see where the storage fields kick in. The difference between the 3.2 Bcf or 3.185, that was a flat line on both the right and left side of the curve in the blue line. And the in-between is the storage withdrawals. And it gets up to the maximum capability of about 1.4 Bcf.

But you can see that even in the peak demand of 5.3, someone might ask the question, Well, how did you serve the demand between that blue line and the red line? Well, that's what's called pack and draft on our system. That's where you're actually stressing the system by pulling gas away from the pipe and then you make up for it in the afternoon or later evening.

So, the area under the curve is the same as the area above the curve when compared to the blue line because we get back to the same place and we have to get back to the same place, because this is one day. What's in store for the next day, we have to be prepared for.

Next slide, please.

One thing I would like to point out, as Mark was talking, he had that graph that showed three different scenarios that, where they had either 90 percent of

receipts or 85 percent of import capability. And that was referenced at Table 4 and Figure 5 of the technical assessment. That looked at that periods in which we would have to use Aliso Canyon if we had those other scenarios which required somewhere between 110 and 150 million cubic feet for an eight-hour period -- again, it's an eight-hour period -- which would require either a withdrawal from Aliso Canyon rate of 330 to 450, or some form of electric curtailment, electric generation curtailment.

So, that's what we look at because, again, it's the eight-hour period is the critical period, which is the peak period.

Next slide, please.

So, while we continue to work on, you know, mitigation measures, we feel that mitigation measures, they help, they don't eliminate risk. You're only trying to manage risk. So, we're trying the best we can to manage the risk of what could happen this summer. And it's part of us -- one of those things is working closely with the operators at Cal ISO and LADWP.

And I'll bring up an occurrence today. We had planned some pipeline inspection work in San Diego -- and we were planning on doing that work -- would have made the inability for electric generation down in the most southern part of San Diego. We got a call from Cal ISO today that

they needed to operate those plants, and we postponed our pipeline integrity work because of their [unintelligible]. That was work that was planned about two months ago.

That just shows how far we've gone in working and coordinating with Cal ISO in operating the system on a daily basis and on an hour-to-hour basis.

But that was one of the cases where we had planned to do some pipeline integrity work, and we had to delay it because of the situation on the electric system.

We'll continue to use our operational orders, or the new balancing rules.

Katy mentioned the new balancing rules changed, but also what was changed is how we calculate the sensitivity as to when we call those operational flow orders. So, we'll continue to move down that path.

We also look at, as I mentioned what we did today, but on a going-forward basis, we will basically push out, if possible, any maintenance activity. Obviously, there will be some maintenance activity that we have to do. Especially, if it relates to safety or compliance. And we have already begun, and we began in early May, to enhance how we can get injections to our other storage fields.

So, we've done that. And we filed on Friday an advice letter with California Public Utilities Commission to enhance even that farther. And we actually put in there

what we believe our minimum storage targets are for the summer. And we're having a -- we have a good chance of coming very close to our target for June 1st that we have.

Next slide, please.

So, I mentioned the filing of the advice letter. We have also, as directed by the CPUC, we have delayed some of our safety enhancement work at our other storage fields to ensure we have, you know, greater amount of withdrawal capability at Honor Rancho and at Playa del Rey and Goleta.

So, you know, the one thing that's different also this year that's an option is the availability of Aliso Canyon. Last year at this time, we were still in the midst of doing the safety review process from a physical side. We, basically, had completed the physical sufficient enough to turn the field over to DOGGR and CPUC for review in November of last year.

Their review of our submittal is still ongoing, but that's a little bit different than we had last year where we didn't have the physical side completed in June of last year. So, that's an option that, obviously, could be considered.

But we stand ready to support energy reliability. We always have for as long as I've been with the company. I've been with the company over 30 years. And we have supported electric reliability as along with our core

customers' reliability because we're worried about summer, but I'm a little scared about winter.

So, any questions you have.

COMMISSIONER KERR: I have a question.

The CPUC recently approved a resolution to provide additional funding to the flex alert program that we talked about earlier. And SoCalGas' comments on that resolution was that the funding wasn't necessary because Aliso Canyon was ready to come back into service.

Obviously, Aliso Canyon is not in service right now. And your comments raised a question in my mind as to your commitment to fully implementing the mitigation measures.

So, I guess I just want an assurance from SoCalGas that you are, in fact, fully committed to implementing the mitigation measures.

(Applause.)

MR. SCHWECKE: Yes, we're committed to move forward with the program. We just want to make sure that we're very cost effective in how we do that. I think it was Ed mentioned, like on the solar thermal, whether that is the best program. But other efforts, and we'll continue to support that and move forward with that activity.

So, we're committed to move forward.

CHAIR WEISENMILLER: Okay. So, a couple of

questions.

One is just for context. My understanding is most of your maintenance is done in the summer; is that correct?

MR. SCHWECKE: Well --

CHAIR WEISENMILLER: As opposed to the winter.

MR. SCHWECKE: Well, it actually goes different --

CHAIR WEISENMILLER: Okay.

MR. SCHWECKE: Most of our maintenance for withdrawal capacity in the withdrawal system is done during summer. Most of our maintenance on the injection system is done during the winter.

CHAIR WEISENMILLER: Okay.

MR. SCHWECKE: And, if you look at the actual amount of injection capacity we've had this year, we had considerable outages on our injection capacity starting back in February in preparation for the shoulder months, or the winter -- or the summer injection period.

CHAIR WEISENMILLER: Okay.

Is there any additional energy efficiency could you do beyond what's in the CPUC-approved advice letter?

MR. SCHWECKE: You know, I really can't answer that. That's really not on my side of the business. I'm --

CHAIR WEISENMILLER: That's okay.

MR. SCHWECKE: Yeah.

CHAIR WEISENMILLER: So, obviously, we got a letter from Brad on the 28th of April. I just want to confirm that your testimony covers all the points in that letter.

MR. SCHWECKE: Yeah, I believe so.

CHAIR WEISENMILLER: Okay.

MR. SCHWECKE: We talked about with -- you know, to the inventory issues and a few of the issues associated with the optimistic assumptions, like 100 percent receipt point utilization and perfect operation of a mechanical device. Really, the system is a mechanical device.

CHAIR WEISENMILLER: If we got to a point where we said, Okay, we need -- there's a heat spell or whatever and we need 5 Bcf reinjection, how long would that take, realizing again it all depends upon a number of things? What's your best estimate.

MR. SCHWECKE: So, if you looked at it from the standpoint that we were given the go-ahead to start injections, there's some criteria that we have to meet to get to that point. Part of the compliance efforts is we have to do a flyover of the facility one week before. We have to do some leak inspections of the pipelines a few days before. I think if you look at what we possibly could

do, I think it's a reasonable assumption that we could probably injection 300 million cubic feet a day. So, you take that, that's going to take you, you know, not that long, 15, 20 days.

CHAIR WEISENMILLER: Okay.

Obviously, the letter indicated a sort of disagreement between you and the staff.

I was just going to ask someone from the staff, probably Mark or Ed or Katy, describe their perspective on why we're comfortable with the analysis that we did relative to your concerns.

Please.

MS. ELDER: I guess I'll offer to answer the question.

I think we're comfortable with it because the analysis started out to try to calculate what our maximum capability was. And, so, the idea that any given thing on a list of potential things that could go wrong would reduce that answer was implicit in trying to define what a maximum capability would be. That's sort of the gist of it.

CHAIR WEISENMILLER: And, obviously, SoCalGas was trying to develop the other bookend. And my understanding is people felt the other bookend they were proposing was too pessimistic.

MS. ELDER: That's correct.

That other bookend also seemed to be something that we were already beyond, that we had the capability to do more than what that other bookend already was.

CHAIR WEISENMILLER: And for the benefit of the rest of the commissioners, do you want to describe some of that difference?

MS. ELDER: The difference between the top bookend and the bottom bookend?

CHAIR WEISENMILLER: Or the bottom bookend and what you would have been comfortable with.

MS. ELDER: The bottom bookend --

CHAIR WEISENMILLER: That SoCalGas had proposed.

MS. ELDER: -- was -- that SoCalGas actually analyzed was a withdrawal of about 800 MMcf per day, and the numbers that the CPUC, looking at maximum withdrawal capabilities for the other three fields, so Playa del Rey, La Goleta, Honor Rancho, the actual maximum capability for those fields adds up to 1640. So, by going with the 1470, which is the number that the Energy Division asked SoCalGas to assume, that number already accounted for some reduced capability at the other fields. And, so, we felt that going all the way down to 800 wasn't realistic.

CHAIR WEISENMILLER: Thank you.

Anyone else?

COMMISSIONER TISOPULOS: So, in one of the

scenarios that you were describing, the heat wave in Arizona that potentially can spill over to Nevada, and then all of a sudden, we are completing for the same molecules, right? So, if there's such a competition, who wins? Is there a bidding war there and whoever pays the higher price, the molecules end upcoming to that region or --

MR. SCHWECKE: You know, that's a good question. And I think when we looked at it most of the time it was during the wintertime and it's, you know, whoever pays the highest price.

The one difference is if you have generators that are located east of California, they get first access to the supplies as it's flowing along the pipe. And we have historically seen where those customers will continue to take supplies, even though they haven't bought them, creating imbalances on the interstate pipeline system or drafting the interstate pipeline system to critical levels. Then it affects all the shippers on the system.

So, it's an integrated system. Who actually gets those supplies on a given day, it will be interesting to see. I would rather be on the front of the pipe than the back of the pipe.

COMMISSIONER TISOPULOS: Got it.

COMMISSIONER DOUGHTY: A lot has been said today about the injection at Playa del Rey, La Goleta, and Honor

Rancho. And, if I heard you correctly, Rodger, you were talking about you're feeling good that we're going to move that storage injection capability by June 1st. So, forgive me if you covered this and I didn't catch it. Where does that take us through the summer? Is June 1 our begin injection moment, or is that a threshold of injection?

MR. SCHWECKE: So, that's a point in time to look at where we stand with regard to the inventory levels. We're sitting at about 29.5 Bcf today, a little bit less. Which is, we've grown inventory substantially since the April 28th letter.

Our target, if you add that to Aliso, again, you have to add the 14.8 Aliso, you are a little over 45 Bcf that you have to get to. Our advice letter filing that we submitted with the Commission has a layout all the way through October what our inventory levels should be at each of the fields.

Example, I'll use Honor Rancho. We're sitting at about sixteen-and-a-half Bcf now. Our target for June 1st is 17.1. And we got about, you know 7, 8, 9, 10 days of injection. I'm feeling comfortable about Honor Rancho.

Goleta is a little tougher. Goleta is more -- is dependent upon one of our mainline compressors in Ventura, which, again, is those older compressors that we can't operate as hard as we'd like to. Getting supplies up to

Goleta is tougher, so to reach a target for Goleta will be much tougher because you wouldn't have the full injection capacity that you have at the field itself.

COMMISSIONER DOUGHTY: So, looking at that, then, and kind of envisioning the time line of a summer, and, of course, August, September, even October being our critical times, where does that take us for that three-month, four-month summer window?

MR. SCHWECKE: So, if you look at -- let's just talk -- it's probably easier to talk about Honor Rancho since that's the largest storage field that still has capability to withdraw a lot of gas and put it close to the basin, which is not directly into the basin.

We should hit by the August time frame probably in a range at Honor Rancho about twenty-two-and-a-half Bcf. Total would be about 53 Bcf. That should get us to the withdrawal capability that we're looking for that was outlined by the Commission's letter to us of 2.0, 65 Bcf withdrawal capability, and maybe a little bit more than that. It won't get us to the almost 2.4-plus that they had asked us to get to. We probably won't achieve that level until later in the year as we continue to build the number of wells that are capable at Aliso Canyon.

COMMISSIONER DOUGHTY: Thanks.

CHAIR WEISENMILLER: Any other questions?

Rodger, we certainly wanted to thank you for being here today. And I wanted to thank you for the cooperation that's existed between our team, technical team, and yours. Obviously, we still ended up with differences of opinion, but we, again, thank you for your assistance.

MR. SCHWECKE: Sure.

MS. RAITT: Thanks.

So, next is an Independent Third-Party Review by Scott Backhaus from Los Alamos National Laboratory.

Just hold on a moment while we get the slides up on the screen.

MR. BACKHAUS: I guess while we're waiting for slides, I'll just go ahead and start.

First is I'd just like to thank both the folks that worked on the Independent Review Team (IRT), both folks are listed and not, Rod Walker, Mary Ewers, and my project manager at Los Alamos, Lisa Inkret, really put out a lot of effort in the last few days to get this wrapped up on time for this meeting.

I'll just go ahead and continue.

So just a quick outline on what we intend to discuss here today is a quick overview of what the Independent Review Team was tasked to do so we know what the boundary conditions are; quick overview of the SoCalGas

pipeline system and gas storage; then we'll talk a little bit about hydraulic modeling; and then I'll just dive into what the IRT findings were.

I'll go through a list of the detailed findings, and then I'll try and give a distillation of those findings and what they actually mean and then a set of recommendations.

Next slide.

So, what was the IRT and who was it composed of? Basically, it's nominally the same independent review team that participated back in summer of 2016.

Cal ISO contacted Los Alamos National Laboratory, Walker and Associates for support to the IRT, and we also coordinated quite closely with the technical assessment team and we also coordinated with SoCalGas, independently with those two different organizations.

The purpose was to review the hydraulic modeling for the 2017 summer assessment. And the review team process was we participated in most, if not all, of the calls of the assessment team. And we also made a site visit down to SoCalGas' gas control operations center to go over the relationship between the 2017 summer system capacity assessment and how that meshes with gas control in real time out in the real world.

And, of course, we prepared a report and

presentation for this meeting.

Next slide, please.

Just qualifications. We skip over this, but Rod Walker has long experience in the natural gas industry. That is mostly what he brought to the team.

I, myself, I run a team of about 20 to 25 scientists that do fundamental R&D into control and optimization of infrastructure systems.

And we have another team that performs analysis of infrastructure under extreme conditions.

Mary Ewers also participated, and she's our lead oil and gas analyst at Los Alamos National Lab.

Next slide.

You've all seen this map, but just some key takeaways for how the IRT thinks about this.

The SoCalGas pipeline system, you can think of it as sort of two or three components, maybe four.

A key component is down in the L.A. Basin. That's a heavily meshed or relatively meshed pipelines system. There is a fair amount of redundancy and flexibility down in the basin, so depending upon what happens in the basin, SoCalGas has some flexibility to reroute gas around outages and other issues.

The import pipelines coming in from the east are generally radial, so outages or other effects on those

pipelines are much more difficult to mitigate, especially under the conditions of the system capacity study that we'll be talking about today.

All these pipelines have constraints. They have engineering constraints on them that have to be respected both for safety and for reliability on both ends of the spectrum.

A little bit about the storage on the system. The Playa del Rey field, which has been talked about quite a bit here today, that lives down inside L.A. Basin, is key to operations down in the L.A. Basin.

La Goleta up on the coastal system has limited access to pipeline transportation out of that area to serve the L.A. Basin. Typically, used as baseload or can be as baseload.

CHAIR WEISENMILLER: Let's advance the slide.

Got it. Thanks.

MR. BACKHAUS: Sure.

CHAIR WEISENMILLER: Go ahead. Keep going.

MR. BACKHAUS: So, then, the Honor Rancho Storage Facility, which is under -- which is a subject of much discussion here, it has better access to pipeline transportation capacity, but it's not as good as it needs to be to be able to allow that facility to operate at peak withdrawal rates under the system capacity assessment

conditions. It's competing for pipeline transportation capacity from receipts from Wheeler Ridge. So, it may not be able to achieve maximum output during stressed conditions.

Let's go to the next slide.

We can skip over most of this because I think most of this has been talked about here today. I think the main upshot is that Southern California Gas was directed to increase storage injections into the remaining fields, but perhaps they didn't have access to all of the appropriate tools that they needed to maximize those injections, and those tools fall into the -- access to those tools perhaps fall into many different areas.

Next slide.

So, quickly, hydraulic modeling, what is it and what is included in it and what is not included in it, which sets the boundary conditions for what the review team was tasked to look at, but also sets boundary conditions on what the system capacity assessment can tell you.

What's included in the hydraulic modeling, it's flow and compression of gas in the individual pipes. Just the basic physics of gas and pipes. The control of the flow and interconnections and valves between individual pipe segments. Natural gas pipelines are complicated. They're very complex. There's many interconnections

between the pipes, especially down in the L.A. Basin, but also between multiple pipes in the ground for the import pipelines from the north and the east. The control and operation of the city gates and pressure reduction stations, primarily going into the L.A. Basin. Control and operation of gas compression stations, and control and operation of the gas storage fields.

It's important to note that the control of all of those items are under SoCalGas' control in the system capacity study and they're under SoCalGas' control in the real-world operation.

The next two, what are the boundary conditions for hydraulic modeling. These are typically not included in hydraulic modeling in detail. They're included in reduced form fashion, so gas storage, reservoirs and their surrounding operational system.

Gas storage injections, their capacity is typically just represented as a constraint on injection. You're not modeling the gas storage field in detail in a hydraulic simulation.

Flowing gas supplies at the receipt points. Those are simple assumptions in the system capacity study.

Those two, the ability to inject, the maximum ability to inject, and the flowing gas supplies are assumed in the system capacity study, but are not under SoCalGas'

direct control in real-time operations.

Next slide.

We'll just go through the findings in detail.

So, this same transient hydraulic model was reviewed by the same Independent Review Team back in the summer of 2016. There haven't been any major changes to the SoCalGas system that aren't easily included in the model that was used for 2017. So, the IRT is in agreement that the system that was used, the hydraulic model that was used by SoCalGas is sufficiently representative of the behavior of the system for the 2017 summer assessment.

Based on investigation of some recent historical data, under the tighter balancing rules, the assessment team estimated that the actual gas receipts could fall short -- the actual gas deliveries could fall short of the scheduled gas by up to 10 percent. That came out of looking at relevant historical data.

So, based on discussions with SoCalGas and analysis of data during stress conditions when the low operational flow orders were issued, the IRT is in rough agreement with this approach.

It's important to note here is that what we're talking about is that there was -- the system capacity study assumes a certain amount of scheduled gas into the system, and not assumes, maximizes that ability to receive

gas. That's not necessarily what will be received in real-time operations. And that's the difference we're talking about here: Is the difference between what is scheduled and assumed in the system capacity study and what actually makes it onto the system.

The assessment team went through a process to determine if receipts -- if actual gas deliveries fell short of what was scheduled on any particular day and what was assumed in the system capacity study, how would you take that into account in extrapolating the gas sendout that would be available on a peak day.

There was a conclusion to go with a one-to-one reduction in the available sendout.

Now, there are potential mitigations for particular shortfalls at particular receipt points. But our priority -- neither SoCalGas, Cal ISO, or LADWP know where those shortfalls are going to occur. And without detailed hydraulic simulation of every one of those particular shortfalls, it would be quite difficult to assess those mitigations.

So, the IRT is in agreement to use a one-to-one reduction for actual gas deliveries relative to scheduled gas.

We're going to the next slide.

I think a key point -- and this is somewhat

outside the bound of the hydraulic modeling, but we felt that it was important to review some of these aspects -- the gas storage fields in question, following the storage safety enhancement plan, have not experienced operating conditions consistent with the directed storage inventory levels.

Now, the way that the output of those fields, the maximum output of those fields, is typically assessed is through online calibration of those fields and simulation. We haven't had operations at these levels following the safety enhancement plan; however, the changes to the fields are primarily to the tubing and the well bores. Those components are relatively well modeled, relatively easy to model. So, the IRT is in agreement to use a combination of the historical operational data and hydraulic simulation of the well bores themselves to assess for a particular inventory of these now modified storage fields, use a combination of the historical data and simulation to assess their maximum output as a function of inventory.

I think one recommendation that's coming out, and maybe this is more of an observation, is that the limited gas and storage -- the limited gas injection, gas storage injection capacity, and the tighter system-wide balancing rules have led to -- what have appeared to have led to is a reduction in storage injections at the non-Aliso gas

storage fields. The exact cause of that I think is a matter still of discussion; but, in our opinion, it appears to be conservatism on the aspect of shippers, conservatism relative to high operational flow orders being issued and fines associated with bringing gas above what you're allowed to bring on during a high OFO and the financial risk associated with that. That appears to be what is causing shippers to perhaps schedule gas in different ways and in a conservative fashion.

Because of this, the IRT is recommending that a gas storage injection plan be developed and implemented that, at a minimum, includes three aspects: Weekly and monthly gas storage injection goals that will achieve the gas storage inventories consistent with what's been mandated by -- prior to peak electric generation season; a definition and implementation of weekly and monthly monitoring of progress towards those goals; and, finally, a clearly defined party or organization that's responsible for achieving those goals.

I think that's probably consistent with some of the things that we've heard here today.

Let's move on.

A couple of last detailed findings. The effect of unplanned gas pipeline and storage outages really does need to be included in the 2017 summer reliability

assessment. And I emphasis "unplanned." Planned outages are coordinated, as you just heard. Previously planned outages are coordinated between SoCalGas and LADWP and Cal ISO on a regular basis. There is plenty of warning when those planned outages are going to occur. But unplanned outages have not been included. I think they perhaps were part of the study previously.

Because of lack of time -- and it does take a fair amount of time to do the transient simulation of individual outages -- the assessment team -- and because we don't know a priori where those outages will occur, the independent assessment team would favor using a simple one-to-one replacement like was done for gas storage -- or gas receipt shortfalls. A similar approach, simply use a one-to-one reduction in gas system capacity. That will be the fastest way to get to an answer of how much gas could be delivered to the electric generation system.

Finally, kind of a technical point, and we talked about that a little bit earlier, is there's some assumptions that go into the gas profile, the time-dependent gas load profile in the 2017 system capacity assessment. That gas load profile was based on statistical work that SoCalGas did on the system-wide gas loads. That gas load then was scaled up and down to achieve maximum capacity, maximum sendout of the system. That particular

curve became the interface between the SoCalGas system capacity assessment and the assessment team's electric reliability study.

In that process, the assessment team modified that gas curve, either scaling it up and down, shifting it around. That can cause issues with the transient hydraulic simulation, that might make it infeasible. However, those adjustments are relatively small. They were on the order of 10 percent. So, the IRT believes that this is reasonably representative of how the SoCalGas system would behave under those modified conditions.

Next slide.

So, all those detailed finding, what does this mean. So, the IRT finds that the hydraulic modeling simulation of the SoCalGas system and the modeling of the SoCalGas control operations are representative of the gas sendout capability of the gas system under the boundary conditions used in the 2017 summer capacity study that was performed by SoCalGas and is discussed by the -- and used by the assessment team.

We also find that the gas system boundary conditions that were used, which is an important input into the system capacity study, those are representative of actual boundary conditions, assuming that the target storage levels can be met. And that means that, really,

that the withdrawal rates that have been mandated can be met, which then translates to whether or not storage target levels can be met.

Next slide.

We also find that under current -- under the current operating conditions as of last week, because I know there have been some proposals and maybe some changes very recently, the required gas storage levels are unlikely to be achieved.

That then goes back to our recommendation that a plan be put in place, gas storage plan.

I think the final recommendation, or the final point, is that we find that the effects of gas system unplanned outages does need to be incorporated into the 2017 summer reliability assessment to get a more complete understanding of the risks to the combined Cal ISO and LADWP power systems.

Next slide.

Recommendations. We already talked about gas storage plans with, at a minimum, these three particular points. So, we won't hammer on that any further.

I think another important recommendation, SoCalGas should consider ways to incorporate transient hydraulic modeling into gas control operations to improve their ability to support gas injections.

I think it's important to note that without Aliso the gas storage injection capability right now is on the order of 200- to 300 million cubic feet per day. That's a pretty thin margin on the total system sendout. So, to be able to achieve maximum storage injection, requires very good gas control and gas control operators have to operate in a conservative fashion because, as was mentioned earlier, once the system crashes, bad things happen. You don't just hit reset. So, maybe some additional visibility on gas control would be useful.

Next slide.

I think it's my last one. SoCalGas should -- we recommend that they should develop a contingency plan that involve gas supplies alternative or in addition to drawing gas for Aliso Canyon to mitigate extreme operating conditions.

And, then, finally, the assessment study should be updated to incorporate unplanned outages and the effect on the combined power system of Southern California.

I think that's all I have.

CHAIR WEISENMILLER: Thanks.

I wanted to thank you and your team for helping us in this area.

When we started last year, we wanted to make a more critical look at the hydraulic modeling. We talked to

FERC. Obviously, we didn't have the internal capability. And we really appreciate Los Alamos stepping forward to help us in this area.

Obviously, this year has been on a tight time scale. We, frankly, wanted to have the workshop about now, so we could see what the mitigation measures are and how they could be enhanced. And then working backwards, that means that people got squeezed to make it work. And, certainly, your analysis was building off of other things; you got squeezed quite a bit. So, I appreciate your flexibility in responding on that.

I guess probably the simplest thing, since your part of this effort came together last Friday, would be to ask both SoCal and the technical team for any comments or reactions.

We're going to start with SoCal so that Mark and Katy can figure out who is going to step up and what they're going to say.

Rodger, you want to come up? Any comments?

MR. SCHWECKE: You know, as far as reaction and comment, you know, I understand. I think some of those same things that were said, you know, we relayed as concerns. I appreciate the comments made about how the system has to operate on a realistic basis, you know, day in and day out and it can't be modeled. You can't follow a

model exactly.

But I think pretty much agree with some of their assessments. There could be improvement -- you were farther on the coordination side when it comes to forecast demand. And then any time you can use data analytics to help operate your system, the better you are. Whether they'll be significant or not, well, we'll have to see whether we'll have more capability.

I also appreciate the comment with regard to the operating margin that we're operating today. When you only have a couple hundred million a day of injection capacity and you're operating a system that is run on a 3 Bcf demand, for example, that's a small margin to operate within in a gas system where things could go wrong fairly quickly.

CHAIR WEISENMILLER: Rodger, one other question.

So, they said you should develop contingency plans that involve gas supply alternatives or additions to drawing gas from Aliso Canyon. How far are you thinking through those alternatives? Obviously, you saw this Friday, but how long do you think it's going to take to come up with something and start talking to PUC?

MR. SCHWECKE: I guess I don't understand what the intent was with regard to the supply alternatives.

If customers are buying gas and, you know,

meeting their demands, I guess it really gets down to, do you use Aliso Canyon or can you by supplies to avoid it. The problem with buying supplies is you may not know until the hour before, and, therefore, you can't go out and by additional supplies on the marketplace back in Texas, in New Mexico, in Colorado that could effectively get to California to meet the demands within that time frame.

CHAIR WEISENMILLER: I just want to ask Los Alamos if you have any response, or should we just hear Mark and then you can respond to both of them?

MR. BACKHAUS: Yeah. Let's just do both.

CHAIR WEISENMILLER: Okay. Fine.

Mark or Katy?

MR. ROTHLEDER: So, I appreciate the review by the Independent Review Team, and I think I'm in general agreement with most of the findings.

I especially appreciate the acknowledgment of the need to address and have a plan for getting more storage inventory to reduce the risk.

The area that I feel like the assessment team now is tasked with having to do as a result of those recommendations is the area of the unplanned outages.

We attempted to address that in the 2016 assessment. If I recall, it was another 400- to 500 MMcf per day risk.

So, assuming the independent review team -- and I think I heard him say that, Scott say that, a one-for-one was an appropriate assumption because you don't know all the different potential unplanned outages that could occur.

When I talked about earlier the 350 MMcf withdrawal capability, I'm assuming 90 -- or 85 percent transmission utilization, 90 percent on the gas system, it seems like then there's another 400 to 500 potential shortfall that needs to be made up if you want to plan for unplanned outages on top of those utilization profiles, 90 percent and 85 percent, on the electric system.

So, I guess we'll go back and take a look on what we can do to address that concern, or that recommendation. But, otherwise, I think I'm in general agreement and appreciate the recommendation and findings.

MS. ELDER: I'm trying to think about whether I have anything intelligent to add or not.

I think the thing -- and it's not like we've sat around and sort of poked Scott and asked questions since he finished his report on Friday.

The thing that struck me the most, I would say, is this question about any additional outages and being able to assume that they have a one-for-one impact. And if you had more time to sit with the model and think about things that could go wrong, would we find things that would

have a bigger than one-to-one impact. And that's the -- I guess that's the big unknown.

And Scott's nodding as I say that. So, we just -- we don't know exactly what the answer to that would be if we had the opportunity to do that.

CHAIR WEISENMILLER: So, you need the additional backup slides?

MR. BACKHAUS: Yes.

CHAIR WEISENMILLER: Okay.

MR. BACKHAUS: And maybe more just to remind me and something to talk at.

So, we did spend some time with the SoCalGas operators and I want to thank Devin [phonetic] for his accommodation and openness about how gas control happens.

We talked about unplanned outages on different parts of the SoCalGas system and where affects really would become perhaps important and where they were less important.

So, that sort of led to the introduction I had on the SoCalGas pipeline system.

So, unplanned outages down in the L.A. Basin, the L.A. Loop as it's called, probably don't result in too much gas curtailment to electric power generators. There's relatively a lot of flexibility down in the L.A. Loop, plus, if you do have to locally curtail one or maybe one or

two generators, Cal ISO's already at minimum gas burn anyway, there'll be some other generator on some other part of the pipe that will be able to pick up that generation.

We go to the next slide.

I think the key then is unplanned outages on the high-pressure gas supply lines coming from the east and coming in from the north.

Let's talk about the east first. Coming in from the east, those pipes are already at maximum capacity. They are already constrained. Outages on those pipes, there's really not much you could do to mitigate them. I believe that will be a one-for-one reduction in gas sendout.

The only place where perhaps the only active, currently active, receipt point where perhaps there could be some mitigation is -- and I think I'll get it right -- the Kern River, Mojave; I think it's Kern River or Kern Mojave -- receipt point, that's the receipt point that competes with Honor Rancho for pipeline capacity. So, if there is an outage on the pipeline coming down from that receipt point towards Honor Rancho, there could be some mitigation by Honor Rancho. Whether it's a complete reduction in the outage or whether it's a partial reduction of the outage, we can't say at this point. And I think that requires additional hydraulic modeling if there's a

reason to pursue that.

CHAIR WEISENMILLER: Thank you. That helped.

Anyone else have any questions or comments?

COMMISSIONER TISOPULOS: It's just a question.

Your last slide, if we put the very last slide. There it is. No. Those are the backup slides.

You left a sentence that says, you know, "In the event there are some disruptions in the incoming pipeline, there are certain mitigation measures that can be taken." What would those be?

MR. BACKHAUS: So, I think if it's the Kern River, Mojave point, I've already gone over that one.

I think relative to outages on, or even if it's gas delivery shortfalls coming in from the east, I think there are perhaps additional mitigation measures involving Playa del Rey and the city gates into the L.A. Basin where Playa del Rey -- as compared to the summer capacity system study, the city gates coming into L.A. Basin could be held off a little bit longer and Playa del Rey could have been turned on a little bit sooner. That have would have allowed better utilization of the Playa del Rey field, not in terms of the peaks, the hourly peak sendout from Playa del Rey, but in terms of the time extension of how long Playa del Rey is on. That would have to be confirmed through hydraulic simulation to assess how much mitigation

there is there.

But I think one has to be cautious when you talk about these mitigations. Playa del Rey is a volumetrically limited -- as all storage is, but it's particularly volumetrically limited. It also has a fairly long turnaround time. For every cubic foot that you take out, it takes a fair amount of time to put it back.

So, if this were to be used as mitigation for an unplanned outage over many, many days, and you increase your drawdown on Playa del Rey over many, many days, sooner or later, your maximum sendout, your maximum hourly sendout from Playa del Rey is going to be reduced. And that will most likely totally negate the increase sendout that you get from having Playa del Rey on longer. So, it's a very time-limited mitigation that you have in place there.

So, perhaps, on a one-, or two-, maybe a three-day basis -- but even that gets to be a little sketchy -- maybe on a one- or two-day basis Playa del Rey could be used as sort of extra peaking, but it requires some simulation to be able to provide the gas operator some guidance on how to control the system on those very difficult days.

CHAIR WEISENMILLER: Thanks again.

I certainly encourage SoCalGas and the technical staff, if they have additional comments on this report, to

file them when the comments are due.

I was going to suggest we take a ten-minute break right now.

Don't go far. But I think it's probably going to be good for everyone to stand, stretch, walk, and come back.

So, basically, let's start at 3:40, and really a hard start at 3:40, so that we go through the next panel and then public comment.

(Whereupon, a recess was taken.)

CHAIR WEISENMILLER: All right. Let's reconvene. Looking at -- okay, Evie is ready. Good.

MS. RAITT: So, we have a panel and Lana Wong from the Energy Commission is the moderator, so we just go ahead and get started.

MS. WONG: Lana Wong with the Energy Commission.

So, the first panelist I would like to introduce is Tim O'Connor with the Environmental Defense Fund.

MR. O'CONNOR: Good afternoon. Tim O'Connor from the Environmental Defense Fund.

Let me first start by saying thank you for the copious amount of information that was delivered on Friday afternoon and the opportunity to review it over the course of the weekend. Very appreciative that it didn't happen next weekend, otherwise, you know, barbecue plans might be

changed.

But I think it's important to note that the level of detail and the commitment by the joint energy agencies to have outside experts reviewing the information and providing it to the public really is a marked a change from where we were, of course, a-year-and-a-half ago and gives an incredible amount of opportunity for entities like ours and our professional consulting firm who we've hired, Skipping Stone LLC, to evaluate this information and to provide technical comments, which we'll also be doing in writing.

And I offer four points today.

And, number one is that I think that this information does demonstrate that we are in need of an update of information as it relates to what the utilities provide on a regularized basis in the California gas report, because the information which is at the heart of this analysis in some ways conflicts with the data which is within the gas report with respect to the capacity that we expect these lines to deliver and the supply with which we expect to be delivered.

And, in fact, when you compare the California Gas Report and Southern California Gas Company's filings, data filings, in -- with the Commission, you see that there is nearly a 336 million standard cubic feet per day

underestimate in terms of capacity that goes into this technical analysis and roughly 462 underestimate -- 462 million standard cubic feet per day estimate of supply, which is in the gas report. And, so, that equals about 800 million standard cubic feet per day of gas delivery that can be achieved that is not evaluated in this technical report.

And, so, I would recommend that as we move through this process we evaluate whether the other pieces of data which we rely on to make decisions are, indeed, accurate.

And, of course, this goes to some important issues as regard to how we are forecasting whether Aliso Canyon should come back online or not and whether the energy system in Southern California is going to be reliable or not.

And, in fact, it's only going to be exacerbated by the fact that in the gas report itself we project that the core gas customers are going to experience about a one-percent decline in gas use per year, leaving extra capacity in the system.

When we look at how the advance metering deployment of nearly 5.9 million meters in the Southern California Gas service territory at the end of 2016, I believe, we see that all this kind of fits together. And

now we need to think about creating a more full picture of this.

And this brings me really to my second point, is that when we look at that advanced metering infrastructure (AMI) and we see the reduced demand on the year-to-year basis, what we don't see in the reliability assessment and in the action plan really is the use of that AMI, all that capital that's gone into providing better assessments and the ability to do better forecasting, we don't see that being really harnessed for the maximum potential for which it can be offered both with respect to providing better gas balancing and forecasting, as well as demand-response programs.

Third, I think that it's important that while we talk about the value of the operational flow orders, the new market rules, and their intense impact that they've had on the gas demand reduction, in fact, you can look at comparing those new gas balancing rules to the effectiveness of the other conditions, and we see that the new market rules have resulted in 95 percent of the gas demand reduction that's within the system.

And, indeed, that is a useful point to look at how we may be able to look at our market rules and the effectiveness of those. In particular, one of the things that we need to be focused on is not just how the system is

performing when we have days with OFOs, but really how market rules can be changed to affect all days. When, in fact, there was a filing by the Southern California Generators Coalition in September of 2016 that recommended the development of a gas imbalance market in Southern California. And that is not discussed in the action plan work or something which is planned to be even considered, it would appear, by the joint energy agencies. And we would like to reiterate the importance of these gas market rules and, in particular, imbalance rules for creating new investment signals for the types of clean energy infrastructure that can deploy the same values that gas can for balancing the system.

And, finally, I think one thing we heard just a little bit earlier today was Rodger Schwecke talking about how, you know, he's concerned about summer, but he's really concerned about the winter. And I think that that means that we cannot be delaying a winter reliability assessment until the winter and we should be getting on that now and looking at the effect of these rules on the winter season and providing opportunity for groups like mine to comment on the assessments and the assumptions that go into it. And we look forward to participating in that conversation.

Thank you.

MS. WONG: Next, we'd like to hear from Michael

Bardee from the Federal Energy Regulatory Commission.

MR. BARDEE: Thank you for inviting me to speak here today.

Let me start with a required disclaimer. My remarks today reflect my own views and not those of FERC or any of its individual commissioners.

I'll talk first about a few actions that FERC has taken in this context and then go on to describe our authority over electric reliability, and touch briefly on some matters that have already been discussed some here today.

As to actions that FERC has taken, about a year ago, FERC had a presentation at a Commission meeting on the Aliso Canyon situation to understand the circumstances better and be prepared for any matters that FERC might have to act on.

Several of the speakers that you heard here today were at that presentation, including Chair Weisenmiller. Thank you for participating in it.

Not long after that, in June of last year, the Commission approved a filing by the Cal ISO to change various market rules to prepare for the summer last year, to have some different procedures in place to help them manage through the summer.

That included the two-day ahead advisory

schedules that you heard about earlier, a mechanism called a gas constraint that they could use to change the outcome of the market runs when necessary to conform to the limits of the gas system.

After the summer, in September, we held a technical conference to find out how things went, to hear from the participants and help us get a sense of whether those procedures were useful and might be needed again in the future.

And soon after that, Cal ISO filed to extend most of those rules. And, in November of last year, the Commission approved that extension, which is good until November of this year. Not clear yet whether we'll be receiving any future filings like that, but we'll be prepared for it if we do.

Let me talk about the FERC authority over maintaining the reliability of the electric grid, in particular, the electric bulk power system, which is essentially the high-voltage system.

Under the statute that we enforce, we selected NERC to be what we call the electric reliability organization. And its role is to propose rules to us for our consideration on how utilities should operate and plan the high-voltage system to maintain its reliability.

Under that scheme, the users, owners, and

operators of the bulk power system must abide by all the approved rules and are liable for enforcement of those rules. That includes Cal ISO, SoCal Edison, LADWP, and San Diego Gas and Electric. It does not include SoCalGas.

One of the most important concepts built into various rules under that statutory authority is what you've heard of as the N-1 contingency. And the idea, basically there, is both in the planning time frame and the operating time frame, you should structure the system so that it is ready to withstand the single largest contingency that is on your system, whether that is the loss of a generating unit, a transmission line, or any other single element on your system.

So, that rule is embedded in the real-time operating rules that we have. We have a set of rules called TOP, Transmission Operator, which, in this case, is CAISO and LADWP; and IRO, Interconnected Reliability Operations, refers to our reliability coordinator, which, for this part of the country is peak reliability. They are subject to those rules that govern the real-time operations.

We also have rules called BAL, for Balancing, and, here, that's Cal ISO and LADWP. And those rules basically require them at any point in time to be balancing the resources they are supplying to the system against the

demand that the system has on it.

A couple other sets of rules, TPL, Transmission Planning, looking ahead one year, five years, ten years, to ensure that you've met that same kind of constraint of being ready for the single largest contingency.

And one last set, EOP, Emergency Operation Rules. These were the rules that kicked in when Cal ISO went into Stage 1 alert not long ago. And they go to Stage 2 and Stage 3. Stage 3 is when you have curtailments of firm-load customers either imminent or actually underway. And they govern the process for how to manage your way through an emergency and get back to normal conditions.

So, that set of rules has been in place for about ten years now, and all of the utilities that I've mentioned have to comply with those rules; and, as you see, they do. That's how CAISO went into Stage 1 not long ago.

Addressing the circumstances more generally, you know, you've heard a fair amount about looking back at the last year, how the weather was fairly mild in the summer. Winter, similar, not extreme. We also did not have major unplanned outages at the bad times when the system was stressed last summer.

Looking ahead, we do have a good amount of snowpack still up in the north, meaning we'll have good hydro resources for a while to continue. We also have more

solar than we had last year, more PV. But, as was mentioned on the last panel, we have less storage, gas storage, in the three non-Aliso fields. So, overall, things went well last summer, but the risks remain. We could have prolonged hot weather this summer. We could have a major unplanned contingency at the wrong time, a line importing capacity from the north could go out at the wrong time.

FERC is going to continue to monitor the situation. If we do get filings like the ones we acted on last year, we will certainly seek to act on them as quickly as we can.

And that concludes my remarks.

Thank you.

MS. WONG: Next, we would like to hear from Jason Ackerman with Best, Best and Krieger, who is representing Los Angeles County.

MR. ACKERMAN: Thank you very much for the opportunity to be here today and share the county's thoughts and reliability issues associated with Aliso Canyon Natural Gas Storage Facility.

As you're aware, there are three natural gas storage facilities in Los Angeles County: Aliso Canyon, Honor Rancho, and Playa del Rey. The county recognizes the need for reliable gas supplies to support its resident and

its diverse local economy.

As you may know, immediately after the well failure at Aliso Canyon, the county served as a first responder of sorts to address concerns of local residents and businesses.

So, it's acutely familiar with the health and safety issues associated with safe and reliable service in Southern California.

The county's position on reliability is informed by both the closure of Aliso Canyon, but as well as the summer and winter action plans. As you know, toward the end of 2015, DOGGR essentially closed Aliso Canyon. That was followed by the governor's 2016 emergency order continuing the prohibition of new injections. That, too, was followed by SB 380, which extended the moratorium on renewed injections until safety enhancement efforts were undertaken.

The county became increasingly concerned with short-term and mid-term reliability issues. And, last year, the county did review the 2016 risk assessment and summer action plan. It was alarmed, I think as most folks were, when it learned that curtailment events could interrupt supply on 14 days during the summer of 2016.

The county was pleased that the mitigation developed in the April 2016 summer action plan proved to be

successful and avoided all curtailment.

Our experts have informed us, and as is supported by the material that reviewed last Friday, tighter gas balancing rules played an instrumental role in this effort. But we should also underscore the increased electrical and gas operational coordination of the regulatory agencies.

In August 2016, the county attended a winter action plan workshop in this auditorium. A new mitigation was included. Among other things, deployment of more robust demand response programs were identified as mitigation. Also, existing and new gas balancing requirements were implemented. These mitigation measures proved to be successful in avoiding use of Aliso Canyon, with exception to a January 2017 event that I'll talk about in just a few minutes.

So, SoCalGas requested authorization to resume injections in fall 2016. And the county developed its formal position. Having reviewed the summer and winter action plans and joint actions taken by the regulatory agencies to ameliorate electric and gas reliability concerns, the county established its position in a five-signature letter to DOGGR, requesting that it not authorize new injections at Aliso Canyon until completion of the CPUC's investigation into the feasibility of eliminating or minimizing the use of Aliso Canyon,

Investigation 1702002, which the county is currently and actively participating in and will continue to do so.

But, also, the county requested that there be no new injections at the facility until completion of the root-cause analysis. And this is a commonsense approach that was developed by the county because the county believes that we need to have a full understanding of what caused the leak before we start placing that facility into service again.

The county looked to satisfy itself about whether or not we could reliably have service within the L.A. Basin without Aliso Canyon. And to satisfy its concerns about that, it retained EES, an energy reliability consultant, to prepare a report on in-basin reliability in the short term.

That report was released on February 6th, 2017. And we are advised that it has been docketed in this proceeding, and we thank you for that.

Unfortunately, based on the short notice, we were unable to have someone from EES here to present today, but I will offer a brief recap of the conclusions of EES.

For our winter of 2016/2017, based on the time the report was issued, EES concluded that approval of gas injections at Aliso Canyon would have no material impact on gas reliability for the time period of February through June 2017.

As it relates to summer 2017, EES concluded that Aliso Canyon withdrawals should not be necessary in light of effective demand-response programs and the availability of increased hydroelectric generation and other mitigation measures put in place by the joint regulatory agencies.

And, then, with respect to winter 2017/2018, EES concluded that there is sufficient time to aggressively implement demand-side management and other mitigation measures that will eliminate the need to utilize withdrawals from Aliso Canyon during winter 2017/2018.

All of this contemplated having Aliso Canyon supplies, which currently stands at about 14.8 Bcf, being used as a backup of last resort without new injections.

I referenced the investigation at the CPUC concerning feasibility of eliminating or minimizing the use of Aliso Canyon. The county has retained another consultant to assist in that proceeding, Energy and Environmental Economics(E3).

One of the first tasks we had for E3 was to review the EES report. And they generally agreed with the conclusions of EES. E3 will continue to provide us consulting services, especially as it relates to the investigation.

I previously mentioned the January 24, 25, 2017, withdrawals from Aliso Canyon. This event seems to be an

aberration that should be thoroughly investigated and analyzed as part of a case study on whether or not the system is being operated efficiently. This is really sort of a lessons-learned piece.

Aside from the timing of those withdrawals being peculiar, the circumstances of the events are as well. There were only .03 Bcf and .02 Bcf withdrawn from Aliso Canyon on January 24 and 25 respectively.

SDG&E Envoy indicates that the cold-snap weather pattern that caused the withdrawals was anticipated and customers were notified of the weather pattern the week before the withdrawals were made.

Routine maintenance was scheduled to commence during those dates. And it's our understanding that that maintenance was not delayed or deferred. In addition to that, it's our understanding that SoCalGas did not contract for additional deliveries despite there being unconstrained pipeline capacity.

And, so, we think that in some context those issues should be thoroughly investigated to determine whether or not the system was being operated or managed correctly or incorrectly, and how to improve on those operations in the future.

You know, perhaps there's somebody here today that can speak to why those withdrawals were made. I think

that that would be helpful and useful. But I think that a thorough investigation is really what is required.

And, finally, I'd like to touch base on the legislative issues. The county supports legislation that ensures continued safe and reliable service. SB 57 requires a moratorium on injections at Aliso Canyon until completion of the root-cause analysis. We believe that that is a reasonable and prudent commonsense approach to resuming injections. And we believe that the legislation has appropriate safeguards to maintain reliable service.

So, with that, again, I thank you for the opportunity to present today. Thank you very much.

MS. WONG: Next, we'd like to hear from Bryan Starr with the Irvine Chamber of Commerce.

MR. STARR: Thank you.

Good afternoon. My name is Bryan Starr, and thank you for the opportunity to address you today on behalf of the business community. I'll be brief because I am actually pinch hitting for my colleague from the L.A. Chamber, Mr. Gary Toebben, who couldn't be here today.

But I'm going to tell you something that you all know and that is the critical nature of energy reliability on the economy and on the business community. I represent about 800 businesses in the Orange County area, a very diverse group of industry clusters ranging from biomedical

to aerospace, tourism, hospitality, hospitals. All of them have one thing in common, and that is there absolute reliability -- or absolute need for energy reliability.

No amount of outage is acceptable for the business community. Not an hour. Not a day. Because it equates to lost wages and equates to loss of productivity and loss of economic activities.

In listening to, you know, the munis that were represented here today, I walk away today with a little less confidence on the reliability. I didn't hear any assurances from them that they thought that they could make it through another summer without some sort of outage. And that's also based on, you know, what we heard in the analysis that you're assuming, this analysis assumes, an absolutely perfect scenario with a flawless delivery system really over a territory that is nearly half of the state. And that just doesn't sound reasonable to the business community, that there would be a flawless execution sort of scenarios that would ensure that we didn't have some sort of outage.

So, I just wanted to remind you all that, you know, the role that Aliso Canyon plays in ensuring reliability, you know, during high levels of energy demand is absolutely critical in our view. And I know you take your responsibility very seriously to ensure that

reliability is upon us and that we don't have outages. And we just hope that you continue that. And please make your policy decisions based on science and facts rather than allegations or emotions. It's just too important to the economy.

Thank you.

MS. WONG: Next, we'd like to hear from Dorothy Rothrock with the California Manufacturers and Technology Association.

So, she is not here in person, but we will have her available via WebEx.

MS. ROTHROCK: Hello. Can everybody hear me?

CHAIR WEISENMILLER: Yes, we can.

MS. ROTHROCK: Excellent.

Thank you very much for letting me participate like this. I know what you all look like. I think you've seen me. So, this is almost as good as being there.

What I'd like to do is just for a few minutes give you a little bit of context for what we're looking at from the manufacturing side of things on issues that are much larger than just energy issues, but just the status of California manufacturing. I usually have a chance each year to do this for the Energy Commission as part of your IEPR. And, so, I'll just take a few minutes to do that right now, if you don't mind.

The slides that I presented to you, if you go to the first one, shows an updated jobs chart for California versus the rest of the U.S. since January 2010. That's where we pegged the end of the last recession.

So, you'll see that manufacturing is coming back in California and the U.S., but California is not quite keeping up with what the average of the U.S. is doing. And, of course, the average of the rest of the U.S. includes some states that are doing much, much better than California, as well as some that perhaps are not doing as well. But, as a large manufacturing state, we think that this is falling short of our capacity and really what we ought to be looking for in California as part of our total economy.

Next slide, please.

This is an updated slide that you may have seen before. This includes the year 2016 on the far right of the chart. This shows since 1977 each year's percentage of manufacturing new sites and expansions that came to California.

So, for example, in 1985, we received 17 percent of the manufacturing investments of the U.S. And that was -- we labeled that the aerospace ramp-up that occurred around those years.

We saw a big boost again in the late 1990s with

computers and the growth of Silicon Valley.

But you'll see that since the year 2001 we've really struggled to keep up with a kind of fair share of manufacturing investments in California. You see that we're kind of lagging. We really haven't broken through three percent in any single year, and the average really is two percent since 2001.

So, we're worried about this because, of course, investments in expansions is often included with modernization and other kinds of technology embracing that makes us more productive and more efficient. And we're alarmed that more investments aren't coming our way.

Next slide.

This is an energy slide that we've started developing in the last couple of years because we were concerned that while everybody's energy costs are going up, you'll see that the industry, particularly, is being disproportionately, I think, impacted by the higher energy costs in California compared to the U.S. Now, this is a measure of the premium, cost premium, in California compared to the rest of the U.S. for each of the rate classes. And this comes from the Federal Information System, and it's a gross aggregate statewide measure. You see that it's a very steep upward climb for industry.

And that's a good segue to what I want to say

generally about the topics that are before you today, and that is how crucial it is that we be sending a strong message to the manufacturers that we're going to address the challenges with the Aliso Canyon problems in a way that's going to maximize the message to manufacturers that we are going to commit reliability and cost control as we try to solve these problems.

There are decisions that companies are making, as reflected in the jobs and investment numbers you saw, that happen both in real time, kind of year-to-year, day-to-day, and that can impact production and jobs in the very short term, such as when there's a curtailment or something like. The next day, there's an impact, somebody is sent home, a production line is lost, whatever. We all know what the real curtailment challenges are that happen in real time.

But then there's a sort of a midpoint also decision-making that's, What kind of technologies or decisions am I going to make in the kind of the midterm, like the next one to three to five years, to manage whatever risk I perceive. And I think that we have companies right now looking very hard at the whole energy system, including Aliso Canyon, and saying, What am I going to do in the next three to five years to manage my production, my investments, and how much am I really willing to do, how much capital do I have in order to make

changes that I need.

And, then, finally, for the long term, going back to the slide showed on investments, Where am I going to expand and where many I going to grow or, potentially, Where am I going to shift if I decide that California's just too risky. And that is the long-term decision that we don't want anybody to make outside of California if we can help it.

So, let me end with just the message that we are watching, and I think the manufacturers are also watching, about the decisions that are going to be made. And the more that you can do to identify the risks in a very transparent way and also make decisions that -- I don't want to say error on the side of reliability, but that takes all the issues into account so that manufacturers are as aware as they can be of what the real risks are so that they'll take sensible steps to deal with it as opposed to steps that perhaps could be costly, unnecessary, and in the long run not in the best interest of California.

So, you just strike that exact balance right there, and then everything will be fine.

Thank you.

MS. WONG: Next, we'd like to hear from Michael Webster with Southern California Public Power Authority.

MR. WEBSTER: Good afternoon. Mike Webster. I

represent 11 municipal utilities in Southern California and one irrigation district. And all of these utilities know that impacts of curtailed gas supply could have ramifications for their reliable electric supply to their customers. But I'm really here today to talk about those medium and smaller utilities within the Los Angeles, Greater Los Angeles area, Pasadena, Vernon, Glendale, Burbank -- Pasadena, and talk a little bit about what they're doing to prepare themselves for this summer.

Now, not all gas curtailments are the same, especially for our smaller utilities. So, one of our utilities is transmission constrained. They must have local gas to meet their local loads. So, even if there's utilities available that can supply energy that can have some flexibility, there's no possible way because of this transmission constraint to help that local utility. So, there needs to be some recognition, working with the balancing authorities, that these transmission constraints would mean that not all curtailments are the same. We need to think about that as we move forward.

The utilities are really deploying a lot of measures to increase energy efficiency and to shift usage away from peak hours. And, so, some of those I'd like to talk about is that they're really deploying tremendous amount of energy efficiency through LED lighting programs,

they're doing weatherization, air conditioning (AC) tune-ups, pool pump replacements; a lot of the energy efficiency measures that you hear from a lot of the utilities, but the smaller ones are really focused in this regard to get some of those things done.

But they're also very, very progressive, is that the smaller utilities have really expanded the use of the Ice Bear technology. They have about 4 megawatts on system now, and that shifts load away from the peak. It stabilizes ramps quite a bit. And Scapa just awarded a contract for up to 100 units of the new smaller, residential Ice programs so that our member utilities can deploy those locally and, again, try to take some of that peak load off the system and use that as a way of storage.

We also have one utility that's ready to go live with 2 megawatts of battery storage. It may not sound like a lot, but when their load is only a peak of 300 to 400 megawatts, it is a big part of their system. And that's going to be available for this summer. And we think that's really progressive on these -- by these smaller utilities to do that.

They're also working on demand response. Many of our utilities have an energy and a water utility. And, so, they're coordinating to reduce pump load from the water systems during those times of peak usage so that they can,

again, provide a demand response for this summer.

And they're also putting in their capital to test new systems. For example, Pasadena last year tested liquefied natural gas. They thought it was going to be a great investment to shift from system natural gas to liquefied. And, so, they spent their capital, they got that up and running. But what they found out is that the time it takes the gas company to switch from LNG, or from natural gas to LNG, was a day-ahead response. Well, curtailments come up way too fast where that could be effective. And, so, what they found is by doing that, they tested it and it's not a real functioning system for them today even though they tried it. So, they're trying to put their money in to protect their customers and testing different technologies.

All of our municipal utilities are using public appeal. So, while the Cal ISO has their flex alert, which is very effective, our utilities are very close to our customers and so it's very effective for us to send e-mails and through social media and other mechanisms to get directly to customers. And we are doing that on an ongoing basis, and we find that it is effective.

So, in conclusion, electric system reliability is a core component of public health, safety, and welfare. It is a must have, not a nice to have; and everything from

healthcare to traffic control, critical communications, to business rely on reliable electric supply. You know, so luck is not a strategy. Planning for contingencies and recognizing that system and components fail, loads as a result of weather is uncertain and can change very, very quickly, wild fires have impacts. Utilities plan for these things to keep the system as reliable as possible. They also plan for some level of gas constraint. That's why we respond to OFOs. But that only has limits. And, so, I think that it's fair to say that the smaller- and medium-sized municipal utilities, quite frankly, they're concerned about this summer. And with great faith and trust, we are hoping that the systems prevail.

MS. WONG: Next, we'd like to hear from Kevin Wood with Southern California Edison.

MS. WOOD: Do we have slides?

Thanks.

So, I am happy to be here today to share with you what Southern California Edison has done to help mitigate the limited gas operations for last summer, as well as what we're doing this summer.

So, if we could go to the next --

So, I'll talk about, again, 2016 and 2017.

So, although we've seen in previous slides that there's been sort of a relatively small incremental amount

of demand response, I just wanted to let you know that, at least for Southern California Edison, we have a fairly robust portfolio of demand response that really be can triggered at any time. This is a potential simultaneous trigger over 1100 megawatts that we've had. This does include the 30 megawatts of incremental DR that we acquired due to Aliso Canyon issues.

And since we have been talking about the Stage 1, I wanted to point out that the first four line items are likely a bulk, or at least some of the 800 megawatts that's been talked about in response to the Stage 1 on May 3rd.

So, next slide, please.

So, obviously, an electric utility, and especially -- and including Southern California Edison, we're always ready and -- for reliability. That's part of our job. So, we have organizations across the company that are -- do this as part of their normal operations.

So, when we, you know, learned of the Aliso situation, we quickly stood up sort of a coordinating team that was sponsored by executives and had some dedicated leadership and project coordination to just make sure that these tracks of work, we're talking to each other so that we weren't having any gaps or overlaps in the kinds of things that each different area was doing.

So, just a quick slide on how we organized the

project. And this project team is in place again this year.

Next slide, please.

So, this is just a snapshot, a summary of what we accomplished in 2016. So, the first main bullet there on the left, a lot has been said already about the coordination amongst the gas purchasers and the agencies, the additional balancing requirements. So, obviously, Southern California Edison participated in that with our market operations to a great extent.

We also had one new intertie real-time call option product that we implemented last year.

Next bullet around the demand-side, management activities or new resources. So, again, we added over 30 megawatts of traditional demand response resources, and including the item that's been, again, discussed here a little bit, our smart thermostat program that we collaborated with the gas company. Edison offered a $75 rebate for that program, and the gas company offered $50. And we were able to sign up over 14,000 customers. And we only just began about July of last year. So, we were able to expedite that program through the CPUC and launch that and acquire 14,000 customers last year. So, that was helpful and we were happy to see that progress.

We set ourselves a goal of 25 megawatts. You can

see the upper, right-hand chart for incremental demand response. And by the end of the year, we did exceed that slightly.

The green represents our base interruptible program. That's, our large industrial customers rarely get triggered, but they are the ones that got called on May 3rd, so we were happy that they responded.

We also were able to make some modifications to current energy efficiency offerings and our income-qualified activities and were able to gain a little bit of new load there for those programs.

We were able to accelerate some of our local capacity requirement resources. These were the ones that were contracted and just received the go-ahead I think this year. But we were able to expedite them one year ahead of when they were originally going to be going online.

We, as has been talked about here, acquired 62 megawatts of electric energy storage. And we conducted a very expedited demand response solicitation and were able to achieve 11 megawatts under contract for that last year.

Next slide, please.

So, not to outdo Ed Randolph's pictures of our storage facilities, but this just shows where these exist. So, we have the Edison-owned new storage at our peaker plants. And shows up there the Grapeland Peaker and

the -- oh, what's the other one?

I can't read it. Somebody help me.

UNIDENTIFIED SPEAKER: Mira Loma Tesla Battery Energy Storage.

MS. WOOD: Center Peaker. Sorry.

So, we have two peaker plants, the Center Peaker and the Grapeland Peaker that we have -- had 10 megawatts each of battery storage that, basically, just helps the turbines be able to quick-start and cuts down on the fuel that they use.

We have the 20 megawatts of the Tesla Battery Storage at Mira Loma, or near Mira Loma substation. And then we have 22 megawatts total on contract from third parties at Pomona and Grand Johanna.

So, next slide.

Next two slides are just some photographs of the -- this, in particular, is our Grapeland Peaker project. You can see the battery storage facilities in the foreground, the peaker unit in the background. And these were pursuant to Resolution E-4791.

Next slide.

And this is a photo of our Tesla battery units near Mira Loma, and, again, pursuant to Resolution E-4791.

Next slide, please.

Okay. For 2017 -- actually, in 2016, we

developed a two-year plan, at least for our demand response and some of the energy efficiency activities, so we are basically just implementing the planned activities in 2017.

We expect or hope to get between 14 and 37 megawatts of additional incremental demand response primarily through our third-party smart thermostat program and the summer discount plan, which we've already actually almost completed marketing around the summer discount plan program.

Energy supply, again, will continue to have the significant coordination with the state agencies. And whatever new or continued balancing rules would be in place for 2017. We do have some solicitations ongoing, not necessarily related to Aliso, but we may get additional storage from the 2016 Energy Storage RFO and the Integrated Distributed NG Resource pilot. We may see some additional storage related to those procurements.

Ongoing communications. As we did last year, adjusting any messaging that we might need for the coming summer. Again, we have launched our marketing campaigns. It's important to get those campaigns launched in the spring so that we can be ready for summer.

Emergency response. What we do, we'll be running an exercise on our emergency response program fairly shortly here and updating our electric emergency action

plan.

And I think I talked about demand-side management. We will continue to do energy efficiency. Off to the right there, the table is actually what's in the pipeline and what we expect to bring into play for 2017 in our energy efficiency program.

So, I'll just give a couple of examples. For energy efficiency, we've tested in actually the PRP area, LED tubes last year. And we just got approval on our work paper to deploy LED tubes for 2017 across the territory, so that will help. I don't have an estimate of the megawatts available for that program. And we're continuing to heavily market the energy savings assistance program.

And I think next slide -- I think that's all I have.

MS. WONG: Our last speaker today is Issam Najm of the Porter Ranch Neighborhood Council.

MR. NAJM: Thank you very much for the opportunity to be here.

My name is Issam Najm, and I am the Board President of the Porter Ranch Neighborhood Council. I'm here speaking on behalf of the neighborhood council, but I also need to stress that I'm not speaking on behalf of the City of Los Angeles. I think the city has a lot of people who can speak on its behalf.

You know, I spent Saturday preparing these slides not knowing there was a dump into the docket on Friday. I would have rather have read the reports and been able to comment on those. I will have some comments, but if you don't mind, I would like to go through some slides that I have prepared.

Next slide. I testified here last year in August, and I recognize that the question at the time was how -- what do we need to implement in place to go through the next summer. But I urged the panel at the time to also ask the future question of, ultimately, how should the gas and electric system be configured in order to operate safely and reliably without Aliso Canyon. And that is the community's perspective, that we need that question answered. Now, realize all the process that is ongoing for the long-term question to be answered. But I would like to make some comments on that, if you don't mind.

Next slide.

It's been about a year now since then, and while there are processes in place, I have not seen that question yet written anywhere and posed as a real question. Not in terms of what the future should be, but, rather, if we are to envision a future without it, how should this system look like. It could be a paper exercise that can be done by anybody. And I proposed it to the gas company. I

proposed it to the city. Just a paper exercise, vision of how it should look like without Aliso Canyon, to able to avoid all these conversations, and yet no one has asked that question. And I would like to ask it.

From our perspective, the disaster was a warning shot across the bow. In fact, we submit to you that you can only attain energy reliability after you eliminate the need for Aliso Canyon.

And, with the little time that I have, I want to walk through five facts that lead to this now. Now, there was a lot of numbers thrown out today, and I'm going to throw out some numbers as well. But they're very simple numbers, they're one, two, three, four, and five. So, I would like to go through them, if you don't mind.

Number one, in that October 2015, and that's, by the way, about 580 days ago, the well -- one well in the field out of 115 ruptured, resulting in the largest known methane leak gas release in the U.S. The failure in one well resulted in the emergency declaration, development of new state regulations, expenditure of millions of dollars of state cost, and tied up the staff times of countless state regulatory agencies. That's one.

Let me go to two. When the leak happened, the gas company informed us that they have hired the two top national firms, AECOM and Fluor, to come up with a solution

to stop the leak. They were not able to do anything about it. The leak continued. They explored Option A, Option B, Option C. They could not do anything, and these are the top engineering firms in the country scratching their head about one well rupture.

Next slide.

Number three, the gas company tried three times to inject heavy liquid into the well to prevent the gas from coming out. And all times, the liquid will come out with the gas through the casing, up the dirt and below the dirt, and the chemicals up in the air. Chemicals that, by the way, the community as of yet does not know what they were. But it created a crater around the well that caused a major concern about whether that well is going to break off as the crater surrounded that well from the injection of that liquid.

Next slide.

Four. It took them four months, for the gas company and the consultants to stop one well. Four months is a very long time. And I'm sure nobody would want that to be happening next to them. But it happened next to us. Four months until they drilled a well next to the other well to intercept it at the bottom, inject cement at the bottom. Four months to do it for one well.

In these four months, thousands of people were

relocated, left their homes, two entire schools had to be evacuated for the entire academic years, and local businesses were economically devastated. Everybody speaks of businesses as if they are only gas users. Well, you know what? There are businesses that live in the community, too, and they were extremely negatively impacted by this.

And, finally, number five. Number five is the least discussed number. And I want to bring it up because I find it amazing. The entire fiasco that we are dealing with here was caused by the release of only 5 Bcf into the air. The field was dropped from 86 down to 15 through those 4 months. The assumption is that all that gas was released, at least the majority of it. In fact, only 5 Bcf was released into the air. 5 Bcf is what caused everything that we are talking about, from all the environmental damage that we are assessing. 5 Bcf out of the total that was stored in that gas. And that was because of one well rupture. There's still 15 Bcf in that field. That is three times the amount that caused this entire disaster.

Next slide.

The state warns us that a major seismic event in the region is not a matter of if, but a matter of when. This entire disaster was caused by the rupture of one well releasing only 5 Bcf of gas that took four months to stop.

What if an event happens that ruptures two wells? Four wells? Twenty wells?

All the planning that's being done would be useless in that event because everybody will just stand and watch them release the gas because there's nothing that can be done about that number when we know how much it took to fix one well.

In our mind, how do we come to terms with that when we're talking about reliability?

Next slide.

So, we ask you again as a community that has gone through this to recognize that the urban underground gas storage facilities are a ticking time bomb. Begin the process of changing the system to operate safely and reliably without them. Only then will we truly have energy reliability, and only then will we be able to go back to our lives and live them peacefully.

And I think that's the last of these slides. And if you'd allow me, I'd like to make some comments about what I heard today.

CHAIR WEISENMILLER: Briefly.

MR. NAJM: Yes.

CHAIR WEISENMILLER: We have many speakers lined up and so a limited time.

MR. NAJM: Okay. We find it disingenuous on

behalf of the gas company to express concerns over storage volume when they passed up on two months of opportunity to inject gas and replenish that storage. It is only when they received the CPUC's letter that all of a sudden now we're able to get 250 and 260 million Bcfd into the other storage. I would have loved for you to ask them why they did not implement that when they were running low on storage and yet they had the excess capacity. But that question was not asked.

And for the electric gas, I would like to ask the question, and I understand from the gentleman who spoke on behalf of the small electric generators, I assume that that LNG concept was about acquiring LNG in case of a shortage as opposed to having LNG onsite. I'm not sure. But I will ask the question. When we talk about --

CHAIR WEISENMILLER: Why don't you ask him that question afterwards?

MR. NAJM: Can I pose it to you?

CHAIR WEISENMILLER: No. Ask him afterwards. Let's keep going. Go ahead. Please, go ahead.

MR. NAJM: I appreciate that. Thank you. And I am done.

CHAIR WEISENMILLER: Thank you.

First, I want to thank everyone for their participation today on the panel, particularly appreciate

FERC coming out from D.C. to be here; certainly, a key partner in going forward on this.

And I think one of the things that would be useful is, Ed, could you come up and just address the EES report on a very high level?

MR. RANDOLPH: Yes. Once again, Edward Randolph, Director of the Energy Division at the California Public Utilities Commission.

The -- and, I'm sorry, I've forgotten your name, sir, the representative from the county of L.A.

MR. ACKERMAN: Jason Ackerman.

MR. RANDOLPH: Yes. Had referenced a study that was conducted on their behalf by a company called EES. And that study has been filed in several places. It's been filed in response to what -- a draft of what we refer to as the 715 Report. It's also been filed in the proceeding here. And I think it's one other place as well, but those are the two critical places.

Most critically, the 715 Report, which we didn't talk about earlier today, requires the CPUC to make a determination of how much gas is needed in Aliso Canyon in order to maintain reliability in the system. That most recent version of the report was released before this summer assessment was done, was based on the prior winter assessment and the prior summer assessments at that time.

It's important to discuss that and the EES report real quickly, but that came to a determination that 29.2 billion cubic field in the field were needed for reliability purposes. And that number comes from looking at the total need in summer and winter of this system, what can be met by total pipeline capacity, what can be met by the other storage fields, and what's the gap on a one-and-ten day on that peak day. And the gap, with everything else, was 900 -- just over 900 million cubic feet we need to be withdrawing from Aliso Canyon.

Looking at the number of wells that are available for withdrawal at Aliso Canyon, the volume of gas you need to get to that pressure was that 29.2 billion cubic feet.

What's important is that number is likely lower now. Because we're taking into account mitigation measures, because we're taking into account the new transmission, that number will lower down. And, as later drafts of that report come out, it will look at what was done in this study.

But back to the EES report out there. Looking largely at that 715 Report, it made a couple of findings. You know, first, which was referenced by L.A. County, was that the field is not needed between March and June of this year for reliability purposes. We agree with that. You know, those are low demand months. You can meet one-in-ten

in those months without the need for Aliso.

The second finding in that report was that -- the second issue or issue of concern we had with that report is, when looking at the ability of the field to meet demand, it looked at the 15 billion cubic feet that were in the field, but didn't take into account the fact that at 15 billion cubic feet the pressure wasn't high enough in the field to meet that .9 billion cubic feet, the 900 million cubic feet out there. And, so, they assumed at 15 billion cubic feet that you would get the same pressure as you would at a higher level, which is not accurate. You would need to go higher for that.

Next, the report assumed that with the high hydro year, hydroelectric could help resolve the issue. We discussed that this morning. Both LADWP and Cal ISO discussed why even in the high hydro year that doesn't provide much additional relief within the L.A. Basin.

They made a side report that some of the CPUC reports can be confusing and inconsistent in the way they compared things. And we actually agreed with that. And that's why in future reports we've made a great effort to, when talking about electricity savings, to try to put that in terms of therm savings and billion cubic feet per savings, so we're using consistent numbers throughout and make it more transparent.

The report also found that the withdrawals in January were not necessary. CPUC is still taking a look at the reasons for the withdrawals in January. There was some data that was required to be provided to us. The reason why we haven't released any sort of summary on that is that becomes more relevant when we get into looking at the need for better balancing core and, potentially, in the long-run OIR. It's not particularly relevant and as we go into summer and other planning exercises. So, you know, for better or for worse, we had to triage that as we were, you know, looking at a chain of events. But we were continuing to look at the cause of those, the withdrawals on those two days.

And then the -- that study looked at, and what other studies have done the same thing, have looked at balancing the system over the course of the day. And the reality is the problem in the summertime is not balancing it over the course of the day, it's balancing it over the course of a few hours. And where you can see on even the most peak summer days you can stay balanced over the course of the day with numbers without Aliso, where all of the analysis shows it's needed is on a day when there's a sudden peak in demand due to the electric generation. And, so, you really need to focus on the numbers on the hourly withdrawals.

So, two things we're trying to do to address that is, one, the assessment that was just released does talk in both hourly withdrawal and in daily withdrawal. The other is that some of that hourly data has been historically deemed confidential. We've been trying to work with parties who reach out directly to us to get them better access to the hourly data. And, in the long term, proceeding looking at the long-term need for it, I think there will be an effort to make that publicly available to any party to the proceeding who is not a market participant.

And, then, lastly, the report found that the mitigation measures work. We agree, and we appreciate the compliment on that in the report. And the 715 analysis that they were looking specifically at and this summer assessment do take into account the impacts of the mitigation measures. But even with those mitigation measures, as we've discussed, there is some risk of reliability shortfalls this summer without Aliso.

CHAIR WEISENMILLER: Thanks, Ed.

Any other comments?

Again, I'd like to thank the panel for being here. Certainly, looking forward to your written comments later.

Let's go over to now public comment. We're going

to use both the microphones. So, we're going to call two names at once. We've got a lot of cards, so we're going to go to two minutes. And, basically, again encourage people, you know, to the extent you agree with someone who just said something, you can leave it at that as opposed to repeating, but, obviously, we'll hear.

Okay. So, let's start with Jane Fowler Ann Deirdre Bolona.

And please excuse me if I botch people's names.

MS. FOWLER: Oh, I'm first.

Hi, I'm Jane Fowler. I'm a resident of Granada Hills. And I do want to thank you for going through all this. It's important to us, and I appreciate it.

So, I was relocated for seven months. And, in that time period, I wanted desperately to feel well. So, I went to a -- what was it -- a detox center to get rid of everything, you know, all the chemicals or whatever in my body. And, believe me, it was miserable. It was really different. But I did it. And for seven months, I worked on myself, you know, trying to get healthy mentally, physically.

And, literally, when I arrived back and went to bed and woke up, the symptoms came rushing back. It looked like I was pregnant. My stomach was bloated. The

headaches came back. Just everything came back.

While I was away, I had stopped my depression medication. I had stopped antiseizure medication. And, now, once again, I'm pretty much nauseous every day. I have stomach issues, throat, headaches. You know, this hair is not my hair, half of it isn't because my hair fell out. I have body aches. I become dizzy, lethargic. I'm so thirsty, it's -- can't be stopped.

And this is every day that you feel something. Something hurts every day, and you don't know what it is. I have a fear of waking up because I don't know what it is for that day. I'm depressed. I'm very depressed. It's been a year and a half of physical and mental torment. I have kind of the classic symptoms of PTSD.

I've just called the realtor. I have to move because the doctor said there is no cure other than to move.

Thank you.

CHAIR WEISENMILLER: And Lane Semper, why don't you come up.

MS. BOLONA: I had a three-minute speech, because that's what we were told in the minutes, so I'm --

CHAIR WEISENMILLER: Well, I'm sorry it's two.

MS. BOLONA: I know it is now. So, I'm going to not look at you like I wanted to so you could see what I'm

going with. I'm going to read quickly because it is so important. Okay?

CHAIR WEISENMILLER: You can also file written comments.

MS. BOLONA: Yeah, I think I'll put it in written, too.

CHAIR WEISENMILLER: Yeah.

MS. BOLONA: Let me just start with, I'm a 17-year -- my name is Deirdre Bolona. I'm 17-year resident of Porter Ranch.

The Aliso Canyon -- the Aliso Canyon -- Aliso Canyon is a health issue masquerading as an energy issue. Aliso Canyon will never be safe.

Methane emissions occur in all sectors of the natural gas industry. They occur through intentional venting, which I lived with the 17 years that I was there, routine maintenance, and it leaks from everything -- fissures in the ground.

So, people are still sick and suffering in Porter Ranch and the vicinity. My family and neighbors have had to live with the mercaptan poisoning for all these years. The toxic stench has seeped into our home day and night.

On my block alone, we have five houses right across the street from me with severe medical issues. I mean, right across the street, a rare eye disease with lead

in their blood. Next door, a teen suffering from cancer. Next door, two siblings with autoimmune disease. Next door, a death from brain cancer. Across the street, a death from kidney cancer. And, sadly, my own father is dying from kidney cancer that I believe was contracted from the trichloroethylene unknown kidney cancer in the toxic odorant mercaptan. That's one of the many chemicals that we know about, because they won't tell us because they're protected by trade secret laws.

Our community has two elementary schools and a middle school downwind from this facility with children that play outdoors, breathing this stuff. Okay? We had -- Castlebay Lane has had a huge amount of teachers die from cancer. There's even a documentary being made now called, "The Cancer at Castlebay Lane."

We heard LADWP today talk about these unplanned events, unplanned events. Yes, there are unplanned events, like the earthquake that might happen on the hill because we have the Santa Susana Fault and the San Andreas Fault right there ready to go. That's --

CHAIR WEISENMILLER: Okay.

MS. BOLONA: -- an unplanned disaster.

CHAIR WEISENMILLER: Okay. So please file your written comments.

MS. BOLONA: Okay. I will.

CHAIR WEISENMILLER: We're going to --

MS. BOLONA: All right. Thank you.

CHAIR WEISENMILLER: Please. Thank you. Thanks for being here.

And Helen Attai please come up.

Go ahead.

MS. LANE: Hi. My name is Lane Semper. I'm a Los Angeles resident. Thank you for allowing public comment.

I'm very grateful for your advocacy and efforts in expediting transitioning from gas and oil to clean, safe, 100-percent renewable solar and wind energy.

I had written notes before I came here, but after listening to SoCalGas and the fossil fuel companies advocate their energy, I wanted to throw something else in. We should all be familiar with the name William Kamkwamba. He was born into poverty, and from a book from the library, created wind energy for his family with scrape-yard materials, gum tree, and his bicycle tire. This was in 2002; fifteen years ago. He was 14 years old. He went on to power his community. So, you know, this can be done.

I attended the United Nations Conference of the parties. The public events, there were hundreds of examples, people around the world that have transitioned successfully, creating better jobs, safer jobs, safer

communities.

Los Angeles is among the smoggiest regions in the United States. This pollution is reason enough to keep SoCalGas Aliso Canyon permanently shut down.

I commuted here from the valley across from Aliso, site of our nation's largest methane blowout. Along the way, I did not see solar or wind farms. I saw gas and oil facilities, power lines, and ample fossil fuel trucks.

Government subsidies continue to favor harmful gas and oil. I hear this excuse as being sensitive to business when all that means is someone's unable to find a way to make money without hurting people physically, economically, and otherwise. But countries around the world have achieved this critical necessity.

Shifting subsidies from fossil to renewable energy --

CHAIR WEISENMILLER: Okay. Thank you.

MS. LANE: -- is the solution.

CHAIR WEISENMILLER: Okay.

MS. LANE: Thank you.

Lorraine. And, actually, Alexander Nagy.

Please.

MS. ATTAI: My name is Helen Attai. I'm here because my family and I have been sick and suffering from SoCalGas poisoning for years.

Just to let you know, as we were here all today for this workshop, there was a fire inside the Aliso facility at about 10:20 this morning, with so many fire trucks and helicopters to extinguish the fire.

As usual, SoCalGas is claiming that was very small brush fire inside the facility. The thing is, even if it was a brush fire with all -- which I doubt, it could get very dangerous and potentially blow up north valley with all the gas sitting there. Not sure how a brush fire started by itself inside a gas facility. So many mysteries up there.

There have been several scientific studies done by different parties which proves that we do not need Aliso. Something very important added to all those scientific reports to me is that it has been proven in real-life experience that Aliso Canyon gas storage is not needed, and that's a fact.

We, the City of Los Angeles, have been without Aliso for 577 days now. That means 577 days without using Aliso Canyon storage. And guess what? No blackouts. 577 days of no need for Aliso. I'm eager to know why you would think next 577 days or days after that is going to be any different to make Aliso necessary for us.

We all do respect -- with all due respect, I do not know where you get your information from when you're

saying that we had mild summer and mild winter, when according to the National Oceanic and Atmospheric Administration reports 2016 was California's hottest summer since we started keeping records.

Those 577 days include two very wet and very cold -- I mean, consider the record-breaking cold winter and record-breaking hot summers --

CHAIR WEISENMILLER: Okay. Thank you. Thank you.

Let's go on to Alexandra.

And next would be Andrea, also from Food and Water Watch.

MS. LUNDQUIST: Hi. My name is Lorraine Lundquist. I'm a resident of the north valley. And I want to thank you so much for all of the work that all of you have done on this issue and for going through all of these reports with us and especially for all of the mitigation measures that you have come up with and made sure have been implemented. All these mitigation measures have made it -- or partly made it possible to allow us to get through the past year and a half without any injections at all into Aliso Canyon and without even anyone suggesting that maybe we might need to inject into Aliso Canyon.

And, obviously, gas balancing has been a huge part of this, as the speaker said. What a surprise that

operating the gas system better actually worked. So, imagine if we ran it even better and tightened up those rules, not only for the non-core customers but also for the core customers, to make sure that they have to actually burn the amount that they order and not just burn the amount that they forecast. Excuse me. That their forecasts have to match their order, but that their actual burn rates have to match their order.

And, then, you've also added this extra measure of increasing the storage in the other gas fields. And I am so confused about why SoCalGas has made so little progress on this measure. You would think it would be a no-brainer that if you think you need storage that you need to build up your storage capacity. But, apparently, it wasn't a no-brainer, so you sent them a letter on March 30th. And yet here we are still on May 22nd still in the same boat with very little storage in those other gas facilities.

Like Commissioner Randolph, this inaction makes me question whether SoCalGas' commitment to implementing these measures is really genuine. But you know what makes me really question it is the withdrawal that they did in January without following all of the mitigation measures that you guys came up with at previous workshops. So, I really encourage you to include some kind of enforcement

mechanisms to make sure that these --

CHAIR WEISENMILLER: Okay.

MS. LUNDQUIST: -- these mitigation measures are really followed.

Thank you.

CHAIR WEISENMILLER: Thank you.

Okay. Let's go on to Alexandra, and, again, after her will be Andrea.

MS. NAGY: Good afternoon. Alexandra Nagy, Senior Organizer with Food and Water Watch.

I wanted to also congratulate this excellent staff and panel for a total about-face from what we saw last summer with the threat of 14 days of blackouts, to all of the hard work, and now a cautiously optimistic report.

I would like to reiterate some of the comments made by Tim O'Connor at EDF, talking about a lot of the inconsistencies between the California Gas Report. Even last winter risk assessment looked at two modelings: The mass balancing equation found that we could meet 5.1 billion cubic feet of demand; and then the hydraulic modeling simulation preferred by SoCalGas so could meet 4.5 to 4.7 demand. And now the latest report has really shaved that down to 3.6. And then the California Gas Report has a much larger estimate.

So, I'm really confused as to why all of a sudden

that number is almost a billion cubic feet less than what we saw in the winter as being able to meet that demand.

I'd like to also talk about the withdrawals in January. The settlement agreement that happened on December 1st and was extended through most of the remainder of this year, I think really sold us short. It went from requiring OFO tariff procedures in case of surpluses or shortages instead of that 5-percent daily balancing. During the withdrawal period on January 1st, SoCalGas let their system get up to 20 percent out of balance on December -- I'm sorry. Wrong page. ...their system got 23 percent out of balance on the 24th, their first day of withdrawals, then 27 percent out of balance on the 25th, their second day of withdrawals.

And, then, as noted in the L.A. Times article and through our own investigation, we found that they actually ordered less gas on the pipeline system.

So, I would love to talk with you about that. The investigation needs to happen. You need to be public with that. And we need to go back to 5-percent daily balancing.

CHAIR WEISENMILLER: Thank you.

Let's go on to Andrea.

MS. LEON-GROSSMAN: Hi. My name is Andrea Leon-Grossman --

CHAIR WEISENMILLER: And Daryl Gale will be next.

Please go ahead.

MS. LEON-GROSSMAN: -- with Food and Water Watch.

First, I want to read the definition of reliability. That's the quality of being trustworthy or performing consistently well.

And it's clear that Aliso Canyon is not reliable. The system for natural gas is not reliable. What is reliable is sun, wind, and battery storage.

Right now, I have solar in my roof, and I had that for five years. His not new technology; it's existing technology. And I'm a customer of LADWP, along with another 20,000 households. However, I cannot have battery storage in my house right now because LADWP doesn't allow that. And it will be wonderful if that could be changed right now, because we could add battery storage immediately. And that I will be happy to have that. That would add reliability immediately. And nothing is more reliable than having that, especially in case of an earthquake.

The Chamber of Commerce is concerned about reliability. This is a surefire way to increase reliability. The Chamber of Commerce admitted to say that SoCalGas is also a member of them, and I think that should have been disclosed. Also, they don't advocate for

efficiency jobs. And there's a lot to be had there. Four percent of buildings right now in the city are using 50 percent of the energy. There's a lot of jobs to be had there, and there's a lot of energy that's being wasted right now. We need to tackle that. That's a surefire way to add reliability, to be wasting less energy, and to add jobs.

The manufacturers' association didn't advocate for that. That's something we need to tackle right now. We need to stop the waste; we need to use our electricity efficiently; and we need to transition to clean energy right now. This is not new technology; it is technology that is available right now off the shelf.

Thank you.

CHAIR WEISENMILLER: Thank you.

Okay. Daryl Gale and V. John White.

Please come on up, John.

MS. GALE: Okay. Thank you. We really need to consider the whole picture in-depth here because we are here to talk about reliability.

It is critical for everyone to understand that more greenhouse gas emissions are contributing to our severely overburdened atmosphere. That well blowout contributed an enormous amount of methane to our air.

I don't live anywhere near Porter Ranch. I live

in downtown Los Angeles, and I live in a solar apartment. We have 115 solar panels on our roof.

People suffer all over from the same long and permanent summer that we have created through our American lifestyle. Numerous people over here said that we had a mild summer. I don't think we had a mild summer. Check any scientific website.

Also, last month, it was documented we are now at 410 parts per million of carbon in our atmosphere. All this carbon holds in more heat and more pollutants. If you want to know about the health problems, about breathing in methane, first listen to the people who live there. And there's a report on Physicians for Social Responsibility, that's psr.org. It's a free 36-page report about all the problems of breathing in methane.

And we have never, ever, ever here in Southern California been in compliance with Federal Air Quality Standards. This is not something to be proud of.

So, reliability, we're talking about. The only thing reliable about natural gas storage plants and a storage facility is the reliability that it is going to leak eventually. And this was a test case to let us know what we need to work towards.

Thank you.

CHAIR WEISENMILLER: Thank you.

V. John White and then Armando Flores, please.

MR. WHITE: Thank you, Mr. Chairman, members.

I, first of all, want to thank the Commission and -- both commissions and all the hard work that you've been doing, and particularly the evidence of the results of the cooperation that you have engendered across the gas and electric system with LADWP, Cal ISO, and Edison. This is the work that we're going to need to do more of going forward.

We now understand that the reliance on natural gas for reliability has turned out to be not fully understood. And, as we unravel the alternatives, I think there's some lessons for us going forward, in particular, the importance of cooperation and sharing of reserves and sharing of data and just working together. This is an ongoing issue we're going to need to pursue.

Also, we think that if we peel back a little bit some of the assumptions that have been made about how much power we need in particular locations under the local capacity requirement versus other ways that we have of providing the same attributes. I think one of the things that is really important is to recognize that when we we're talking about reliability we're talking about attributes that are needed in particular locations, whether it's voltage or whether it's inertia or so forth. That those

attributes can be provided, and you've already seen evidence of this through the rapid improvements in technologies where we could combine batteries with slow demand response and get the equivalent of burning the gas.

So, I think this is an important lesson for us going forward. And I just want to commend to you keep at this. I know there's a lot of pressure. There's a lot of emotion. But there's also a lot of terrific hard work that you've been doing and that we can still do.

I do want to emphasize that I don't think the gas company's record on conservation has been as robust as it needs to be, and I'm glad that got discussed.

Thank you.

CHAIR WEISENMILLER: Thank you.

Okay. Armando, and then Christine McLeod on behalf of Lucy Labruzzo, please.

Go ahead.

MR. FLORES: Good afternoon. My name is Armando Flores and I'm with the Valley Industry and Commerce Association, VICA. We represent over 400 businesses and non-profits across California.

From both a business and an air quality perspective, keeping key parts of our energy infrastructure, such as Aliso Canyon, is critical. A reliable energy supply is the foundation of our economy.

Removing one critical element of our energy system makes Los Angeles vulnerable if another element fails.

The impact of an unreliable energy supply is significant to businesses. A shortage of natural gas will impact the largest users first, large industrial users, refineries, and electricity generators.

The effects of this unreliability will be significant to employers.

As mentioned today, this summer is expected to have a higher risk of outages. We need to remind ourselves of the cost of outages for a medium or a large commercial customer, a momentary loss of power costs just under 13,000. An eight-hour outage costs an average of 84,000. For small commercial customers, an eight-hour outage cost an average of $4,690. Less eye popping, but for a small business, a significant cost.

Outages cause manufacturers twice as much as non-manufacturers, which is especially important in Los Angeles, the biggest manufacturing center in the country. The manufacturing sector employs over half a million people in Los Angeles. These are good-paying jobs, and we risk these jobs by not making every effort to ensure energy reliability.

We need to work to safely bring Aliso Canyon back online.

Thank you.

CHAIR WEISENMILLER: Thank you.

Christine, and then Patricia Glueck next.

Go ahead.

MS. MCLEOD: Thank you so much for the opportunity to speak with you today.

This statement is given on behalf of Lucy Labruzzo, who could not be here today. She's a Senior Vice President at our company, Cordoba Corporation.

By way of credentials, Lucy is a mechanical engineer and certified energy manager with 26 years of experience working solely with energy infrastructure, including regulatory power generation, electric and gas transmission, and energy efficiency.

Energy reliability throughout Southern California remains a significant concern. Our energy infrastructure system requires a holistic, comprehensive approach to ensure for reliability.

With the State Water Resources Control Board's once-through-cooling policy and San Onofre no longer in operation, Southern California already relies heavily on power from outside the region.

As a result, one of the greatest risks is transmission line interruptions caused by wildfires, transmission line capacity limitations and substation

equipment failures. A significant threat to transmission lines exists with pervasive California wildfires, particularly this summer, as confirmed by the National Interagency Fire Center, due to the rain and increased vegetation growth.

As a region, we cannot solely rely on hydroelectric power or renewable energy resources, as they come from outside the region for the most part.

There's enough technical information to cause apprehension about reliability. Multiple experts have gone on record in agreement that Aliso Canyon is necessary to meet the region's energy needs.

The bottom line is that, without Aliso Canyon in full operation, curtailments are more than possible with potentially devastating impacts to our communities and businesses throughout the regions.

Based on Lucy's 26 years of experience working in the energy sector, with transmission lines at risk and few other reliable local power sources, full operation of Aliso Canyon is critical to energy reliability in Southern California.

Thank you for your time.

CHAIR WEISENMILLER: Thank you.

Okay. So, Patricia next. Come on up.

And, while she's going to the microphone, Brandon

Matson, if you could go to the other microphone, that would be great.

MS. GLUECK: Okay. My name is Patricia Glueck.

As one of the 200,000 residents living near Aliso Canyon, I have wanted to talk about the active earthquake faults and the high fire danger, as well as the engineering studies which show that Aliso Canyon is not needed for energy reliability, but instead I need to talk about some organizations, including many who are here today, who receive money from the gas company every year -- and this is per the GO77M report -- like VICA that spoke recently, $25,000 a year.

These groups in return will parrot a script given to them by SoCalGas. And that script screams, There will be blackouts and people and businesses will die.

But here's the thing, some people have died and others have become seriously ill but because of the toxic chemicals that have spewed out from SS 25 during the 2015 blowout.

Fifteen days ago, someone lost her battle with bladder cancer. And that's considered usually caused by environmental factors, such as exposure to toxic chemicals.

A 13-year old with diagnosed with aplastic anemia. This is another disease that is often caused by exposure to toxic chemicals.

Another child, just 7 years old, developed AML, acute myeloid leukemia. This particular strain is rarely seen in minors. And one major cause is exposure to toxic chemicals.

These are a few examples of how this gas storage facility has been harming us.

And the gas company won't tell us what they've used on SS 25. They filed a health study for the damage it's caused us. And, despite the commitments made regarding allowing a root-cause analysis into why the blowout occurred, it's fighting that, too.

So, please be aware of the propaganda the gas company has been spreading. That gas company site --

CHAIR WEISENMILLER: Okay.

MS. GLUECK: -- needs to be shut down because it will never be safe.

CHAIR WEISENMILLER: Thank you.

Let's go on to Brandon Matson.

And if Cheri Derohanian could come up, that would be great.

MR. MATSON: Great. Thank you. Good afternoon. My name is Brandon Matson. I'm the Advocacy Director for the Los Angeles County Business Federation, known as BizFed --

(Interruption.)

MR. MATSON: -- which is a grassroots --

CHAIR WEISENMILLER: Please let him speak. Let him speak.

MR. MATSON: -- which is a grassroots alliance of more than 160 business associations, representing over 325,000 employers with 3 million workers in L.A. County.

Safety and energy reliability are both very important to us. In this slide, Aliso Canyon has met safety requirements and is critical to energy reliability in Southern California and to our region's economy.

With the continued restrictions on operations at Aliso Canyon, we are concerned about our region's energy reliability, especially for the coming summer which has been mentioned extensively today as being forecasted to have a significant chance of higher-than-average temperatures.

As we know, when heat waves hit, use of electricity surges as people turn on their air conditions and fans, which causes an increase in natural gas demand, as roughly 60 percent of electricity in the region is generated using natural gas.

When this happens, natural gas is critical because gas-powered peaker plants can be ramped up quickly to meet electric demand spikes. And, without local supplies of natural gas available, there is risk that there

might not be enough natural gas available to meet these hourly changes in electric demand, which would have negative impacts on our county's residents, businesses, and workers.

We need Aliso Canyon at its full capacity to ensure we have the energy supply needed to power our region this summer.

Thank you.

CHAIR WEISENMILLER: Thanks.

Let's go on to Cheri, and then Brad Jensen.

MS. DEROHANIAN: Hello. My name is Cheri Derohanian.

I'm a resident of Porter Ranch for the last 15 years. I have twin daughters, who are 7th graders at Porter Ranch Community School. And, at the time of the gas leak, they were forced to run a mile a day at the school. No one even knew what was going on. The school didn't have any kind of response because they'd never had a gas leak catastrophe of that nature.

Thirty thousand residents, fifteen thousand of them had to move away. Two schools closed. Henry Stern from Malibu, one of my friends because I'm from Santa Monica originally, he was gifted enough to write legislation such as SB 380 under Senator Fran Pavley's direction. And he since has done Senate bill 57 to find

root-cause analysis.

I have just one thing to say: If a plane crashed and you were lucky enough to survive, would you actually go up in that plane again if nobody analyzed what the cause of the crash was? Let's be real here.

I appreciate all that you've done, the PUC, and I appreciate that you've strengthened the rules and made it so that the other storage facilities have to have more gas injected because Aliso has been closed.

But make no mistake, it's not your job to police SoCalGas; it's your job to make better regulations, better rules, oversight for the safety, welfare of everybody who lives in Southern California and the United States.

Thank you.

CHAIR WEISENMILLER: Thank you.

Marcel, would you come up, too.

Next. Go ahead, please.

MR. JENSEN: Good evening. I'm Brad Jensen. I'm with the San Gabriel Valley Economic Partnership. We are a regional economic development corporation covering eastern Los Angeles County, essentially from Pasadena out to Pomona. You are currently in the San Gabriel Valley; welcome.

Thank you very much for the hearing today. It was very thorough and very interesting, providing a great

depth of information regarding a very complicated issue.

Reliability is the primary concern for the business community in the region that I represent. Businesses depend on a reliable energy supply for their operations and for their production. Energy loss, even for a short time, has a major effect on the long-term success of these businesses and their numerous operations here in the region.

Companies that have to ramp down production in the midst of an electricity loss reasonably worry about the affect it will have on their long-term prospects in the state, on their bottom lines. And this, in turn, affects thousands of employees and their families who work at these companies.

The economic partnership fully supports the efforts of the state regulatory agencies to ensure safety at Aliso Canyon and determine the cause of the gas leak. Safety rightly should be a top priority for the state. But the priority of safety must be balanced with a reasonable concern over the very thin margin we have for electrical generation without Aliso Canyon, which affects potentially millions of residents throughout the Southland.

It is not an exaggeration to state that the margin of our natural gas supply without Aliso Canyon is precarious.

Much has been said today about the limited storage capacity without Aliso. The state should carefully consider the serious challenges the generation system faces without adequate supplies of natural gas readily at hand. This is a concern for businesses in my region, but also for residents throughout Southern California.

Thank you.

CHAIR WEISENMILLER: Thank you.

Marcel and Amy Yue-Lap-Wan, please.

MR. HAWIGER: Thank you very much Chairman Weisenmiller and Commissioners.

My name is Marcel Hawiger. I'm a staff attorney with the Utility Reform Network.

TURN obviously participates to represent ratepayers at the Public Utilities Commission, and we'll be involved in looking at all the nitty-gritty details and analyses. But I want to just take this time to make two more general observations.

There was discussion about balancing. And you saw the slide that showed that of the various remediation efforts changes in balancing rules contributed to more than 90 percent of the potential benefits in reducing the need for gas storage and gas use last summer. And there was discussion that the core needs to do more. And, absolutely, we should make use of the data from the

advanced meters. The core already balances day in and day out every day. It's just they balance to a forecast, and they will do better when we balance to the actual meter reads.

But keep in mind that what you are calling daily balancing, for the rest of the system, which is all of the industrial customers and power plants, it's not daily balancing. SoCalGas proposed daily balancing two years ago, but instead there was a settlement that provided for tightening balancing during critical days, OFO days, but not on any of the other days. We don't know whether balancing other days actually could help by getting the system more -- starting at a better spot during an OFO day. Also, those settlements will expire. So, we need to make sure that those settlements are extended and that also perhaps more can be done, as you asked, with the balancing rules.

Second, there is genuine concern, why hasn't SoCalGas put gas in storage. We deregulated gas storage for most of the customers 20 years and more ago. SoCalGas only buys for residential customers, and they pay to inject gas. The reason we're not using more storage is because all of those other customers, including the power plants, whose reliability we're concerned with, don't use it.

CHAIR WEISENMILLER: Thank you.

Amy and Anthony D'Aquila from Pasadena.

MS. YUE-LAP-WAN: Blackout. Blackmail. Who receives mail anymore? Going paperless, but at what cost? Stay inside, stay inside, comes the phone call through the line. Is the air inside the home any different from the air around the sky? Blackouts. Gas prices. Carpooling hype. Who do we pay to keep the lights on and why? Who asks us to conserve and still lies all the while? Diamond Bar. Sacramento. Porter Ranch, and L.A. Where can we go to find the regulators, the leaders, the cheaters, and the liars? Are you reliable? Can the Aliso Canyon facility go on? Shut it down. Shut it down. Shut it all down. Kids with rare diseases. Half a black of community CANCERS. Elder folks that have no strength to leave their homes. How would it feel to be poisoned in your bed and to bleed through school and work, in the hospital lobby? Leaks. Paid off groups. Thirty thousand lawsuits. Energy shortages feigned. Neighborhoods compromised. Can you take back the toxins flowing through their blood? There is no reliability in corporate greed. Reliability. Reliability. Never will there be reliability. Never can being bought and sold be reliable. Never will burning fuel be safe or reliable. Never has SoCalGas been reliable. Now, even a home cannot be reliable to protect us from danger, to shield us from pollution, to harbor safe

dreaming. Safe energy. Renewable energy. Clean energy. Energy to rely on. With all of the money circulating and the science crunching through, be accountable to be reliable, which means to be well and good, to be trusted, not to kill your neighbor, to remember where you come from, and take care of what gives life to you. So, shut it down. Shut it all down. Shut it all down.

Thank you.

CHAIR WEISENMILLER: Thank you.

Next speaker is Anthony, City of Pasadena.

And, Anna Jung, please come up.

MR. D'AQUILA: Good evening. My name is Anthony D'Aquila. I'm the Interim Assistant General Manager of Power Supply at the city of Pasadena.

I'm here to state Pasadena's support for safe operations at Aliso Canyon Storage Facility. Without question, health, safety, and residents -- or health and safety of the residents near Aliso Canyon is paramount. However, we appeal to you for options that address both the operational safety of Aliso Canyon and electric reliability.

Cities like Pasadena have transmission and operational constraints that prevent the import of enough electricity to meet 100 percent of their peak demand. Pasadena has five local natural gas-fired power plants,

which are necessary to meet the city's peak electricity needs.

During 2015, Pasadena relied on our local gas-fired generation to mitigate import constraints on 67 days.

In 2016, this reliance increased to 74 days.

On these days, our local gas plants were needed 15 to 17 hours per day. This equates to more than two months in both years where a portion of our Pasadena residents would be experiencing rolling blackouts for almost three-quarters of the day without the support of local natural gas-fired generation.

Pasadena agrees that there is value in conducting a root-cause analysis of the conditions under which the leak occurred. However, we urge for consideration of identifying options to mitigate the potential rolling blackouts if the moratorium remains in place. The need for electric reliability and safe operation at Aliso Canyon Storage Facility and the health and safety of neighboring residence are not mutually exclusive.

On behalf of the residents of Pasadena, we thank you for your consideration.

CHAIR WEISENMILLER: Thank you.

Please, go ahead.

MS. JUNG: HI. My name is Anna Jung, and I'm

here representing Anthony Duarte.

CHAIR WEISENMILLER: And I was going to say, and Patty from the Orange County Business Council please come up.

MS. JUNG: Okay. My name is Anna Jung, and I'm here representing Anthony Duarte, who can't be here today.

First of all, thank you so much for all the work that you've done and you got a lot more work to come.

As CEO of the Regional Chamber of Commerce of San Gabriel Valley, I represent the interests of many local businesses in my area and serve to strengthen and support them in their local economy.

That being said, reliable energy is one of our most valued resources, as it plays a massive role in each of our businesses day-to-day activity.

With summer just around the corner, I'm here today to express my concern about reliable energy in the region, specifically, relating to Aliso Canyon.

The Aliso Canyon Storage Facility is a key component of guaranteeing reliable energy, especially in the upcoming months where we are sure to face extreme temperatures and higher energy demands. Aliso Canyon is essential to our businesses and their success. Without it, a significant threat of long-term service interruptions looms over our heads, and reliable energy could be a thing

of the past.

For the sake of our business owners, their employees, and their customers, I feel it is critical to resume injections at the Aliso Canyon Storage Facility.

Thank you.

CHAIR WEISENMILLER: Thank you.

Patty.

MS. CONOVER: Good afternoon. Thank you for hearing my comments today. My name is Patty Conover, and I am Director of Communications for Orange County Business Council.

As we approach the second summer now without the use of Aliso Canyon Natural Gas Storage Facility, it is critical that Southern California Gas Company is allowed to resume operations at Aliso Canyon.

The utility has indeed completed a comprehensive suite of tests and upgrades at the facility under the direction of DOGGR and independent technicians to ensure the facility is ready and safe to end the [unintelligible] closure.

A viable and sustainable flow of natural gas is critical to the economic well-being of Southern California and the state as a whole. The longer Aliso Canyon is inoperable, the more Southern California's energy is threatened.

Currently, more than 95 percent of Southern Californians use natural gas for their homes, and about 60 percent of the electricity used in California comes from power plants just like Aliso Canyon that run on natural gas.

When Aliso Canyon is operational, Southern California Gas can buy gas at lower costs and store it benefiting consumers. If the facility remains out of operation, we may experience continued insecurity of not knowing whether enough natural gas will be available to fuel Southern California homes and businesses when needed.

OCBC commends the hard work and diligence of SoCalGas in ensuring that the facility is secure and ready to meet the demands of the region's vibrant and dynamic communities.

And thank you very much and have a good afternoon.

CHAIR WEISENMILLER: Thank you.

I think we've got -- everyone in the room who had a blue card has been called. So, let's go to the WebEx.

MS. RAITT: Okay. So, we have one person on WebEx, Craig Galency [phonetic].

CHAIR WEISENMILLER: Please, go ahead.

MR. GALENCY: Hi. Good afternoon. Hopefully, you can all hear me.

CHAIR WEISENMILLER: Yes, we can.

MR. GALENCY: Very good.

Thank you for your time. Thank you for an excellent workshop. I am a 26-year resident of the north San Fernando Valley and I live in very close proximity to the blowout.

I'd like to make a point because I work with a lot of corporations and deal with leadership and management, and I think what I'm seeing here is -- I think my position is a little bit different than what others have pointed out. Is that in the beginning of today' workshop I heard quite a bit of information about mitigation and creative solutions and how to work around the issues we have with Aliso Canyon. But then quickly what happens is -- you guys can still hear me, correct?

CHAIR WEISENMILLER: Yes, we can. Go ahead. Keep going.

MR. GALENCY: Very good. Thank you.

What I heard very quickly after that is when SoCalGas came up and spoke. Rodger, you know, your 30 years there, maybe you don't have creative ideas and new solutions, but you were completely in discussion of constraints, what we can't do, not what we can do to help be creative problem solvers in the situation.

So, Chairman Randolph at the CPUC, I think it's

absolutely time that your organization and the others representing today challenge and look at SoCal's culture and their activities and really ask yourselves, Are they operating as a good partner or are they solely here to demonstrate and advocate for the opening of Aliso Canyon.

Edward, don't let them off the hook. They owe us an answer for January. Okay.

I didn't like your response of why you don't have an answer to that.

Last thing I want to mention is the advocates for businesses, et cetera, you guys only talk about how we have to open up Aliso Canyon, but you don't talk about putting more pressure on the mitigation or battery or any other option that is at the disposal of LADWP. Okay, guys? It's obvious you're reading a script from SoCalGas. Stop doing that. Okay? This is not in the best interest of region or the community.

Lastly, Dorothy, if you really believe that energy reliability is a reason why companies don't come to Southern California or California in general, you're wasting your constituents' time. There are far bigger issues than reliability of energy.

Thank you for your time everyone.

CHAIR WEISENMILLER: Thank you.

I believe we've covered -- gotten all the public

comment.

It's time for Commissioners.

You want to start?

MS. KERR: Yeah. I just wanted to thank all of the work that went into this workshop. It was very informative. I think it's -- the analysis shows that it looks like we can make it through this summer, but only if things go well.

And, so, I commend all the agencies, and I hope that we can deal with all of those contingencies and avoid -- hopefully, the weather will cooperate, and that issues like forest fires and things will not impact reliability.

So, we will keep working at the PUC on all of the different Aliso Canyon fronts, including our long-term viability proceeding.

And thank you for all your participation.

CHAIR WEISENMILLER: Yeah. I'll go next.

First, I certainly want to thank everyone for their activity today and for their participation. It's not easy to obviously pull the agencies together and have this sort of common presentation and fairly complicated analysis that we had to walk through.

I think, certainly, the good news on the mitigation measures is that, so far, they have been

working. I think part of the message to people is that, going forward, some of these key issues are in your hands. You know, again, everyone out there is saying, Shut it down. Please, go home, put LED bulbs in your house. You know, look at putting solar on your roof, solar thermal potable tanks, you know.

It's really time to start moving in that direction. A lot of it is very cost effective. It reduces greenhouse gases. It reduces pollution. I mean, at the same time look at electric cars. I mean, you know, in this area, certainly -- yeah, I'm just saying, hey, electric cars -- again, most of you drove out through -- drove internal combustion engines out here, and that doesn't help really.

We have to really electrify the transportation system to really make progress in this area. Dealing with smog, we have to do that for not only automobiles but, you know, 30 percent of your economy is goods movement. So, we need trucks. We need buses. We need, you know, to really go through and start making those changes.

And, again, if you are thinking about it, do it today. I mean, again, let's not wait.

And, then, certainly, when we do have a flex alert, please, please, do whatever you can at that point to reduce your loads so we can adjust to the situation.

Because we will have surprises, but, again, it's -- you don't -- the future is really in your hands in this area and we need action now.

COMMISSIONER DOUGLAS: I just wanted to say briefly that I also appreciated the very informative presentations. Happy to see and hear from all the public comment. And, so, I just, you know, wanted to thank the agency staff for pulling this together.

COMMISSIONER HOCHSCHILD: First, my thanks to everyone who helped organize this hearing today.

And I just particularly wanted to address the people who live adjacent to Porter Ranch because it's not easy to come to a hearing and talk about health impacts and to go through that.

And, you know, what I heard today actually mirrors many of the same symptoms I saw when visiting a fracking site recently. There are consequences to our current energy system that are not acceptable. They're not acceptable to me personally, they're not acceptable to our state. And I just really wanted to urge you to keep speaking out and being relentless.

And, yesterday, I attended a very moving memorial service for the former Chair of the California Energy Commission, Jackie Pfannenstiel, who was one of those quiet leaders who was extremely effective. And she planted a lot

of the seeds of success that we're now seeing flourish on renewable energy and energy efficiency. But her success, I think, came mostly from just being relentless. And that's what we have to be as we build this clean energy future.

And I just really want to thank, particularly, the residents who came and spoke from the heart today. Thank you.

COMMISSIONER TISOPULOS: And, Mr. Chairman, thank you very much to start with, you know, for holding the workshop here in our back yard. As you can tell, it's an issue near and dear to all of our hearts regardless of whether we are representing the community, the businesses, or the agencies.

I, personally, found the information exchange extremely useful. And, again, I want to thank you very much for holding it here.

MR. DOUGHTY: Chair Weisenmiller and staff, Kevin, Heather, Lana, all -- everybody, you did a great job, as always.

I learned a lot today, and I thank the members of the public, members of the industry, members of business, who came to share their views. This is an emotional and difficult topic, but we held a constructive conversation today and will now move forward into another summer with plans and ideas for fortifying our energy resiliency in

Southern California.

So, thank you.

COMMISSIONER RANDOLPH: I would just like to echo those comments and thank you. This has been a wonderful venue. I appreciate the dialogue. Clearly, a lot of emotion on both sides. We all have a vested stake in having a reliable system for our communities that we serve.

And I appreciate that we are working together better. We have seen some phenomenal results from those efforts, and we need to commit to continuing that. And also encourage the R&D communities to come up with additional advanced technologies that we can use to truly integrate and get to that 100 percent clean energy that we need in the future.

CHAIR WEISENMILLER: Thank you.

This meeting is adjourned.

(Whereupon, the workshop adjourned at 5:36 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 12th day of May, 2017.

MARTHA L. NELSON, CERT**367

TRANSCRIBER'S CERTIFICATE

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.

IN WITNESS WHEREOF, I have hereunto set my hand this 12th day of June 2017.

Kelly Farrell
Certified Shorthand Reporter
CSR No. 8081