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CALIFORNIA ENERGY COMMISSION

STAFF WORKSHOP

In the Matter of:) Docket No.
) 15-IEPR-03
Joint Agency Workshop on)
California's Drought Response)
_____)

CALIFORNIA ENERGY COMMISSION

THE WARREN-ALQUIST STATE ENERGY BUILDING

ART ROSENFELD HEARING ROOM

(HEARING ROOM A)

1516 NINTH STREET

SACRAMENTO, CALIFORNIA

FRIDAY, AUGUST 28, 2015

9:30 A.M.

Reported By: Kent Odell

APPEARANCES

Commissioners Present

Chair Robert Weisenmiller, CEC
 Commissioner Andrew McAllister, Lead Commissioner, CEC

Agency Partners

Commissioner Catherine Sandoval, CPUC
 Vice-Chair Frances Spivy-Weber, State Water
 Resources Control Board
 Undersecretary Gordon Burns, California EPA
 Secretary Karen Ross, California Department of
 Food and Agriculture

Staff Present

Heather Raitt, IEPR Program Manager
 Laurie ten Hope, Water Energy Technologies
 Sylvia Bender, EAD Administration
 Christine Collopy, Rebate and Direct Install Programs
 Kristen Driskell, Water Appliance Standards
 Guido Franco, Energy Generation Research Office

Panel Presenters (* Via telephone and/or WebEx)

Eric Lamoureux, Office of Emergency Services
 Sylvia Bender, EAD Administration, CEC
 *Dede Subakti, California Independent System
 Operator
 *Dan Cayan, Scripps Institution of Oceanography
 Christine Collopy, Rebate and Direct Install
 Programs, CEC
 Kristen Driskell, Water Appliance Standards, CEC
 Laurie ten Hope, Water Energy Technologies, CEC
 Commissioner Catherine Sandoval, CPUC
 Kent Frame, California Department of Water
 Resources
 Cynthia Marvin, California Air Resources Board
 Jessica Bean, State Water Resources Control Board
 Jenny Lester Moffitt, California Department of
 Food and Agriculture
 Matthew St. Clair, University of California, Office
 of the President

APPEARANCES (Cont.)

Panel Presenters (* Via telephone and/or WebEx)

Dan Burgoyne, California Department General
Services

*Peter H. Gleick, Pacific Institute

Frank Loge, UC Davis

Guido Franco, Energy Generation Research Office, CEC

Aram Shumavon, Kevala Analytics

Dorothy Rothrock, California Manufacturers and Technology
Association

Pamela Boyd Williams, California Retailers
Association

Karen Mills, California Farm Bureau Federation

*Alexander Kohnen, US Department of Navy (WebEx)

Jack Hawks, California Water Association

*Mark Gentili, Los Angeles Department of Water and Power

Dr. Robert Kosteki, Lawrence Berkeley National Laboratory

Bryan Kelly, Merced Irrigation District

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

2 August 28, 2015

9:38 a.m.

3 MS. RAITT: So good morning. Welcome to today's
4 Joint Agency Workshop on the California Drought Response.
5 This workshop is part of the Integrated Energy Policy
6 Report and I am Heather Raitt, the Manager for the IEPR.

7 I'll quickly go over housekeeping items.
8 Restrooms are in the Atrium at the door to your left.
9 There's a snack room on the second floor up the stairs.
10 If there's an emergency and we need to evacuate the
11 building, please follow the staff to Roosevelt Park, which
12 is across the street diagonal to the building.

13 Today's workshop is being broadcast through our
14 WebEx conferencing system and parties should be aware that
15 you're being recorded. We'll post an audio recording on
16 the Energy Commission's website in a couple of days and a
17 written transcript in about a month.

18 We have a very full agenda today and are asking
19 our presenters to please limit your remarks to the time
20 allotted. We're going to try to keep speakers to their
21 time constraints and hold a yellow card to indicate two
22 minutes and red card to show time is up.

23 We'll break for lunch at about 12:30 for 45
24 minutes. At the end of the day there will be an
25 opportunity for public comments. We're asking parties to

1 limit their comments to three minutes, so the maximum
2 number of folks can participate and speak.

3 We're asking you to fill out a blue card if you
4 want to have comments and you can go ahead and give it to
5 me. And when it's time to speak, go ahead and go to the
6 center podium. For WebEx participants, you can use the
7 chat function to tell our WebEx Coordinator that you'd like
8 to make a comment during the public comment period. And
9 we'll either relay your comment or open your line at the
10 appropriate time. For phone-in only participants, we'll
11 open your lines after we hear from the folks in the room
12 and on WebEx.

13 If you haven't already, please sign in at the
14 entrance to the hearing room, materials for the meeting are
15 at the entrance. And we encourage written comments, which
16 are due on September 11th and the process for submitting
17 comments is in the workshop notice.

18 And with that, I'll turn it over to Commissioner
19 McAllister for opening remarks.

20 COMMISSIONER MCALLISTER: Thank you, Heather.

21 I'm really happy to be here and been looking
22 forward to this workshop for quite awhile. The IEPR, as
23 everybody probably knows, is sort of the place where we
24 talk about certain things over and over again. The
25 forecasts and other issues, other things like that, that

1 are really foundational we do every two years. And we also
2 take advantage of the IEPR to bring up topics of immediate
3 urgency and relevance across the policy landscape that have
4 an energy component. And certainly this is absolutely one
5 of them, water and the drought are front in center in terms
6 of our need to plan for the future and deal with them in
7 the very near term.

8 The Governor's Executive Order on water has a
9 litany of things that really need to happen and happen
10 quickly. The Energy Commission has a few of those, four of
11 them -- two of those the Standards and the Water Efficiency
12 Rebate Program -- are under sort of my purview. And the
13 other two having to do with water for power plants and are
14 R&D and implementation of new technologies broadly in the
15 marketplace are under the purview of Chair Weisenmiller.
16 And so we're sort of tag-teaming the Commission's efforts
17 on water.

18 But really the lion's share of the work falls to
19 the Water Board. And we're really happy to have Fran
20 Spivy-Weber here with us today and I'm looking forward to
21 her comments and participation as well as Commissioner
22 Cathy Sandoval, who's here from the PUC, who is the lead on
23 the WET-CAT. And who will be giving us a presentation and
24 I'm really looking forward to your participation as well
25 and hearing really, the various perspectives of the

1 agencies.

2 We're waiting for a couple of people, but I think
3 we wanted to get started in any case. At some point we're
4 going to break for a picture, so that everybody on the dais
5 can I guess document their presence here.

6 So really I want to just highlight the fact that
7 we have been moving forward quickly and expeditiously on
8 the things that were tasked, that the Governor tasked us
9 with at the Energy Commission, as I know the other agencies
10 have. But we've really moved ahead on Water Efficiency
11 Standards and staff has done a bang-up job on that as well
12 as the Incentive Program that we're collaborating across
13 various agencies with as well. And we'll hear a little bit
14 about that from the staff, both of those topics.

15 So with that, rather than take up more column
16 inches here I think I will pass the microphone to
17 Chair Weisenmiller and then to the others on the dais.
18 Thank you all for being here.

19 CHAIRMAN WEISENMILLER: Again, I'd also like to
20 thank everyone for being here today. This event actually
21 flowed out of a conversation I had with Commissioner
22 Sandoval awhile back and we concluded it was a good idea to
23 pull us all together under the IEPR framework to look at
24 the water and drought issues.

25 I think a lot of us are fearful that drought is

1 the new normal in California. You know, the reality is
2 we're in year four of sort of the worst drought in 1,300
3 years. Those who had the opportunity to attend the two
4 days we had earlier this week on climate science sort of
5 got a fairly good perspective of one, trying to go through
6 and understand obviously we are having a major impact
7 already on climate. And there's certainly a lively
8 scientific debate over whether this drought is made worse
9 by the way we've disrupted our climate so far or whether
10 it's a direct consequence of that.

11 And I think looking -- and certainly that affects
12 how one goes forward. The reality is that we are planning,
13 expecting the drought to occur next summer again.
14 Certainly that would be a worst case, but I think we have
15 to plan for worst case and certainly a lot of actions we're
16 taking now like basically encouraging everyone to reduce
17 water use by 25 percent is so they have water next year.

18 And I would, again, like to thank all
19 Californians for chipping in and for in fact, meeting that
20 target, the 31 percent. I know again we'll talk a little
21 bit today about there's also a potential of going from
22 drought to floods with El Nino. But obviously the science
23 there is also something which we'll -- you know, science is
24 complicated there. And whether we actually have much rain
25 or whether we have rain only in Southern California or

1 whether it's more the same we'll find out. But anyway,
2 we'll have a presentation on that this morning.

3 So again, I would like to thank our sister
4 agencies for being here today for this. And thank everyone
5 for calling in and/or being here to again hit this critical
6 topic.

7 COMMISSIONER SANDOVAL: Good morning. Welcome
8 everyone. I'm Catherine Sandoval; I'm a Commissioner with
9 the California Public Utilities Commission. So I would
10 like to thank the California Energy Commission for hosting
11 this workshop today in the Integrated Energy Policy Report
12 and also thank my Legal and Water Advisor Jamie Ormond and
13 also my Energy Advisor Amy Baker. And I think my Chief of
14 Staff Ditas Katague will be joining us later.

15 So our team has been privileged to work closely
16 with both the California Energy Commission and also the
17 Department of Water Resources and the State Water Resources
18 Control Board and many other sister agencies in responding
19 to this drought. And the state really has come together as
20 a whole, not just for our state agencies, but tremendous
21 partnerships: local, tribal, nonprofit, private sector,
22 regional.

23 And as Chair Weisenmiller said every day
24 Californians are really contributing to saving water and
25 thus also energy in the drought. I can tell you that my

1 own lawn is very brown. My whole neighborhood looks very
2 brown and we're in the Brown Administration after all, so
3 that works out.

4 So we're also here, because the drought has
5 severe implications for our public safety, our economy and
6 sustainability. We have seen a terrible fire season this
7 year. Just last week I was in hearings in the Mammoth
8 Lakes area and just the smoke was stinging your eyes and it
9 was hard to breath and it was actually great to get back to
10 Ridgecrest where it was 107 and infested by beetles.

11 So, you know, unfortunately this is a story being
12 played out too often in California. And we can see that
13 the drought has left the grass tinder dry, but that also
14 our infrastructure sometimes contributes to what's going
15 on. And one of the things that we've been working on at
16 the CPUC is the intersection between communications and the
17 drought and I'll talk about that a little bit more in my
18 response. But you see it directly in how it affects our
19 fire response and our ability to get communications to
20 firefighters.

21 We're also very thankful that this workshop has
22 been jointly noticed in the CPUC's Water-Energy Nexus
23 Proceeding where we are looking at the Nexus between water
24 and energy, the embedded energy in water and the embedded
25 water in energy as well as the topic of the Communications

1 Water Nexus. So I will talk a little bit more about that
2 proceeding and this proceeding here has been noticed as a
3 joint workshop.

4 One of our topics is also about interagency
5 coordination, how we can coordinate between agencies to
6 achieve the goals of appropriately using water and
7 conserving and also conserving energy and promoting good
8 stewardship. So we plan to use this record as well in the
9 record of the CPUC Water-Energy Nexus Proceeding.

10 So we also will be issuing a workshop report,
11 which will likely just be a copy of the transcript. And so
12 if you want to submit copies or comments on that in the
13 CPUC Water-Energy Nexus Proceeding you're encouraged and
14 welcome to do so.

15 So with that I'll turn it back to the Chair and
16 thank you very much for having us be here. And we'll have
17 the opportunity to say a little bit more about some of our
18 work later on, on the Water-Energy Nexus and the drought.
19 Thanks.

20 COMMISSIONER MCALLISTER: All right, I will pass
21 it to Fran Spivy-Weber. But I just wanted to make note
22 that Secretary Karen Ross, no worries, no worries. We're
23 very happy to have you no matter what, from the California
24 Department of Food and Agriculture, so thank you for
25 joining us. All right.

1 VICE CHAIR SPIVY-WEBER: We look forward to a
2 report on the Amazon, right?

3 I'm Fran Spivy-Weber, Vice Chair of the State
4 Water Resources Control Board. And as you can tell from
5 the theme that has already been laid out by the CEC and the
6 CPUC this Administration really is trying very hard to
7 integrate its activities, so that we get more than the sum
8 of the parts. And I think we are certainly doing that.

9 The State Water Resources Control Board has a
10 number of initiatives. The one that's most visible, the
11 one that's been in the newspaper the most has been on
12 conservation, particularly urban conservation and looking
13 at reductions in mostly outdoor water use in urban areas.
14 And the report came out yesterday that for the month of
15 July Californians -- and I say this, it's Californians that
16 are doing this, not agencies -- Californians saved 31.3
17 percent in the month of July. A very hot, hot, hot month
18 and so it's very exciting.

19 When combined with June, which was the first
20 month of the mandatory requirements, we now are at 29.5
21 percent for the two months. Our goal is 25 percent.
22 That's the goal that the Governor set for us and so we are
23 moving in the right direction, so we will continue to
24 follow that through the rest of the year. But it's we're
25 off to a good start.

1 But in addition, we have a lot of money going out
2 the door on recycled water. And so that is another drought
3 response where we're helping to create and are enjoying the
4 creativity of water agencies and cities who are figuring
5 out how they can use recycled water. So recycled water's
6 another part of our response to the drought.

7 Stormwater is also a response to the drought and
8 we have a new strategic initiative that is going to lay out
9 for the next ten years the priorities that we have for
10 stormwater. We are working with the regions, our nine
11 regional boards, to develop climate activities, climate
12 parameters, climate data that they can include in permits.
13 So that as they issue permits they actually contribute to
14 the overall improvement in our response to climate and dry
15 as well as stormwater and wet and flood.

16 And finally, in our Division of Financial
17 Assistance we are looking at long-term investments in
18 infrastructure. And that definition of infrastructure,
19 which used to be pretty much just wastewater plants, is now
20 much, much broader with the Division of Drinking Water and
21 pipes of all kinds for all kinds of things wet. And we are
22 asking the question when people want to put in new
23 infrastructure what does this mean in a climate variable
24 future? If you're going to make a 50-year investment what
25 have you done to think about the climate issues?

1 So those are just some of the examples of where
2 we are. And I will close by saying that we do have enough
3 water. We just have to use it smarter, better, more
4 efficiently in the future. And not use it on things that
5 aren't contributing to jobs, to recreation, to the things
6 that are important to Californians and the California way
7 of life. Thank you.

8 COMMISSIONER MCALLISTER: Thank you, so much.
9 Secretary Ross, would you like to make some
10 comments?

11 SECRETARY ROSS: Yes, and thank you very much for
12 hosting me. I'm very excited about today. And like Fran
13 mentioned, I think the work of this Administration taking
14 very integrated approaches, how well we work across
15 Administration to really make sure that we're not in our
16 silos, that everything fits together to accomplish these
17 greater goals, has been a hallmark of this particular
18 Administration.

19 When I think back to the Bioenergy Action Plan
20 that we worked on my first year, the Water Action Plan, and
21 all of the good work that's happening around climate --
22 that data -- the Scoping Plan, there's tremendous
23 opportunities.

24 I have an incurable disease called optimism and
25 only an incurable optimist could say even in this drought a

1 remarkable sector of our economy, the agricultural
2 industry, is not just surviving, it is growing to meet
3 increased market demand. And it is going to survive, but
4 we had a report that was out just last week that we will
5 fallow this year over a half-a-million acres of land. And
6 that comes at a significant economic cost of \$1.8 billion,
7 but also lost farm worker jobs that otherwise would have
8 been created if we were growing at the rate that we
9 normally would with the kind of demands that we have right
10 now.

11 We are able to do that, because of an
12 extraordinary level of groundwater pumping. And there's
13 also been a number of reports out about that last week. I
14 bring that up, because agriculture in normal times is a
15 very water and energy-intensive part of our economy. But
16 there is also great opportunities when we think about the
17 use of water and the use of energy and especially when we
18 look at pumping of groundwater. What that means for energy
19 use, for greenhouse gas emissions, and for water use.

20 As a result of the emergency legislation that
21 passed last year the California Department of Food of
22 Agriculture received \$10 million in greenhouse gas
23 reduction funds for an energy and water efficiency program.
24 We spent \$10 million in very wise ways, Mr. Chairman. And
25 it's interesting that we had requests for over \$40 million

1 in that program.

2 This year we have an additional \$10 million and
3 we had over 300 requests that totaled almost \$40 million
4 again. So it's a very strong incentive program that for
5 the first time ever asked farmers to calculate what their
6 greenhouse gas reduction would with this funding in
7 addition to calculating their water savings and their
8 energy savings. This is a good program. It's obviously
9 highly subscribed. It's something that can continue to do
10 good.

11 But I also want to make a comment on another
12 program that CDFA is running right now, which is also
13 funded by the Greenhouse Gas Reduction Fund. And it made
14 available \$12 million for dairy digesters. We know that we
15 have almost 2 million dairy cows in this state, which
16 creates a lot of -- the polite term is waste. And that by
17 focusing on turning that into energy we are addressing
18 short-lived climate pollutants, we're creating part of the
19 Bioenergy Portfolio that the Governor has strong goals for
20 us.

21 And it is another way that we can really think in
22 an integrated way how we can address a nitrate problem.
23 How we can address short-lived climate pollutant problems.
24 How we can reduce greenhouse gas emissions and create
25 energy. And I think that when we look at issues like food

1 waste and others the opportunities in that particular arena
2 are like open to the moon and back. So I'm very excited
3 about the opportunities that we have and what we're going
4 to hear today. And want you to know that from the
5 agricultural sector we look forward to working with all of
6 you to make sure that we are the most sustainable
7 agricultural system in the country if not the world. I
8 think we can lead the way, because we're Californians.
9 Thank you.

10 CHAIRMAN WEISENMILLER: Thank you.

11 COMMISSIONER MCALLISTER: Okay. Thank you, very
12 much.

13 And all of you on the dais, we're really looking
14 forward to the presentations, which we will start in just a
15 second after we do -- I think this is a good opportunity to
16 break for a photo op right in front of the said here.

17 So Katy is ready with the camera, okay?

18 (Off the record at 9:58 a.m.)

19 (On the record at 9:59 a.m.)

20 MS. RAITT: All right. Our first Panel is on
21 California's Drought and the Effects on the Energy System.
22 And our first speaker is Eric Lamoureux from the Office of
23 Emergency Services

24 MR. LAMOUREUX: Well, good morning and thank you
25 Commissioner McAllister, Chairman Weisenmiller, for the

1 invitation. It's a pleasure to be here today.

2 I was asked to give the doom and gloom
3 presentation to start your day, kind of set the stage.
4 Unfortunately, my presentation probably won't have strong
5 nexus back to your important discussions throughout the
6 day, the impact of the energy sector. But I'll help you
7 understand kind of how we're organized under the Governor's
8 State of Emergency to address the drought emergency, our
9 role at the California Governor's Office of Emergency
10 Services and then give you some highlights of what we're
11 dealing with right now.

12 You know, our responsibility as most folks know,
13 is to help support communities that are impacted by
14 disasters: earthquakes, fires, floods and so forth. And
15 under the drought we have the same responsibility, to carry
16 out the authorities that the Governor has under the
17 Emergency Services Act to help communities that are
18 impacted by drought. And so I'll talk in a little bit
19 about our role in helping communities that are responding
20 to individuals whose wells have run dry. I'll talk a
21 little bit about our role in bringing together multiple
22 agencies to address particular challenges with water
23 systems.

24 You know, a lot of these issues, although there
25 are a number of agencies that have key regulatory

1 responsibilities often times when you're sitting at a local
2 government level it's very difficult to know who do I call?
3 What organization has the funding to address my situation?
4 And often times it's not one organization, it's a hybrid
5 approach where multiple organizations have a piece of the
6 puzzle.

7 But our role is to be the single point of contact
8 as our director like to -- the analogy that he likes to use
9 that I fight with him all the time is us being the
10 bellybutton if you will, of California State Government --
11 that one entity that anybody locally can go to in order to
12 understand how to solve their problem. And so I want to
13 thank our other agencies: Food and Agriculture, Water
14 Board, CPUC, all of whom have helped us on a number of
15 different situations over the course of our emergency
16 response the better part of the last two years.

17 This presentation was developed by our State
18 Operation Center staff. This is a core group of folks from
19 State OES and a number of other state agencies that are key
20 response partners in the drought response that maintain
21 this PowerPoint presentation. So I apologize in advance if
22 some of you may have seen this before, but this is a
23 presentation that we use consistently and continue to
24 update with current figures.

25 But obviously everybody knows what we're looking

1 at there. And certainly something that many of us,
2 especially those that live in Folsom Rock in the Roseville-
3 Sacramento areas are very familiar with, but Folsom Lake
4 indicative of what we're seeing up and down the state.

5 Just to step back a little bit, the reason I'm
6 here today and I'm here representing a number of folks
7 above and below me within the organization, but I'm the
8 Regional Administrator for our Inland Region. We're broken
9 up at Cal OES into three administrative regions. My region
10 stretches from Kern County in the south up to the
11 California-Oregon border, the 31 counties basically between
12 the coast range and the Sierras.

13 And as many of you are aware, that's where our
14 most significant drought impacts have been occurring. So a
15 great deal of my time and my staff's time is spent
16 addressing drought response issues.

17 2011-2014 the driest we've ever seen on record.
18 The effect is being felt far and wide in many different
19 sectors. The household nonfarm businesses -- and I know
20 Secretary Ross can speak more eloquently to this than I can
21 -- account for about 20 percent of human water use. And we
22 jump down, you know, agriculture accounts for about 80
23 percent of that water that's available for human
24 consumption.

25 You know, in some parts of the state we've got

1 better water storage in Southern California in our
2 metropolitan areas. They've made more investments into
3 storage, but we've got cuts being seen across the state as
4 Secretary Ross alluded to. Hundreds of thousands of acres
5 ag land has been fallowed.

6 We've seen, especially last year, a significant
7 number of ranching operations sell off huge percentages of
8 their herds, which means that those of you that are
9 familiar at all with cattle ranching you don't rebuild a
10 herd. You don't buy a new herd when we get out of the
11 drought and you're back in business. It's going to take a
12 significant number of years to rebuild those operations to
13 what they were prior to the drought.

14 And in many cases, and in many of our
15 communities, especially many of the rural ranching
16 communities that I'm responsible for, you've got
17 agriculture operations that are run by individuals that are
18 in their later years. And in many of these communities
19 their family have moved on and there's nobody within their
20 family or their circle of friends that's willing to step up
21 and rebuild that operation. So in many cases what you're
22 going to see is a lot of these cattle ranching operations
23 are just going to disappear, which is certainly a huge
24 impact.

25 You look at a area like Modoc County, which I

1 spend quite a bit of time in that's about all they've got
2 left. They lost their logging industry, recreation is --
3 although it is truly a beautiful part of our state -- it's
4 very difficult to get there. So all they're really got is
5 cattle ranching and a number of different ag operations, so
6 a huge impact in communities like that, very difficult
7 tradeoffs.

8 I'll talk a little bit about the Governor's
9 Drought Task Force in a bit, but trying to find that right
10 balance for human water consumption, critical ag
11 consumption for our food supply, for California and the
12 nation and the world, but also balancing that against the
13 environmental impacts and trying to preserve species. And
14 that's really where we are today is looking at what can be
15 done to preserve key species that run the risk of going
16 extinct?

17 So a number of actions have been taken by the
18 Governor. Three Executive Orders starting with the State
19 of Emergency, following that on with some regulatory relief
20 for a number of our emergency response programs and then
21 his most recent Executive Order, which called for a 25
22 percent mandatory water cut across the state.

23 I have the privilege of briefing Secretary Ross
24 and Member Spivy-Weber on a regular basis as well as other
25 key members of the Governor's Cabinet at the Drought Task

1 Force on a weekly basis. That group meets on a weekly
2 basis to look at our emergency response effort conservation
3 environmental impacts and have the tough conversations
4 about where we need to shift focus and redirect programs.
5 So a great dialogue that happens there, it is by no means a
6 number of state executives sitting in a room and just going
7 around the room making reports and then walking out.

8 There is some tremendous dialogue that occurs
9 each and every week in there at a very senior level. And a
10 lot of good work for those of us on the ground that are
11 responding, a lot of good action and direction that occurs
12 there that supports on a weekly basis those operations.

13 The funding that the Governor's dedicated, \$687
14 million initially, a lot of that for large capital
15 improvement projects so, you know, sometimes you hear the
16 criticism that we haven't drawn down the funding enough in
17 state government. You know, on the emergency response side
18 the money that's been allocated to a number of departments
19 on that front we're blowing through that money. It's
20 getting out the door and where it needs to be.

21 A lot of these higher dollar figures you're
22 seeing are for large capital improvement in infrastructure
23 projects. It's going to take longer to see the draw down
24 in those funds, but there's certainly a very concerted
25 effort amongst all the state agencies to work on getting

1 this money out and drawing these funds down.

2 I'll skip through this. The impacts, the
3 counties in yellow are those counties that have proclaimed
4 a local emergency. As you can see from Tuolumne County
5 south the Central Valley and the San Joaquin Valley is
6 about the hardest hit and I'll talk a little bit more about
7 that in a moment.

8 Most of our lakes are, in some cases, at levels
9 that are nearing historic levels making it very difficult
10 for the communities that rely upon those critical water
11 supplies. Last year we spent a great deal of time dealing
12 with absolutely emergency imminent situations with a number
13 of water systems and coordinating efforts there. This year
14 some of those have stabilized somewhat and we're not seeing
15 as many of those issues although there is still a
16 significant amount of money spent to help support systems
17 with key projects, mitigation projects.

18 A tremendous amount of our effort's been spent on
19 dry wells. We've got over 2,000 dry wells throughout the
20 state. In the East Porterville area alone, in Tulare
21 County, pretty close to that green dot if you can see it on
22 the map is a community of East Porterville. Throughout the
23 state we've got about 2,000 dry wells. About 2,000 of
24 those are in this Tuolumne County to Kern County south
25 area. If you zero in a little further to Tulare County

1 about 1,200 wells are dry there. And if you go a little --
2 drill down a little deeper in the community of Easter
3 Porterville, about a two-square mile area, we've got about
4 700 dry wells.

5 Our job at the Office of Emergency Services is to
6 utilize funds that the Governor's authorized through the
7 California Disaster Assistance Act to help get water for
8 drinking and sanitation out to those individuals whose
9 wells have run dry. These are county-run projects to
10 address the public health and safety threat. But it's our
11 responsibility to follow up and provide the reimbursement
12 to those counties for those efforts. So that's where a
13 significant amount of our time and effort's currently being
14 spent.

15 This illustration here shows you what our snow
16 pack has looked like over the last four years. And
17 although there's a lot of talk of El Nino, certainly
18 helping us it's not going to be a drought buster. And in
19 many cases if we get El Nino conditions where we have
20 significantly warm storms some of these snow pack images
21 may be what we're looking at again next year.

22 I talked a little bit about our current response
23 operations and activities. A number of other state
24 agencies that are involved in the response managing water
25 systems, state and federal entities working together on a

1 daily basis to find that right balance of systems,
2 Department of Fish and Wildlife dealing with a lot more
3 interface between humans and wildlife as well as trying to
4 relocate key fish populations from around the state.
5 Department of General Services -- I see Dan in the room --
6 doing a tremendous amount of work on our state facility
7 portfolio in addressing that.

8 The last thing I want to show you is this
9 illustration here, which is from the U.S. Department of
10 Agriculture. The illustration on the left is 2013 and
11 their drought designation, the dark maroon being worst and
12 August 18, 2015 on the right.

13 I will not be able to be here for the whole day,
14 but my contact information is here and I'm happy to answer
15 any questions by phone or online at a later time. So
16 again, appreciate it. Sorry for running a little late, but
17 yeah.

18 VICE CHAIR SPIVY-WEBER: And are you going to ask
19 everyone who does have a dry well to actually report it,
20 because some people are not reporting their dry wells.

21 MR. LAMOUREUX: I'd sure like that.

22 MS. RAITT: Thank you very much, Eric.

23 The next speaker is Sylvia Bender from the Energy
24 Commission.

25 MS. BENDER: Thank you. I'm Sylvia Bender,

1 Deputy Director for the Energy Assessments Division here at
2 the Energy Commission.

3 You've heard a little bit about the Governor's
4 Drought Task Force and I'm going to shift gears a little
5 bit to talk about an interagency group that is working also
6 as a subgroup of the Drought Task Force. This interagency
7 group is made up of members of the Energy Commission staff,
8 State Water Control Board, Water Resources, the CPUC and
9 the ISO. And we're staffed by members of my division as
10 well as the Siting Division here at the Energy Commission.

11 We're focused mainly on energy supply and service
12 reliability under drought conditions. And we have three
13 purposes: to develop tools to illustrate drought impact on
14 generational reliability, to monitor hydropower facilities
15 and water use at thermo-generation facilities and to review
16 and activate emergency contingency plans as needed.

17 So based on the work for that group my remarks
18 will cover two main topics today. What we're doing to
19 track and monitor these facilities and some of the insights
20 that we're learning on our look at reduced potable water
21 consumption in the state.

22 So this chart provides a little bit of context
23 for where hydroelectric generation fits within our state
24 generation mix today compared to 1950. Our hydroelectric
25 system is relatively unchanged since then, but the

1 portfolio of generation resources that the state has to
2 call on is vastly different.

3 California's hydroelectric system consists of
4 about 14,000 megawatts. This is out of a 78,000 megawatt
5 capacity total spread across 287 conventional hydroelectric
6 facilities that are largely dependent on snow melt. That
7 accounts for about 6,000 of that 14,000 megawatt; 79
8 multipurpose reservoirs where hydroelectric generation may
9 be one of the last things in the list of all of the uses
10 accounting for about 5,000 megawatts. And lastly, four
11 pump storage facilities that rely again on movement of
12 water.

13 Even without the drought hydropower production is
14 a declining portion of California's in-state generation
15 mix, accounting now for only between 9 and 14 percent of
16 the state's annual generation. You have to remember too,
17 that hydro-production varies considerably from year to
18 year. In 1992, which was another drought year hydro
19 provided about 11 percent of our total power. In 1995, a
20 wetter year, it approached 28 percent. In 2014 we're
21 approximately half of what the recent averages have been
22 down to only about 8 percent of our instate generation.

23 Even thermal power plants generate some amount of
24 heat whether for condensing steam, cooling lubricating oil
25 that heat has to be removed to keep the plant running

1 efficiently and that takes water. And I'm talking here
2 about natural gas plants, geothermal, solar thermal and
3 cogeneration. California has a relatively modern fleet of
4 thermal plants. Most water uses are integral components of
5 the energy production.

6 More recently, our working group has turned its
7 attention on to screening and monitoring approximately 78
8 Energy Commission jurisdictional plants and 22 large
9 natural gas fire plants across the state. We're not
10 looking at once-through cooling plants along the ocean and
11 we're not looking at the hydroelectric facilities here,
12 just the thermal plants.

13 The purpose of this monitoring and tracking is to
14 understand the supply sources that each of these plants
15 relies on for its operation. And these are supplies that
16 could be vulnerable to reduced federal or state water
17 deliveries, curtailed water rights, less or poor quality
18 recycled water, insufficient banked water, land subsidence
19 or depleted groundwater.

20 So we're looking at about 100 plants, this is
21 about 45 percent, a little less than half of the state's
22 installed capacity.

23 We've created a map and what I'm showing here
24 does not have the large text box in it, because I thought
25 it would be a little bit too confusing for you to try to

1 read that small print. But it's a map of locations and
2 information about each of these plants overlaid with data
3 from the Department of Water Resources on large areas of
4 recent and historical subsidence. We have this posted on
5 our Energy Commission website. You find it right on the
6 front page.

7 The table of plants that's not on this particular
8 graphic will show you the average water use, the capacity
9 factor of the plant and its primary water source and
10 supplier. The shaded areas, the colored areas that are
11 there, are estimates of the degree of potential subsidence.
12 And then there are some lines, which don't show up very
13 well on here that are actual areas of recent historical or
14 a combination of those types of subsidence.

15 So we'll probably be updating this as the new
16 NASA information comes out, but this is our first attempt
17 to try to graphically represent some of this. What are
18 some of the insights that we've gained from going through
19 this exercise of tracking these plants and mapping them in
20 this way?

21 We see that surface water use is spread across
22 the state in 17 water districts. No one water district
23 supplies more than 8 percent of the total. Groundwater is
24 also spread across 13 groundwater basins, which helps limit
25 the impact to any one basin. We have two plants that are

1 located in areas identified on the map as recent
2 significant overdraft and subsidence related to groundwater
3 pumping. These two plants represent 2 percent of the
4 capacity shown on this map of these 100 plants. And
5 looking all of this recycled water is considered to be the
6 most drought-resistant supply for generation and the most
7 environmentally-responsible.

8 So I'm going to show you a couple of graphics now
9 that sort of put these 100 plants and the way they use this
10 water in a little different context. Here we're looking at
11 the 100 plants divided into their sources of water and you
12 see the largest component is for recycled water. Only 20
13 percent are actually relying on groundwater.

14 Looking at it a slightly different way, these 100
15 plants represent 30,000 megawatts of capacity. Again,
16 that's about 45 percent of the state's total. And we see
17 again, that the larger portion is served by recycled water.
18 It's a little bit more surface water here, but recycled is
19 still the largest portion.

20 And then a third of these we're looking at the
21 overall water that's used by these particular plants. It's
22 125,000 acre feet for these 100. And again, this does not
23 include the once-through cooling and some of our very water
24 intensive geothermal plants that are under the 75 megawatt
25 limit that we have here. But you see again that recycled

1 water represents two-thirds of the water being used here.

2 So what insights have we gained from all of this?
3 The first IEPR in 2003 recommended use of alternative water
4 supply sources and cooling technologies to be consistent
5 with State Water Board policy on keeping consumptive use of
6 fresh water for power plants to a minimum.

7 So since 2004 we have installed 9,000 megawatts
8 of combined cycle projects, 85 percent of those projects
9 now rely on recycled water or dry cooling.

10 Thermal efficiency of our plants is also
11 increasing each year. The Commission publishes a report
12 each year on thermal efficiency of gas fire generation. We
13 can see that that is also coming down. We're at 12 percent
14 more energy generated, using 7 percent less natural gas
15 over the last 13 years as shown in our last report.

16 We can also see that greater use of dry cooled
17 and recycled plants could even achieve more water savings.

18 So our next steps in our analysis will be looking
19 at water intensity further, looking at more of the trends
20 in overdraft and subsidence and how it relates to our
21 energy system using some of the newer Department of Water
22 Resources data. We're even starting to think about looking
23 at impacts of potential flooding, should we get into that
24 mode? And how these might affect these plants in
25 particular and other parts of our energy structure.

1 And all of these topics will be discussed in more
2 detail in this year's Integrated Energy Report as well.

3 Thank you.

4 MS. RAITT: Thank you, Sylvia.

5 So our next speaker is joining us via WebEx, Dede
6 Subakti from the California Independent System Operator.

7 COMMISSIONER MCALLISTER: I want to just
8 acknowledge Ashley Conrad-Saydah has joined us from the
9 California EPA, so thank you Deputy Secretary for being
10 here. And at some point if you'd like to make some
11 comments, maybe when we get to a breaking point, you can
12 step in and sort of give a perspective of your agency.

13 MS. RAITT: Dede, are you there?

14 MR. SUBAKTI: Yep.

15 MS. RAITT: Great.

16 MR. SUBAKTI: Good morning, everybody. My name
17 is Dede Subakti. I'm with the California ISO. My part of
18 the department in California ISO is responsible for
19 performing Summer Assessments and normal operations day-to-
20 day -- normal operations planning.

21 So while I'm here today is I would like to share
22 what our view of the summer is so far and what we've been
23 observing and what we've been learning, things that have
24 worked, things that are a challenge and how we also are
25 looking to the future. So with that, let me go start with

1 the slide number two. And I'm just going to give a brief
2 overview of what we normally do.

3 Now, coming into the summer of 2015 we knew that
4 there is a shortage of water. I mean, there's a drought
5 that's been going on. So every summer we normally perform
6 a Summer Assessment. It's actually two types of a Summer
7 Assessment. There is a Summer Assessment from looking at
8 the perspective of resources. In other words, that the
9 California ISO does the balancing area, that the area asks
10 as a whole for California ISO, do we have enough resources?
11 That's the first type of the things that we look at, the
12 resources assessment portions.

13 And then the second portions that we also look at
14 is how does that jibe with the transmission if there is a
15 transmission of contingency. There is fire in the line and
16 whatnot, what would happen with that? So those are the two
17 types of assessments that we normally do every summer
18 before we go start the summer season itself.

19 What I'd like to share a little bit here in the
20 first part is that coming into the summer we did project
21 that there's going to be adequate reserves to meet our
22 summer condition. Interestingly enough that when we model
23 this we see that there is a moderate load growth, it's not
24 too big, but it's just okay. But also there's a lot of
25 additional new generation, just like the previous presenter

1 mentioned that there's other generations, other new
2 resources that have been put in service and been
3 commercialized since the last summer. And it counts for an
4 additional over-2,000 megawatts of those new generation
5 (indiscernible) and service.

6 And this 2,000 megawatt is mainly solar
7 renewables unit and when we looked at that reduction of the
8 hydro itself that we expected, it's somewhat offset by the
9 addition of the renewable generation.

10 So that's the good thing, that's the fortunate
11 thing that has occurred in the summer. Also, there are a
12 number of transmission facilities, transmission lines,
13 (indiscernible) condensers and whatnot that have been
14 upgraded, a new facility that was down in Southern
15 California, they're started beginning to come online. It's
16 quite an overall improvement in the area from both resource
17 and transmission perspectives.

18 So these are somewhat the good news that allows
19 us to basically look at the summer and say, "Yeah, I think
20 from the BA perspective, from the California ISO
21 perspective even though we are going to have less hydro,
22 but there are new generations that come in." And that is
23 somewhat offsetting what our summer looked out.

24 So the next slide, slide number three, pretty
25 much tracks and shows our reserve margins based on the

1 normal scenario. And you can kind of see that as this new
2 generation, the non-hydro generation are being put in
3 service, our reserve margins have been increasing up year
4 by year. And we have a pretty low chance of not being able
5 to meet our load, not being able to meet the firm load. So
6 that's the trend that we've been seeing.

7 Slide number four, which is the next slide here
8 is showing just what we were thinking about or what we were
9 looking at, the pre-summer projection of the drought's
10 impact on the summer hydroelectric. And this is just
11 further capacity reductions up on the top in 2014. You
12 know, we do a comparison between what we saw in 2014 and
13 what we predict in 2015.

14 So this is the number of the predictions, the
15 difference between the 2014 and 2015 estimates. You know,
16 it's doing pretty well and it's about the right number. So
17 I think as you can see, the reduction of the hydro itself
18 is being offset by the addition of solar.

19 Now, let me go through the slide number five, the
20 next slide, to show you what does solar production actually
21 do. And as you know, as we get warmer, hotter, the sun is
22 up, the load, the demand of the energy goes up. But at the
23 same time the solar production itself also goes up. So
24 what you're seeing here is that the green line here is
25 actually what we call the Net Demand.

1 The Net Demand is basically the amount of demand
2 or the amount of energy used that is calculated by taking
3 the actual demand subtracting the electricity produced by
4 the renewable: the wind and then solar that are directly
5 connected to the ISO grid. As you can see the differences
6 become bigger and bigger and those are providing quite a
7 bit of margin for us, so that we don't necessarily dispatch
8 the conventional generation as much as we used to.

9 So this is all the good news about what we have
10 seen in the summer of 2015. So but that is just really
11 looking at it from the state level, right? You are looking
12 at the California ISO level; you are looking at the
13 balancing area level. We are looking at the big pictures.

14 Now, that's the good news, but there is the bad
15 news or there is a challenge. I'm going to start with the
16 challenge with slide number six here. The next slide,
17 slide number six shows that look, you know, even though in
18 the big picture's area we are sufficient, we have quite a
19 bit of reserve margin there are pockets of area in -- for
20 example, Table Mountain and Fresno and Big Creek area --
21 these are areas that are really localized.

22 And these are areas that historically have been
23 really relying on the hydro level or hydro generation. And
24 these are areas that now have a significant reduction of
25 hydro, but at the same time these are the areas that may

1 not see as much solar or new generation that comes in. So
2 in this area we do have to have more procedures, a process
3 to manage generation commitment, generation dispatch in
4 this area, because these three areas have always been
5 relying on the hydro generation in their -- I think that's
6 the other portion there in the third bullet item is that
7 the drought impact does impact the non-hydro units. That
8 water supply for the thermal units can be more
9 unpredictable with water releases restrictions from storage
10 and whatnot.

11 So there is some limited operations in there due
12 to water requirements. But really these are things that
13 are more localized, that really need specialized procedures
14 and processes to manage the generation commitment and
15 dispatch in this area.

16 What we have been observing, especially this
17 summer, flexibility in the dispatch itself are really keys
18 to manage the overload. And when I say flexibility it
19 really includes the flexibility on how we generate and move
20 water for the hydro generation as well as for the pump
21 storage itself, for the load of the pump or the pump
22 storage. That the flexibility is very key for us to be
23 able to help sort of load and then not causing an overload
24 in the transmission systems during the summer, especially
25 with the low hydro conditions.

1 So in my conclusion, I guess in my summary in the
2 next slide here, what we have been observing as an ISO, as
3 the balancing area, the big area, we do have sufficient
4 reserve margins. We have a very low probability of the
5 shedding of the firm load. A lot of this is because again,
6 the reduction of the hydro is offset by addition of new
7 generations.

8 But really looking into the future, which is what
9 we've been looking at right now. We're focusing on how do
10 we have flexibility in the dispatch, generation dispatch,
11 pump dispatch, pump storage, at the right locations? Those
12 are the keys to manage potential overload. You know,
13 flexibility in pumps, flexibility in hydro generation
14 schedules. If there is a way for us to get that
15 flexibility that will be the key for us to do that, because
16 really we don't have the BA or statewide issue. But we do
17 have all these localized area issues here and there.

18 And the other thing that we're looking at is what
19 do we do when water does return? Because we want to make
20 sure that at the end of the day when water does return,
21 with all the solar that we have, with all the generation
22 that we have, we would have quite a bit of generation and
23 potential over-generation. So we are looking at ways that
24 the flexibility of pumps, flexibility of water management,
25 that we believe will be critical to minimize over-

1 generation.

2 So that's the end of my presentation. Then if
3 there is any questions and whatnot I'll be happy to answer
4 it. I also want to acknowledge that -- I apologize I
5 cannot be there in person, but I have my colleague -- one
6 of our directors, Brad Bullion, is in the room with you --
7 also to be able to answer any questions and comments on
8 behalf of California ISO. Thank you.

9 MS. RAITT: Thank you, very much. Any questions?
10 No, okay. Great, thank you.

11 So our next speaker is Dan Cayan from the Scripps
12 Institute of Oceanography who is also joining us by WebEx.

13 MR. CAYAN: Hello, everyone.

14 MS. RAITT: Hello, let me get your --

15 MR. CAYAN: Can you hear me?

16 MS. RAITT: We can hear you, thanks.

17 MR. CAYAN: Good, okay. A pleasure to
18 participate and I'm going to talk a little bit about the El
19 Nino situation that has developed and maybe with us in the
20 winter-time. As we've already heard, of course, we've had
21 four years of record drought and actually warmth in the
22 last couple of years. And everyone wants to know,
23 including the science community, how this topical situation
24 that's developed may affect us during this winter wet
25 season.

1 So if we can go to the next slide? I wanted to
2 first point out that we have some coastal issues that occur
3 during El Ninos. And, of course, our coastal problems
4 generally don't occur, because there's gradual sea-level
5 rise, which is happening we think. But they happen when we
6 have large storms coupled with high tides, possibly
7 exacerbated by some incremental rises in sea level. Next
8 slide.

9 We have observed historically along the
10 California Coast that the greatest problems, greatest
11 excesses -- this is hours of exceedence in sea level at the
12 San Francisco tide gage. There are two years that stand
13 out in the record, the 1982-83 episode -- very large El
14 Nino. And then we had really an equally large El Nino in
15 '97-'98. '97-'98 was kinder in that we didn't get,
16 luckily, large storms when we had spring tides. So the
17 damages and the hours of exceedence were not as high.
18 Let's go to the next.

19 This chart shows ocean surface temperatures. And
20 in the center of the domain here is the Pacific Ocean. The
21 red shading represents departures from normal, that are
22 positive warmer than normal. We see that really the entire
23 eastern North Pacific and extending into the Tropical
24 Pacific is warm. There was a lot of discussion last year
25 about the warmth in the North Pacific, which is really kind

1 of another story. But it may play into the weather
2 conditions this winter in kind of marginal fashion.

3 What I want to draw your attention to is the
4 filament along the Tropical Pacific from the dateline
5 across to the Coast of Peru, which is the area of the
6 Tropical Pacific upper-ocean that has essentially a rather
7 shallow thermocline -- the boundary between the warmer
8 upper-ocean and the cooler, deeper ocean. And it's that
9 area which tends to oscillate and provides us with this
10 phenomena that we call ENSO -- El Nino Southern
11 Oscillation. That's a coupled ocean atmosphere phenomena
12 and the ocean changes, because the winds change and the
13 winds change, because the ocean changes.

14 And in the wintertime when these factors are
15 present they may influence the weather outside of the
16 tropics, namely by shifting and activating storminess
17 across the North Pacific when we have a condition like we
18 see here where the eastern part of the Basin is warm. That
19 tends to make more convection, more high cloudiness in the
20 central to eastern part of the Pacific. That cloudiness
21 ducts heat and energy into the North Pacific and that
22 causes some of the largest storms that we see in the
23 Pacific Basin.

24 So right now we're seeing a rather strong event
25 that's developed in the tropics. If we go to the next

1 slide, the climate community has parsed the Tropical
2 Pacific out into different regions. I want to draw your
3 attention to the so-called Nino 3.4 region. That's the
4 time series for the temperatures there are shown by the
5 second panel on the right. And what we note is that
6 temperatures there were somewhat warm last winter, declined
7 in the springtime and since then have rather steadily
8 increased. Average temperatures in that region now are
9 just below two degrees Celsius above long-term averages.

10 This region is very important, because it seems
11 to be one in which the atmosphere is quite sensitive to as
12 far as wintertime conditions in the North Pacific. So it
13 is -- as I mentioned earlier -- it's looking quite strong
14 as far as the warmth that's developed. Next slide.

15 The warmth is not just the very uppermost part of
16 the water column. This is a slice of 300 meters of water
17 across the Tropical Pacific from the very western part of
18 the basin on the left, to the eastern part of the basin on
19 the right. And again, the shading illustrates the
20 departures from normal of water temperatures.

21 And what you notice here is the fact that while
22 the surface is warm it's actually in the subsurface where
23 you see the greatest departures from normal. Which at
24 their utmost here are five degrees Celsius above normal or
25 so. That's the area of the thermocline where temperatures

1 change rapidly with depth and very sensitive to these
2 changes of wind and so forth.

3 This heat reservoir is really important, because
4 that gives the system a persistence, a longevity. And, of
5 course, in trying to do seasonal weather forecasting we
6 need something in the climate system that has some inertia.
7 Let's go to the next.

8 This is simply a time series of that warmth
9 throughout the water column in the eastern part of the
10 Tropical Pacific. And you can see how this is somewhat
11 wiggly, but it's been basically quite warm ever since the
12 late springtime of 2015. Let's go to the next.

13 So where are we today in terms of historical El
14 Nino events? Here shows a chart of El Nino-ness, I guess,
15 development. This is the Multivariate El Nino Index for
16 the seven strongest events since World War II with the 2015
17 event superimposed. I've shown that by the red dot there.

18 The two events that I mentioned earlier, the
19 1982-83 which is the green one and 1997-98 which is the
20 reddish pink one, are -- well '97-'98 somewhat stronger at
21 this point in the game; '82-'83 about the same. Both of
22 those events were distinguished by having an exceptionally
23 strong persistence of the tropical El Nino qualities that
24 extended into the mid-to-later part of the winter.

25 And it's interesting that when you look at

1 historical El Ninos it's oftentimes the latter part of the
2 winter that really stands out in terms of storminess
3 affecting California. Storminess and the delivery of water
4 supply and in some cases even floods.

5 So where we are right now is impressive and from
6 a water supply standpoint somewhat encouraging. But let's
7 go to the next --

8 MS. RAITT: And sorry to interrupt, but we will
9 need to try to wrap up soon, so thank you.

10 MR. CAYAN: This is my last slide.

11 MS. RAITT: Thank you very much.

12 MR. CAYAN: This is the precipitation in
13 California, Division 2, which is the Sacramento drainage
14 which is arrayed according to its El Nino characteristics:
15 El Nino being on the left, neutral conditions in the
16 Tropics in the center and La Nina on the right. And what
17 we notice here is that essentially all El Ninos are
18 somewhat different, but as you approach the far left-hand
19 portion of this diagram, the stronger El Ninos, you see
20 that several of the water years there -- October through
21 Marches -- were relatively wet.

22 So finally, we got to the next. In summary we
23 have El Nino conditions. It looks like they will continue
24 on into the winter. The question is how strong will they
25 be? Southern California tends to have a stronger reaction

1 as far as wetness than Northern California, but large El
2 Ninos tend to affect the whole state. And historically in
3 terms of coastal problems many of those have occurred
4 during El Ninos and we have to pay particular attention to
5 periods when we have high tides. Thank you.

6 MS. RAITT: Thank you very much.

7 Do you have a question?

8 CHAIRMAN WEISENMILLER: I was just going to thank
9 Dan. On some of those déjà vu events I basically got the
10 same presentation last Friday at about the same time with
11 Mexican officials down at Scripps and thought it would be
12 helpful today. Thanks.

13 MR. CAYAN: Thank you, Chair Weisenmiller.

14 MS. RAITT: Thanks again.

15 So that wraps up our presentation on a review of
16 the drought. And so next we have Updates from State
17 Agencies on Actions to Address the Drought. And the first
18 speaker is Christine Collopy from the Energy Commission.

19 MS. COLLOPY: Great, thanks Heather. Good
20 morning. My name is Christine Collopy. I'm the Deputy
21 Division Chief of the Efficiency Division, here in the
22 Energy Commission. I'm here today to talk about what we're
23 doing in response to the drought. Go ahead and switch the
24 slide.

25 We had the Executive Order signed by Governor

1 Brown, which directed the Energy Commission to implement a
2 short-term appliance rebate program to incentivize
3 customers to replace inefficient appliances and devices in
4 households. Next slide.

5 The Energy Commission does anticipate, or we have
6 asked for, \$30 million to implement rebate programs. We
7 intend to do this in two different phases. And that first
8 phase is implementing an appliance rebate or clothes washer
9 rebate program state-wide for all Californians to
10 participate in. That clothes washer rebate would be \$100
11 per unit. It would be a very simple online application for
12 consumers to participate. We are also anticipating
13 offering an instant rebate portion to this program where
14 you would go to a retailer and purchase the product and
15 receive an instant rebate at checkout.

16 We are partnering and leveraging this program
17 with existing programs, so existing utility rebate program
18 and water district programs. Our program allows layering
19 of rebates as long as their program allows it. Again,
20 we're really trying to focus on easy participation with
21 this program, because we want as many Californians to
22 participate as possible.

23 All the clothes washers that are ENERGY STAR
24 would qualify for this program. And the Phase 2 program
25 that we're also working on is the Direct Install Program.

1 Each program we're going to be allocating 15 million
2 towards, so the Direct Install Program will also have that
3 investment.

4 We're partnering with the Community Services and
5 Development Department. We are leveraging their existing
6 low-income weatherization program, their Weatherization
7 Assistance Program and their Low-Income Home Energy
8 Assistance Program. So when they're going out and doing
9 assessments and determining what weatherization and
10 efficiency measures to install, they're also going to be
11 looking for what water appliances to install.

12 We'll be bringing to that program shower heads,
13 kitchen and bathroom faucets, dishwashers and clothes
14 washers when necessary in that dwelling. This program will
15 be available for single and multi-family dwellings. Next
16 slide.

17 For the Clothes Washer Rebate Program, again the
18 funding source we are anticipating is the Greenhouse Gas
19 Reduction Fund, administered by the Air Resources Board.
20 The funding for these programs are currently pending
21 legislative authority, but we're trying to get ready to
22 push that button once that may happen. The rebates for
23 clothes washers will be awarded on a first come, first
24 served basis.

25 And again we are really focused on making it easy

1 for the consumer. And part of that is making sure they
2 understand that they can utilize both the utility or water
3 district rebate along with our rebate. Okay, the next
4 slide.

5 Clothes washer rebates may be redeemed in one of
6 three ways. The online rebate is where a consumer would
7 buy the product, go to the online application form, which
8 is very simple, fill that out, upload proof of purchase and
9 then wait for their check. For those that may not have
10 access to the Internet we do have a mail-in rebate option
11 available, which is they would download an application
12 form, mail in their application with proof of purchase and
13 again wait for their check.

14 Along with this, there's a consumer hotline that
15 will be available for anyone who may need help doing either
16 the online rebate or the mail-in.

17 I mentioned before that we're also going to be
18 doing instant rebates. This is a point of sale rebate,
19 which would be given directly at the retailer. And we're
20 working to bring on some stores for this. And it's looking
21 very hopeful that Home Depot and Lowes and Sears would
22 participate in that program.

23 But we're also really working with the
24 independent retailers, because we want them included in
25 this program. And they would be able to easily participate

1 in this program. And they would be able to easily
2 participate by helping customers with the online or mail-in
3 rebate program. Next slide.

4 This rebate program will be branded under the
5 Save Our Water Program. That is the State of California's
6 water program. And we're going to be having materials in
7 the stores, so consumers know how to participate and they
8 know what products are eligible.

9 Looking on the screen up in the right hand
10 corner, we call it "cling." It's something that sticks to
11 the project so customers know it's an eligible product.

12 The items on the left of the screen are what we
13 call a tear pad. It's 8 1/2 by 11 where customers can rip
14 that off and take it with them. It tells them about the
15 program, the three easy steps on how to apply. We're
16 offering some water saving tips also, for other than just
17 appliance, for water around your household. And then in
18 the very, very fine print are the terms and conditions that
19 the State of California must put on all material. Next
20 slide.

21 The other program that we are offering is the
22 Direct Install Program, which we are partnering with
23 Community Services Development Department. And again,
24 we'll be adding these appliances into their existing
25 program, focusing on the most disadvantaged communities in

1 California, using CalEnviroScreen. Next.

2 Pending legislative authority again on this
3 program here's our key milestone dates. We've already
4 adopted guidelines for the rebate program. And we are
5 ready to launch as soon as funding may be available.
6 Direct Install will be a little bit later with draft
7 guideline workshops happening next month, followed by
8 bringing this to a business meeting for the Energy
9 Commission to consider. And then we're looking at Direct
10 Install launching that program in the fall of this year.
11 Next.

12 And if you'd like to comment, there is our
13 docket. And if you would like to information on the
14 program, please join the WaterSaver ListServ. And we'd
15 also welcome you go out to the SaveOurWaterRebates.com,
16 which is the web portal that we've joined with the
17 Department of Water Resources. It's a one-stop shop
18 concept, so that if you want turf replacement rebates,
19 clothes washer rebates or toilet rebates, you go to one
20 location and you participate in the application process
21 that way. Next.

22 And finally, if you'd like to participate in the
23 commenting on this workshop, there is the docket for you to
24 participate. Thank you.

25 COMMISSIONER MCALLISTER: Thanks Christine. I

1 just want to highlight the interagency collaboration here.
2 And also say that, having myself worked in program design
3 for much of my career, in implementation of these sorts of
4 programs and these working with marketplaces and getting
5 action to actually happen out there, I'm really
6 appreciating staff's prioritization of that.

7 And really the understanding that consumers need
8 super-easy, very low-touch kinds of interactions and that
9 we need to really focus on the communications. And getting
10 the word out, so that people know these programs are there
11 and can easily participate in them. And that's really what
12 moves the needle. So I just want to highlight that and
13 thank Christine and staff for that.

14 DEPUTY SECRETARY CONRAD-SAYDAH: I was just
15 wondering if you had an estimate or a target for number of
16 households that you could reach with a Direct Install
17 Program with CSD?

18 MS. COLLOPY: We're aiming to reach about 25,000
19 dwellings. So it would be, again, single family and multi-
20 family.

21 COMMISSIONER MCALLISTER: And I'll just also
22 chime in. Direct install programs are relatively
23 expensive, but they're also you kind of have to go there if
24 you're going reach hard to reach populations. So
25 basically, it's a linear with the funding, so the more

1 funding, the more households. And I think that
2 conversation will have to evolve over years.

3 MS. COLLOPY: Our target is 25 percent
4 disadvantaged communities. And that is where we're going
5 to reach our disadvantaged community goal is through the
6 Direct Install Program.

7 MS. RAITT: Okay. Next is Kristen Driskell from
8 the Energy Commission

9 MS. DRISKELL: Too many microphones. Good
10 morning. My name is Kristen Driskell and I am a Supervisor
11 in the Appliances And Existing Buildings Office in the
12 Efficiency Division here at the Commission. I'm here to
13 present the Commission's recently adopted Appliance
14 Efficiency Standards for Water Consuming Appliances, which
15 we developed under the leadership of Commissioner
16 McAllister. Next slide, please.

17 Executive Order B-2915 issued April 1st, 2015
18 required the Commission to adopt standards to reduce water
19 use in appliances and suspended various rule-making
20 requirements otherwise applicable, so we could do it
21 quickly. Next slide.

22 We looked at some opportunities to achieve water
23 savings. The little blue arrows highlight things that we
24 have adopted Standards for recently. And the outlined
25 arrows are areas where we may look in the future. Next

1 slide.

2 Just seven days after the Governor issued his
3 Executive Order the Energy Commission adopted Water
4 Efficiency Standards For Toilets, Urinals and Faucets.
5 Once in effect, these Standards will save 10.3 billion
6 gallons of water each year with energy savings from the
7 reduced use of hot water and the electricity needed to
8 transport water. Next slide.

9 These Standards go into effect for all products
10 sold or offered for sale on or after January 1st, 2016.
11 Toilets must be 1.2 to 8 gallons per flush or less. The
12 most common types of urinals, wall-mounted urinals, are
13 .125 gallons per flush. Kitchen faucets are 1.8 gallons
14 per minute with optional temporary 2.2 gallon per minute
15 increase to fill pots. And public lavatory faucets are at
16 .5 gallons per minute.

17 The Commission also adopted Standards at this
18 time for residential lavatory faucets, which I'll talk
19 about in a little bit, since we tweaked them a little bit
20 later. Next slide. I'll talk about them now.

21 Following adoption of those standards, the
22 Commission looked for additional opportunities to save
23 water. And we looked at shower heads and tweaking the
24 residential lavatory faucet standard. Commissioner
25 McAllister lead a workshop on July 28th to vet both

1 proposals. And on August 12th we adopted standards for
2 these products. The shower head standards alone are
3 expected to save 38 billion gallons of water over the next
4 ten years with additional energy savings from the reduced
5 use of hot water and imbedded energy. Next slide.

6 These are the Lavatory Faucet and Shower Head
7 Standards. They're both Tiered Standards. For shower
8 heads a 2.0 gallon per minute Standard takes effect July
9 1st, 2016. And it drops to 1.8 gallons per minute two
10 years later. For lavatory faucets and aerators a 1.5
11 gallon per minute standard takes just a couple days from
12 now, September 1st. And a 1.2 gallon per minute will take
13 effect on July 1st, 2016. Next slide.

14 The total savings in dollars after a full stock
15 turnover, meaning all of the existing stock are replaced
16 with the compliance stock, is \$2.1 billion. Total avoided
17 greenhouse gas emissions are 3.5 million tons. Next slide.

18 To enforce these standards, we require
19 manufacturers to certify regulated appliances through our
20 database before selling them in California. We just
21 modernized our database, so everything's available online.
22 Manufacturers can certify online. And the public can
23 search the database online by model number or by appliance
24 type to find certified appliances. And the link is on this
25 slide here.

1 In addition, the Commission has the authority, as
2 of July 1st, 2015 to impose an administrative penalty of up
3 to \$2,500 per unit of appliance sold or offered for sale in
4 violation of our standards. We have been conducting public
5 webinars and other outreach to inform people about the new
6 data base and to offer compliance assistance to insure that
7 both manufacturers and retailers have every tool they need
8 to comply with our standards. Next slide.

9 What's next? We're currently considering
10 opportunities for irrigation equipment, both landscape and
11 agricultural, commercial dishwashers, and other potential
12 products. I'll point out the investor owned utilities
13 through their codes and standards enhancement programs have
14 provided pretty critical research, analysis, and data to
15 help us with this investigation. Next slide.

16 I'm just going to point you to the little thing
17 in the corner. If you'd like to stay in touch with the
18 appliances program and all of the things that we're doing,
19 please sign up for the Appliances ListServ, which you can
20 access at the link at the bottom of this slide. Thanks.

21 DEPUTY SECRETARY CONRAD-SAYDAH: I have a
22 question. Do you have any plans for the retired appliances
23 or the decommissioning of the appliances that people are
24 replacing in their homes and where they can go? Have you
25 worked with Cal Recycler or others on that?

1 MS. DRISKELL: For the Standards Program we only
2 regulate the new appliances, so we don't have any impact on
3 that. But if a person were to replace their appliance,
4 they'd only be able to buy a compliant product in the
5 stores after the effective dates for those Standards.

6 DEPUTY SECRETARY CONRAD-SAYDAH: Okay. But that
7 might be something to just look into, in working with
8 CalRecycle to make sure those don't all wind up in a land
9 fill.

10 MS. DRISKELL: That's an excellent suggestion.

11 COMMISSIONER MCALLISTER: I get a lot of
12 questions actually when we roll out Standards. "So, is
13 somebody going to go to my house and rip out my appliances
14 and make me have one of these new -- " No. It's not the
15 way it works, right? So just have that on the record that
16 nobody's ripping out your faucets or your shower heads.

17 Again, I think in a lot of ways the appliances,
18 just for those on the dais and those in the audience, the
19 appliances team is I think small but fierce. And has had a
20 huge impact on the energy and then now also the water
21 landscape over the years. And I think it's a little bit
22 unsung, but really generates similar levels of savings to
23 Building Standards, which kind of have a higher profile and
24 are kind of a bigger deal every three years.

25 But the Appliance Standards just kind of roll out

1 periodically and are based on really terrific analysis and
2 are very solid in terms of the savings they generate. And
3 really are a key tool for the state going forward. So
4 thanks for all your work very recently on all the water
5 stuff, Kristen and your team.

6 SECRETARY ROSS: I just appreciate including the
7 potential for agricultural irrigation equipment in the
8 future. And I know that your staff has worked closely with
9 our staff, learned from the small program that we do have.

10 One of the things -- going to your comment,
11 because I appreciate making it low-touch, easy to
12 understand, easy to use -- in farming it's a little bit
13 more complex than that. And we know that just getting the
14 right-sized pump, not just going with what the first sales
15 person has said is the right-sized pump. But also, on-
16 going technical assistance, education because you have
17 constant turn-over in staff, all of the monitoring of the
18 drip lines.

19 All of the other things that go with that, that
20 make it more complex than a standard appliance rebate
21 program are some of the challenges for us. How to fund
22 that kind of technical infrastructure to provide support to
23 make sure that once that equipment is there its maintained,
24 its monitored. All those different aspects to it just
25 bring up another level of complication to a program.

1 COMMISSIONER MCALLISTER: It's really interesting
2 actually is one of the -- market transformation is a term
3 that people -- diffusion of innovation is one of these
4 terms that a lot of people use in context of trying to get
5 markets to transition over to cleaner, more efficient
6 technologies.

7 And yet Everett Rogers, who wrote the seminal
8 research throughout his whole career on that issue of
9 diffusion of innovation, actually did his research in the
10 agricultural sector. And through generally the extension
11 model of how you go get farmers and it turns out it's a
12 very neighborly-oriented thing and its very geographically
13 focused and that's how these kinds of innovations -- You
14 know, one farmer takes a risk, approves it and then his
15 neighbors day "Hey, maybe I'll do it?"

16 And we have a little bit of different model in
17 California then the Mid-West where the research happened,
18 but I think that diffusion model that is relative high
19 touch but high impact as well, but potentially if you can
20 sort of insert the right technologies into the right
21 environment.

22 SECRETARY ROSS: It still is the behavior
23 adoption model that still works best.

24 And one of the things that we have been able to
25 do with our second round is that we required anyone who got

1 one of our grants, that they themselves or one of their
2 staff members would have to go through technical training
3 with just with just their ways to check the box to make
4 sure that we're starting to get that level of information
5 and knowledge out there. So it's a great model that still
6 works -- 150-year-old model and it still works.

7 CHAIRMAN WEISENMILLER: Okay. I was going to
8 point out two quick things. One was that first time I was
9 in public service, and that was actually the first time
10 Governor Brown was governor, we had a drought in '76 and
11 '77. And coming out of that, we did the first round of
12 Water Efficiency Standards for Appliances, which certainly
13 left us much better able now to do deal with the drought,
14 from the cumulative savings of those standards.

15 I was also in it -- the last time I was in
16 Beijing we met with Chinese group that does appliance
17 standards. And they are very interested in the Water
18 Appliance Standards we've just done. So we'll send them
19 information on that. China, as you know, faces similar
20 issues on water, particularly with agriculture.

21 COMMISSIONER MCALLISTER: China also has a
22 tremendous solar water heating industry, where you can
23 almost -- very few people use natural gas or propane or
24 anything to heat their water. They really use solar. And
25 they have these incredibly low-cost solar water heaters

1 that pretty much everybody has because it's their only
2 option. So we need to sort of -- maybe we could learn from
3 stuff from them front as well.

4 MS. RAITT: Great. Thank you, Kristen.

5 Our next speaker is Laurie ten Hope from the
6 Energy Commission

7 MS. TEN HOPE: Good morning. I'm Laurie ten
8 Hope. I'm the Deputy Director for Research here at the
9 California Energy Commission. And I'm going to talk about
10 the Water Energy Technology Program. Next slide, please.

11 This is also part of the Governor's Drought
12 Executive Order, one of the four initiatives that the
13 Energy Commission was charged with and this specifically to
14 incent cutting-edge technologies. And we, as part of the
15 Executive Order, are directed to collaborate with the
16 Department of Water Resources and Water Control Board.

17 This has been an extremely productive
18 relationship, because we're charged with incenting cutting-
19 edge technologies. It's really important to know what
20 other technologies are out there and already deployed.

21 We have weekly calls that are also have staff
22 participation from food and ag and the CPUC and intensive
23 engagement with the Air Resources Board to make sure that
24 the design of this program fits with the Greenhouse Gas
25 Funds that are anticipated as the funding source here.

1 Next slide, please.

2 So the WET Program is really designed to
3 accelerate deployment of innovative water and energy-saving
4 technologies. And it's really important that there be this
5 dual emphasis of greenhouse gas emission reduction and
6 water savings. And so this leads us to focusing on
7 reducing water onsite.

8 We're specifically looking for technologies that
9 are beyond the R&D stage. It's not a research program.
10 It's an early deployment program. So we want some
11 documented performance data that the technologies are real,
12 that they've been proven. They're ready. They're
13 commercially available. But they're not widely deployed,
14 because there's a cost issues or a familiarity issue.

15 And this program could really help provide the
16 experience with cutting-edge technologies that can be used
17 now. But they also help us if we're in the fourth year of
18 a ten-year drought. I mean we don't really know where we
19 are and we want to -- through the Executive Order I think
20 it's nicely framed to deploy technologies we have now, but
21 also what we may need going forward. Next slide please.

22 So this just shows kind of where we see this
23 program in the innovation pipeline. Later this afternoon,
24 I'll talk a little bit about research that's water-related
25 in our research program. That's over towards the left side

1 of the innovation pipeline. This water program sits here
2 in the middle where we're hoping to pull technologies over
3 the valley of death, where they need some help to get
4 traction. So they need a little bit of exposure and
5 financial help to make that transition. Next slide,
6 please.

7 So we are rolling this program out in three
8 phases. This is anticipated as a \$30 million program. It
9 is contingent, as all the new GGRF programs are, with
10 legislative action as well as approval of our investment
11 strategy by the Air Resources Board. But we're
12 anticipating this to be a three-phase program with a 10
13 million allocated to the agricultural sector. With the
14 bulk of the agricultural funding going to a rebate program
15 going to a rebate program for a high-efficient irrigation
16 system that has very specific design criteria and requires
17 a certified design.

18 And the whole idea is to kind of push the
19 envelope, as Secretary Ross was saying, to specific,
20 efficient water-saving technologies that are designed to
21 not have some of the operational issues that she
22 identified.

23 But we also reserved \$3 million of that program
24 for grants, so that we can look at innovation in the
25 agriculture sector around precision agriculture strategies

1 that either use advanced meters and control strategies, but
2 really to try to put just the amount of water that's needed
3 at just the right time.

4 The other two phases, Phase 2 we've allocated 16
5 million for industrial, commercial and residential grants.
6 So these are looking at technologies that use no water or
7 lower water. Prime candidates are food processing, food
8 service, wastewater treatment, heat recovery and recycling
9 for all sectors.

10 And the third phase is for desalinization. This
11 is a small amount in such a capital-intensive area. We're
12 looking for innovation in the desal area, perhaps membrane
13 technologies. This is the phase that is still under
14 development. Phase 1 and Phase 2, our guidelines are
15 posted. We've had several workshops and taken public
16 comment. Right now, we have -- I'll go to the next slide
17 which has the comment. Well, I'll get to it in a second.

18 We do have comment periods on Phase 2 and Phase
19 3. I wanted to highlight that a minimum of 10 percent of
20 the funding will go to projects in disadvantaged
21 communities that are serving disadvantaged communities.
22 And those projects will have a higher capital cost
23 available, so up to 75 percent of the eligible project cost
24 would be included in the program. Next slide, please.

25 So as I mentioned our guidelines have been

1 adopted. We've had public workshops already. We're in an
2 open comment period right now for Phase 2, which is the
3 residential, industrial, commercial. And we're taking
4 comments on the program designed for the desal portion.
5 Depending on legislative action we hope to be able to
6 release the final applications in the fall and start
7 accepting applications immediately after.

8 I've already talked about this. Comments are due
9 on the 1st. We have multiple resources available to you.
10 So on slide nine it indicates that we have a website that
11 provides the information, the guidelines, our draft
12 application.

13 We also have what's called an Idea Exchange. We
14 have a lot of people contacting us. They have suggestions
15 on water technologies. We want to make it available to not
16 only ourselves, but to other people who might be interested
17 in what innovative technologies are out there. And if
18 anyone is interested in funding opportunities the
19 Opportunity Listserv is there.

20 The final slide is if you have questions. The
21 next one is the final -- if you have any questions feel
22 free to email us at the wet@energy.ca.gov and we can answer
23 your questions regarding the program. Thank you.

24 SECRETARY ROSS: Can I just say I love your Idea
25 Exchange. We're getting inundated every day. And I'm

1 going to just start directing them all to your website.

2 MS. TEN HOPE: Thank you. And you'll hear from
3 DWR. They have a venue as well, so any questions?

4 CHAIRMAN WEISENMILLER: No, that's good. I would
5 note after the Executive Order our target was to try to get
6 these ready to go July 1st. And obviously we're primed and
7 now waiting for legislative action.

8 MS. RAITT: All right, thank you Laurie.

9 Next is Commissioner Sandoval.

10 COMMISSIONER SANDOVAL: Great. Well, thank you
11 very much. Well, following on that is a terrific segue.

12 We've really appreciated the opportunity to
13 participate with the California Energy Commission as well
14 as the Department of Water Resources, who have been charged
15 with taking the lead on implementing some of the aspects of
16 the Governor's Executive Order of April 1st regarding the
17 drought. Including paragraph 17 which had a lot of really
18 visionary ideas about how we could use technology to help
19 us to not only manage the drought, but better prepare for
20 California's sustainability and resiliency in the future.
21 So thank you so much for the opportunity to participate.

22 I had the opportunity to speak briefly at one of
23 the workshops in Downey. So I appreciate that and I
24 appreciate the opportunity to be here and link this work in
25 an even deeper way back to some of the policy work that

1 we're doing. So next slide, please.

2 So I am, as you know, a Commissioner with the
3 California Public Utilities Commission. The CPUC has
4 jurisdiction over investor owned energy, water and
5 telecommunications utilities, common carriers, including
6 some pipelines. So, for example, the pipeline that broke
7 in Santa Barbara was licensed under our jurisdiction, but
8 it was up to the feds. There was a bizarre agreement long
9 ago, it was up to the feds to do all the safety checks on
10 that one.

11 But we do rail safety and rail crossings. We
12 also do a lot of systems like we're going to be in charge
13 of rail safety for the Getty Monorail. So I heard
14 yesterday that it's in good shape. That's good to know.
15 And we also regulate other services including
16 transportation network carriers, which some of you may know
17 is Uber or Lyft and others as well as other transportation
18 providers such as other TCP's. Basically limos and a
19 variety of other types of entities, so we have a pretty
20 broad jurisdiction.

21 Our jurisdiction basically reaches to two-thirds
22 of the state's energy rate payers. So while there are
23 places where we don't touch energy rate payers in places
24 here like Sacramento, most Sacramento-ens get their
25 electricity from SMUD. But they still get their gas from

1 PG&E and thus we would have regulation over the natural gas
2 provided.

3 And we have jurisdiction over the investor-owned
4 water utilities, which constitute about 19 percent of the
5 water rate payers of the state. We have actually recently
6 seen a few proposals for some of the investor owned water
7 utilities to merge with some smaller water systems, so that
8 number may fluctuate a bit. So while we do not regulate
9 the majority -- the services provided to the majority of
10 water rate payers in the state -- we have some influence as
11 a single body working on these issues. And we do
12 coordinated vary closely with our local agencies as well as
13 with the water agencies.

14 We also not only regulate intrastate
15 telecommunications services, but we provide support for
16 communications and broadband deployment through the
17 California Advanced Services Fund and through some of our
18 efforts including broadband measurement in terms of
19 Internet access. And we'll talk a little bit about how
20 critical that is to managing energy and water in the
21 drought.

22 And we also engage in a number of programs for
23 consumer assistance, consumer education, and low-income
24 assistance and public safety. And I think this creates
25 really important opportunities for layering and leveraging.

1 Next slide, please.

2 So the CPUC operates an energy efficiency
3 program, which we oversee. So the investor owned utilities
4 basically are the stewards of the program. And they are
5 authorized to spend approximately \$1 billion a year on
6 energy efficiency. So already in the energy efficiency
7 portfolios a number of providers do include water-saving
8 measures, particularly to the extent that they involve hot
9 water.

10 So the biggest debate so far has been about cold
11 water measures and I'll get to that in a minute when I talk
12 about the Water-Energy Nexus.

13 We also spend approximately 335 million a year on
14 our low-income energy program known as the Energy Savings
15 Assistance Program or ESAP. And so we're right in the
16 cycle of considering ESAP proposals. And one of the areas
17 that we have specifically asked about is proposals that
18 address the Water-Energy Nexus and the drought.

19 And I think that this is another opportunity for
20 layering, because obviously we all want to use our dollars
21 well and not duplicate, but really leverage. And we have
22 seen in presentations from the investor owned utilities
23 that they do actively work with water agencies.

24 And we will ensure that they actively work with
25 the CEC in the rollout of the rebate programs, so that we

1 really are leveraging and creating the most value for
2 Californians, not only for their individual energy
3 profiles, but to help us better manage water energy in the
4 drought.

5 We also have a number of low-income rate-payer
6 assistance programs, both on energy, which is CARE. It's a
7 very large program. We spend a lot of money on it. And
8 also low-income water rate-payer assistance programs. So
9 next slide, please.

10 So as I mentioned, we are engaged in a proceeding
11 at the CPUC, the Water-Energy Nexus Proceeding. I have the
12 privilege of being the assigned Commissioner on this
13 proceeding, ably advised by Amy Baker is my lead advisor on
14 this proceeding. Jaime Ormond (phonetic) has also been
15 very active on this proceeding as well as Gia Discatagi.
16 (phonetic)

17 So in this proceeding there a number of topics
18 that we are examining. Our goal is to look at the cost
19 effectiveness of joint water energy products. We're
20 investor owned utility rate payers. And to look at a
21 variety of issues that affect the Water-Energy Nexus. So
22 we're looking at the imbedded energy savings that result
23 from joint water programs, assessing the benefits, and
24 determining if incentivizing measures that save both water
25 and energy would be a cost effective use of energy funds.

1 And then we're also examining a variety of other
2 opportunities and issues that stem from the water-energy
3 nexus. So next slide, please.

4 So we released a couple of weeks ago, a proposed
5 decision that was issued on August 17th, regarding what's
6 called the Cost Calculator Tool for the Water-Energy Nexus.
7 And this was developed by the CPUC in conjunction with the
8 Navigant Consulting, with tremendous input from the parties
9 to the proceeding, who've given us a lot of feedback.

10 And so it is designed to allow evaluation of a
11 measure or a suite of measures, and looks at the energy
12 intensity of the energy used at the hydrological basin
13 level, but it also allows for input at a more localized
14 level. So, for example, San Jose Water Company could put
15 their information about what is the energy intensity of
16 the water that they deliver to their customers and then
17 make that available for others to be able to analyze.

18 And this is important because like for example,
19 the San Francisco hydrological basin area when you compare
20 the City of San Francisco versus San Jose, served by San
21 Jose Water Company, there is less energy intensity in the
22 water in San Francisco, because 100 years ago the Mayor of
23 San Francisco went to the Yosemite area, climbed a tree and
24 put a notice at the top of the tree saying, "This water
25 belongs to the City of San Francisco." And this lead

1 eventually to the creation of the Hetch Hetchy Reservoir.

2 And that system was built 100 years ago as a
3 gravity-fed system. And no energy touches it until it gets
4 to the East Bay where it's treated and then comes over to
5 San Francisco. So as a result of that it is less energy
6 intensive than the water that is used by the San Jose Water
7 Company, the majority of which usually comes from the
8 California Water Project. But of course with deliveries
9 down in the California Water Project, they have had to
10 actually rely on water that they have stored.

11 Luckily the area of San Jose has a basin, but
12 there is a lot of energy involved in pumping water out of
13 that basin. So the tool allows for consideration of those
14 differences and thus allows you to ask the question, "Would
15 a particular measure be cost-effective or efficient in this
16 particular area?" So next slide, please.

17 So here is an example of the run of the tool.
18 And so you see on the top an example of an analysis of the
19 cost-effectiveness using the current prevailing model,
20 which is known as the E3 Model.

21 And then you see on the right TRC is Total
22 Resource Costs and the goal has been to put a dollar in and
23 get at least a dollar back. And so none of these measures,
24 in these particular cities -- these are in Southern
25 California Edison service territory in Los Angeles County.

1 None of these things reached a one-to-one ratio, although
2 we do evaluate their projects on an overall portfolio
3 basis. Each thing doesn't have to actually equal one.

4 But when you look at the calculator and you
5 account for the embedded energy in water you get very
6 different ratios. And some things are extremely efficient
7 such as in City 2, and only in one city, City 5, are you
8 actually below the cost-effectiveness level. So next
9 slide, please.

10 So we're also looking at -- in another
11 proceeding, R1111008, it's called the Balance Rates Order
12 Instituting Rulemaking. Phase 2 of that proceeding will
13 address water rates and conservation accounting mechanisms,
14 customer impacts, the drought emergency and technology.
15 This follows up on Phase I where we actually, among other
16 things, changed the rules somewhat for consolidation of
17 water districts. And that has facilitated the path for
18 some of the applications that we have seen now for water
19 districts. So next slide, please.

20 So this rate making is very important, because
21 what we seek to do is to balance infrastructure investment
22 and rates to achieve safe reliable service at just and
23 reasonable rates. And sadly we've seen, while Californians
24 are striving mightily to conserve water, that in the past
25 couple of years there have been some spectacular water main

1 breaks. And several of them in the past few months, where
2 we've lost millions of gallons of water. I'm proud to say
3 none of them involved investor owned utilities, right Jack?
4 So that's Jack Hawks from the California Water Association.
5 But you can lose a lot of water. And of course it can
6 become as well a fire safety hazard.

7 So creating the right balance, so that we invest
8 in our infrastructure and it's reliable and resilient is
9 important. Next slide, please. And then we're coming up
10 on the last couple of topics.

11 Another important topic is to look at also water
12 meters. There are many places in the State of California
13 that still don't have water meters. When I previously
14 lived in Sacramento I was shocked to learn about the lack
15 of water meters in Sacramento. I'm from Los Angeles. A
16 couple of things puzzled me, the lack of water meters and
17 the leaf piles, still don't get that one.

18 So but now we do have a goal to transition
19 everyone to water meters and so we're still in that
20 process. But the reality is today that most water meters
21 are still analog. A few digital meters are deployed and a
22 communications backbone is still necessary to collect, read
23 and analyze this digital signal. So one of the things I
24 say is that we live now in a fit bit world, where you can
25 learn about every step and every heartbeat, although the

1 Federal Trade Commission says that's apparently just an
2 estimate. But close enough.

3 But you can't learn about your water bill for two
4 months. So you know that your conserving because your
5 lawn's going brown, not because you get information on your
6 water bill in a timely fashion to enable you to take
7 action.

8 So one of the things that we proposed in the
9 Water-Energy Nexus proposed decision is a pilot where
10 energy utilities to provide water utilities access to the
11 smart meter data collection backbone as an energy
12 efficiency measure. So then they can get credit under the
13 energy efficiency program for enabling this backbone that
14 would enable steps to save both water and energy. Next
15 slide, please.

16 And then I'll close with this topic, which is
17 also important to introduce to this whole discussion in the
18 IEPR about the integrated nature of communications in
19 water. And I would add to this communications, water and
20 energy. We are increasingly seeing that communications
21 facilities and services are necessary for management of
22 water and energy.

23 Indeed, when you talk to people in the energy
24 sector, they will tend to talk about communications as
25 controls. But one of the things that I know that I've

1 spoken with all of you about, and Secretary Ross in
2 particular, is that infrastructure deployment is hampered,
3 particularly in rural areas, but you also see pockets in
4 urban and suburban areas, where the communications infra
5 structure simply isn't deployed.

6 And so this is something that we've been
7 documenting at the PUC, but the wide-spread wireless
8 deployment that we enjoy here in places like Sacramento and
9 cities like Long Beach and San Francisco is not at all the
10 case when you go to farms and to many of California's rural
11 communities, even many suburban communities. And
12 particularly on farms, you know, thanks to the Rural
13 Electrification Administration you see not only electricity
14 but a telephone in the house, but in the farmer's field
15 nothing and no communication. So this means that of all
16 the wiz-bang technologies that could be used to have the
17 iPad manage the irrigation system just simply don't work,
18 because there's no communications technologies.

19 So developing this infrastructure is absolutely
20 critical. And I think there's some new opportunities there
21 and that one of our tasks is to identify the gaps, the
22 effects of the gaps as well as the barriers to not only
23 adoption, but also deployment. So next slide, please.

24 So examples of why this is important also. On
25 the left, you see the Town of Orleans. This is not a cell

1 tower. This is actually back-haul for the calls to get out
2 of this town. The Town of Orleans is about eighty miles
3 inland from Eureka. It is the home of the Karuk Tribe.
4 Their telephone service -- they do have plain old telephone
5 service, which has -- lets say it's been jittery at best.
6 There is no cell service normally in Orleans

7 But actually right now last week a cell on wheels
8 or a COW was deployed to Orleans, because there is a fire
9 North of Orleans, the Nickel Woods Fire. (phonetic) And
10 the U. S. Forrest Service put in a request to get
11 assistance for communication to help them to better manage
12 that fire.

13 So the facilities there, the central office that
14 supports the telephone service -- and it also has what is
15 called T1 lines -- are absolutely critical, because you
16 need that T1 line to provide the backup for the COW, so
17 that the calls can go out. We think a lot about wireless
18 as connecting to the Cloud and connecting through air, but
19 95 percent of a wireless call is wired line, right? And
20 then it's going to connect at the central office or at the
21 tower to a wired line facility, so that you can make a
22 phone call.

23 These facilities are also important to provide
24 plain old telephone service and one of the things that fire
25 camp, the U.S. Forrest Service Fire Camp asked for was 20

1 plain old telephone service lines. And so the plain old
2 telephone service was operational before the cell. So at
3 least it got them into the 20th century and able to call
4 headquarters and call for backup and dial-up -- woo! And
5 by Tuesday, they were connected.

6 So this is actually a problem that plays out over
7 and over again with fires. And so as we have opportunities
8 now to build out our communications infrastructure in rural
9 areas, making sure that we're building out to deal with
10 fire emergency, but also thinking about how do we build out
11 in a way that helps us think of better manage water and
12 energy is going to be absolutely critical.

13 And the last thing I'll say on this is that I
14 really wanted to just announce and thank AT&T and Verizon
15 who yesterday accepted, from the FCC, money from the
16 Connect American Fund.

17 This will bring over \$300 million in territories
18 served by AT&T, almost \$200 million in territories served
19 by Verizon, to build out broadband access to households at
20 a level of at least 10 megabits per second down and one up,
21 so over \$500 million for California. This is really
22 historic.

23 And it creates a really historic opportunity to
24 be able bring more robust communications to places like
25 this. Places that we heard about today from the Office of

1 Emergency Services, so that we really can better manage our
2 water, energy, fire as well as drought response.

3 So thank you very much. I really appreciate this
4 opportunity. And we also welcome your comments on the
5 Water-Energy Nexus proceeding. And thank you so much for
6 the coordination.

7 COMMISSIONER MCALLISTER: Thanks Commissioner
8 Sandoval. I really appreciate all your leadership on this
9 front and it's great to have you on the dais. So thank you
10 for that.

11 MS. RAITT: Thank, and next -- oh go ahead.

12 COMMISSIONER SANDOVAL: I was going to say I left
13 off the last slide there, which is on autonomous vehicles.
14 So I thought Secretary Ross would especially get a kick out
15 of this.

16 So we were talking about communications and the
17 changes in communication the leader in autonomous vehicle
18 development and deployment in the United States is John
19 Deere. So John Deere has been manufacturing and selling in
20 the United State autonomous vehicles for over 15 years.
21 Santa Clara University just got an autonomous vehicle this
22 semester to shuttle around the students.

23 And so we're going to be seeing more and more of
24 these things that are going to be integrated into all sorts
25 of devices, so as we think about the grid of the future,

1 the electrification of the future, more and more of it is
2 also going to be integrated with communications and give us
3 new ways to think about water and energy. Thank you.

4 MS. RAITT: Thanks.

5 Our next speaker is Kent Frame from the
6 California Department of Water Resources.

7 MR. FRAME: Thank you for the invitation to speak
8 to you today and give you an update of some of the
9 activities of Department's engaged with in drought
10 response. Again, my name is Kent Frame with the Department
11 of Water Resources, the Water Use Efficiency Branch, in the
12 Division of Statewide Integrated Water Management.

13 I'm going to take a little different track than
14 our other agency presenters in that I'm going to give you a
15 little overview of the Department activities, which will
16 include a lot of the water use efficiency programs that I
17 manage.

18 And then I'll touch briefly on the Groundwater
19 Management Act that the Department is implementing. And
20 briefly a little bit about the activities regarding
21 stormwater that water use efficiency are engaged in. And
22 then I'll end up talking briefly about the just-released
23 NASA Subsidence Report. Next slide, please.

24 The Central Valley Project and State Water
25 Project are very important projects for water deliver in

1 the state. And then we do have a Drought Contingency Plan.
2 There are four primary goals with three main objectives:
3 the goal being to operate the project to meet essential
4 human health and safety needs. And hopefully to minimize
5 water supply shortages -- something we don't always have
6 control of -- but also to control saltwater intrusion in
7 the delta, preserve water quality, and to preserve cold
8 water reservoirs for the salmon. And then maintain
9 protections with listed species.

10 And the objectives for meeting the four primary
11 goals are to export available flows while maintaining delta
12 water quality, to conserve reservoir storage from year-to-
13 year, and manage June through September reservoir releases
14 that benefit in-stream temperatures to meet Sacramento
15 Valley Basin needs and preserve the carry-over storage to
16 the following year.

17 Some of the specific drought response activities
18 that the Department is engaged in, is to support Cal OES,
19 State Water Resources Control Board, the Department of Food
20 and Agriculture and local agencies. As the previous slide
21 indicated, we're involved with the SWP and CVP operations.

22 And we are engaged in an increased focus on
23 groundwater conditions on two of the main programs that
24 focus on this again are CASGEM and the Ground Water
25 Management Act. We are also monitoring in partnership with

1 NASA, fallowed agricultural lands, Central Valley land
2 subsidence and agricultural consumptive water use to
3 mention a few of those monitoring projects.

4 We are also providing water use efficiency
5 drought workshops. We have either already held or are
6 going to be holding over 90 workshops statewide in April
7 through October.

8 We provide drought funding where necessary and
9 when we can -- when the resources are available. And we
10 partner with the Water Board in especially their Drinking
11 Water Division on providing emergency water supplies. We
12 provide emergency assistance to small water systems and
13 private well owners. And we support the task force, of
14 course, and the tribes and provide for water transfers when
15 requested. Next slide, please.

16 The April 2015 Executive Order called for a 25-
17 percent conservation and a 50 million square foot turf
18 replacement program. We currently have \$25 million that we
19 have available for us for this program. Most of it is
20 going out in rebates in partnership with the Appliance
21 Program with the CEC.

22 We're also trying to assist in reducing potable
23 water use in the CII Sector to the WET Program and other
24 programs, water management programs and urban water
25 managements programs that we have.

1 There are some regulations on using potable water
2 in new construction medians. And we're investigating new
3 rate structures as a conservation means. And then we're
4 also involved in monitoring diversion curtailments. Next
5 slide, please.

6 The Executive Order further called for updating
7 the Model Water Efficient Landscape Ordinance. This
8 ordinance has been updated and it has been submitted to the
9 Office of Administrative Law. And it's currently under
10 review and should be finalized soon.

11 Another directive required many more water
12 agencies, agricultural water agencies, that had not
13 previously submitted ag water management plans to begin
14 doing so. Previously, only those ag water management
15 agencies that supplied irrigated water to more than 25,000
16 acres were required to submit an ag water management plan
17 to us for review.

18 That has been extended by Executive Order to
19 include the 10,000 to 25,000 irrigated acre water supply
20 agencies. Those plans are beginning to be due to the
21 Department January of 2016 with the smaller water agencies
22 due to us in June of 2016.

23 As I mentioned earlier, we're heavily involved
24 with groundwater monitoring. And I'll talk a little bit
25 more about that with a couple of slides later in this

1 presentation. We're also working with the CEC on improved
2 water conservation appliances. One of the programs that
3 we're implementing is the Toilet Rebate Program. That is
4 being implemented with the Turf Rebate Program. The next
5 slide, please.

6 Through this website I shamelessly will bring to
7 your attention I want to give a shout-out to the CEC, in
8 particular Christine Collopy and her team for working so
9 diligently in assisting us to get this web site
10 operational. This was launched August 12th. Next slide,
11 please. I'll just skip to the next slide please.

12 Water use efficiency stormwater activities.
13 We're currently monitoring legislation, regulatory action,
14 and looking at setting targets or actions to quantify or
15 capture -- how to determine to best capture stormwater.
16 We're also performing a literature review to see what needs
17 to be done or what has been done. And we look forward to
18 coordinating with the Water Board on this.

19 The Model Water Efficient Landscape Ordinance
20 does have some conditions in it regarding stormwater
21 capture onsite retention. There will be a coordinated
22 effort, going forward, with stakeholders on developing even
23 more restrictions or activities regarding storm water
24 capture. Next slide, please.

25 The Sustainable Ground Water Management Act that

1 was passed in 2014 provides for management -- well
2 groundwater is managed at the local agency level. It has
3 requirements there for medium and high-priority basins as
4 defined by CASGEM to file a management plan. It requires
5 the formation of GSAs and the GSAs then are required to
6 submit a groundwater sustainability plan. Next slide,
7 please.

8 It is a new local management tool that empowers
9 the GSAs to register groundwater wells, measure
10 extractions, require reports and manage extractions and
11 assess fees. Next slide, please.

12 I'm going to move on here, real quickly here to
13 the Subsidence Report. Chronic groundwater over-draft has
14 some serious consequences. And according to the NASA
15 report recently released, vast areas of the Central Valley
16 are sinking faster than in the past, as huge amounts of
17 groundwater are pumped during the drought. In some places,
18 the ground is sinking nearly two inches each month, which
19 is unprecedented. Next slide, please.

20 This depletion, which leads to subsidence can
21 cause infrastructure damage including interference with
22 roadways, railways, bridges, pipelines and even groundwater
23 pumping wells. Next slide, please.

24 In the Sacramento Valley and north of Yolo --
25 these are actually snapshots from satellite imagery -- that

1 shows that about six inches had subsided between 2006 and
2 2010. And from May to November of 2014 another three
3 inches west of Yolo subsided. Next slide, please.

4 In the San Joaquin Valley the subsidence is even
5 more significant. For the period 2006 to 2010 a maximum
6 total subsidence was found to be 37 inches near Corcoran.
7 For the period May 2014 to January 2015 subsidence just
8 southeast of Corcoran was found to be 13 inches in that
9 short time period. Next slide, please.

10 These are two snapshots, aerial images, of the
11 aqueduct. And the greatest subsidence that's impacting the
12 aqueduct is observed between Huron and Kettleman City,
13 where a subsidence bowl has been noticed to be about 14
14 inches in depth. And it was centered less than a half a
15 mile from the aqueduct. The subsidence bowl extends beyond
16 the aqueduct and caused 8 inches of subsidence along the
17 1.3 mile stretch of the aqueduct with a maximum subsidence
18 of about 13 inches.

19 COMMISSIONER MCALLISTER: Just a quick question.
20 Is that a threat of the structural integrity of the
21 aqueduct itself?

22 MR. FRAME: Not being an engineer I couldn't say
23 absolutely, but I would speculate that it could be. Just
24 from a scientist's perspective if we have something that's
25 built to be at a certain level and on either side of it or

1 in the middle it begins to subside so the elevation changes
2 I would think that at some point and time it could become
3 impaired.

4 COMMISSIONER MCALLISTER: Probably a lot of
5 detail there, but it sounds like Fran has some insight as
6 well on this?

7 VICE CHAIR SPIVY-WEBER: Well, I know in some
8 smaller systems, not in the State Project but where there
9 has been movement of water through a canal-like situation,
10 that exact same thing happened and they had to start
11 pumping. So they were using a gravity feed and then they
12 had to start pumping, because you just changed the
13 elevation. So it's quite serious.

14 MR. FRAME: Yeah, we've seen that in some of the
15 smaller canals too down in that area. Next slide, please
16 and with that I'll say thank you and entertain questions.

17 VICE CHAIR SPIVY-WEBER: I do have one question.
18 Who is working on your rates investigation?

19 MR. FRAME: That would be Peter Brostrom in the
20 Water Use Efficiency.

21 VICE CHAIR SPIVY-WEBER: Oh, Peter is? Okay.

22 MR. FRAME: Yes.

23 VICE CHAIR SPIVY-WEBER: And I assume that
24 there's coordination with you and your proceeding?

25 MR. FRAME: Yes, we're working quite closely with

1 Commissioner Sandoval on the work that she's doing and with
2 the CEC where appropriate on standards in energy and
3 technology and appliances.

4 CHAIRMAN WEISENMILLER: Yeah, a couple of weeks
5 ago, Commissioner Randolph and I did an event, which was
6 looking at adaptation and in terms of PUC infrastructure,
7 particularly electric utilities and gas utilities.

8 But it seems like we really did not get into the
9 subsidence question, which certainly could have
10 implications for gas pipelines, for example, rail lines,
11 any number of infrastructures which the PUC is responsible
12 for in terms of safety. And so I was going to encourage my
13 staff and certainly welcome PUC staff here to help us make
14 sure this data gets integrated into that.

15 And certainly going forward I believe under the
16 Governor's Executive Order adaptation plans are due to NRA
17 in September. And so it's -- again I know obviously we're
18 in the situation where we have sea level rise and we have
19 subsidence both in different areas, but we need to be
20 thinking through that, particularly if we do have an El
21 Nino next year.

22 COMMISSIONER SANDOVAL: Yes, that's a great
23 point. I was thinking exactly the same thing.

24 And the CPUC is going to be having a Safety En
25 Banc on September, I believe, 23rd. So this is an issue we

1 can explore along with DWR and CEC. And I agree that it
2 provides concern for subsidence for a number of facilities,
3 including those common carrier gas pipelines that I
4 mentioned as well as natural gas pipelines, rail, electric
5 and a variety of other facilities. So it definitely is a
6 concern.

7 This, for example, is one reason why the Santa
8 Clara Water Valley Water District asked for a 30 percent
9 conservation target even though the area was only assigned
10 a 20 percent conservation target by the Governor's Office.
11 Because that area has a history of subsidence from when it
12 was the Valley of the Heart's Delight, the agricultural
13 area, and they're already starting to see signs of
14 subsidence. And so this is why actually the District
15 decided to buy some water and to put some more water into
16 the groundwater basin. And that they felt that they had to
17 ask for more conservation.

18 So one thing that I'm thinking of that we could
19 coordinate on is like to also to look at some of the DIS
20 mapping. It's an interesting area. It's on the
21 infrastructure side with some odd gaps in mapping. But to
22 be able to take a look at where you have information about
23 subsidence, that also creates a certain go-to area where we
24 could perhaps have increased inspections to make sure that
25 the infrastructure is not at risk. But we'll definitely

1 commit to brain storming with you and working with you and
2 your staffs on that.

3 CHAIRMAN WEISENMILLER: That'd be good. I think
4 Sylvia earlier showed us some science mapping we've been
5 doing of power plants. Our GIS systems have a lot of the
6 oil and gas pipeline information although I'm not sure we
7 ever got the PG&E GIS data transferred over. But any way
8 in terms of -- we could have our photography people get
9 into the overlays of energy infrastructure and subsidence
10 more generally from power plants.

11 MS. TEN HOPE: Chair, if I might? Part of our --
12 the Energy Commission's Supplemental Research Plan to the
13 CPUC that we're submitting in September will include
14 subsidence and the potential impact on natural gas
15 infrastructure. And we've been talking with CPUC staff
16 about that.

17 CHAIRMAN WEISENMILLER: That's good. But as you
18 know, one of our concerns is that in terms of oil
19 infrastructure we -- certainly our R&D money is very tied
20 to either electric or gas. And a lot of our oil
21 infrastructure along the coast is coastal and/or pipeline.
22 So in terms of -- it's not an industry that's giving much
23 thought to climate disruption or adaptation, so there's not
24 even been some of the basic research done there, at least
25 not that I'm aware of. Or if there is, it's not public by

1 any means.

2 COMMISSIONER MCALLISTER: Yeah, so that would be
3 -- I think we all agree that would be a priority that that
4 industry ought to kind of step up to help happen.

5 I have as -- well I want to say congratulations
6 on getting your program up and running. And I know that
7 our respective staffs have been working really closely on
8 that. And we're happy, happy to contribute to that effort.
9 And our resources hopefully get approved by the Legislature
10 then we'll be able to sort of get back of lock step in
11 terms of implementation. So congratulations on that. And
12 I'm really looking forward to working with you all going
13 forward.

14 I did have a question on gray water and sort of
15 how that fits into the Department strategy for near term
16 and long term.

17 MR. FRAME: Well, Gray water is something that we
18 advocate and it is legal to be incorporated into housing.
19 Not only new housing, but to install it in existing homes
20 also.

21 COMMISSIONER MCALLISTER: I just did a lot of the
22 landscape system and it's kind of a burgeoning little new
23 industry. It's pretty cool, yeah.

24 MR. FRAME: It is. There's a lot of really neat
25 technologies out there that for gray water systems, some

1 pretty advanced stuff that is interesting.

2 Again, it's something that we do promote whenever
3 that we can and work with the proper folks, the building
4 code folks and the drinking water and the Board and trying
5 to move that forward, so that it is a more acceptable
6 technology and conservation feature.

7 COMMISSIONER MCALLISTER: So and do you draw a
8 distinction or see differently the sort of direct re-use
9 gray water kind of applications versus say what they're
10 doing in Burbank and some other places where they're
11 actually doing purple pipe infrastructure for sort of
12 public and commercial landscaping -- that sort of thing?

13 MR. FRAME: I see them as two different things.
14 Recycled water, recycled municipal water, is regulated
15 differently. I think gray water has a big potential for
16 onsite use as opposed to recycled water, which is generally
17 transported offsite and then reapplied or indirectly re-
18 injected into the groundwater.

19 So I kind of look at, myself gray water similar
20 to stormwater capture, it's a water that you can re-use
21 onsite, whether it be a home or industry or a CII facility
22 where it doesn't necessary require treatment. But it could
23 be treated and therefore it's less energy intensive than
24 the recycled water. So I see the benefit of its use is
25 really onsite. Did that answer your question?

1 COMMISSIONER MCALLISTER: That was good. Yeah,
2 because I was kind of thinking maybe in terms of scale and
3 how much of the solution it could be, just sort of a ball
4 park.

5 MR. FRAME: I really haven't seen any
6 quantification of that.

7 COMMISSIONER MCALLISTER: Okay.

8 VICE CHAIR SPIVY-WEBER: Gray water's just taking
9 off as you have observed. It's been around forever. But
10 it's --

11 COMMISSIONER MCALLISTER: It's been legal for
12 what, ten years or something?

13 VICE CHAIR SPIVY-WEBER: Well, there were some
14 updates of the state regulations that came online about a
15 year and a half ago.

16 But I was just in Groveland and went out to the
17 Evergreen Lodge. And this is where the Rim Fire occurred
18 and they have equipped most of the Evergreen Lodge with
19 gray water. So showers go out and water the trees that are
20 around the various cabins.

21 They had to evacuate for three months. When they
22 came back the cabins and the trees around the cabins were
23 fine and everything else was just devastated. And so now,
24 the Evergreen Lodge is building a second hotel on 120 and
25 they're putting in 100 percent gray water and some other

1 things as well.

2 But it's an area that's really starting to take
3 off. But quantification, I don't think we're there yet.

4 MR. FRAME: It is and if I may? One of the
5 things that we would like to do is to develop targets not
6 only for stormwater capture, but also recycled water, gray
7 water, desal water, develop targets potentially a
8 methodology for quantifying that going forward. We think
9 that that would have a lot of benefit to the State, the
10 management of the water resources.

11 CHAIRMAN WEISENMILLER: Yeah, well one of the
12 things we had struggled with when we drafted the Executive
13 Order was whether it was possible to put something in on
14 gray water. And at that point, that weekend was long
15 enough as it was, and so we didn't get to that part. But
16 it's certainly one of the things would be good to think
17 about if there's way to build that into say our Building
18 Standards or Appliance Standards.

19 COMMISSIONER MCALLISTER: Yeah and I wanted to
20 just build on that.

21 So another related thing we were talking about
22 during the development of the Executive Order was actually
23 should the Governor ask us across agencies to work on the
24 Plumbing Code itself? Because while we do end use, but in
25 order to really save water say in new construction you

1 really do need to look at the design of the water
2 distribution system within the house itself. You've got
3 smaller pipes. You've got shorter runs, so the hot water
4 comes more quickly. And you need probably a different kind
5 of waste system as well so you can get all those solids
6 back into the waste system.

7 So there's a big important conversation that
8 needs to happen. It's not just about our jurisdiction, but
9 actually about several agencies' jurisdiction -- HCD and
10 others -- to try to get a handle around new construction
11 and the plumbing code with respect to new construction.

12 VICE CHAIR SPIVY-WEBER: But whatever you do with
13 gray water you should also be coupling it with what goes on
14 with stormwater as well. Very much along the lines that
15 Kent laid out, because we can't do these things in silence.
16 We've got to do them in an integrated way.

17 COMMISSIONER MCALLISTER: And the reason we
18 didn't do that is again, because it was a longer-term
19 conversation. And it didn't quite adapt to the emergency
20 situation in the same way as many of the other things did,
21 but it did make the flag go up, so we're going to actually
22 have that conversation.

23 COMMISSIONER SANDOVAL: So just real quick, a
24 follow on to that. So one of the earlier CEC presenters
25 mentioned that a number of power plants now are using

1 recycled water, I believe it was a little over about 50
2 percent. So one of the things that we're already starting
3 to see is increased competition for that recycled water and
4 while in some uses -- recycled water is not perfect for
5 some uses.

6 So, for example, we got a tour of Santa Clara
7 University and how they're responding to the drought. And
8 they said some of the recycled water they used might have
9 been associated with some trees dying. But now there's a
10 new way of treating the water and so they're hoping that'll
11 be better for the trees. But at any rate you're starting
12 to see farmers who are now interested in recycled water.

13 More industrial uses that are interested in
14 recycled water. Places like Orange County have long been
15 basically pumping their recycled water into their basin and
16 mixing it in with other water sources.

17 So I think we're going to see in the future
18 increased competition for recycled water, which is part of
19 why the Governor's Executive Order also does facilitate the
20 development of more recycled water facilities.

21 But I think we need to -- it just emphasizes the
22 need to look for a diversity of water sources, because
23 we're, I think, going to start seeing a lot of price
24 increases on recycled water. Indeed we've seen tremendous
25 price increases on large volumes of water generally. So

1 it's just something to look for as we see. And do you see
2 that already, increased competition for recycled water, Mr.
3 Frame?

4 MR. FRAME: I do not. I don't work personally
5 with recycled water very closely. I do know that there's a
6 lot of potential for expanding the use of recycled water.
7 But I'm not aware of the competitiveness of it at this
8 time.

9 VICE CHAIR SPIVY-WEBER: Right now there is a lot
10 of competition for recycled water. So that's true.

11 There is also a lot of slack in the system.
12 There are a lot waste water plants that are discharging to
13 the ocean or to the streams. And so there is more
14 capacity, but it is expensive. It's not cheap.

15 And the biggest change I think in the recycled
16 water world has been in the quality of the in-fluent coming
17 into the recycled water plant. It varies a lot, because
18 people are saving water. They're not using as much --
19 there's not as much water coming with the waste.

20 And so its creating lots of problems and its
21 moving many waste water agencies who do recycle water, to
22 put in nitrification, de-nitrification facilities, which is
23 again is an energy user. And but is a water quality and an
24 expense. So yes there's lots going on here that we need to
25 be thinking through.

1 MR. FRAME: And you mentioned competition. One
2 thing comes to mind, I wonder if a lot of the competition
3 is a response to the lack of infrastructure for recycled
4 water delivery?

5 VICE CHAIR SPIVY-WEBER: Probably.

6 MS. RAITT: All right, so we have some of our
7 speakers before lunch, so we should probably move on if
8 that's okay?

9 COMMISSIONER MCALLISTER: That's great. Thank
10 you.

11 MS. RAITT: Okay. So Cynthia Marvin from
12 California Air Resources Board is next. Thanks, Cynthia.

13 MS. MARVIN: Thank you and I appreciate the
14 invitation to join your discussion today.

15 Certainly, I think we're all well aware here, and
16 proud of the fact that California leads the way for state-
17 level action on climate change with ambitious GHG reduction
18 targets set by both the Legislature and the Governor and a
19 myriad of comprehensive plans for both for both climate
20 mitigation and adaptation.

21 What we're hearing today is about the activities
22 on both the regulatory side and an incentive side to save
23 water, reduce energy. And one of the key programs that the
24 Air Resources Board runs is the Cap and Trade Program,
25 which sets a declining greenhouse gas emission cap for the

1 sources that account for about 85 percent of the state's
2 greenhouse gas emissions. This is just a brief background.

3 Part of that program, the state auctions
4 allowances and the state proceeds from those allowances, go
5 into the Greenhouse Gas Reduction Fund. And that fund is
6 the source of some of the support for the programs we're
7 hearing about today. State law says that the dollars from
8 the Greenhouse Reduction Fund need to be invested in
9 projects that reduce greenhouse gases and further the
10 purposes of AB 32 including projects to benefit
11 disadvantaged communities and achieve other co-benefits.

12 So not for the folks on the dais who are well
13 aware of this, but for other folks, I always like to
14 emphasize that the Legislature and the Governor determine
15 which programs will receive funding and will be
16 administered by which agencies.

17 Right now, we've got about 15 state agencies
18 working on programs, over 40 programs, with more programs
19 proposed in the new budget. ARB's role in this is specific
20 and in response to state law, which directs us to provide
21 guidance to the agencies that are administrating these
22 programs to maximize the benefits to disadvantaged
23 communities, provide quantification methods for greenhouse
24 gas reductions and co-benefits, and also to make consistent
25 the tracking and reporting function.

1 So with that brief background, I'd like to talk
2 specifically about some of the drought reduction programs
3 that are funded by the Greenhouse Gas Reduction Fund. Not
4 the program elements that you're hearing about from the
5 administrators, but the prospective as the supportive
6 agency to make sure that these funds do get used for the
7 appropriate types of projects.

8 Because the dollars must be invested in projects
9 that achieve direct greenhouse gas emission reductions,
10 we're working with the agencies that have these funds and
11 ensuring that they are directed to projects that do three
12 things. They reduce energy use, they reduce water heater
13 heating or they reduce groundwater pumping. And right now
14 those are the three things that we are certain have a
15 greenhouse gas reduction benefit. There are other programs
16 that deal with cold water, that deal with some of the water
17 conservation programs that may have a greenhouse gas
18 benefit, but it's very project specific.

19 So initially in the first year or so, perhaps in
20 the second year, we thought it best to make sure the
21 agencies were focusing this part of funding on the projects
22 that were kind of a slam dunk from a greenhouse gas
23 reduction perspective.

24 I think it's really positive that the work that
25 the Energy Commission and others are doing on some of these

1 new programs are seeking to provide a single interface with
2 the public, so the public can come in, look at rebates,
3 look at support for different programs. And it's really a
4 behind-the-scenes administrative effort to determine, which
5 is the appropriate pot of funds to be supporting that and
6 so we're really happy to be part of that effort and
7 appreciate your work to make that happen.

8 In terms of going forward we have been relying on
9 the studies that have been funded and lead by CEC, CPUC in
10 terms of quantifying the greenhouse impacts of these
11 different projects. We are looking at the CPUC Calculator
12 right now and using that as the basis for the work on the
13 quantification methods. Because of the opportunity to fund
14 additional projects, if the project specific data shows GHG
15 benefits, we expect to be building on those models in
16 concert with the agencies as we move forward so that the
17 types of projects that can be funded using the Greenhouse
18 Gas Reduction Fund can expand as we move forward.

19 I just wanted to note very briefly that there's a
20 couple of other project types that are either in response
21 to the drought or responding to the impacts of the drought,
22 that are funded by GGRF. Those are programs through
23 CalRecycle to support composting facilities. Of course,
24 compost could be applied and reduce the water needs.

25 We also have a number of funds that are spent by

1 CAL FIRE on forestry health projects responding to the
2 beetle infestations and other things that are reducing the
3 risk of catastrophic wild fires.

4 And then we're all hoping with the new budget to
5 be determined, hopefully in the next month, that there will
6 be funding for the Healthy Soils Program spread and
7 performed by many of the agencies in this room that also
8 have both climate and water savings benefits. So that's
9 the summary of the greenhouse gas reduction contribution
10 towards the drought response.

11 CHAIRMAN WEISENMILLER: Yeah. Cynthia, could you
12 either now or later submit in the record two things? I
13 think it might be useful to get on the record the workshops
14 you're having, going forward on scope for the next
15 Investment Plan. And also to point people to the link
16 where we're tracking the Administration's investments in
17 climate including the GGFR funds?

18 MS. MARVIN: Okay. Chair Weisenmiller refers to
19 a couple of efforts. And a number of the folks in the room
20 have been traveling the state with us in the last month or
21 so to do workshops on two different documents that are out
22 there.

23 There's a concept paper on the Administration's
24 Investment Plan for the Cap and Trade Auction Proceeds that
25 would start with the next fiscal year, so that's 2016-2017

1 and the subsequent years.

2 The Investment Plan is really a qualitative look
3 at where do we think the needs and opportunities are to use
4 these funds wisely for greenhouse gas reductions. And what
5 is the general nature of the recommendations from the
6 administration about how those funds are used in the budget
7 process?

8 So that concept paper is out there for public
9 comment. We will be putting out a full draft of the
10 Investment Plan in the next month and a half of so. That
11 will go through an additional series of public workshops
12 with all the agencies that administer the program,
13 participating again. There'll be a public hearing before
14 the Air Resources Board roughly in November of this year.

15 And all of the activities that are done by both
16 ARB as well as the other agencies that are administering
17 programs, the highlights of those activities and links to
18 them can be found on ARBs Cap and Trade Auction Proceeds
19 web site. I actually don't remember the web address, but
20 we can certainly supply that for your records.

21 CHAIRMAN WEISENMILLER: If you do later, that
22 would be fine. I just thought given we have a lot of
23 people interested in this area; it would be good to at
24 least provide that context for them. Thanks.

25 VICE CHAIR SPIVY-WEBER: And one thing I would

1 like to make a request with the CEC here and CPUC as well
2 as the Air Board, every year the Air Board uses a number of
3 different approaches to asses where we are in meeting our
4 greenhouse gas reduction goal. After 2015, in 2016 when
5 you collect that information, one of the big differences
6 between this year and past years will be the tremendous
7 amount of cold water savings that have occurred in the
8 state because of conservation.

9 And while it won't be enough to confirm that cold
10 water -- assuming that it moves the needle -- we'll see.
11 But if it does move the needle it would be good to try to
12 tease out where the water conservation savings -- how the
13 water conservation savings influenced that number. And
14 that will be a data point that will help, I think, whether
15 or not cold water savings should be more prominent in the
16 program.

17 MS. RAITT: I'd like to invite Matthew St. Claire
18 and Dan Burgoyne to join the speakers at the table, please.

19 And if we're ready we'll move on to our next
20 speaker who is Jessica Bean of the State Water Resources
21 Control Board.

22 MS. BEAN: Good afternoon. I'm with the Office
23 of Research Planning and Performance at the State Water
24 Board, so I'm going to give you -- I'll try to keep it
25 brief. I'm sure everyone's getting a little hungry. I

1 know I am. Next slide, please.

2 I'm going to do the majority of -- I'll spend the
3 majority of my time talking about our Emergency
4 Conservation Regulations. Those are the most prominent
5 lately. I'm also going to touch on a few other items near
6 the end of my presentation: water conservation pricing, our
7 curtailments, our Emergency Drinking Water Program and
8 recycled water. Next slide.

9 I just wanted to take a step back and look at
10 water conservation for last year and the beginning of this
11 year. So there was a voluntary 20 percent conservation
12 that was requested by the Governor last year. And if you
13 take a look at this graph the blue bars are showing you the
14 month-over-month percent reduction we had state-wide as
15 compared to 2013.

16 But what I would like you to pay attention to is
17 the red line. And that's basically showing the cumulative
18 percents. So when we got to March of 2015, we'd only
19 achieved 8.6 percent, which is pretty far below the 20
20 percent standard we were looking for. Next slide.

21 So on April 1st we had the Executive Order, which
22 mandated the 25 percent statewide conservation for urban
23 water. On May 18th the Water Board had adopted an
24 Emergency Conservation Regulation and then on June 1st, the
25 Conservation Standards, the percent reductions that we've

1 been hearing so much about went into effect. Next slide.

2 The Emergency Regulation can really be broken
3 down into three different areas. The first one would be
4 some prohibitions for all Californians. Some of these were
5 already existing in past regulations, some of them were
6 specified in the Executive Order, things like not allowing
7 runoff from your irrigation, not watering 48 hours after a
8 rain event. And some of the newer ones was the prohibition
9 against irrigating turf on street medians. Next slide.

10 Another sector were the requirements for
11 business, so hotels have to offer the option to their
12 customers to launder linens daily. Water now is only
13 available upon request in restaurants.

14 Some new things were for self-supplied
15 businesses. So businesses that don't receive their water
16 from a supplier, maybe they get it from a well, they now
17 have some specific conservation actions as well as for
18 small water suppliers.

19 Now we consider small water suppliers, in this
20 case, less than 3,000 service connections. And there's
21 thousands of those statewide. And for the first time those
22 water suppliers now have conservation actions and some
23 reporting requirements, which we'll have more information
24 on in December when they do start reporting to us. Next
25 slide.

1 But the meat of the regulation was revolving
2 around the urban water suppliers and that 25 percent
3 reduction. And that equates to about 1.2 million acre feet
4 and basically suppliers have different standards that range
5 from 4 percent to 36 percent savings that they're required
6 to achieve beginning in June of this year and going through
7 February of next year. And that's always based on a 2013
8 compliance month.

9 The urban suppliers are reporting to the Water
10 Board monthly. We receive information on potable water
11 production, residential use, commercial, industrial,
12 institutional use and then enforcement actions. So we're
13 able to take a look at how the suppliers have been
14 enforcing the different prohibitions from the state, but
15 then also their local ordinances in terms of fines.

16 The thing that I really want to point out here,
17 in terms of meeting the Standard is while the regulation
18 required a certain percent reduction for the suppliers, it
19 did not prescribe how the suppliers were going to do that.
20 And that's allowed for flexibility and how the suppliers
21 can achieve the savings in their areas. Next slide.

22 So we just released the information for June and
23 July. We have two months now in the compliance period.
24 And we have saved 135 billion gallons of water as compared
25 to 2013. That's 35 percent towards our goal of 1.2 million

1 acre feet, so we're doing very well. Next slide.

2 If we take a look at the compliance period -- so
3 we have these past two months -- the purple bars are
4 showing the statewide percent reduction for each month.
5 The red line is that 25 percent target that we have. And
6 the orange is the cumulative percent. So you can see that
7 in July we did have a savings of 31 percent, which is well
8 above our target. And cumulatively, that was 29 percent,
9 so we are doing very well. Next slide.

10 In terms of compliance by the suppliers there are
11 412 urban water suppliers reporting to us. And 73 percent
12 of them met or exceeded their Standard. Another 14 percent
13 were very close. They were within 5 percent of meeting
14 their standards. And only 12 percent were further than 5
15 percent of meeting their standard. And the Water Board is
16 working with each of the suppliers that didn't meet their
17 standard individually to help get them on track in the next
18 months. Next slide.

19 So Directive Eight of the Executive Order asked
20 the State Water Board to direct urban water suppliers to
21 develop rate structures and other pricing mechanisms. And
22 that's typically referred to as tiered rates water
23 conservation pricing. And that's something that can be
24 very challenging.

25 The rate setting is very complex. It's certainly

1 not a one size fits all approach. It has to be tailored to
2 the locals. And there's a lot of limitations with the Prop
3 218 process. But the State Water Board is working with
4 other agencies as well as water suppliers and stakeholders
5 to determine how we can best implement this directive.

6 Right now we have an information page up on our
7 website. And in July we held a public workshop to receive
8 more stake holder input. And we're going to be working on
9 that pretty diligently as we go forward. So there's going
10 to be more to come. Next slide.

11 A quick comment on water shortage diminishes or
12 curtailments. Some of you may be familiar with water
13 rates, but basically they specify the season of use,
14 purpose of use, place of use, and a quantity of water. And
15 basically those are given a priority date. And that's
16 really important, because when we have a drought or a
17 limited supply the most junior water rates holders are
18 going to be the first that have to discontinue their use.
19 Next slide.

20 So since March 2015, we've had over 9,000 water
21 rates effected due to the lack of supply. Many of those
22 rates are starting date back to the pre-1914, the senior
23 water rates holders, which is a first in many cases. And
24 it's affecting several watersheds -- the Sacramento River
25 and San Joaquin River particularly -- and all of their

1 tributaries. Next slide.

2 This is mentioned earlier, but we do have the
3 Emergency Drinking Water Program. These images are of East
4 Porterville from the Los Angeles Times. And they have very
5 little water there and we are, as a state, supplying to
6 them in the emergency drinking water needs. Fortunately,
7 the governor approved the \$1 billion Drought Relief Package
8 and then the State Water Board was able to allocate \$19
9 million in funding for other projects. And they're really
10 focused toward disadvantaged communities to deal with
11 projects like supplying bottled water, well repair, things
12 of that nature. Next slide.

13 So this worked in really nicely to our earlier
14 discussion. But there were some questions on recycled
15 water and, of course, with drought it tends to be a quick
16 emergency. We're trying to come up with things as quickly
17 as possible, but we do need to think about augmenting the
18 supply. And just some basic information from the water
19 plan, we use about 600,000 to 700,000 acre feet of recycled
20 water statewide for things like agriculture and landscape
21 irrigation and groundwater recharge.

22 And the State Water Board strongly supports the
23 use of recycled water. We have a recycled water policy
24 that aims at increasing that use. And just some milestones
25 here before I finish up is that last year in March we had

1 \$800 million of funding for recycled water projects coming
2 up. That's ongoing. In June the Board approved
3 regulations for ground water replenishment using recycled
4 water.

5 In December of next year the Board's going to
6 consider adopting regulations to augment surface water with
7 recycled water. And then some going forward, there is a
8 goal to increase recycled water state-wide by 200,000 acre
9 feet by 2020 and then another 300,000 acre feet by 2030.

10 MS. RAITT: Okay. Thank you very much.

11 The next speaker is Jenny Lester Moffitt from the
12 California Department of Food and Ag.

13 MS. LESTER MOFFITT: Hi, thanks for having me
14 here today. I'm going to speak briefly on our State Water
15 Efficiency and Enhancement Program. This is the program
16 that Secretary Ross had mentioned earlier in her opening
17 comments. It's a program that we started just last year,
18 we can move to the next slide.

19 It was, through emergency drought legislation
20 signed last year by the Governor, we were allocated \$10
21 million to establish this program. And in 2014 through
22 2015 we not only set up this program, but also distributed
23 this money. In March of this year we received another \$10
24 million through emergency drought legislation as well.

25 Both monies are from the Greenhouse Gas Reduction

1 Funds and so not only is the goal of the program to reduce
2 water use, but also energy use and greenhouse gas
3 emissions. Next slide.

4 I'm going to talk a little bit about the program
5 development. This is something that we are very proud of,
6 this is a new program for us. And so not only did we have
7 to set up the program pretty quickly, but we also wanted to
8 make sure that the program was very effective and is a
9 program that we can continue through the drought and
10 beyond.

11 So these are just some of the phases --
12 developing the framework. We have an Environmental Farming
13 Act Science Advisory Panel that has been active in public
14 stakeholder meetings, really developing and listening to
15 stakeholders on what is needed in such a program.

16 You can go to the next slide. And then this just
17 is I'm not going to let you look at this too long, because
18 it will tire your eyes. But it just talks about the
19 process that we went through and basically just iterates
20 how iterative of a process it is. We can go to the next
21 slide.

22 The big thing is the evaluation criteria for us.
23 The top two, of course, are largest water savings -- and
24 one thing I want to just stress from the beginning is that
25 this program is an On Farm Water Efficiency Program. So

1 when we're talking about the SWEEP Program we're talking
2 about resources that growers can tap into should they want
3 to implement a water efficiency savings programs. So those
4 are things like drip or soil moisture meters or micro-
5 efficiency irrigation and so forth. There's a whole gamut
6 of them. And so the water savings was a really important
7 of that, looking at acreage or acre feet per year.

8 But of course greenhouse gas savings were also
9 very important and so the metric tons of CO2 equivalent per
10 year, per acre was also a huge evaluation criteria. Also
11 along with that was what are the different types of
12 efficient irrigation systems we're going to employ. And
13 then use of -- so some of those could be the soil moisture
14 meters as I mentioned. Also electronic weather station
15 linked to irrigation controllers and use of ET based
16 irrigation scheduling such as the California Irrigation
17 Management Information Systems, flow meters, and also just
18 pump improvements. You can move to the next slide.

19 As we looked through the evaluation criteria --
20 we can move to the next slide actually -- we also looked at
21 a lot of the co-benefits. And I think was a really
22 important aspect of it, is looking at the environmental and
23 social co-benefits of these projects. So where is -- you
24 know, what are some things is we look at nutrient
25 management that growers are starting to implement or

1 improve air quality or improve quality, and what are those
2 co-benefits?

3 Benefits to disadvantaged community as Cynthia
4 had mentioned, that was a huge factor for us. And so that
5 was part of the scoring criteria, is disadvantaged
6 communities. And then matching funds certainly was not
7 required, but encouraged and it allowed us to really
8 leverage the funding that we did have. You can move to the
9 next slide.

10 I think the biggest thing that we worked on in
11 deploying this was the tools and the resources for not only
12 growers, but for us in our reporting to the Air Resources
13 Board on using Greenhouse Gas Reduction Fund money, is how
14 are we going to quantify those greenhouse gas benefits?
15 And how are growers in their application going to be
16 quantifying this? This is something that growers are not
17 used to doing.

18 There are resources through USDA for growers to
19 employ more efficient irrigation systems, but none of them
20 are specifically tied to greenhouse benefits. So as a
21 grower is looking to apply for this money how can they do
22 this? And so we work closely with USDA and the EPA on
23 developing a tool that we believe is a very good tool for
24 growers to use as a calculator and adapted the fuel savings
25 tools for SWEEP growers to utilize the Greenhouse Gas

1 Reduction savings. So this was probably one of the biggest
2 things that we really worked on as we were deploying this
3 program. We can move to the next slide.

4 The first round of funding was very successful.
5 We issued \$8.4 million on 133 different projects. And I
6 think the most important thing we talk about is soil
7 moisture, 60 percent of them had some sort of soil moisture
8 monitoring systems, 32 percent had micro-irrigation. As
9 you can see, all of these numbers do not add up to 100, so
10 I think the bottom number is the most important, which 43
11 percent -- almost half -- issued some sort of multiple
12 technique. So maybe they're doing soil moisture metering
13 along with micro or drip or they're using ET data
14 scheduling for their pumps and their variable frequency
15 drive pumps.

16 So I think that was a really important thing is
17 that growers really got creative when they put together
18 these efficiency irrigation systems and really looked at
19 multiple techniques. Next slide.

20 Also by the numbers -- so of those 133 projects
21 that we funded in the first round that contributed to
22 24,000 acres converting to efficient irrigation systems.
23 And the water savings was 24,707 acre feet per year, which
24 is enough to fill over a half a million swimming pools.
25 And over the ten-year life of the projects we're looking

1 almost a quarter of a million acre feet of water per year
2 that is saved. Next slide.

3 And then as we go into greenhouse savings we
4 estimate that about 210,000 ton of CO2 equivalent per year
5 is saved. And over the life of the project that's over 2
6 million tons of CO2 equivalent. Next slide.

7 I just want to talk a little bit about this year.
8 As I mentioned that we also received another \$10 million
9 for this year. The application period we received that
10 money or the money was signed into legislation late March,
11 the application period was from May until end of June. We
12 received 345 applications totaling \$30 million in requests.
13 That's for \$10 million, so it's a very popular, very
14 oversubscribed project.

15 And we expect to announce awards in September
16 2015. And I think as we look into the future, into next
17 iterations, we're hoping that we'll continue to receive
18 funding for this program. And we really started to talk
19 with stakeholders about how we can be even more creative
20 with the money. How we can work with our sister agencies
21 in deploying that money and leveraging that money with
22 other programs as well.

23 So the last slide is just a question slide, so I
24 want to thank you for your time and look forward to
25 questions.

1 COMMISSIONER MCALLISTER: For now we're going to
2 keep it rolling. We have a couple more presentations here,
3 we don't want to keep people too far behind schedule. So
4 thanks very much for being here.

5 MS. RAITT: Great. Thank you.

6 Our next speaker is Matthew St. Clair from the
7 Office of the President of the University of California.

8 MR. ST. CLAIR: Thank you. So I wanted to,
9 before I start talking about University of California's
10 water use and water use reduction strategies and
11 achievements I want to put that into context if you'll go
12 to the next slide, please?

13 Sustainable Water Systems is part of a broader
14 sustainability program for the University and we are pretty
15 excited that Sierra Club Magazine ranked four UC campuses
16 in the top ten of their cool schools ranking on campus
17 sustainability including UC Irvine at number one and UC
18 Davis at number two.

19 And, of course, the biggest impact that the
20 University of California is having in contributing to the
21 drought response is through our research, education and
22 training for the state. So I wanted to at least briefly
23 mention that we have a California Institute for Water
24 Resources, which is teamed up with our extension services
25 to offer over 200 trainings since the drought emergency was

1 declared, in every county of the state. Training local
2 folks in ag sector and beyond on water efficiency.

3 We have a website set up that allows the public
4 and the media to tap into UC's expertise on the drought.
5 And we, of course, have three UC experts on the agenda
6 today speaking as part of this workshop. And we've
7 organized a couple gatherings of UC experts, a drought
8 summit at the State Capital last year, and more recently a
9 Water-Energy Nexus Workshop that we co-organized with the
10 U.S. Department of Energy where Vice Chair Spivy-Weber and
11 Commissioner Sandoval and Laurie ten Hope were all present
12 and speaking as part of that gathering.

13 So moving on to UC's water use, we as a
14 university system use about 4.6 billion gallons of water
15 per year. That's after reducing water use over the last 15
16 years in an amount that would provide an annual water use
17 for an average UC campus. And that's while bringing a new
18 UC campus online at UC Merced.

19 Our water use is slightly different than what
20 you'd see for urban water use throughout the state.
21 Irrigation is a very small amount of our total water use,
22 only 14 percent of our total water consumption goes to
23 potable irrigation. We have large infrastructure, that's
24 essentially campus power plants. And then lab buildings
25 are very water intensive and our hospital buildings, of

1 course, as well. Go to the next slide, please?

2 This shows campus by campus, a big take-away from
3 this is really that hospitals and lab buildings are driving
4 our water use. So the campuses with the highest water use
5 are the ones with medical centers, with multiple hospitals.
6 And the campuses that are the most laboratory research
7 intensive. Next slide, please.

8 We also have a very large range of local water
9 supply conditions for our different campuses at range. And
10 thus the current water reduction targets cover almost the
11 entire spectrum from a low of 8 percent for UC Santa Cruz
12 and UC San Francisco to a high of 36 percent required
13 reduction for UC Merced. Next slide, please.

14 We immediately -- well, actually even before the
15 drought emergency we had publicly announced a water
16 reduction goal as part of our ongoing sustainability
17 program and immediately gathered together all of the
18 campuses to get a commitment to immediate drought response
19 measures. We put together -- we collected all of those,
20 about 160 total. And then recently, just a few months ago,
21 did a survey of the campuses to see how many of those
22 drought response measures they'd committed to one year
23 previous they had actually been able to implement. It was
24 more than we'd expected given the lack of any centralized
25 funding resource for them to take these measures. So at

1 least half, and in some cases all of the drought response
2 measures, had been taken by the campuses.

3 And as part of the survey we checked on the
4 status of taking all of the actions called for in the
5 recent Executive Order. And most, if not all campuses,
6 have taken all of those measures. If you go to the next
7 slide -- and access to recycled water is a big limiting
8 factor. Only four of our campuses have that and they're
9 able to do much more than the other six. Next slide,
10 please.

11 Going forward we have really great best practices
12 on one or more of our campuses that we're spreading like
13 advanced metering systems at UC Santa Cruz, an amazing
14 water filtration system at UCLA in their power plant that
15 reduces water and energy.

16 So we're trying to spread those, but what we
17 really need to work on is providing the financing and
18 funding resources for our campuses to take those water use
19 efficiency levels to the next level. So we're working to
20 provide a type of financing program that we've been able to
21 provide on energy efficiency for over a decade, which has
22 resulted in a huge award-winning energy efficiency program.
23 We want to extend that to water now. Next slide.

24 That's all I have. Thank you.

25 COMMISSIONER MCALLISTER: Good. Thanks, Matthew.

1 MS. RAITT: Thank you.

2 Next is Dan Burgoyne from the California
3 Department General Services.

4 MR. BURGOYNE: I drew the short stick and I'm the
5 last person before your lunch, so I'll be brief, go on to
6 the next slide.

7 So the State of California, we have approximately
8 120 million square feet is Executive Branch facilities. We
9 use a lot of water, but we're still relatively small in the
10 entire California building market. So the water that we
11 use equates to about 15 billion gallons of water of a year.

12 And you can see the breakdown on the pie chart,
13 on the chart here. About half of that is used by the
14 Department of Corrections and Rehabilitation. About a
15 third of that, and we're including this as well, is the
16 highway irrigation on Caltrans along the many miles of
17 highways in California. And all the other state agencies,
18 the remaining 33 agencies' facilities, equate to about 18
19 percent of what's left. So a lot of agencies are involved
20 in this.

21 Recently, and by the way that water use is
22 equivalent to about five percent of Folsom Lake's capacity,
23 which is about a quarter of what's left in Folsom Lake for
24 those who've seen it recently. We had an Executive Order
25 in 2012 that required water use reduction and state

1 agencies have been working since that time to reduce water
2 use in their building and facility use. To date, at least
3 through 2014 state agencies had realized about 22 percent
4 reduction mainly in the 2013 to 2014 timeframe where most
5 of those savings were realized. Next slide, please.

6 So we were put in the seems like once in a
7 lifetime scenarios where we actually had funding to give
8 state agencies for sustainability initiatives. And in this
9 last budget cycle we received \$10 million to give out to
10 state agencies. So we put a program together quickly,
11 received applications from about 20,21 or so agencies and
12 departments. And we were able to award grants to the
13 departments that you can see up here, which include 19 of
14 those, about 75 percent of the applications we were able to
15 award so very excited about that.

16 These projects are to be completed by spring of
17 next year, so they're a very short timeframe. And in
18 addition to those 19 departments there were 10 district ag
19 associations or county and state fairs that also received
20 the funding. So they were very excited, because they're so
21 short funded, to get water savings on their programs. Next
22 slide, please.

23 So 153 projects were approved, you can see here
24 just kind of the list of many, many fixtures. A lot of the
25 focus was on indoor fixtures, some on irrigation upgrades.

1 you can see 7, almost 8,000 toilets being replaced --
2 that's a lot of porcelain -- faucet aerators, showerheads,
3 lots of items, a lot of irrigation shifting over to drip
4 irrigation. Because of the moratorium on new landscaping
5 that's in place we did not fund any projects that were
6 submitted that included new planting of landscape. Some
7 projects were infrastructure projects, a lot of leaky pipes
8 as you can imagine at state facilities, especially in state
9 parks and other areas.

10 And then we also saw some pretty innovative ideas
11 come out, some maybe a little too innovative to fund at
12 this point. But others, you know, just a couple of
13 examples -- a laundry facility at Corrections as they have
14 a pretty high volume that would recycle and reuse the water
15 from the laundry, which will save many, many -- lots of
16 water. Next slide, please.

17 So in addition, we asked departments to -- we
18 gave them resources to identify rebates that might be
19 available. They were able to identify a quarter of a
20 million dollars worth of rebates. Many of the departments
21 pitched in to help make it more -- help them earn these
22 grants. And the net result is that there were about an
23 estimated savings of 278 million gallons of water a year,
24 equivalent to about 2,100 homes. This equates to 2 percent
25 of the state's total use that I referred to earlier.

1 And, you know, the term that we kind of used in
2 determining this, the criteria was a gallon say per dollar
3 or GPD, I'm not sure if that's a real acronym, but that's
4 what we used. And on average we saw maybe 47 gallons per
5 dollar funded, which we thought was pretty good. A lot of
6 departments are pitching in to bring the cost down. Next
7 slide.

8 So in addition, DGS initiated a project a year or
9 so ago to retrofit energy, you know, water using systems at
10 DGS facilities, many fixture, several thousand fixtures.
11 This is currently underway, has been underway over this
12 past year, is nearing completion, almost \$5 million of
13 investment. And there are some fixtures, historic, that
14 require more retrofits to the infrastructure that are going
15 to require more work. Next slide.

16 And then in addition, about a half a million on
17 irrigation and landscape, irrigation controllers, meters,
18 flow sensors to help cut water use in that sector. And
19 we're looking at other options as well.

20 Last, that's all I had.

21 COMMISSIONER MCALLISTER: Thank you, very much.

22 I have one question actually for both Dan and
23 Matthew, I guess. So in the situation where you've got
24 just a massive portfolio of buildings and lots of different
25 situations, building types etcetera, which both of you have

1 -- and also just acknowledging that I'm thinking more of
2 the energy side, but I'm wondering whether there are
3 analogs here with the water side. You know, the analytics
4 and the sort of real-time information ecosystems are really
5 springing. There's a lot of innovation there, I mean on
6 the energy side and the water side UC Irvine is really
7 kicking it. And I appreciate that.

8 And I guess some of these dashboard base, you
9 know, metrics based systems to be able to manage in real
10 time, I'm wondering -- obviously it requires a lot of
11 metering and investment in different systems, but I'm
12 wondering how much you use that and/or can use it going
13 forward to really manage and identify those opportunities
14 that won't be obvious unless you have that insight at a
15 detailed level to manage water in the same way that energy
16 is increasingly being managed.

17 MR. BURGOYNE: So I'll go first and then I'll let
18 Matt add in. You know, we are -- our DGS facility is in
19 the process of instituting a monitoring-based commissioning
20 and we follow a lot of that after UC and CSU's lead, they
21 had that program for years, that would include energy and
22 water information. And we also have an online -- actually
23 all state facilities have their water uses as added to the
24 ENERGY STAR Portfolio Manager, which we're tracking energy
25 and water. And that's added every month.

1 MR. ST. CLAIR: Yeah, and we are also applying
2 the lessons that we've learned through a dozen years of
3 doing the monitoring-based commissioning program. And UC
4 Santa Cruz recently presented to our water working group on
5 their advanced water metering system and gave a couple of
6 how it gave them alerts when there was a leak that would
7 have taken them months, if ever, to find it previously.
8 But now it's instant, because they're constantly tracking
9 that through this monitoring system.

10 COMMISSIONER MCALLISTER: So and how prevalent do
11 you think -- I mean, I imagine all the UCs are looking at
12 doing it. I guess, how -- sort of what's the plan in terms
13 of really getting those systems implemented and up and
14 running?

15 MR. ST. CLAIR: Finding funding for metering as
16 you know, for energy historically has been challenging, for
17 water even more challenging. So we're trying to identify
18 ways to get the metering in place on all of our campuses,
19 because at the other end of the extreme we have one or two
20 campuses that have one or two meters for the entire campus.
21 They can't even break out how much they use for landscaping
22 versus building use. And Santa Cruz has, for a small
23 campus, 450 meters -- the other end of the extreme.

24 VICE CHAIR SPIVY-WEBER: There's a lot of
25 interest in the Legislature on leak detection. And the

1 CPUC, a number of years ago, conducted a GHG reduction
2 evaluation of a number of different things, but leak
3 detection came out on top as a GHG reducer. And so as we
4 consider the use of Cap and Trade funds that's a coldwater
5 source that is already proven through studies.

6 CHAIRMAN WEISENMILLER: Great. I was just going
7 to ask Matt in terms of follow-up, you had mentioned you
8 were trying to finance the waters by looking at tools
9 you've used on the energy efficiency side. And I just
10 thought I'd just follow up and get on the record what
11 specific energy efficiency financing tools were you
12 thinking of?

13 MR. ST. CLAIR: We have an internal financing
14 program that we've used as part of our statewide energy
15 efficiency partnership where we issue our own debt to
16 leverage the utilities in energy efficiency incentives. So
17 we're hoping to do something similar for water and we
18 already have the whole tracking and evaluation system set
19 up for energy efficiency, so we can utilize that whole
20 infrastructure for water efficiency financing as well.

21 COMMISSIONER SANDOVAL: Thank you for all of your
22 work on this and on leak detection, metering can also be
23 very helpful in determining leak detection. So could you
24 say a little bit about what you're doing at the UCs in
25 terms of metering, analog meters, digital meters, what is

1 their role in helping you to help identify leaks as well as
2 identify trends and patterns?

3 MR. ST. CLAIR: The Santa Cruz example is the
4 prime example of that, but we have a couple of other
5 campuses like Irvine and Davis that have great metering
6 systems in place and some dashboards. But we are looking
7 very closely at how to expand that type of metering
8 infrastructure for leak detection primarily, but also for
9 all the other benefits, because you can't manage what you
10 don't measure. And in some cases we don't have the data to
11 manage the water.

12 COMMISSIONER SANDOVAL: So I would also welcome
13 your participation in both this proceeding, the IEPR, but
14 also the Water-Energy Nexus proceeding. And encourage you
15 to also take a look at the pilot that we have proposed for
16 the water utilities and the energy utilities to work
17 together to create access to the backbone network to
18 facilitate that metered reading. So they may be interested
19 in also pairing up with a customer who'd be interested.

20 So it's something that it would be helpful to
21 have your comments on how that has worked in Santa Cruz and
22 your interest in expanding to other campuses.

23 MR. ST. CLAIR: We'd be happy to participate.
24 Thank you.

25 COMMISSIONER MCALLISTER: Yeah, also I guess I

1 would just comment, having some experience with the
2 diversity of water districts and how different each context
3 is. And there are many, many of them across the state --
4 you know, more so than the largest investor utilities --
5 more analogous to the small POU's versus the big IOUs.

6 And so I'd just encourage us to think about what
7 are the conditions that we really need to pay attention to
8 in terms of cost of water, and that type of structure with
9 the varying abilities of our different providers. And to
10 find solutions that are really going to work for all the
11 campuses and all the buildings no matter where they are, so
12 I think that's a big challenge. There's a lot of
13 discontinuity right across the state, so that's a challenge
14 in and of itself.

15 MR. ST. CLAIR: We're certainly wrestling with
16 that and creating a system-wide financing program for water
17 use efficiency when one of our campuses pays 65 cents per
18 1,000 gallons and another one pays 19 cents for 1,000
19 gallons. It's very challenging.

20 COMMISSIONER MCALLISTER: Yeah. Yeah, so
21 interesting, so I guess if nobody else has some comments or
22 questions I want to thank everybody for this morning's
23 presentations. It's been really fabulous. Very much you
24 should all pat yourself on the back and I'm looking forward
25 to this afternoon.

1 And we are going to take 45 minutes for lunch, so
2 that would put us back at 1:35. So hopefully we can all
3 get to a place to eat and come back at that timeframe.

4 CHAIRMAN WEISENMILLER: Be sure to mention --

5 COMMISSIONER MCALLISTER: Oh yeah, we do have a
6 cafeteria up on the mezzanine up there. So you can at
7 least check out the offerings and hopefully they meet your
8 standards. And I will see you back here at 1:35.

9 MS. RAITT: Yes.

10 (Off the record at 12:50 p.m.)

11 (On the record at 1:40 p.m.)

12 MS. RAITT: So we'll be starting in just a minute
13 or two.

14 COMMISSIONER MCALLISTER: Okay. Let's get
15 started.

16 MS. RAITT: Okay, great.

17 So starting again on the IEPR Workshop on
18 California's Response to Drought and we're going to have
19 the Panel after lunch is Case Studies on Water Use.

20 And we have Peter Gleick from the Pacific
21 Institute on WebEx to present for us.

22 COMMISSIONER MCALLISTER: Welcome, Peter.

23 MR. GLEICK: Well, thank you. Good afternoon
24 everybody, I'm sorry I couldn't be there. I'm at the One
25 Water management conference in San Francisco. And maybe

1 the small consolation is I get to save a few of my
2 greenhouse gases this week.

3 I just want to make a few quick points since I
4 know we don't have much time. Next slide.

5 First, of course, as we all know the severe
6 drought in California is having a whole range of widespread
7 impacts on agriculture ecosystems, our energy systems, our
8 urban systems as well. And I think we're just beginning to
9 get the data to understand the full nature of some of these
10 impacts. As I'll mention, we at the Pacific Institute just
11 released a report yesterday, or the day before, on actual
12 agricultural data and how the agricultural sector has been
13 affected by the drought. And I know Heather Cooley has
14 talked a little bit about that.

15 And, of course, California's water system is
16 extremely vulnerable to shortages, but also the long-term
17 influence of climate change independent of the drought.
18 And there is some research that's now available for some of
19 these effects, as I'll touch on. Next slide.

20 As we know, I think the California hydrologic
21 cycle's been disrupted over the last four years. It's been
22 remarkably dry, but it's also been remarkably hot. It's
23 not just been a short fall in precipitation, but a
24 remarkable increase in temperature as well.

25 This is a graph. I won't go into it in detail,

1 but as you see in the upper left corner 2014 was not only a
2 dry year -- and in fact the last three years have been
3 extraordinarily dry, but they've also been extraordinarily
4 hot. And there have been a series of research studies in
5 the last few months that have looked at this link between
6 climate change, temperature and the influence of climate
7 change on the drought. Next slide.

8 Again, one of the impacts of course is on our
9 energy system. When we get less water we get less hydro
10 generation, when we get less hydro generation we have to
11 make that up. This is from a report that the Pacific
12 Institute released a few months ago, looking at through the
13 end of the water year in 2014 the loss of hydro generation
14 over the last really 15 years although you can just
15 especially see the impacts over the last 4 years.

16 And when we lose hydro generation we make it up
17 with natural gas. It's the marginal energy source. We
18 have managed to increase our renewable production as well,
19 but the cost of the additional natural gas we've had to
20 burn is about \$1.4 billion just over the last four years of
21 the drought -- actually three years -- the first three
22 years of the drought. And this year will add additional
23 costs to rate payers for making up these lost hydro
24 electricity months. Next slide.

25 I mentioned we just released an ag study.

1 There's good news and there's bad news in that study.
2 Agricultural revenues in 2013 were the highest they've ever
3 been despite the drought. Ag revenues in 2014 were below
4 what they were in 2013, but we're still the second highest
5 year ever, even correcting for inflation. But despite that
6 resilience, if you will, there's no doubt that there have
7 been very significant regional impacts. Especially the
8 Southern San Joaquin Valley has seen decreases in revenue.

9 We have record high employment in the
10 agricultural sector as well, but as we describe in that
11 report, the resilience of the ag sector has seen this come
12 at a long-term cost. We're over-pumping groundwater, as
13 everyone knows. There has been long-term investment in
14 efficiency. There are a series of lessons, if you will,
15 from some of this resilience work that suggests how this ag
16 sector can continue to be strong in the face of water
17 shortages and the face of climate change, but it's not
18 going to be easy.

19 It's going to require changes in ground water,
20 it's going require changes in crop mix, it's going to
21 require changes in where we grow things. And the policy
22 implications of that have not been fully explored either.
23 And we go into quite a bit of detail in that report. It's
24 available online at the Pacific Institute's website. And
25 if you're interested in that particular topic I urge you to

1 take a look at the details. Next slide.

2 As I mentioned farm employment was also at an all
3 time high in 2014. There was record employment in the ag
4 sector, but again that hides some of the regional
5 consequences. Certainly many specific communities have
6 seen increases in unemployment and were not necessarily
7 great at making sure that the regions that have been
8 hardest hit are getting the kinds of relief that they need.

9 And this of course is true for groundwater
10 overdraft, as well. We've seen certain communities see
11 wells go dry. And much of the emergency funding from the
12 drought and from the bond has gone to try and help some of
13 those communities. But understanding these local impacts
14 is a key challenge, moving forward. Next slide.

15 As I mentioned the agricultural impacts have been
16 buffered by unsustainable practices. They've also been
17 buffered by pretty strong markets for certain kinds of
18 crops. Revenue is high because some crop prices are high.
19 And, in fact, crop prices nationwide have not gone down
20 because of the drought yet. I think if the drought
21 continues that may change, but overall we know that these
22 kinds of effects are going to have longer-term impacts,
23 especially the ground water overdraft. Next slide.

24 This is a graph that many of you have seen before
25 showing that depletion in the Central Valley and in

1 particular in the Southern San Joaquin.

2 And again the Department of Water Resources
3 recently published, I think within the last week, quite a
4 remarkable study from JPL going into much more detail about
5 groundwater subsidence, about the overdraft, about what
6 some of the long-term infrastructure costs of this
7 overdraft of groundwater are going to be. And if we do not
8 figure out a way to recharge groundwater in our wet years
9 as one of the storage solutions to our challenge, I think
10 the consequences of this overdraft are going to get worse
11 and worse. Next slide.

12 So that's really all I had to say. I realize we
13 have very little time. There are many more consequences of
14 the drought. The Institute is working on an ecosystem
15 assessment to try and understand some of the ecosystem
16 impacts of the drought.

17 The only final remark I'd say is there is a
18 remarkable set of state expertise available. The joint
19 workshop that we're having today brings together an
20 incredible selection, an incredible array of agency
21 expertise and depth. And I think frankly we're going to
22 need all of it in order to address this drought, address
23 long-term water challenges unrelated to the drought and
24 address long-term impacts of climate change.

25 Thanks, very much.

1 DEPUTY SECRETARY CONRAD-SAYDAH: Okay. I have
2 one question, if I can? Peter, this is Ashley Conrad-
3 Saydah from CalEPA. Thanks so much for speaking to us
4 today. I just had a question on groundwater recharge.

5 If we do see the type of rain that we need over
6 the next several years, what's the likelihood that we'll be
7 able to see groundwater recharge given subsidence in all
8 the other ecological impacts of the longer term depletion
9 of groundwater over many decades?

10 MR. GLEICK: Well, thank you. Yes, you're asking
11 the billion dollar question of course. We do get
12 groundwater recharge in wet years. The answer to how much
13 and where in part depends on geology. I think in some of
14 the areas where we've seen subsidence we're losing
15 groundwater storage capacity.

16 Another key issue is the kind of rainfall we get.
17 If we get very short period, intense rainfall we get more
18 runoff than recharge.

19 And it's tied to the agricultural question as
20 well. If we're smart we'll integrate some of the questions
21 we have about agricultural sustainability with the idea
22 that we'll protect certain kinds of agricultural lands that
23 can also serve as recharge basins, especially in the
24 Southern San Joaquin.

25 So it partly is a policy question about where we

1 choose to recharge, about how we try and capture stormwater
2 during wet years. But I do think that's a policy priority,
3 moving forward. We've got to get better at groundwater
4 recharge. It's really a potential, enormous smart move for
5 us I think.

6 COMMISSIONER MCALLISTER: Great, thanks Peter.
7 Let's move onto the next.

8 MS. RAITT: Thanks, so and --

9 MR. GLEICK: Thank you.

10 COMMISSIONER MCALLISTER: Thank you.

11 MS. RAITT: Next is Frank Loge, from UC Davis.

12 MR. LOGE: Hi, good afternoon, thank you for
13 inviting me today. I'm Frank Loge. I'm a professor in the
14 Department of Civil and Environmental Engineering and the
15 Director for the Center For Water-Energy Efficiency at the
16 University of California, Davis.

17 And I've been asked to come and talk today about
18 a data platform that we've been building. And largely,
19 what I'm going show you is a series of screenshots from a
20 very interactive application that we've built. But the
21 application was too hard to actually run it here in a live
22 forum.

23 So our center started back in 2011. We spent
24 about a year looking at both the water-energy sector and
25 trying to identify the primary areas for our center to

1 focus on the Water-Energy Nexus. And where we kind of
2 landed was this idea of data. And data is critically
3 important for both allowing water-energy utilities to
4 understand how they can work together and jointly invest in
5 water-energy conservation as well as doing monitoring and
6 verification on the backside to verify the anticipated
7 savings of different types of practices that get rolled
8 out.

9 And one of the things that we noticed early on is
10 that water utilities have anywhere from five to over thirty
11 databases that they house their data in. And while that
12 certainly works for their standard reporting that they're
13 used to doing it makes it very hard to drive innovation in
14 the water space. Basically, you know, the ability to look
15 at data in a different way and to gain insights from that
16 and make informed decisions of how to move forward.

17 So one of the first things we did was we built
18 the capability to ingest or integrate all the different
19 databases into one common database. And what that then
20 allowed us to do is to begin to build all sorts of
21 different analytics very quickly that allows water and
22 energy utilities to look at that data in a different way.
23 So I'll just run through and starting next it will be a
24 series of screenshots.

25 But I just wanted to point out -- so the first

1 study that we did was a cold water energy intensity
2 analysis at East Bay Municipal Utility District in
3 partnership with Pacific Gas and Electric. And the whole
4 purpose was to illustrate that the energy intensity in a
5 water system varies based on where you're at. So what's
6 shown here is kind of each of these boxes are different
7 shapes, are different types of assets within a water
8 system. And so as water flows through these different
9 assets energy is put into that water to move it forward.

10 So the first study that we did was intended to
11 help illustrate to people that while an annual average for
12 a water utility or even a hydrologic zone average, while
13 conceptually it's easy to use and to understand, that a
14 much better, more refined approach is to actually look at
15 the energy intensity across pressure zones.

16 So what's shown here on the right is the energy
17 intensity for 10 pressure zones within the East Bay MUD
18 service territory. They have roughly 122 pressure zones,
19 we only looked at 10. But the variation there was about a
20 twelvefold variation of energy intensity across this
21 pressure zone, so energy intensity expressed is kilowatt
22 hours per millions of gallons. So it ranged from about 500
23 up to about 6,000 kilowatt hours per million gallons.

24 Since then we've done this study at a number of
25 other water utilities and we've seen similar types of

1 variation for all these different water utilities. So
2 getting to this level of resolution is really important
3 when you begin to want to understand the energy savings
4 associated with water conservation as well as the
5 greenhouse gas emission reductions. And I'll show you a
6 few examples here in a second of how important that is.

7 So since that one study we now have worked with
8 probably close to ten major water utilities in the state of
9 California, and also in Texas. And what we're beginning
10 now to be able to do is to develop different types of
11 benchmarking metrics across these different water
12 utilities. So as an example on the X axis, each of those
13 labels is just a different water treatment plant and
14 different water utilities. And on the Y axis is the energy
15 intensity measured as kilowatt hours per million gallons.

16 So you can begin to see that different treatment
17 plants can have hugely varying energy intensities
18 associated with those treatment plants. That variation may
19 be justified, it may not, but having something like this
20 where you can begin to benchmark across water utilities for
21 certain features or assets of the utility becomes very
22 valuable for a water utility to understand how well they're
23 doing and what they might want to improve.

24 The other thing we've done is began to benchmark
25 pumping activities across water treatment plants. So

1 you'll see kind of three clusters of data there, those are
2 three different water distribution systems. The Y axis is
3 energy intensity measured as kilowatt hours per million
4 gallons. And the X axis is just pump ID number, so each of
5 those vertical data points is a pump ID.

6 So you notice in the first set there's quite a
7 bit of variation in energy intensity across pumps. And
8 then if you look across the different water utilities you
9 might begin to say, "Hey, the treatment plant 1" -- who's
10 the one on your left -- "might want to begin to look at
11 some sort of optimization schemes to better manage or
12 improve the operation of their pumps, because clearly
13 treatment plants 2 and 3 seem to be doing a better job."
14 You can also begin to understand what pumps you might want
15 to specifically focus on.

16 So this is now the start of the screenshots of
17 this interactive demo. So shown here is a heat map of
18 energy intensity for a water utility in the State of
19 California. If you look at the right-hand side it says
20 "Full Year View." So the vertical columns are days, so
21 there's 24-hour vertical columns. The first one on the
22 left is 12:00 to 1:00 a.m. and then it goes from 1:00 to
23 2:00 a.m. and so on. And then for each row is a day, so
24 this is over 365 days. And you can begin to see that
25 during the summer months, down in the middle, that light

1 yellow is indicative of this water treatment plant
2 practicing demand management, because they have time-of-use
3 energy pricing.

4 But the interactive features, you can drill down
5 and click and you can understand what pumps are still
6 running. And you can begin to further optimize the energy
7 use for those pumps that are still running.

8 The other thing that this will be really helpful
9 for doing is as we begin to have rulings through the
10 Utility Commission that will allow shifts in the time-of-
11 use pricing to help address the ISO Duck Curve, which is
12 the curve that reflects all the energy production
13 associated with photovoltaics. You begin to use this type
14 of approach to modify energy use to reflect the alternative
15 times of time-of-use pricing to help try to drive energy
16 use during the time periods when energy is most plentiful.

17 Another thing that water utilities have found
18 useful is this a -- the polygons or the white lines that
19 then have different shades of blue? Those are pressure
20 zones for a water utility in Southern California. So a
21 pressure zone has a common pressure and as you move to
22 different pressure zones they have different pressures or
23 they're managed in a different way.

24 So this shows water use according to pressure
25 zone. So as you begin to look at how to roll out water

1 conservation efforts a water utility might want to focus on
2 the particular pressure zones that have the greatest water
3 use, so greatest water use are the darker blue, not the
4 lighter blue.

5 I'll skip this one, but the other thing that we
6 can do is so we've -- now this is a similar in energy
7 intensity map as I showed you for East Bay MUD, but this is
8 for this other water utility. And so the darker red is
9 higher energy intensity, the lighter yellow is lower. And
10 this again is about a twelvefold variation, so it varies
11 from about a thousand kilowatt hours per million gallons
12 all the way up to 12 thousand kilowatt hours per million
13 gallons.

14 So the energy provider for this utility has found
15 this very useful to understand where they might actually
16 want to invest energy efficiency dollars for water
17 conservation. So you might not want to roll it out system-
18 wide, but rather you might want to focus on areas that have
19 higher energy intensity than lower energy intensity.

20 The other thing that this allows an energy
21 utility to do is to actually calculate the anticipated cold
22 water energy savings for adoptions in different pressure
23 zones. And I want to point out this is the actual data.
24 It's not deemed savings or it's not anticipated savings,
25 this is the actual energy intensity associated for each of

1 the pressure zones within this water utility.

2 Just a couple of things, some utilities find this
3 interesting or useful and some don't. But over on the left
4 it says "Rate Classes," "Base Year," and it's 2013,
5 "Comparison Year" is 2014. So again this would be
6 interactive if I was showing it to you in a different
7 venue. Base year is the gray. The purple is the
8 comparison year, so you can get accurate, up-to-date
9 information on your water utility. If this was an AMI
10 system you could update it hourly or daily. If it's a
11 monthly or bi-monthly read it would be updated.

12 This also could assist in reporting to the state,
13 this could be made available to the state, so you get the
14 data in real time. You know, different types of
15 functionalities can be built into this type of data in
16 terms of how it's shared.

17 Here it looks very similar, except Rate Class you
18 notice that it says "Residential single-family detached,"
19 so you can click down and drill into each of the different
20 rate classes to see how they are doing. Here this is
21 indicative that at the time -- well comparing 2013 to 2014
22 -- there's still substantial improvements in water
23 conservation that could have been made with a single-family
24 residential.

25 Another feature, so the Y axis is total water

1 produced annually in ccf, the X axis is monthly. It's
2 breaking out according to rate class, so blue is
3 residential multi-family, orange is residential single-
4 family and green is commercial. But again, looking at
5 rolling out water conservation programs targeting specific
6 customer or customer classes, here clearly the three
7 customer classes that should be identified are residential
8 multi-family, single-family and commercial. That's where
9 you're going to get the biggest bang for your buck.

10 This is another thing I wanted to show you,
11 because this really gets at the Water-Energy Nexus. So
12 shown here is total water production on the left, that's
13 the first bar. The second bar is if you achieve a 25
14 percent water reduction for that community. And then on
15 the right there's three different ways to calculate the
16 energy savings associated with that water conservation. So
17 the yellow bars, the Y axis, is kilowatt hours and the
18 horizontal axis is the three different ways to estimate
19 energy intensity.

20 And so the first way is just an annual average.
21 You take the total energy used by that water utility for a
22 given year. You could divide it in to the total water
23 production. That gives you the energy intensity. You
24 multiply it by the amount of water saved and that gives you
25 the total kilowatt hours.

1 The second way is the CPUC Water-Energy
2 Calculator, using the hydrologic zone estimate for this
3 water utility.

4 And then the third way is using our approach,
5 which looks at the energy intensity as a patchwork across
6 all the different pressure zones.

7 So you notice that in this example all three
8 approaches result in roughly the same estimate. But this
9 is assuming that all the conservation technologies were
10 adopted uniformly. If you look at the fact that maybe
11 conservation technologies were adopted actually only in the
12 top 50 percent of the pressure zones that have the highest
13 energy intensity, the estimate of energy savings with our
14 approach is about twofold higher than the other two
15 approaches. So this would result in a twofold -- or in
16 this case a twofold-underestimate of the actual greenhouse
17 gas emission savings associated with -- in this case it
18 would be a 10 percent reduction in water use.

19 So anyway taking this approach we find is really
20 important. It's not competing with the CPUC Calculator,
21 it's just an alternative way to estimate energy intensity
22 that can then feed into the calculator.

23 The final thing I just want run through real
24 quick -- but the other thing that we're finding really
25 important is I went to the Governor's Water Technology

1 Summit on July 10th and I moderated a session. And asked
2 the people in the room to raise their hand, " How many
3 people," -- you don't have to do this -- but, "How many
4 people know how much water they used last month?" And
5 about 50 percent of the room raised their hand.

6 And I said, "Of those folks, how many people know
7 how you compare to people like you?" And about 50 percent
8 of those people raised their hand.

9 So about 25 percent of the people in the room, in
10 my view, actually had the information they needed to have
11 to understand how they might respond to the drought. You
12 know, if you're doing well then you don't have to do
13 anything. If you're not doing well you understand how much
14 you have to do.

15 So there's a couple companies out there:
16 WaterSmart, Dropcounter that are doing this. Water
17 utilities themselves are starting to do this. So the basic
18 idea is you could take an individual account like this. On
19 the right-hand side that says, "Hey, your 26.9 percent of
20 the people are doing better than you." You could begin --
21 so what you can't see here is a little hard, but you can
22 then begin to drill down and say, "Customize how many
23 toilets, how many shower heads, things like that you have
24 in your house. How much water do they use? Go outside,
25 tell me how much turf you have and how your sprinklers

1 work."

2 And then ultimately what you can do, what this
3 screen is saying, is it helps people understand what they
4 could invest in and how much water they're going to save.
5 So if they reduce their toilets from 5 gallon to 1.28 and
6 they reduce their faucets they save 23.9 percent of their
7 water. So if you're a poor water user, you understand
8 exactly what you need to do and the cost of that.

9 And the final thing up here on the right there's
10 a button you can click, but if you look up on the top left
11 it says 3,144 kilowatt hours. So now you can actually get
12 an estimate of the cold water energy savings associated
13 with that water conservation on an individual account
14 basis. And then you can begin to track this in terms of if
15 people actually adopt these technologies, you can actually
16 track the actual savings.

17 So with that said my time's up, but just one
18 quick thing. So we really think that information is
19 critical for helping align policy business models and
20 technologies in our response to the drought and when we
21 think this type of approach is critical for moving forward.

22 So thanks for your time.

23 VICE CHAIR SPIVY-WEBER: I want to add a little
24 bit of piling on. But for the energy folks in the audience
25 if you have energy hotspots like San Onofre going down, and

1 you want to try to reduce the amount of energy being used
2 in water agencies around that area, you can use that time-
3 of-use approach. Most water agencies don't do this, but
4 they can operate based on time-of-use to a new operating
5 procedure if you work with them around those issues.

6 CHAIRMAN WEISENMILLER: So Edison as a preferred
7 pallet in those areas, so hopefully these are tools they
8 are using.

9 VICE CHAIR SPIVY-WEBER: They are working on
10 this. Yes, they are definitely working with us. But we
11 don't have to just do it in Edison, we can do it in other
12 places as well.

13 CHAIRMAN WEISENMILLER: No, but I mean it's a
14 good way to demonstrate.

15 DEPUTY SECRETARY CONRAD-SAYDAH: Yes. So -- oh,
16 go ahead.

17 CHAIRMAN WEISENMILLER: No, I was just going to
18 ask in terms of is UC using this itself or Davis itself?

19 MR. LOGE: As an institution?

20 CHAIRMAN WEISENMILLER: Yes.

21 MR. LOGE: No.

22 CHAIRMAN WEISENMILLER: There's a term about
23 eating your own dog food, but anyway --

24 MR. LOGE: We have very distinct roles and
25 responsibilities in the UC system. The person that runs

1 our system was here this morning --

2 UNIDENTIFIED SPEAKER: And he's right here, now.

3 MR. LOGE: Yes, Matt's here. Okay.

4 COMMISSIONER MCALLISTER: So I totally appreciate
5 the question. I guess this seems more oriented towards
6 sort of utility management, more than individual customers.
7 Is that a fair statement?

8 MR. LOGE: Both. So like the last set of slides
9 I went through real quickly is intended to be a customer-
10 facing application that helps educate folks on their water
11 use, how well they're doing and what they can do to improve
12 it.

13 COMMISSIONER MCALLISTER: Okay. So in any case
14 it's sort of a retail -- I mean, I guess I'd be interested
15 in sort of how to build, you know, a crosswalk between
16 institutions that -- massive uses of water that have a lot
17 of variability like Matthew talked about this morning and
18 this tool and sort of linking those two up in ways that
19 make sense.

20 I guess I had a question about data. So if
21 you're working with utilities -- you know you said work
22 with 10 or 11 utilities -- how much of an issue is the
23 availability of information data, metered data throughout
24 at their system and at their individual customers or is it
25 not an issue or does it vary? I guess, when you engage

1 with them do you have access to information you need to
2 actually implement the tool?

3 MR. LOGE: Well, that's a great question, so four
4 years ago, no. We've gained a lot of trust over those four
5 years. So for our research group to get access to this
6 data is a lot easier. We are now getting private, critical
7 infrastructure information and personal information from
8 water utilities. We are also getting them from energy
9 utilities to begin to do other things, which I didn't talk
10 about today.

11 We are moving in the direction -- and we are
12 going to run a pilot starting in October for a year where
13 we're building the capability to host all this data in a
14 cloud and actually create the ability to share the data
15 across water utilities and across different entities. So
16 we have five to eight water utilities that we're targeting,
17 that I'm happy to mention if you'd like, but the idea is
18 that we're going to put the data up in a Cloud.

19 And actually this will include private, critical
20 infrastructure information, personal information, as well
21 as a whole host of other information. And we have a whole
22 set of security and privacy provisions in place that means
23 that not everyone is going to get access to all the data,
24 but you will be able to share the data in different ways
25 based on the policies of the data provider.

1 So we're going to run that pilot. And our hope
2 then is we will, within a year or two, have all the water
3 utilities in the State of California, their data up in the
4 Cloud made available to different people at different
5 levels of access.

6 COMMISSIONER MCALLISTER: I can this being really
7 important for policy and for bench-marking and cross
8 comparisons and any number of things. So there are a lot
9 of analogs I think between energy and water in addition to
10 them having an overlap in the nexus. But just management-
11 wise, I think this is really powerful stuff.

12 DEPUTY SECRETARY CONRAD-SAYDAH: Well, even
13 thinking about with my neighborhood that still isn't on
14 meters, comparing folks and water utilities that are not
15 metered versus ones that are metered, just showing the
16 water savings over time would actually help us to actually
17 invest more funding into stepping up the metering process.
18 Because I know, I mean that for these four years we've all
19 tried to cut back, but we have no idea how well we're
20 doing. So it would be really neat to actually show that
21 delta between ones that still have the antiquated system
22 versus the modern systems.

23 MR. LOGE: And the other thing that there's
24 growing interest in is not only comparing ones that don't
25 have water meters to ones that do, but also comparing ones

1 that have water meters -- but they're not AMI meters --
2 versus AMI. And then also figuring out with AMI meters how
3 can we give that information to the customer so they
4 actually use it? And people are finding even if you're
5 collecting data at a higher resolution it's not being used
6 in ways that people would hope by the customer.

7 DEPUTY SECRETARY CONRAD-SAYDAH: Well, the
8 electric utilities are a good model for that. And we can
9 see real-time energy use and it doesn't really affect a ton
10 of behavior.

11 MR. LOGE: Yeah.

12 COMMISSIONER MCALLISTER: I guess the hope though
13 is that the analytics that will get more and more
14 sophisticated such that when you do present information at
15 a retail level that it's not, "Oh, here's your use." Or
16 even, "Here's your use and how you compare to your
17 neighbor," but sort of, "Here's your use and here's exactly
18 what you're using energy in. And here is where you ought
19 to invest. And here is somebody who can help you do that
20 and we'll give you an incentive until this date." And all
21 the things that somebody needs to push them over the edge
22 of doing a project.

23 MR. LOGE: Yes.

24 COMMISSIONER MCALLISTER: So I really see that.
25 But foundationally you've got to have this tool before you

1 can really go there, so good stuff.

2 MR. LOGE: Yeah, you've got a meter first.

3 COMMISSIONER SANDOVAL: So thank you. And for
4 the energy utilities how much the data affects behavior
5 also I think is influenced by how the data is communicated
6 to the customer.

7 So there are customers right now who look at that
8 data on the Web and then some of them who have signed up to
9 get alerts on their cell phones and texts and they're some
10 of the most responsive. But what we haven't really done
11 and are considering in some proceedings, so I won't go into
12 it deeply is things like home area networks. And so as
13 other devices and means are developed to help push that
14 data closer to the customer and put it in a user-friendly
15 format we may see different types of responses. So that's
16 something to be seen.

17 And I think that with regard to your suggestion
18 about looking at pressure zones, we've had the opportunity
19 to meet and discuss this. I think it's actually, as you
20 suggest very consistent with the idea of the way that we've
21 developed the cost calculator for Water-Energy Nexus is
22 that you can below the hydrological basin level. And so
23 anybody could input if they've got the information on
24 pressure zones and are willing to share it, it certainly
25 could be input.

1 So it's designed right now so that a water
2 utility or administrators of just a water district couldn't
3 put in a district-wide average, but we certainly could
4 design it to also accommodate more granular location base,
5 which gets to pressure.

6 So I think it's very consistent with where we're
7 going. We'll have to check with if it's a 2.0 question,
8 but I think it's a good point to get to and maybe something
9 that we also need to move forward with in terms of data
10 collection for the utilities so that they are looking at
11 that.

12 And then I think the corresponding part is then
13 how is that also communicated to the customer and how does
14 that factor in, as well, to our rate making and other
15 planning.

16 MR. LOGE: And just one thing to know, the data
17 that we have is very granular, but it's water. I didn't
18 show you, but we also have energy data, so we can actually
19 not only estimate the energy savings associated with the
20 technology, you can track it at a customer level. So we're
21 doing something right now with SoCal Gas in partnership
22 with Burbank Water and Power doing exactly that -- looking
23 at different technologies to save hot water and then
24 picking up the actual gas savings for those households that
25 adopt the technologies that are part of the study.

1 COMMISSIONER MCALLISTER: Okay, thanks very much.

2 MR. LOGE: Thank you.

3 MS. RAITT: Thank you.

4 Next is Guido Franco from the Energy Commission.

5 MR. FRANCO: Good afternoon. So I'm going to
6 talk about drought, climate change and the energy system.
7 And since I'm going to be talking about climate change I
8 will present a long-term perspective of issues.

9 First, is regional climate variability in
10 California is relatively large. The blue line shows the
11 global average temperatures and you can immediately notice
12 that the gray line, that is the California temperatures. I
13 know temperature has a much higher variability than the
14 global.

15 Another thing that you would notice the red dot
16 there, 2014, has been said several times before that 2014
17 has been the warmest year on record in California. But one
18 thing that I'm not sure in here, but we need to consider,
19 is that 100 or 150 years of that is not enough to fully
20 characterize the natural variability.

21 Okay. So this is a graph similar to the graph
22 that Peter Gleick presented and actually I steal his idea.
23 What I did was to create that for Sierra, Nevada. And I
24 didn't use anomalies. I used, actually, temperatures and
25 precipitation. So 2012 to 2015, that's four years, the

1 average has two characteristics. One, it hasn't been the
2 lowest four-year period with respect to precipitation, but
3 it has been the hottest by far. So it's almost outside the
4 range of natural variability.

5 Now long-term perspective the global climate
6 models that have been used and developed by the IPCC or for
7 the IPCC tend to underestimate the risk of drought. I'll
8 not go into an explanation on why, but that's a fact.

9 So there was a study done by Arizona State or the
10 University of Arizona where they look at the actual
11 variability. So they added the variability from historical
12 record, they added the variability from the paleo-record.
13 And what they find out is that a risk of ten-year droughts
14 in California, in this century, is about 80 percent. And
15 that a likelihood of the longer-lived droughts of more than
16 35 years, is between 20 to 50 percent. So this is a
17 staggering finding and actually there are now some global
18 climate models to look at droughts in a different way.
19 They are not looking just at precipitation, but also the
20 soil's moisture. And you find out that yes, it's almost a
21 certainty that due to high temperatures the soil moisture
22 is going to go down.

23 Okay. Now let's talk about current practice of
24 the management of water reservoirs in California. And here
25 I'm talking about the large reservoirs like Shasta, the

1 ones that are owned by the federal government. First thing
2 the water managers use super simplistic rule curves to
3 operate large water reservoirs. For a water expert this is
4 not a surprise, but an engineer like me this was, "Wow,"
5 when I find out about this because it doesn't make sense at
6 all.

7 And the other thing that doesn't make sense is
8 that they typically don't use precipitation forecasts.
9 They just use observed precipitation and use graphs that
10 were created, I think, when I was going to school in
11 engineering. You know, this type of graph that's --

12 So this is the curve for the Oroville Dam. And
13 there are studies that show that this is really bad if you
14 want to adapt to climate change. First of all there would
15 be the risk of flooding increases and second of all you
16 would have a lot of waste of water if you continue using
17 this tool of the Oroville curves.

18 So we have a project that we funded a long time
19 ago with -- we had a hydrologic research center. It's the
20 INFORM Project. It's basically a system that uses
21 probabilistic hydrologic forecasts and a modern decision
22 support tool to improve the management of large water
23 reservoirs in California. So the simulations show that
24 this is a win-win strategy, because it outperforms the
25 current management practices. But not only that, we also

1 asked the researchers to look at climate scenarios.

2 And the -- I don't know if you can see it -- yeah
3 this area here is dry. This is in the future, so dry years
4 the black line is what would happen on the current
5 conditions, so basically we would get less water.
6 But if we use the INFORM System there will be an increase
7 in water availability in the order of 20 or plus percent.
8 So this is a win-win strategy. The only problem is that to
9 make changes of the rules operation of INFORM operated dams
10 is almost an impossible task because of NEPA and because
11 some of the rule curves could actually have to be approved
12 by the U.S. Congress.

13 So adaptation option for the dry forms of climate
14 change, so even in 2003 we had a study suggesting that one
15 of the ways that we should look to adapt to climate change
16 is to start storing water underground in wet years and
17 withdrawing the water in dry years. I mean, it seems to be
18 logical, but it took a moment to come out with that
19 conclusion.

20 Now one problem is where do we recharge these
21 underground aquifers? Well, I just found out. I get the
22 beautiful magazine "California Agriculture" -- yes, a
23 marvelous magazine, plain language, English, even though
24 English is not my first language -- but so they have done a
25 study looking at recharge areas in California taking into

1 account multiple factors. So they find out there are
2 agricultural areas that could be used for recharge areas
3 and without damaging the crops.

4 Now, let's go back to electricity. Electricity
5 consumption for water pumping, so the -- I don't know what
6 color this is -- so this is groundwater. So it's a
7 significant amount. It's about 3 percent of the
8 electricity demand. And, in fact, this graph may be
9 underestimating actual energy, because this graph assumes
10 to have the power and water sources reporting of
11 groundwater pumping is correct when we have their JPL and
12 motor stats suggesting that they may be severely
13 underestimating water pumping. And also, it doesn't take
14 into account that well, in a drought we have to go deeper
15 to study water, so everything gets worse.

16 Yeah. So what I'm trying to say is drought will
17 exacerbate the issue of electricity demand for groundwater
18 pumping.

19 I mean I think my understanding is it was a talk
20 about subsidence and the NASA work at JPL. So what my
21 group have done is -- Sonya Ziaja, sorry about that Sonya
22 -- and Jordan Scavo -- so they created a map showing the
23 natural gas pipelines and the areas that have propensity
24 for subsidence. And what we see is that there is a lot of
25 overlap. And in our opinion the subsidizing may also

1 compromise the integrity of natural gas pipelines.

2 Now let's talk about abandoned or plugged wells.
3 I mean, we have like 100,000 abandoned or plugged wells in
4 California. And actually that's only the ones that are
5 reported, the actual number may be much higher. And the
6 other study suggesting that subsidence compromises the
7 integrity of wells casing and create pathways for
8 migration of methane to the atmosphere. And actually we
9 asked the LB&L to perform some measurements on wells and
10 abandoned wells and they measured leaks. So it's a real
11 issue.

12 The figure on your right shows -- I was told this
13 but I can't believe it -- is a protruded natural gas well.
14 I don't think so, but that's what everybody says, that's
15 what the report says. So it has protruded 46 centimeters
16 or 1.5 feet in two years, so it's a staggering amount.

17 Okay. The only thing is that if that subsiding
18 was geographically uniform we wouldn't have an issue. The
19 problem is that subsidence is not geographically uniform.
20 In this case this is data from a satellite, so you can see
21 that it's not uniform. But even if you go and use radar
22 data using airplanes you'll find that there is even a low
23 hitter (indiscernible) scale in the order of meters. And
24 again, we have natural gas pipelines in there. In there we
25 have oil pipelines. We have natural gas wells, etcetera,

1 etcetera.

2 So in conclusion, higher temperatures has made
3 the drought significantly worse. If we consider the
4 paleorecord analysis suggests that the increased chance of
5 mega-droughts is really relatively high. But there are
6 options for managed surface and underground reservoirs in a
7 way that help us with climate change and with the current
8 drought. And these variable things have feedback between
9 groundwater, water and energy.

10 So thank you very much.

11 COMMISSIONER MCALLISTER: Great. Thanks very
12 much Guido.

13 CHAIRMAN WEISENMILLER: Actually, just one thing,
14 you know eventually could you also -- and Sonya -- do a
15 plot of oil pipelines in subsidence?

16 COMMISSIONER MCALLISTER: Yeah, right.

17 MR. FRANCO: Yes, so that's next that we're
18 doing.

19 CHAIRMAN WEISENMILLER: Okay, thanks.

20 MS. RAITT: Thanks, Guido.

21 Next is Aram Shumavon from Kevala.

22 MR. SHUMAVON: Thank you. Just briefly I am
23 going to mostly focus on live demo of some web assets, but
24 Kevala does energy and data analytics with a special focus
25 on externalities to most policy-makers world view and

1 certainly most market participants. Obviously this
2 workshop is very much about those externalities and so
3 that's a great thing. But while we focus on a lot of
4 geospatial information we'll be focusing on energy and
5 electricity in this one. And I will be speaking about two
6 projects that are in the works, so these are activities
7 that we are currently undertaking.

8 The first is focused on electricity market cost
9 impacts for a bulk power system and specifically we're
10 looking at cooling water for thermal resources. And then
11 we will be talking a little bit about some of the work that
12 we're just starting now looking at taking the CPUC's Water-
13 Energy Nexus Cost Calculator and porting it over to the Web
14 to allow it to better interact with geospatial data and to
15 make it a little bit more user-friendly.

16 So I am going to jump over to the Internet here
17 shortly. And briefly, we are very focused on adding as
18 much hyper granular information around where energy
19 infrastructure is located and also looking at temporal
20 issues related to that. So when we look at Water-Energy
21 Nexus and cooling in particular, we start with where
22 resources are located. So you're looking at all the power
23 plants in California in this example. Eliminate the
24 renewables and look at non-renewables and then we can
25 actually go in beyond that and look at resources that

1 utilize cooling.

2 Once we have this information we can then begin
3 the process of drilling down -- actually, I'll turn another
4 layer on here briefly. We can look in greater detail at
5 all of these individual resources and better understand
6 what these look like in terms of their fuel types, their
7 heat rates, the size of these resources, their capacity
8 factors.

9 And that then allows us to better understand how
10 to quantify the amount of water that they use and how the
11 price of wholesale electricity might change as a result of
12 the input of water increasing over time. So on the
13 previous image there's a lot of geospatial information
14 here. It can be a little bit overwhelming. We really
15 tried to simplify that in a user interface that makes it a
16 little easier to begin the process of more intuitively
17 understanding.

18 Pick a county as an example. You could pick a
19 region with subsidence as another geography that you might
20 look at. You could pick a political district, things along
21 those lines. And all we're really doing is then looking at
22 the resources, the generation resources located inside that
23 polygon in this example, and looking at the capacity factor
24 of those resources. And the size of the resources
25 multiplied by a cost per megawatt hour to estimate the

1 cooling costs in future scenarios.

2 And this is again, as a work in progress, we've
3 picked \$2,000 per acre foot, sort of peak price of water
4 target. But the idea is that in iterations of this we will
5 be starting the process of allowing for a variability of
6 the price of water over time, so some months water will
7 cost less and some months water will be more.

8 And similarly you might want to see variable
9 pricing during droughts years so that we can better
10 understand the costs of alternatives to water intensive
11 resources. And we can measure those both within
12 geographies at a sub-statewide level or a statewide level.

13 So again, this is very much a work in progress.
14 We are processing the spectrum of inputs that we want to
15 incorporate this, but it functions now and we're pretty far
16 along in the process of scoping out the ranges that we want
17 to be including. I would not put too much weight on the
18 numbers that are involved here. We took sort of generic
19 capacity factor assumptions and assumed uniform price of
20 water over the course of the year and things along those
21 lines. But at least that shows some sense of what these
22 kinds of analytics can reveal.

23 I will say the one thing that we like about it is
24 how fast and easy it is to use. There's just one place to
25 key in the area you that you want to look at. And it

1 immediately produces results. That is a motivation for the
2 other piece that I wanted to briefly speak to, which is
3 looking at the Navigant-developed CPUC Water-Energy Nexus
4 Calculator. I'm going to go back to my presentation here
5 and eventually figure out where that is done.

6 The key thing is that Xcel, although it is
7 wonderful and transparent in terms of the ability to allow
8 people to sort of understand how tools, how the processes
9 are developed it's not particularly well suited for very
10 large data sets. For those of you that might be familiar
11 with the NET energy metering tool that the PUC has been
12 using it takes about six hours to run on a typical desktop
13 computer. So we have been focusing a lot of our time on
14 our developers, our development team, on migrating a lot of
15 these Xcel-based resources over to much faster web-based
16 analytics. We are getting ready to start that process
17 with the PUC's tool.

18 And the other thing that we do to that is we add
19 -- so we eliminate the unpleasant user experience of having
20 to key in values into lots of individual fields and we've
21 replaced a lot of that with geospatial information. So you
22 can use a map to click or a street address to key in and
23 you'll immediately know, "If I am at the following location
24 this is my utility, this is my hydrologic zone, this is my
25 water intensity zone." And all of that is taken care of,

1 there's no user error associated with that, there's only
2 developer errors. That's on us if that happens, not on
3 anyone else.

4 So we are adding all of that geospatial data to
5 the data stack that I showed earlier and are beginning the
6 process of scoping out porting the Navigant-developed tool
7 over to SQL back-in and it will all be Web-based and
8 hopefully available for public consumption in the not-too-
9 distant future.

10 It will probably have a slightly more complicated
11 user interface than the demo that I just walked through
12 earlier, because there will be more inputs that will need
13 to happen. Some of which will be needed to be entered
14 manually or via a CSV file or something along those lines,
15 but it should be a much faster and more pleasant process.
16 So that is the extent of what I wanted to speak about.

17 And I will say that the comments earlier about
18 data availability, more data availability is great. We
19 love doing this kind of stuff and the easiest and fastest
20 way for us to do that is to find places where we can just
21 go and immediately incorporate it into the kinds of tools
22 that we're trying to build.

23 COMMISSIONER MCALLISTER: Great. Thanks Aram.

24 I guess I do have one question. Well, a few
25 weeks ago we had a workshop about planning tools for

1 infrastructure developed in the energy sector. Mostly it
2 was kind of building on the DRECP, the Desert Renewable
3 Energy Planning Project. And so it became clear there.
4 And also, in many of the things we're talking about in say,
5 the existing buildings context in individual programs where
6 we're trying to get the right kinds of information
7 accumulated and organized, so that we can actually evaluate
8 programs or plan for the future and do better policy
9 essentially from our perspective at the agency.

10 So a key resource for all these activities is
11 data exchange. And without getting wonky, basically just
12 having a protocol, a schema, that allows different data
13 sets that sit in different places to talk to each other and
14 communicate and import, export quickly and seamlessly.
15 And I guess I'm wanting to get your view on one, whether
16 that's actually the case? And that that is an important
17 kind of infrastructure piece, in fact.

18 And then assuming it is, I guess, what could be
19 the state's role in sort of ironing that discussion out or
20 facilitating that discussion about what those protocols
21 would look like?

22 MR. SHUMAVON: So my thoughts on this are
23 evolving. I think if you had asked a year ago I would have
24 said, "Absolutely, we need this right away." I think one
25 of the things that is hard, especially when trapped as a --

1 and I speak as a more-than-a-decade-long employee of the
2 PUC -- it's very difficult inside the construct of a
3 regulatory body's procurement confines to even think about
4 how these kinds of things would happen.

5 It's really hard. I mean, a lot of state
6 agencies are still using their own servers. And like
7 everybody is using the Cloud and it's amazing and scalable
8 and incredibly quick. And so those sorts of things, like
9 the state procurement processes aren't capable of handling
10 yet. So I actually think that there's probably more value
11 to just focusing on getting the data out there.

12 The other piece of all of that is that as fast
13 processor speeds are improving we think about Moore's Law,
14 you know, every 18 months or whatever. Algorithms are so
15 much faster, like they are leapfrogging orders of magnitude
16 above Moore's Law. And so there are things that seem very
17 intuitive in the IT space or in the tech space, more
18 broadly.

19 For example, many entities will take geospatial
20 data and port it over to a raster, so that it's no longer
21 vector based. And then they do all their analysis on
22 graphic chips. And basically just say, "Turn all of these
23 numbers into colors and give me an average color for the
24 following ten layers." And they can blow through petabytes
25 of data in amazingly short periods of time. These kinds of

1 innovations are so hard for the state procurement processes
2 to even wrap their heads around that I'm moving more in the
3 direction of saying, "Just put as much data out there,
4 don't worry about the form that it comes in." I would
5 prefer not PDFs of Excel files as a general rule, but we're
6 more than willing to take PDFs of maps and stretch those
7 out and extrapolate from there although obviously
8 geospatial information really wants to be a little more
9 consumable than that.

10 That's a long-winded answer.

11 COMMISSIONER MCALLISTER: No, thanks. It's
12 helpful.

13 Commissioner Sandoval?

14 COMMISSIONER SANDOVAL: Thank you.

15 So one time I was a (indiscernible) to an apps
16 for energy hack-a-thon, I was saying that part of what we
17 were trying to do with data is to go from "Excel" to
18 "accessible." Right, so I think this is another example of
19 that.

20 So we certainly welcome your comments in the
21 Water-Energy Nexus Cost Calculator Proceeding about
22 anything that we could do to make the data accessible. I
23 think Excel is a good tool, but I personally love
24 geospatial analysis and the CPUC has done a lot of work
25 with geospatial analysis, particularly in the

1 communications area.

2 So I think as we've talked about there's a lot of
3 layering that we need to do in terms of energy facilities,
4 different types of facilities and infrastructure
5 subsidence. I would add fire threat areas to that. And
6 then as we add all these other things it can really help us
7 to identify opportunities and priorities. So I look
8 forward to your comments about how we can make this tool
9 something that would be accessible to the analytical power
10 that you're talking about. So thank you.

11 MS. RAITT: Thanks, Aram.

12 MR. SHUMAVON: Thank you.

13 COMMISSIONER MCALLISTER: Great, thank you.

14 Thank you very much.

15 MS. RAITT: Okay. I'd like to invite the
16 speakers for the next two panels up to the tables. We'll
17 go ahead and move on to the Panel on Industry, Agriculture
18 and Business Outlook.

19 And the first speaker is Dorothy Rothrock from
20 the California Manufacturers and Technology Association.

21 MS. ROTHROCK: Thank you very much. It's a
22 pleasure to be here. My name is Dorothy Rothrock. I'm
23 with the California Manufacturers and Technology
24 Association. I do not have a presentation, so you get to
25 keep looking at all of our names there, for a moment. And

1 I'll probably take less than eight minutes, so I want bonus
2 points right out of the gate.

3 First of all, of course, California manufacturing
4 is a very important sector of the economy. We struggled
5 over the years. We suffer very high costs in the state,
6 have very high energy rates. We have lost jobs in the
7 state, have not gained jobs at the same level that have
8 been gained since the recession ended in the U.S. All that
9 is to provide kind of a background setup for some of the
10 points I want to make about our response to the drought.

11 First of all, because energy costs have been so
12 high over the years and all other costs, for that matter,
13 manufacturers are always looking for ways to save money.
14 And so to the extent they can reduce their water
15 consumption that's something they'll definitely look at and
16 have been looking at over the years.

17 Many of the members of my association have very
18 robust sustainability programs that look at all
19 environmental impacts of their activities, the products
20 they make and their footprint in our communities and take
21 steps to do what they can in a cost-effective way to reduce
22 those costs and to reduce those inputs. So I think we start
23 out in a pretty good position of being responsible players
24 in this environment.

25 In the drought itself we have been very actively

1 involved in working with the agencies to find where it is
2 appropriate for manufacturers to step up more than we have
3 already. And one of the key points that we have been
4 making, and that I believe is fairly well agreed upon, is
5 that we have certain kinds of water uses that are typical
6 commercial office and landscaping and other kinds of uses.
7 That it really makes sense to have a kind of best
8 management practices or standards or appliances or watering
9 cycles and times that can be applied sort of across the
10 board. And that uses of water can be reduced and some of
11 those uses maybe even be somewhat discretionary, like
12 ornamental landscaping, for example.

13 On the other hand, what's really important to us
14 is to protect our use of processed water. Sometimes that
15 processed water is actually an ingredient to a product or
16 it's very vital for the use in equipment pumps or for
17 cleaning or other kinds of health or safety purposes. So
18 not having the water, or having the water arbitrarily
19 reduced in that amount, can be something that shuts down a
20 plant and sends people home.

21 So as we've been working with the agencies we've
22 been saying, "We've got to keep as much flexibility as
23 possible with the local agencies, so that they can work
24 directly with their manufacturers to find out what can you
25 do and what can't you do, where are your pain points and

1 what's feasible."

2 And then also, secondarily, understand that it
3 takes some time. Even if there is an agreement that
4 something needs to be done there is time that needs to be
5 taken to actually implement those things. It's not easy for
6 a manufacturer to use a process reduction as a drought
7 solution. I mean, as an emergency solution, this is a
8 long-term supply and use solution that the manufacturers
9 can do, but it takes often capital investment as well as
10 time to implement.

11 With that I will end and turn it to the next
12 person. Thank you.

13 COMMISSIONER MCALLISTER: I do have one question,
14 Dorothy. Actually, thanks for the presentation and your
15 comments.

16 Are there particular places in the state that
17 jump out as sort of being the -- where the reductions are
18 expected to be very high and you have a concentration of
19 membership. And kind of there's a perfect storm a little
20 bit about -- I guess who are your main, you know, "partner
21 agencies" that you're having to work with a lot on this
22 issue?

23 MS. ROTHROCK: Two come right to mind, but I'm
24 going to only call out one and that's San Diego, mainly
25 because they already went through in the early '90s a real

1 drought situation. A lot of the companies down there
2 worked with the agency to come up with a supply enhancement
3 plan as well as use reduction. And they're still really
4 active down there and have done a great job.

5 The others that I'm not going to mention usually
6 -- let me just characterize them -- small water agencies
7 with maybe one or two big plants. They have a struggle,
8 because they've got say a blanket target and yet they see a
9 huge volume of water in one location. And so the tendency
10 is to want to, "Well, let's just cut across the board and
11 expect them to step up in the same way that we're asking
12 all of our residents to stop watering their lawn." And
13 it's just as I say, because of the process water use it's
14 just not feasible to reduce at that same level.

15 COMMISSIONER MCALLISTER: Thanks.

16 VICE CHAIR SPIVY-WEBER: I'd like to add just one
17 comment, because we just recently, Wednesday, had a meeting
18 of a lot of water agencies. And in general the water
19 agencies were saying, "Please don't look at CII. (phonetic)
20 Don't. You know, just stay away." But one water agency
21 actually spoke up and said, "We're working hand-in-glove
22 with our manufacturers and commercial institutions. And
23 we're finding water -- by working with them we're finding
24 significant water savings.

25 And so while I agree with you on the processed

1 water it still bears looking at it again and particularly
2 with the water agencies. So that's what I would encourage.

3 MS. ROTHROCK: And let me reinforce that, because
4 that was our message to ourselves and reinforced as -- my
5 members, we talk like once a month, we come together. We
6 have a task force on this. And it's, "Talk to your
7 agencies, get agreements going with them." Because, you
8 know, like anything else there's other things that may be
9 higher on your list to worry about.

10 But in a drought suddenly the water becomes more
11 important and yes, maybe there are things you can do.
12 We're certainly going there, because frankly it's the best
13 defense against overhand, overbearing regulation that may
14 come down the road. And we are very concerned about 2016,
15 2017 and don't want that to happen if we can all avoid it.
16 And that's the end of me.

17 COMMISSIONER MCALLISTER: Thank you.

18 MS. BOYD WILLIAMS: Hi, my name is Pamela
19 Williams. I'm the Executive Vice-President on the
20 California Retailers Association. And we have members that
21 range from the major supermarket chains to chain
22 drugstores, mass merchandisers such as Target and Wal-Mart,
23 department stores, apparel, furniture, home, jewelry,
24 hardware and home improvement stores. And we also have
25 some convenience stores and restaurants.

1 So you can see that this range is from
2 freestanding major retailers to retailers that are in part
3 of a mall. From a 100,000 square foot retailers to 3,000
4 square foot convenience stores. So the range is really
5 broad. And obviously the food service and food prep,
6 grocery stores and restaurants, have a higher water usage
7 or need than some of the others.

8 I'm going to break up my remarks in three areas.
9 I'm going to talk a little bit about what the Association
10 has done, what retailers are doing and then I have a plea
11 at the end for some assistance in one area.

12 The Association has been working with the Energy
13 Commission on their Faucet Standards. And we've reached
14 last month a good compromise through working with CEC and
15 the plumbing manufacturers and ourselves. And in that case
16 a lower standard is actually going to be put into effect,
17 one of them sooner than was even originally proposed.

18 We're also working with the Energy Commission on
19 the impending clothes washer rebate. Home Depot, Lowe's,
20 Best Buy and Sears will be participating in the instant
21 rebate, which is always the more effective rebate when the
22 customer gets it right at checkout. So I know there's
23 going to be mail-in programs, which is fine. It's better
24 than nothing, but the fact that you're doing the instant
25 rebates is a really good thing. And we're waiting, I

1 think, for the final appropriation from the legislature to
2 start that program.

3 We're also working with CEC and DWR on the
4 impending toilet rebate program, which I think starts in
5 the fall.

6 And then lastly we've worked with CEC staff on
7 the Appliance Efficiency Standards and the kind of rollout
8 of that. And we have made available our newsletter that
9 goes out every two weeks to any agency that wants to reach
10 the retail -- you know, to permeate the market, to use our
11 newsletter for any of those types of purposes.

12 So secondly I want to talk a little bit about the
13 impact of the drought on the retail industry and our
14 responses. I thought you might be interested in some of
15 the things that are selling and some of the things that
16 aren't, because in some ways people are saying, "Wow, the
17 drought has been really great for retail." So it's just
18 kind of interesting.

19 We're selling more of the following: drought-
20 resistant plants, cactus, palms, grasses, mulch, bark and
21 redwood chips, patio stones and pavers, synthetic turf.
22 And interestingly the synthetic turf is selling only in the
23 higher-income areas. The stores can track who's buying it,
24 so it must be still so expensive that only the high-end
25 income homeowners are affording it. We're also selling

1 more lawn pigments, buckets and barrels, and drip
2 irrigation systems.

3 This is what we're selling less of: trees --
4 people are worried about planting new trees -- annual and
5 perennial plants and flowers, lawn seed, lawn fertilizer,
6 lawn weed-reduction sprays, all types of plant fertilizers,
7 gopher repellant, soils such as planting mixes and prelate,
8 lawnmowers, lawn bags, sprinklers, hoses, hose nozzles,
9 decorative fountains, umbrellas, rain pouches, raincoats
10 and rain boots.

11 So we surveyed our members in response to this
12 request and I have some answers that are kind of store-
13 specific and others that are general to the industry. And
14 so these are overall the majority of the retailers
15 responded that they're doing these four things almost
16 across the board.

17 First is installing low-flow restroom fixtures,
18 low-flush toilets, low-flow faucets and the automatic timer
19 faucets where you put your hand under them and then they
20 stop so that there's no running on of the water.

21 Secondly, relative to exterior landscape for
22 those retailers who have exterior landscaping, the
23 freestanding stores, they're installing drought-resistant
24 planting. And there's also something now called non-
25 irrigation plants, which require no water whatsoever. So

1 they're using that as well. And just as an example,
2 Walgreens is replacing all of its lawn with river rock in
3 161 stores, all of its stores in California.

4 With regard to exterior building cleaning,
5 because we have to keep the outside of the structures clean
6 as well, we're using water brooms instead of hoses. So
7 there's a water savings there to clean off what's called
8 the "apron," which is the front and sides of the stores.
9 We're replacing some water cleanings with good old-
10 fashioned dry brooms. And some retailers have started
11 using a new product called Eco Foam, which you spray on the
12 outside of the buildings as a foam and it just kind of
13 drizzles down and evaporates and cleans the building, so
14 there's no water usage at all.

15 And number four, leak detection. The stores have
16 upped their scheduling for leak detection. They have it on
17 a periodic schedule and they've all increased the
18 scheduling for leak detection and shortened the mandated
19 time that they have to get it fixed. And even my members
20 are surprised at how much they have saved in terms of water
21 from just leak detection. It's amazing.

22 Some of them are working with utilities,
23 particularly those stores in a single utility service area
24 where you have a lot of stores in that area. The utilities
25 are providing them with lists that compare the stores water

1 usage so that gives them a road map as to what stores need
2 attention. And note also that these comments that I just
3 made don't just apply to the stores they also apply to the
4 distribution centers and the wholesale facilities that
5 these stores own and operate as well.

6 Some of the specialized examples is -- that you
7 might not think of -- pet stores. Pet stores have
8 aquariums. But did you know that there are now higher
9 efficiency fish systems for aquariums which need less
10 cleaning; so a longer time between cleanings, which saves
11 water. And they also have pet grooming, so they've
12 installed shutoff valves on the hoses that you're rinsing
13 Fido with. So that's their savings generated there.

14 Lowe's is an example, as is Home Depot, but these
15 are specific to Lowe's -- they are participating in a plant
16 certification program called "Water Wise" where they
17 advertise that those plants are low-water usage plants. At
18 every California Lowe's there's a SYNLawn -- that's S-Y-N
19 as in synthetic lawn end cap -- which is at the end of an
20 aisle that notes not just selling the SYNLawn pigment, but
21 also notes all of the rebate programs that are available
22 both locally and through the state.

23 Lowe's is also promoting the sale of rain barrels
24 in advance of El Nino in a way that thinks pretty clever.
25 Instead of El Nino being looked at as a negative where

1 people might not be saving Lowe's is putting, "Capture
2 every drop" in front of the barrels as a way to look at it
3 just as a conservation method.

4 They have stopped running water through the
5 majority of all of their decorative outside fountains.
6 They have one or two just to show the trickle effect, but
7 all the rest are turned off. They sell WaterSense
8 certified bath and kitchen fixtures and there's a specific
9 display point in all of their 111 stores.

10 And lastly they have "Save Our Water" signs over
11 all relevant conservation products throughout the store.

12 Orchard Supply Hardware has a series of ongoing
13 clinics or classes that they offer for customers. And each
14 store has a designated drought ambassador that people can
15 ask questions of and that conducts these clinics and
16 classes.

17 And lastly as an example, Sea World. Yes, Sea
18 World is a retailer in addition to an amusement park,
19 because they sell their own merchandise and they sell food
20 and beverage. Sea world just installed its first saltwater
21 flush bathroom. It saves 1.3 million gallons of fresh
22 water. And they're now planning their second such
23 saltwater bathroom.

24 And I want to end with a plea of something that
25 you all could possibly do or make happen that would be

1 helpful. All retailers, like all businesses, are required
2 to comply with the regulations of the 410-odd water
3 agencies. For retailers with hundreds of stores in
4 California this is no small task. But there's no
5 centralized database that contains the name of the water
6 agency and the requirements of that water agency.

7 Some agencies have separate residential and
8 commercial standards, some of them just have sort of one
9 set that applies to everyone. Stores are finding it really
10 labor intensive and in some cases impossible to determine
11 the requirements of each agency.

12 We contacted DWR and we contacted the Association
13 of California Water Agencies. We must have talked to the
14 wrong people, because in both cases we said, "Could we at
15 least get a list of the 410 water agencies and their
16 contact information, so when a store says, 'I don't know
17 what to do,' in X location?" And we were told both times,
18 "No sorry, no such list exists."

19 VICE CHAIR SPIVY-WEBER: I -- well, you're --

20 MS. BOYD WILLIAMS: We got the wrong person?

21 VICE CHAIR SPIVY-WEBER: You got the wrong person.

22 MS. BOYD WILLIAMS: Okay, good.

23 VICE CHAIR SPIVY-WEBER: Because there now is a
24 website where you can just type in your address and it will
25 let you know who your purveyor is at that address. It's

1 www. -- I have your name -- I will send it to you.

2 MS. BOYD WILLIAMS: All right, that'd be
3 wonderful.

4 VICE CHAIR SPIVY-WEBER: And I'll make sure it
5 gets posted.

6 MS. BOYD WILLIAMS: Is it conceivable that there
7 could be one website, one central location to go to that
8 would list the agencies. And underneath each agency,
9 "commercial" and "residential," because some of them have
10 been excellent in really clearly communicating to the
11 businesses and others have good websites. But there are
12 others that you can't tell if is it for just residential
13 or residential and commercial?"

14 VICE CHAIR SPIVY-WEBER: Right.

15 MS. BOYD WILLIAMS: So that would be our plea.
16 That if there could be, if there is the possibility of
17 establishing one centralized database for all the agencies
18 and their requirements for all business, it's not just
19 retail. That would be a really wonderful undertaking for
20 compliance purposes, I think.

21 VICE CHAIR SPIVY-WEBER: That's a plea I will
22 carry home.

23 MS. BOYD WILLIAMS: That'd be great. Thank you.

24 COMMISSIONER MCALLISTER: That's great. And
25 actually I want to pile on. Thanks for making the point.

1 VICE CHAIR SPIVY-WEBER: Sure.

2 COMMISSIONER MCALLISTER: Yeah, I mean back in
3 the day I actually administered a third-party program in
4 the energy efficiency realm where we were actually -- it
5 was for Laundromats. And so we were doing lighting,
6 overhead lighting and we were doing -- getting them to try
7 to replace their boilers, update their boilers and also
8 their machines right, because they used tons of water. So
9 it was sort of an integrated approach where you got water
10 and energy.

11 And just keeping track -- so we provided a rebate
12 on the energy side but wanted to really facilitate the
13 water rebates that would go along to make it all more --
14 the program would work well. And just tracking the rebates
15 that were available at the water districts, in and of
16 itself, was a full-time job -- more than a full-time job.
17 And they'd change, you know, they'd run out of money and
18 they'd sort of stop-start and they're non-uniform. And one
19 side of the street is one agency; the other side is the
20 other agency. It becomes very difficult.

21 So it's not an insignificant resources question
22 to sort of who would actually take that on and make it
23 happen, but it is real issue and I totally felt your pain
24 back there.

25 I wanted to ask about you mentioned a few of the

1 things in store that your members are doing to try inform
2 people and aim them at the right products. I guess I
3 wanted to ask, are there resources that you recommend or
4 that your stores use or that your members use to really
5 help people navigate the landscape of not just complying
6 products, but just efficient products?

7 So maybe it's, "Okay. Well, buy WaterSense or
8 buy ENERGY STAR," or whatever that is. And that's sort of
9 a simple message, but there are increasingly some of these
10 resources that filter through just a massive number of
11 products to identify according to each person's sort of
12 desires. You know, "I want my refrigerator to be x cubic
13 feet and be -- have it through the door," or whatever.

14 I guess that I think that transitioning in the
15 marketplace to the new sort of set of efficient devices,
16 whether it's energy or water -- obviously we're talking
17 water here -- is really a very deep educational transition
18 for people as well. And then most people don't buy these
19 devices all that often. So I really think that retailer is
20 really the touch point, whether it's the website or the in-
21 store, to help people identify the products that they're
22 going to be happy with.

23 Not just the ones that are low water and, "Okay
24 here's my shower head," because people buy those, they take
25 them home. They don't like them, they don't use them. But

1 really educate, really aim people at get them to the right
2 product that's going to work for them. And it's not just
3 about the characteristic that we want, but it's about lots
4 of characteristics.

5 And so I think there are hundreds and thousands
6 of products out there. And I guess I'm asking a question,
7 but I'm also kind of proposing a challenge that we work
8 together evermore to kind of help customers. In our case
9 it's the citizens and sort of constituents, in your case
10 customers, find the products that are going to make them
11 happy along at the same time that they are in conformance
12 with our policy goals.

13 And it's a big challenge, so I guess I'm
14 wondering maybe if you could dig in a little bit deeper on
15 how you provide information to your customers? But then
16 also maybe reflect on the bigger picture of all the
17 information that we have to sort through to get to the
18 product decision.

19 MS. BOYD WILLIAMS: And maybe we -- obviously
20 some retailers do it better than others and some retailers
21 do it better in store and some better online. But yes, why
22 don't we maybe chat a little bit further about sort of what
23 you think that would look like and stuff. And I'll go also
24 as well, talk to my members and see.

25 COMMISSIONER MCALLISTER: Yeah. I guess I'm

1 thinking there are some -- like the Enervee and some of
2 these tools that are springing up that actually are quite
3 sophisticated and sort through a lot of data and keep it
4 very up to date, might be helpful for retailers to help
5 their customers as well. I know some of the utilities are
6 using them for their programs, but having a more integrated
7 approach might be a good thing. So we can continue that,
8 thanks very much.

9 MS. BOYD WILLIAMS: Thank you, Commissioner.

10 COMMISSIONER MCALLISTER: Okay, great. Thanks
11 very much.

12 MS. RAITT: Next is Karen Mills from the
13 California Farm Bureau Federation.

14 MS. MILLS: Good afternoon, thank you for having
15 me. And as Heather said I'm Karen Mills with the
16 California Farm Bureau Federation. The Farm Bureau is a
17 nonprofit trade association. We represent farmers and
18 ranchers throughout the state in 56 counties and we work
19 with 53 county farm bureaus.

20 It's a daunting task for a Farm Bureau
21 representative to talk about the drought, because the
22 issues are pervasive throughout our organization. And
23 there are many experts within the Farm Bureau who could
24 talk about this. And many times the experts are members,
25 actually. But we have a lot of folks who work on various

1 issues related to the drought.

2 My expertise is on energy matters and a large
3 focus of what I do deals with energy rights. And so it's
4 good to have a focus for that purpose to be here, because I
5 think we all can read an article every day talking about
6 the impact of the drought is on agriculture and what
7 agriculture ought to be doing about it.

8 So this provides a great opportunity to touch on
9 the effect of water availability on the development of
10 rights for agriculture and the establishment of those
11 rights. And then how the rights are used in a way that
12 will make sense and be predictable and allow for
13 agricultural customers of the utilities to use their energy
14 in ways that make sense for the water availability that
15 they have. And to make sure that things aren't at cross-
16 purposes, so the next slide please.

17 I just wanted to provide a list of titles. These
18 are from our Ag Alert articles. Ag Alert is a weekly
19 publication that Farm Bureau provides to its members and to
20 others and they've been developing articles under the water
21 crisis series, which began on Christmas of 2013. Not a
22 very good Christmas present, was it, to start that.

23 But I wanted to provide a list. There's a lot
24 more articles that they've done over the last couple of
25 years. So this is just a small sample and I tried to

1 provide examples of how many commodities are impacted that
2 they've reviewed and all the other aspects and the
3 ancillary effects.

4 You know, one of the recent articles was just
5 talking about the landscapes are shifting to drought-
6 tolerant plants and the impact that it has on our nursery
7 members. Very far-reaching and the articles, as you read
8 through them and just -- well, you can tell by the titles
9 that they reveal the challenges faced by agricultural
10 operators throughout the state.

11 And they also show the creativity and the
12 perseverance of the ag operators to solve their problems
13 and to preserve their livelihoods, most of the vast
14 majority of which are family farms. And the economic
15 success last year that there have been recent articles
16 about, and comments about the ag sectors, is certainly
17 attributable to the creativity and perseverance of farmers
18 and ranchers throughout the state. They work with their
19 hands and their brains in figuring out solutions to make
20 sure that they stay in business.

21 But Farm Bureau also believes they just can't be
22 here without mentioning about how strongly we believe that
23 one of the keys to success of improving the circumstances
24 related to water availability is water storage. And those
25 discussions continue to go on. Next slide.

1 So as I indicated, what I wanted to focus on a
2 bit, was on the structure and the development of electric
3 rates. Over 80 percent of ag usage is for pumping water.
4 And that was what attributed in the Energy Efficiency
5 Strategic Plan about ten years ago. And I'm sure now that
6 it's much greater than 80 percent, at least the last couple
7 of years. But this chart's from our testimony in a
8 proceeding that's concluded and is being implemented now.
9 And it's illustrative of how variable the methodologies
10 that tie costs to agriculture for rate setting.

11 COMMISSIONER SANDOVAL: Can I interrupt you?

12 MS. MILLS: Yes.

13 COMMISSIONER SANDOVAL: Are you a party in this
14 proceeding?

15 MS. MILLS: I am and this proceeding's concluded.

16 COMMISSIONER SANDOVAL: Okay. So we just want to
17 avoid any party comments.

18 MS. MILLS: Yes, Commissioner. The proceeding's
19 been concluded and it is being implemented and so that's
20 why I thought it was safe to present that. I'm not
21 offering it for the truth of the matter asserted, but just
22 it's a chart that's for an illustration to talk about.

23 (Colloquy off mic regarding hearing.)

24 COMMISSIONER SANDOVAL: Yeah. So let's move on.

25 MS. MILLS: Okay. Well, I'll turn the chart

1 over, but what I do -- and you can move the chart off the
2 table.

3 COMMISSIONER SANDOVAL: Okay.

4 MS. MILLS: But what I do want to talk about is
5 that in rate setting one of the things that we struggle
6 with is how much usage changes for ag over the years. And
7 how, because water pumping is such a big part of that how
8 much variability there is in it. And then it wreaks havoc
9 with the forecasting requirements, which the California
10 Energy Commission of course, is very tied to.

11 So as we were trying to do forecasting of what
12 usage is having events like the drought and the changes in
13 it, has an impact both on sales and then how the usage is
14 conducted. So and then in terms of setting rates there's a
15 great deal of variability and it creates problems for
16 certainty, for customers being able to assess and predict
17 how to plan for those rates and for their proceedings.

18 So the last page, and so finally this is the last
19 page that I have. In terms of managing electric rights and
20 usage by our members, which is a key part of their ability
21 to manage their water as the UC Davis pointed out that
22 statewide there is an estimated \$587 million in increased
23 pumping costs for 2015 and which is additional to what was
24 anticipated. And so then again there's concerns, because
25 of the increase about what that means for assumptions about

1 rate-making purposes.

2 The importance of electric rate design can't be
3 dismissed either. There's an existing PG&E rate schedule,
4 for example, that's a split week time of use period to
5 allow the users to spread out when they use energy, because
6 it spreads out the off-peak time of use. And it allows
7 growers in areas where they're dependent on groundwater to
8 stagger the irrigation schedule, so it's not focusing all
9 the use in a short period of time, which then impacts the
10 ability for the groundwater to remain viable. You know,
11 otherwise it would draw down the water so much and the
12 wells so much that folks wouldn't be able to access their
13 water effectively.

14 And the Butte County Farm Bureau folks brought it
15 to our attention, but it occurs in other areas of the state
16 as well. Jenny Moffitt, I think earlier today brought up
17 some of the ideas about the technology in operations. And
18 as we look at structural changes to rate schedules I think
19 the time of use periods were brought up. It's important
20 that the customers be allowed lead time in order to access
21 and change their planning purposes in order to adapt to
22 changes, because they do need lead time.

23 Also a key part of what our members look at in
24 terms of managing their electricity usage is what costs
25 imply. And the large increases in rates or any increase in

1 rates it's really important that they have the lead time to
2 address those costs and manage them effectively, so that
3 they can adapt and affect their water usage or whatever
4 kind of usage they're having to deal with.

5 One of the bright spots for agriculture has been
6 their ability to aggregate for net metering. And in those
7 circumstances ag operations, both small and large, have
8 many electric meters to serve their loads. And what the
9 aggregation has allowed them to do is just build one
10 generation system. And with specific parameters they can
11 offset their usage of multiple meters against that one
12 facility.

13 And so what it does is in that context allow them
14 and encourage them to consider and manage in a related
15 basis, all their meters. And which can bring about
16 ancillary benefits and allows them to look at their farm
17 and ranching operation for electricity and for water
18 management on a broader basis than just by an account, by
19 account basis.

20 So thank you.

21 VICE CHAIR SPIVY-WEBER: One thing that we found
22 in working with water agencies, and I assume that this --
23 particularly in terms of forecasting -- is that in general
24 water agencies used wet year, dry year, normal year. They
25 didn't go like extreme wet or extreme dry, they were just

1 the three. And so they simply weren't prepared or what
2 we've gone through over the last four years.

3 So scenario planning where you actually do test
4 your response to an extreme, I think is going to become
5 more the norm for forecasting. Not that you -- I mean, if
6 we get a normal that's -- there is no such thing, but if
7 you get one great. But that's been important.

8 Another point that actually Andrew mentioned --
9 and no, I guess you all don't have to worry too much about
10 it -- but the Prop 218, San Juan Capistrano case, which is
11 affecting rates is still out there. It's being appealed,
12 but it has certainly created a lot of caution on the part
13 of water agencies that want to increase their rates.

14 It's not so much that they can't do it, because
15 they can as long as they make a tight nexus between what
16 they are charging and what they are serving they can do it.
17 But they can still be sued and so the threat of a lawsuit
18 is having a dampening effect on folks really pursuing new
19 rates and certainly in the public sector.

20 COMMISSIONER MCALLISTER: Thank you, very much.

21 MS. RAITT: Next is Alexander Kohnen from US
22 Department of Navy who will be joining us by WebEx.

23 MR. KOHNEN: Good afternoon. I hope every -- can
24 everyone hear me?

25 MS. RAITT: Yes, thank you.

1 MR. KOHNEN: Okay. Hi, I'm Commander Alex
2 Kohnen. My job title is as the Assistant Regional Engineer
3 here in Navy Region Southwest. I'm not 100 percent
4 familiar with WebEx, so don't really know how to forward
5 the slides. I do apologize.

6 MS. RAITT: Just let me know when you want to go
7 to your next slide and I'll forward it for you.

8 MR. KOHNEN: Why don't we do that right now then?

9 MS. RAITT: Okay.

10 MR. KOHNEN: So we did what we do as the Navy.
11 The Governor's strategy came out or his State of Emergency
12 came out on 1 April and we do what we do as a military
13 organization, we created our war plan. So we developed a
14 Navy Region Southwest Water Strategy.

15 And to kind of give you a context, Navy Region
16 Southwest encompasses the six southwestern states of the
17 United States extending from Colorado to California and
18 then including Arizona, New Mexico, Utah and Nevada. We
19 have ten installations we're responsible for primarily,
20 nine of those are in the State of California. So we have a
21 big, big footprint here in California and are heavily
22 invested in California and the success of responding to
23 this drought.

24 What the Regional Commander decided to do -- and
25 at the time it was Rear Admiral Lorge -- he said, "I

1 realize that this 25 percent cut is for residential
2 consumers, but I'm unwilling to sit on the sidelines."
3 Even though we had cut our water consumption by almost 26
4 percent since 2007 to today he decided to issue another
5 challenge. And what he said was, "We're going to cut our
6 water consumption based on the Governor's Mandate of the
7 2013 year by another 25 percent," which for us equates to
8 about 925 million gallons.

9 "On top of that I'm going to take 2 million
10 square feet of turf throughout my facilities and I'm going
11 to convert that to zero-scape. And on top of that, I want
12 my irrigation to be cut in half from what it is today." So
13 a lot of challenges were issued out there. And obviously
14 we're not going to accomplish that in the next 15 minutes.
15 So he said, "I'm going to give you five years, base COs, to
16 figure this out. But by 2020 I want to be down 925 million
17 gallons with those other caveats."

18 So in our strategy we decided to focus on five
19 areas and you can see them up there. And I'll go into a
20 little bit more depth, but conservation, projects,
21 compliance, landscaping and irrigation and then better data
22 to inform our commanding officers on how they're doing or
23 the five key elements of our strategy. So if you go to the
24 next slide I'll do a little bit more explanation of each of
25 those.

1 So culture of conservation, I think everybody
2 kind of understands that, but we're trying to better
3 educate our population -- we have several hundred thousand
4 individuals that occupy our bases right now in the State of
5 California -- on how they can do better at supporting water
6 conservation goals. We do a great job of it for our
7 sailors at sea. We have a thing we call "Navy showers"
8 where you turn on the shower head, get enough water on you
9 to start the shower, then turn it off, lather up and then
10 rinse off. We're talking about that level of detail we
11 want to get invested in to make this an effective drought
12 response.

13 Water conservation projects, one of the
14 challenges we have in the federal government is a lot of
15 the projects we do for conservation behavior, they have to
16 have a return on investment. And I think everybody in the
17 room knows that water is not properly costed based on its
18 value to whatever operations, missions, requirements you're
19 trying to achieve. So trying to make a project pencil out
20 to save water is really, really difficult. And there's not
21 a ton of those opportunities. And like I said we've been
22 doing this since 2007, so all those ones that were easy to
23 do, they're done. So now it gets hard.

24 So we had to kind of reconfigure the way we look
25 at it. And what we said, and I'll talk a little bit more

1 about this in the next slide, is hey water is an enabling
2 resource for mission. In other words, it is a vital
3 element of the national security strategy. So we've got to
4 spend money whether we like it or not. So we set aside
5 about \$5 million this year, we will probably double that
6 next year, on projects that purely reduce water.

7 And we used a very, very basic metric on how we
8 depict which projects we wanted to do. We had every
9 installation submit projects and that metric was numbers of
10 gallons saved on top versus number of dollars invested on
11 the bottom. The higher the ratio the more likely you were
12 to get funded.

13 And finally compliance, some of our challenges
14 with compliance. So as you start to reduce water our
15 systems hydraulically have a lot of dead legs in them.
16 Remember, a lot of these systems were created mostly in the
17 '40s, so we've been keeping up with them. But they're not
18 the most optimally designed systems out there. So as we
19 reduced water towards these dead legs we were starting to
20 see disinfection byproduct situations. We were starting to
21 see chlorine residual droppings. So what we ended up doing
22 is increasing flushing just to keep our disinfection rates
23 high enough and in effect, eliminating all that water
24 savings simply through flushing.

25 So we've got a team out there now looking at

1 solutions. And just by a simple decommissioning a tank and
2 making it a surge tank, so we can look a system, we saved
3 10 million gallons alone on a simple \$200,000 loop project
4 in Naval Base Coronado, so huge opportunities out there.

5 We're looking at where irrigation plays a vital
6 part in chlorine residuals and looking at what we can do it
7 to kind of loop those systems before we reduce the
8 irrigation, so in effect, not increasing flushing
9 compliance.

10 Another issue is flow rates for fire hydrants.
11 We do a lot of operations that require fire hydrants to be
12 certified and tested on a regular basis. We're trying to
13 find a new way to do that. There's some technologies out
14 there that are really interesting -- a trawler-mounted tank
15 where we can send the water through the tank and push it
16 back into the system and know that it meets all the quality
17 standards that are required under the Safe Drinking Water
18 Act.

19 Next landscaping and irrigation, we've made a
20 determination that there are two types of landscaping we
21 use within our naval facilities. One we're calling
22 aesthetic irrigation or landscape, I apologize, and the
23 other is functional. So parade decks, athletic fields,
24 that would be functional. The landscaping is actually
25 interacted with a person to provide a desired result.

1 Can you back one slide? I'm still on that last
2 slide.

3 Okay. And then the ornamental one, that's where
4 we're going to really focus in on. How do we reduce our
5 aesthetic irrigation requirements, because as Ms. Marco
6 (phonetic) said, "Hey, brown is a badge of honor." And
7 we're trying to really incorporate that culture within the
8 Navy. We want that brown lawn and we really made some
9 successful strides with that. We had a admiral's wife, who
10 will remain nameless, who called up the other day, because
11 her lawn wasn't as brown as her neighbor's lawn and she
12 wanted to know why her irrigation was running so heavily.
13 So that's a huge paradigm shift for us, we're really
14 pleased that we're starting to turn that corner on that
15 issue.

16 And finally, water data acquisition. We don't
17 put, as somebody mentioned earlier, AMI meters, flow
18 meters, for our water hydrants. We usually do one meter at
19 the header and then we do the old-style meters that you
20 have to walk around and check on a regular basis. So our
21 data comes back about six weeks after consumption to tell
22 us how we did on all our conservation behaviors. Our goal
23 is eventually on all our barracks, which are essentially
24 just giant apartment buildings, to put basically dashboards
25 up in the lobby to tell people, "Hey, you used this much

1 water per capita yesterday. You used this much today." So
2 our leadership can get out there and really encourage to
3 take the challenge on of, "How do I reduce my water
4 footprint in the state of California?" Okay. Next slide.

5 So here are the natural drivers. Like I said,
6 national security issues. This one's a little heavy handed
7 saying base closure, but the reality is let's take a base
8 like China Lake that's listed out there. If we cannot
9 provide an adequate, safe supply of water at China Lake on
10 a regular basis we will have a very, very difficult time
11 continuing to conduct the operations as they are conceived
12 today at China Lake. It will become cost prohibitive if we
13 have to truck water out there.

14 So the time is now. We know that aquifer is
15 going, getting lower and lower and lower on a regular
16 basis. So we've got to conduct a strategy that most
17 effectively supports the continuity operations in China
18 Lake today and well into the future, on one of our most
19 strategically important bases in the Navy. And it is
20 sitting on top of a expiring lease on water and we've got
21 to really, really be aggressive with that.

22 Two, water conservation projects. I've talked a
23 lot about this, but we need now to have a strategy that
24 incorporates water reduction in the Southwest as a matter
25 of course and a matter of fact, not as a matter of

1 finances. If water is as valuable as it is, we have got to
2 find a way to properly articulate that to our leadership
3 and continue to support any and all efforts as just a
4 baseline for starting to do business. So any facility
5 project, it would be like not installing a roof or a
6 foundation to not have the water conservation pieces in
7 place. So we're working on developing those, what we call
8 guide specs for those projects, from here into the future.

9 Compliance improvements, I've talked a lot about,
10 but hydraulic modeling of our systems is one of the most
11 key and least costly things we can do to be successful.
12 Simply knowing where our times are. I talked about Naval
13 Base Coronado. When we did hydraulic modeling we found out
14 that some of our dead legs had detention times of up to 86
15 days. By simply looping the system and using that surge
16 tank, we got that down to below -- there is no spot in that
17 system that has water that's over a day old at that point.

18 Landscaping and irrigation, I said 1 million
19 square feet of turf and high-water use landscaping is going
20 to be replaced with synthetic. We've already done several
21 million square feet on most of our bases, almost all of our
22 athletic fields throughout the region have been converted
23 over now to synthetic turf. And Naval Base San Diego, if
24 you drive out there, there is just a ton, almost a million
25 square feet of what we call zero-scape throughout the

1 based.

2 And then water data acquisition, I talked a lot
3 about that and that spiraling effect of the better your
4 data, the better your decisions. And we're now making --
5 our goal is to get 90 percent of our water consumption on
6 AMI smart meters, so we can do real-time data analysis. So
7 next slide.

8 So the net result so far has been extremely
9 positive. Based on the June and July of 2013 we're down 30
10 percent. You can see that in the corner. Our fiscal year
11 to date starting last October, we're down almost 17 percent
12 based on the 2013 baseline. So we've already given back
13 almost a little over 400 million gallons to the State of
14 California and we're hoping to continue to do that into the
15 future and continue that upward trend.

16 And one of the things the Regional Commander and
17 the new Regional Commander, Rear Admiral Rich, just told he
18 is really unconcerned with how wet the year is. This is
19 now the new normal here in the State of California and
20 we're not turning back from this. So next slide.

21 With that I am ready to answer any and all
22 questions.

23 CHAIRMAN WEISENMILLER: Hi, this is Bob
24 Weisenmiller. We've had a great partnership with the Navy
25 and Marines in the Southwest. Certainly we appreciate the

1 partnership we've had, particularly in the water
2 conservation side, but obviously we've done that across the
3 board: energy efficiency, renewables and zero emission
4 vehicles. I certainly have enjoyed working with Secretary
5 Mabus and with Denny McGinn and with the base commanders
6 there. And again, look forward to continuing and deepening
7 the partnership, particularly as we deal with the water
8 issues, but across the board.

9 MR. KOHNEN: We really appreciate the partnership
10 too, Doctor. I've met you several times and I can tell you
11 that your help on our CO2 Washer Initiative has been
12 invaluable. I think there's a real opportunity to
13 demonstrate that technology into the future.

14 CHAIRMAN WEISENMILLER: Yes. Thank you.

15 DEPUTY SECRETARY CONRAD-SAYDAH: This is Ashley
16 Conrad-Saydah with CalEPA and I just wanted to know, you
17 talked about some of these measures in the Southwest. Has
18 the Navy elsewhere thought about water conservation
19 measures simply for cost saving measures?

20 MR. KOHNEN: They do if you can demonstrate a
21 return on investment, basically 20 years is your planning
22 horizon of greater than 1. So basically if you invest a
23 million dollars and you can get a million dollars back in
24 20 years you have a good opportunity of getting that
25 project funded. Unfortunately, in most other areas,

1 specifically in the Southeast water's tremendously cheap
2 and tremendously plentiful most of the year. So it doesn't
3 pencil out though there are other spots that they have like
4 in West Texas, that they're being successful at.

5 We have an overall -- we have pushed our strategy
6 up and we are hoping it's going to be adopted, but again
7 it's more of a -- it is definitely geographically based.

8 DEPUTY SECRETARY CONRAD-SAYDAH: Well, maybe some
9 of the calculators we talked about earlier today in terms
10 of the Water-Energy Nexus would be helpful then in terms of
11 spreading out resource savings across the whole country.
12 And we can easily send those along to you, but it sounds
13 like there's a lot of work being done here in California
14 now to show the cost savings from water savings as well.

15 MR. KOHNEN: That's a great point.

16 COMMISSIONER MCALLISTER: Thank you, very much.

17 MS. RAITT: Thank you.

18 MR. KOHNEN: I appreciate the opportunity.

19 MS. RAITT: Great.

20 COMMISSIONER MCALLISTER: All right. Let's move
21 on to --

22 MS. RAITT: Next is Jack Hawks from the
23 California Water Association.

24 MR. HAWKS: Good afternoon, my name is Jack
25 Hawks, California Water Association. I want to thank the

1 Energy Commission for hosting this event.

2 I've learned a lot more about drought management
3 than I thought I already knew and I already thought I knew
4 a lot. So it's -- I'm going to talk a little bit about the
5 regulated, PUC-regulated water utilities, the water IOUs
6 I'll use for shorthand. I'm going to talk about the
7 jurisdictional relationship a little bit between the PUC
8 and the State Water Board. I'm going to talk about how the
9 water IOUs -- what they're doing in terms of managing the
10 drought and then how they are doing. Go ahead to the next
11 one.

12 There are about 113 regulated water IOUs. When I
13 say regulated, I'm talking about PUC-regulated, this is
14 rate regulation. They are obviously regulated by the Water
15 Board as well on water quality and a host of other things,
16 but this is rate regulation here. We've got 14 that have
17 more than 2,000 service connections, 9 that have more than
18 10,000 as you see up on the slide here. And there's a big
19 range. The smallest Class A has got about 20,000
20 connections; the largest Class A is pushing about 500,000
21 connections, so a large variation.

22 We've got about a million-and-a-half meters --
23 as Commissioner Sandoval noted this morning -- a million-
24 and-a-half meters out of about the 8 million or so meters
25 in the -- or connections in the state.

1 And we serve about six million Californians. And
2 as you can see, our water districts are spread all over the
3 state. And we'll come back to those in a minute. Go
4 ahead, next slide.

5 Okay. The PUCs Commissioner Sandoval noted this
6 morning, as far as we are concerned on the water side it's
7 responsible for ensuring that we deliver safe, clean,
8 reliable water at just and reasonable rates. I repeated
9 the 113 number up here on this slide, because I want
10 Vice-Chair Spivy-Weber to know that that number is
11 declining and it's declining steadily.

12 Many of you may know that the SB 83, Senate Bill
13 83, passed in June. The Governor signed it. It has to do
14 with consolidation, acquiring small, troubled water
15 systems, public water systems. And our utilities have
16 gotten a jump on that. This bill is ultimately -- it's got
17 a range of encouraging voluntary consolidation all the way
18 up to, at the end of the day, possible mandatory
19 consolidation.

20 And the PUC in the last few months has approved
21 about a half a dozen consolidations in our side. And
22 they're not all just other regulated water utilities. A
23 couple of them are mutual water companies. One is a small-
24 community services district. They all have TMF: technical,
25 managerial and financial problems. And all of their

1 customers are going to be for the better once these
2 acquisitions get completed, so that's why I raised that
3 point.

4 Now, after getting the necessary policy direction
5 from the fifth floor at the Commission -- and that's where
6 Commissioner Sandoval resides, that's where Amy and Jamie
7 reside -- the Division of Water and Audits actually carries
8 out all that policy direction. And they process our rate
9 and service change requests, they investigate the service
10 quality issues. And more recently they are now monitoring
11 and ensuring compliance, not only with the PUC's
12 directives, but also with the state water boards, with the
13 Department of Water Resources, California Water Commission,
14 the Governor's Office, everybody now.

15 And part of the reason I wanted to talk about
16 this jurisdictional point is that -- and this last bullet's
17 important here -- the PUC and the Division of Water and
18 Audits share jurisdictional responsibility with the State
19 Water Board on water quality and drought management
20 compliance. But it's gone even farther than that now. A
21 year ago -- a couple of months now the Division of Drinking
22 Water, the state's drinking water program, got transferred
23 to the State Water Board. It's hard to believe that you
24 could actually raise the profile of water in the state's
25 leading watery agency, but that's exactly what's happened.

1 With the Drinking Water Program and the State Water Board
2 now, drinking water's profile at events like this
3 everywhere has raised dramatically.

4 And I've had to cut myself in half. I used to
5 spend about 80 percent of my time at the PUC, 20 percent
6 here in Sacramento. It's now 50/50. And that's a
7 manifestation of how the profile of drinking water has
8 increased in this state in the last year. Next slide.

9 Okay, where we are today. Well, heard about the
10 Governor's Executive Order on April 1st and May 5th the
11 Water Board passed its next iteration of emergency
12 conservation regulations as Jessica had noted this morning.
13 And you know about the conservation targets that range from
14 4 to 36 percent across the 411 reporting water districts.
15 And what they are based on, they calculated those at
16 targets based on the consumption from a few months last
17 year compared to 2013.

18 And then this last iteration of the emergency
19 regulations required monthly water use reduction or
20 production numbers for the month in 2015 compared to 2013,
21 as well as an estimate of their residential gallons per
22 capita per day. That's what the "GPCD" is up there. And
23 that's been happening and that's what Jessica pointed out
24 this morning. The first two -- most of the programs got
25 going in a big way on June 1st. And that's why the first

1 two months have shown these precipitous drops in
2 consumption.

3 Two days later the PUC passed its resolution that
4 ordered compliance with that May 5th emergency regulation.
5 And for us that meant something significant that hadn't
6 happened in 23 years and that was the activation of what
7 are known as Schedule 14.1 -- and I'll get back to that in
8 a minute. Next slide.

9 If you have a chance, avail yourself of the
10 Emergency Conservation Portal on the State Water Board's
11 website. And you'll see this as well as a multitude of
12 information about what's going on and about how the drought
13 is actually being managed by the State Water Board. The
14 significance of this slide is it summarizes the last
15 iteration of emergency regulation and it characterizes not
16 only the reduction targets and the monthly reporting
17 requirements, but all of their prohibited uses. So it
18 would get to us real quick. Next slide.

19 Last summer the PUC ordered the water IOUs to
20 activate their, what are called, Tariff Rule 14.1. As the
21 Water Board increased its severity of drought management
22 requirements of the urban sector, urban water sector, the
23 PUC did the same thing. So we have Stage 1 and Stage 2,
24 Stage 3. All of those initial stages had to do with
25 voluntary work pursuant to the Water Board. And that moved

1 up to continuing to limitations and prohibitions and then
2 mandatory restrictions. Mandatory restrictions is where we
3 were about a year ago at this time.

4 Then this past -- the May iteration of both the
5 Emergency Regulation and the PUC's Resolution, we got down
6 to serious business. And these mandatory restrictions
7 became mandatory reductions and that's where we are today.
8 And that mandatory reduction is what the Water IOUs had to
9 do in the form of this Schedule 14.1. And we got into
10 specifics on the water reduction requirements and what
11 happens if you don't -- yeah, I'm hurrying -- if you
12 violate the prohibited uses or if you exceed your target,
13 so each of the water utilities initiated programs again,
14 basically starting in June.

15 I just want to point out that PUC required us to
16 meet directly with all of our customers. We had nearly a
17 hundred meetings all over the state. We had 16,000
18 customers attend our 60 reporting districts. And last
19 slide here real quick.

20 What's happened? As you can see we had a
21 majority of our 60 reporting districts out of the 411 at
22 the top 4 targeted reductions -- 24 percent up to 36
23 percent. Then June, and in July, 50 of our 60 reporting
24 districts met or exceeded their targets, which is a
25 wonderful result. And then in June, 5 of the 10 were

1 within 5 percentage points of their targets. So let's say
2 they had a 36 percent target and they got to 31 percent in
3 June -- 31 percent is quite a reduction. Same in July, 7
4 of the 10 got to within 5 percentage points. In June, 37
5 percent met or exceeded the state average, which at that
6 time was a 27 percent; 35 percent it met or exceeded the 31
7 percent in July. And 23 actually got above 35 percent and
8 7 got above 40 percent.

9 About half in both months were lower than the
10 state average on the residential GPCD. And this is a pretty
11 low number. The state average is about 98 gallons per day
12 per person. And anything below that -- and then a number
13 of them are down under 60 gallons a day -- it's quite a
14 significant decrease, even those that aren't necessarily
15 meeting their targets.

16 Like there's one of our districts that had a 4
17 percent reduction in July against a 16 percent target.
18 Their GPCD is only 67 gallons a day, so that just shows you
19 -- I mentioned this to Dorothy the other day this
20 particular district has a huge industrial component and
21 they're not after the processed water yet in that district
22 yet. We're trying to hang on to the water that's essential
23 to the business activity for the moment.

24 So I'll go ahead and end it now. Just my little
25 plea is this is all wonderful stuff going on here, but

1 we're all going to have to face the customers here in a few
2 months. And I'm not just talking about the water IOUs now.
3 All of the retail water agencies in the state are suffering
4 through what we're calling lost revenues. And even the
5 City of San Diego last week got hammered for a 16 percent
6 rate increase proposal on the local press, local
7 television. And their reduction was, in July 27 percent.
8 And they're just doing this to kind of make up for these
9 lost revenues.

10 And it's incumbent upon all of us on the
11 government industry side here to try to make sure our
12 customers understand that their bills, their monthly bills
13 are not necessarily a function of how much water they use.
14 So I'll leave it there, but that's my plea. Thank you.

15 VICE CHAIR SPIVY-WEBER: A very good plea. And I
16 was talking with a fellow from Texas who was having to do a
17 16-plus increase in his water bill. And what he would
18 normally do is he would take an average bill for cell
19 service, an average bill for Netflix or various and sundry
20 things like that and clearly water is quite cheap.

21 But just for those of you in the energies, on the
22 energy side, what Jack just said about consolidation? This
23 is kind of a sleeper issue. It really kind of went through
24 and no one really paid a whole lot of attention to it, but
25 it is going to, I think, change over time. It's going to

1 change the character of the water world. Because while you
2 have 411 3,000 hookups and more, you have over 5,000
3 smaller than that. And so that's one reason the water
4 industry is so difficult, particularly for energy people.
5 Because they are used to dealing with 3 or 4 or 10 -- you
6 know, like nothing.

7 And so the IOUs in particular have stepped up to
8 work in this consolidation area. And I think certainly for
9 the future it's going to pay off quite well in terms of
10 better service, higher quality, training of operators, more
11 opportunity for this integration between water and energy.

12 COMMISSIONER WEISENMILLER: Yeah, I guess Jack
13 the question I had is recently the issue came up at LADWP
14 that in terms of the water side they had an investment
15 cycle that I think would take them like 300 years to
16 basically catch up on the deferred maintenance?

17 MR. HAWKS: No, well it's not what I would call a
18 deferred maintenance.

19 COMMISSIONER WEISENMILLER: Well, whatever. So I
20 was trying to understand how --

21 MR. HAWKS: It's pipe replacement, pipeline and
22 main water main replacement.

23 COMMISSIONER WEISENMILLER: Now how broad is that
24 issue in your members?

25 MR. HAWKS: It's a nationwide, daily, constant

1 motivation and motivating factor with every water utility
2 in the United States. And you're right, the replacement
3 timeframe ranges from 50 years to 500 years.

4 This is actually another distinction for the
5 water IOUs. They are required by statute, by California
6 statute, to go in for a rate review every three years. And
7 the Commission, these three right here, they look at that
8 issue in every single rate case. And in every single rate
9 case the water utilities propose a capital investment
10 program just devoted to the main replacement and to try to
11 improve -- I'd better be careful here, because there are
12 some rate cases going on right now about this issue, but
13 just generically. And this is discussed in every rate
14 case.

15 COMMISSIONER WEISENMILLER: Yeah, again what I'm
16 just trying to understand is obviously we are talking about
17 all these busy technologies, AMI, all the things you could
18 do with advanced technologies. And trying to figure out
19 how do you balance that with the basic infrastructure
20 needs, which is crumbling?

21 MR. HAWKS: And the need to try to keep the rate
22 increases to a level that the customers can handle and that
23 the companies can handle. It's not easy, and actually the
24 two proceedings that Commissioner Sandoval talked about
25 this morning, are directly related to your question here

1 about the balance.

2 And one, the Water-Energy Nexus, we're going to
3 be presenting some ideas to the Commission on how we work
4 together with the energy utilities on AMI or just how they
5 do it on their own. There are some water agencies out
6 there that are already invested in the AMI for their
7 service areas.

8 And in the other proceeding, the balance rates
9 OIR that Commissioner Sandoval mentioned, we're definitely
10 going to be talking about how to balance all these
11 competing priorities and how fast are we going to bring in
12 the advanced infrastructure into the water industry?.

13 Now, in our case most of our Sacramento area
14 companies have gotten their customers metered. We're down
15 under around 12 percent of our connections out in the
16 Central Valley that need to be metered, so it's not as
17 significant for us. We can move forward with some of these
18 initiatives on the technology side and not be held up too
19 much by our flat-rate connections that we still have.

20 COMMISSIONER SANDOVAL: I should also mention
21 that both the Water-Energy Nexus Proceeding and the Balance
22 Rates OIR are quasi-legislative, so this is --

23 MR. HAWKS: So not subject to ex parte, right?

24 COMMISSIONER SANDOVAL: Not subject to ex parte,
25 rules, so this is part of why we're not having the cutoff

1 cow here.

2 So but so one question again -- I really wanted
3 to thank you and all the utilities, especially for the
4 public meetings, that's an extraordinary number of meetings
5 and just there's a tremendous interest in the customers.
6 So it sounded like in the beginning that the customers had
7 a lot of questions and concerns about mandatory cutbacks,
8 but for the most part there's been performance. So have
9 you seen a shift of public attitude?

10 MR. HAWKS: Yeah, I'm glad you brought that up.
11 Actually even I have been pleasantly surprised. I thought
12 the customers are going to hate this and hate us. And
13 actually some of the customers at these meetings, after the
14 meetings they've actually said, "This is working. We're
15 okay with it."

16 There's still a lot, believe me, there's a lot
17 that are paying these -- remember, there's surcharges and
18 penalties for violating these uses. So there are some that
19 are paying and not happy about that, but I actually have
20 been pleasantly surprised with the customer reaction. And I
21 know the Water Board and the PUC have too. I'm just
22 astounded to see these numbers. I didn't think you could
23 change the behavior of 38 million people this quickly, but
24 it's happening.

25 COMMISSIONER SANDOVAL: That's great.

1 COMMISSIONER WEISENMILLER: Actually I know this,
2 particularly Dorothy's members have been pleasant, right?

3 MS. ROTHROCK: Our members are wonderful, is that
4 what you said? Yeah, I agree.

5 CHAIRMAN WEISENMILLER: Right.

6 COMMISSIONER SANDOVAL: And then so for the --
7 most of the investor owned utilities are meeting their
8 goals. For those who have not been able to quite achieve
9 their goals I know that CPUC Water Division Director Kahlon
10 has made a phone call to see what we could do to help. And
11 you mentioned that at least one of them is in an area with
12 a very high number of commercial customers.

13 MR. HAWKS: Industrial, yeah.

14 COMMISSIONER SANDOVAL: Industrial, thank you.
15 So can you tell us a little bit about what do you think are
16 some of the barriers to meeting the goals in the areas
17 where the goals are not met? And what we could do, either
18 through any of our proceedings, to be helpful?

19 MR. HAWKS: This is being recorded and
20 transcribed isn't it?

21 COMMISSIONER SANDOVAL: Yes, so in general -- not
22 specifics.

23 MR. HAWKS: Okay. Well, the heck with it. In
24 the Central Coast there are affluent communities with large
25 lots and very GPCD to begin with. And they have been

1 reducing, but their targets are in the 30 to -- 28 to 36
2 percent range. Their performance thus far, has been in the
3 15 to 26 percent range. So they're not there on the
4 targets yet, they are reducing. But they're large lots,
5 they're affluent, they don't mind paying \$5 for a unit of
6 water. A unit of water is 100 cubic feet. They don't mind
7 that. They don't mind paying a \$50 fine or \$100 fine for
8 violating uses. I mean, Tom Selleck didn't mind -- he did
9 mind and he went out and he's paying for it now, but that's
10 part of it.

11 Actually I'd say that's most of it now that I
12 think about it. Is just it happens to be the particular
13 communities that are being served, but that's not uniform.
14 But here look in the Bay Area, South Bay, affluent
15 communities, not necessarily as large of lots, but Los
16 Altos? They've seen a big drop, heck in San Jose, San
17 Jose's a good example. They only had a 20 percent target.
18 And you're right about Santa Clara Valley in emphasizing
19 the 30 percent, but they're 38 to 35 percent now. I think
20 San Jose they're both about 31 percent, they were right on
21 the state average in July.

22 COMMISSIONER SANDOVAL: Well Fran, maybe we need
23 to visit some people in the Central Coast and just talk
24 about doing some persuasion.

25 MR. HAWKS: I don't want to pick on the Central

1 Coast though, because it's not like they're not conserving.
2 They are.

3 VICE CHAIR SPIVY-WEBER: We can also go to
4 Beverly Hills.

5 COMMISSIONER SANDOVAL: Okay. But it does point
6 out -- and I wanted to commend the Water Board also for
7 giving individual targets, because they are targeted at
8 some of the communities that had very high usage. And this
9 was also part of what drove concern, I think, in some of
10 the initial meetings is you had reported it was -- whereas
11 usually for GRC you've got lower income people come and
12 say, "Don't raise my rates." And at these meetings it was
13 higher income people coming and saying, "You know, how
14 could you tell me how much water to use? As long as I can
15 pay my bill why should you care?"

16 So but it's because there's a drought and so I
17 think that there might be a need, at this point, to really
18 start looking at what other communities are still not
19 making it and how can we really reach out to the local
20 leadership to say, "You need to embrace the brown."

21 MR. HAWKS: Yeah. Actually I'm not talking about
22 the Northern Central Coast, I want to be clear about that.
23 The Northern Central Coast is awesome. I'm talking about
24 below Big Sur, okay?

25 COMMISSIONER MCALLISTER: Yeah. We're running a

1 little bit behind and I want to keep moving, but also I
2 feel like I should point out that behavior change is
3 something that does have a peculiar cycle. So to the
4 extent that a lot of what we're talking about is behavior
5 change and sort of voluntary reductions and people sort of,
6 "Okay, I know we're in an emergency. I'm going to
7 respond." Well, in the energy realm at least I know
8 there's actually quite a bit of literature that shows that
9 the longer you try to -- you really need those savings for
10 the long term. But they are kind of challenging to sustain
11 in some ways.

12 And so I think we all ought to sort of keep note
13 of what happens over time and really do the analysis,
14 figure out what works, where it's working, where there's
15 rebound effect. You know, where the persistence isn't
16 quite there if and when that happens. And I think we can
17 learn how to design a program such to make it and encourage
18 it to be more sustainable. But behavior can be fraught,
19 because it doe depend on people's choices.

20 CHAIRMAN WEISENMILLER: Yeah, while we're talking
21 about that topic I was going to have Laurie mention the
22 Behavioral Conference coming up, which will be on our
23 agenda. So for us to consider, but do you want to talk
24 about the date and time for that?

25 MS. TEN HOPE: There's a Behavior Energy and

1 Climate Change Conference. I'll pull up the dates here. I
2 believe it's October 18th and 19th, I'll double check.
3 It's here in Sacramento. It's a great workshop for looking
4 at behavioral issues and scientific studies of what
5 motivates behavior in energy and climate. And it's very
6 rigorous. It's a great cross-disciplinary conference
7 across engineers and social scientists.

8 COMMISSIONER MCALLISTER: Maybe we can have a
9 water track if they don't already have one. And I'll just
10 second that, it's a great conference and very worthwhile.

11 MS. RAITT: Okay. Shall we move on?

12 Next we have Mark Gentili from the Los Angeles
13 Department of Water and Power on WebEx.

14 MR. GENTILI: Good afternoon, Commissioners.
15 Thank you for this opportunity. I'm Mark Gentili. I'm the
16 Supervisor of Water Conservation for the Los Angeles
17 Department of Water and Power. Next slide. I'll try to be
18 quick here, I know it's getting late in the day.

19 We basically have three mandates started at
20 different times. The first is SB 7-7, then we have the
21 Mayor's Directive which came out, Directive Number 5, which
22 came out in October 2014 and then, of course, the
23 Governor's Executive Order in April 2015. And being in
24 L.A. the most important for us is to make number two, the
25 Mayor's Directive. But, of course, by meeting that we're

1 going to meet the others also.

2 The Mayor's Directive basically actually said
3 save 10 percent based on 2013 from the overall usage in
4 July. The 10 percent was July and we met that and then we
5 have our next one in 2017, February, 20 percent.

6 The Governor's Executive Order is basically
7 saving 16 percent on a monthly basis, so taking the full
8 monthly usage from 2013 and saving 16 percent. So we've
9 made that through June and July and a pretty good chance
10 we're going to make it through August. Next slide.

11 So what is our response to the drought, how are
12 we meeting these goals, how are we going to continue to
13 meet these goals? I mean, basically I kind of broke it
14 down into behavioral changes through education and
15 awareness, codes and standards, and hardware programs.
16 Next slide.

17 So water waste, of course, is a behavioral,
18 trying to change that behavior. Here are some examples of
19 water waste, sprinklers, run off, hosing down cement areas
20 which we don't allow unless it's for health and safety
21 reasons, overwatering landscaping, producing runoff. Next
22 slide.

23 So to combat that we have our water conservation
24 crew, and that's the Water Conservation Response Unit, we
25 call it the Water Crew. They're enforcing Phase 2 of the

1 ordinance, which basically has things everybody's heard
2 about. Of course, not watering, there's three days a week
3 watering and we may change that to two depending on how we
4 do month after month with the Governor's Directive there.

5 We've added staff to the crew. We have wraps on
6 the cars, so our cars are very identifiable. And that's
7 doing well enough that we're able to -- we started with so
8 many calls into our hotline that just investigating those
9 calls -- only now that we have more people we're actually
10 going to the higher usage areas and just driving around
11 proactively to see what kind of violations are happening.
12 Next slide.

13 So Codes and Standards, some time ago, 2009, we
14 enacted 180822, the High Efficiency Plumbing Fixtures
15 Ordinance. And with that we -- again this is 2009 -- we
16 mandated 1.28 gallon per flush toilets in L.A., .125
17 urinals, 2 gallon showerheads and higher cycles of
18 concentration for cooling towers. Next slide.

19 And in the future and very near future we want
20 certain construction techniques to be mandated for new
21 construction before the next adopted edition of the
22 California Plumbing Code. And the kind of things that
23 we're looking at is to specify how long it takes for hot
24 water to reach where it's use is, tightening landscape
25 irrigation allowances, mandates for dual waste water

1 collection of gray water and using the gray water, more use
2 of reclaimed or recycled water, mandating water sub-meters
3 for three story or less multifamily residential buildings
4 and pool covers. Next slide, please.

5 Landscape, a lot of things happening in landscape
6 guidelines and ordinances and whatnot and in 2011 the State
7 Model Water Efficiency Landscape Ordinance further reduced
8 irrigation demand. And right now there's this new Model
9 Landscape Ordinance, further reduced irrigation demand.

10 And right now there's this new Model Landscape Ordinance in
11 effect by December 2015. Some of the things that that has
12 in it is all new irrigation systems, have to have pressure
13 regulators and master valves, it's going to require flow
14 censure that basically shut off the irrigation if there's a
15 leak or a sprinkler breaks. No turf are allowed in median
16 strips or parkways. Next slide.

17 And, of course, we have hardware savings to
18 battle the drought. In hardware savings, here's some of
19 kind of the highlights of the SoCal WaterSmart Program,
20 which is run by the Metropolitan Water District in which we
21 put a good portion of the rebates. If you look at the
22 fiscal year '12-'13 for multifamily high-efficiency toilets
23 -- and premium high-efficiency toilets, which are 1.06
24 gallon per flush or less -- that we had close to 50,000 in
25 fiscal year '12-'13. In '13-'14 we gave out 87,000 rebates

1 and '14-'15 almost identical, 87,000 rebates. Next slide.

2 And further in commercial, through that same
3 program, turf reduction has gone from close to 400,000
4 square feet in '12-'13 up to 1.5 million square of turf
5 replaced. Next slide.

6 And for residential also ATPs have gone up
7 substantially from '12-'13 1,840 to 55,290 in this past
8 fiscal year. Next slide.

9 And, of course, everybody knows about residential
10 turf replacement and how we -- well, not just us, but a few
11 agencies got together and bankrupt the MWD to take it from
12 -- we took it from 140,000 in '12-'13 up to -- hold on my
13 screen just stopped here -- '12-'13 up to 7.6 million in
14 this past fiscal year. Next slide.

15 Now, this is in my opinion, I think the next
16 frontier of water conservation is going to be. A lot of
17 people have been talking about commercial-industrial water
18 conservation and we have this Technical Assistance Program,
19 which covers commercial, industrial, institutional and then
20 multifamily like multifamily property owners if they do
21 projects. I'm not talking about individual dwelling units
22 doing these projects.

23 And I think it's the next frontier, because soon
24 toilets are going to be mandated for residential and then
25 for commercial. And I think at some point rebates are

1 going to end there and that's a big portion of our program.
2 So the next thing that's going to come, I believe, is going
3 to be more of like custom-type projects, which I mean, they
4 do start out as custom and sometimes they end up just
5 becoming rebatable items. But for things like cooling
6 tower efficiency upgrades, recirculation projects,
7 recycling projects -- those probably will remain custom,
8 because the savings vary from customer to customer. Next
9 slide, please.

10 So I want to give a couple of example to wrap it
11 for the Technical Assistance Program in my presentation.
12 One project that I've been working very hard on is a 55-
13 facility project. And I'm not going to name what these 55
14 facilities are or what their business, but they basically
15 installed a fully automated water treatment system for the
16 evaporative condensers that they have.

17 And how this works is we provide an incentive,
18 LADWP does and also MWD provides an incentive for the 55
19 facilities. And together our incentive was -- well, we had
20 140,000 and MDW 165,000, which is pretty much the project
21 cost, the customer saving overall about 2.4 million gallons
22 per year. Their bill savings are over \$200,000.

23 And the one thing I think is very interesting in
24 a lot of other utilities, electric utilities -- beside
25 we're electric utility also -- but people are looking at

1 the energy savings here for this particular project and
2 I'll go into that a bit. But just to give you an idea,
3 that we had -- the 55 facilities that we have now -- of
4 those, we have 6 that was in our original pilot. And I've
5 looked at their energy usage over the past couple of years
6 and seen that they're saving about 4 percent of their total
7 facility energy usage. And why is that happening? Next
8 slide, please.

9 MS. RAITT: I don't mean to interrupt, but we
10 will need to wrap it up soon. Thank you.

11 MR. GENTILI: Okay. Anyways, they put an
12 automated control, this is it. It's got a controller on
13 the left there adding the chemicals with the automated
14 meters. Next slide.

15 And this an evaporative condenser. As you can
16 see, the condition it's in. As the water treatment gets
17 better, this gets a lot cleaner. Next slide.

18 And last project is an industrial launderer that
19 put in a rather large gray water system and it cost them
20 \$800,000. The incentives plus the savings per year from
21 the water, sewage and gas costs was a 5.8 year payback.
22 Next slide.

23 And this is what the system looks like. It's
24 ceramic filtration. It requires less PSI to get the waste
25 water through than you'd have for RO. Next slide. And

1 this is what it looks like, you have hundreds of these
2 little ceramic tubes that go inside the stainless steel
3 canister and water's forced through them.

4 That's it.

5 MS. RAITT: Thank you, very much.

6 COMMISSIONER MCALLISTER: Thanks very much. I
7 think unless somebody has a top-level really urgent
8 question I have a question I'd like to ask. But I think
9 maybe I'm going to pass and maybe you'll hear from staff or
10 my office later.

11 MR. GENTILI: Okay.

12 COMMISSIONER MCALLISTER: So we're running a
13 little bit behind, so but thanks very much. That was
14 interesting and I'm sure you'll have some contact to follow
15 up.

16 MR. GENTILI: Okay. Thank you. Bye now.

17 MS. RAITT: Great. Our last panel is on
18 Preparing for a Future of Drought and Laurie ten Hope again
19 from the Energy Commission.

20 MS. TEN HOPE: Hello, I'm back. And I'm still
21 Laurie Ten Hope, Deputy Director of Research at the Energy
22 Commission. And I'm going to do a quick fly-over on our
23 research program and some of the research opportunities.
24 Next slide please.

25 So, I'm going to just quickly talk about some of

1 our current and active research that has our Water-Energy
2 Nexus and then looking forward to some of the research
3 opportunities coming up in the EPIC and Natural Gas
4 Program. I just wanted -- you can go to the next slide.

5 We have basically three research programs. We're
6 winding up the PIER Program, Public Interest Energy
7 Research. A couple of the projects that I'll highlight are
8 part of that program. We have been doing research since
9 the mid-1990s and water has been a part of this all along.
10 I mean the Water-Energy Nexus, water issues, particularly
11 for industrial and agriculture have been a featured portion
12 of the program.

13 The more recent program focused on the
14 electricity sector is the EPIC program, Electric Program
15 Investment Charge. And we also have Natural Gas Research
16 Funds that focus on hot water savings. Next.

17 So, basically -- I mean in the research program,
18 we have the customer groups here and our policy makers
19 define what the needs are, what the barriers are. And then
20 we solicit the innovation and the talents of the California
21 researchers and manufacturers. So these are a couple of
22 examples of projects that were recently awarded at our May
23 business meeting. They're just kicking off, but they're
24 providing some interesting potential solutions here, like
25 actually one is kicking off and one is already successfully

1 demonstrated.

2 So the one on the left is Porifera and they're
3 looking at using a forward osmosis system for concentrating
4 products that can be used in applications like breweries,
5 wineries, tomato processing, liquid soap. And they're
6 using a filtration process to concentrate products without
7 heat concentration. So it's much lower energy use.

8 And then they use reverse osmosis at the end of
9 the process, which is a much more energy-intensive process
10 for just the final clean up and then have water that is
11 usable for onsite either for their industrial processes or
12 irrigation applications. So we're very interested in this.
13 We actually have two projects with them, one focused on
14 food processing and one on waste water.

15 The project on the right, Mr. Kohnen from the
16 Navy talked about this project. This is a CO2 Nexus has
17 developed this Tersus laundry system. It uses a closed
18 loop CO2 for cleaning instead of water. It's kind of a
19 triple win. You have 100 percent water savings, 50 percent
20 energy savings, 50 percent cost savings.

21 The project was successful as a demonstration
22 project, using lab clean room fabrics. And now we're
23 initiating a pilot with military for Kevlar and other tents
24 and military fabrics that really can't be washed. And
25 they're thrown out. And if this is successful with these

1 fabrics, it will be a lot of water savings and a reduction
2 in waste products. Next please.

3 So a couple of other projects. The PowWow
4 Project on the left is basically an agricultural
5 application using smart meter data. And then providing
6 messages to -- its taking pump information and smart meter
7 data and then being able to message to the grower where
8 there might be a potential leak or basically a leak
9 situation, so that they can address that right away. So
10 it's kind of using social media technology applications in
11 an agricultural setting.

12 On the right, this is a project, it's an advanced
13 walk that we funded -- completed this research a couple of
14 years ago. And if you go into a fast food Chinese
15 restaurant and can see behind, most of the woks are using
16 water, and a lot of water. They're running their woks at a
17 high temperature and they need to be able to cool off the
18 surface of the woks.

19 So this is a ceramic material and a burner that's
20 really focused, a much more focused flame, so that you
21 eliminate the use of water completely. So this is a
22 product that worked in the lab and now looking for
23 applications, commercial applications, to manufacture and
24 distribute the wok. Next.

25 Also we've had some references to power plant

1 use. So power plants can be a really large water user if
2 they are using wet cooling. Our siting process really
3 encourages dry cooling, but there are a lot of power plants
4 that are still using wet cooling. And we've done research
5 to really try to perfect dry cooling and it's available.
6 It's on a lot of the power plants now, but there's an
7 efficiency loss and so one of the research opportunities
8 going forward is to maintain the efficiency while still
9 eliminating water. So there are successes here and more
10 research to do.

11 It's especially an issue as we anticipate we're
12 going to get hotter and drier and being able to maintain
13 that efficiency under those conditions is important.

14 So that's kind of a really quick sample of a few
15 of the projects that are either under way or completed that
16 give us some hope for the future as Karen Ross was saying.
17 You know she's an optimist. And if you're in the research
18 world, it gives you a lot of opportunity to be an optimist
19 of some of the solutions that are being worked on.

20 So we have in the EPIC Program, which is the
21 largest funding source we have for research, we're guided
22 by a three-year investment plan. And that investment plan
23 -- the second investment plan for 2015 through 2017 --
24 identifies research areas that we will be issuing
25 competitive solicitations for in the next 18 months. And

1 so there are in the topic areas of industrial ag and water
2 efficiency, building efficiency and environmental research.
3 So next.

4 A little bit of detail on industrial ag water.
5 We're interested in water recycling, better membrane
6 technologies, water re-use, desalinization, the
7 applications of water and energy savings in these sectors.
8 So if you're out there, researchers, look for these
9 solicitations and bring your ideas forwards. Next.

10 In the building area, I'm also very interested in
11 bringing the next generation of fixtures and appliances to
12 bear, so that Commissioner McAllister can do that next
13 round of Standards or utilities have the next round of
14 products for incentive programs or, of course, going direct
15 to market.

16 And the last one on that list, the last bullet,
17 is gray water reuse. We're really interested in exploring
18 that for the residential and commercial sector and
19 addressing some of the barriers of being able to bring that
20 into building code.

21 So finally, the last area I wanted to touch on is
22 that we're also looking at -- we will have solicitations in
23 the water management area, continuing to improve the
24 hydrological forecasting to better anticipate and manage
25 our hydro resources. Next.

1 So that was a really quick, quick, quick overview
2 of research. So if you're interested in more of the
3 details of what type of solicitations will be coming
4 forward, we publish our investment plan and it's on line.
5 And we have an opportunity list that anyone can sign up for
6 and we'll send out the solicitations and workshops that
7 we're having. And we always have a workshop after every
8 solicitation is released to answer questions. And we often
9 have scoping workshops in advance to help us fine tune what
10 the research area is.

11 And I think that's my last slide. Any questions?

12 COMMISSIONER MCALLISTER: Okay. Great, thanks
13 Laurie. I get regular briefings on this stuff, so if
14 anybody else has questions, now. Yeah, it's a really
15 incredible resource to be able to fund at the level we do.
16 And Laurie you said -- you gave three or four, five
17 examples, but the list is very long, so I'm sure it was
18 very hard to choose.

19 I think we'll move on. Thanks very much, Laurie,

20 MR. KOSTECKI: Okay. Good afternoon. My name is
21 Robert Kostecki. I'm a senior scientist and a Deputy
22 Division Director at Lawrence Berkeley National Lab.

23 I would like to thank you for the invitation. I
24 really appreciate the opportunity, not just to speak here,
25 but also to listen about is really going on, on the future

1 action plans.

2 So my short presentation is going to give you a
3 quick overview of what the lab is doing in The Water-Energy
4 Nexus area. What we have been doing, because it's nothing
5 really new. And then I'll report some very recent
6 successes in bringing federal funding to California to
7 address some of the issues that we are all very much aware
8 of.

9 So this first slide, what it shows is a number of
10 projects that have been developed over the years with the
11 Department of Energy, which reside within what we call the
12 Water-Energy Climate Nexus. This project had been
13 conceived by many different groups and the funding comes
14 from different offices under the Department of Energy. So
15 they are driven by a different set of goals. And they are
16 laid out on different timelines.

17 So DOE has been considering Water-Energy Nexus
18 funding activities on Water-Energy Nexus for more than ten
19 years. And we have been talking to them as well as other
20 national labs quite intensely. The problem was that the
21 message coming from Berkeley was different from the message
22 coming from Sandia or Argon National Labs. And for DOE,
23 the whole information was more like a nebula of problems
24 impossible to deal with and develop a consistent
25 comprehensive national program.

1 This has changed in the last two years. There
2 was an active group which consisted of scientists,
3 prominent scientists from national labs, which developed
4 more or less of a national plan in the Water-Energy Nexus
5 area. And a report was published one year ago, very
6 shortly after California Council for Science and Technology
7 published its own.

8 And these two reports are very similar. But
9 three important key conclusions are DOE recommended
10 strongly each national lab to work with local authorities
11 and address problems that are geographically specific to
12 the location of where the national labs are. So in our
13 case, California it is.

14 The second is the problems relevant to Water-
15 Energy Nexus reside across all technology readiness levels
16 from a very basic level all the way into demonstration
17 deployment, meaning that an effective approach and long-
18 lasting, sort of a long term approach, will have to cover
19 all those readiness levels.

20 Now we've been following very closely, California
21 publications on the matter. The report I've mentioned in
22 California Water Action Plan and others, and we've been
23 thinking how to consolidate our ongoing efforts into more
24 comprehensive, more coherent, and coordinated efforts.
25 Next slide please.

1 So with quick conclusions, a few bullets that we
2 extracted from these documents relevant to California, I'm
3 not going to go and read them. They're all right there.
4 But our conclusion or translation, scientific translations
5 of those, was that that is a lack of or need for scientific
6 tools to guide optimized California investment in water-
7 energy infrastructure.

8 I'm not trying to say that there's no science in
9 decision making in California. But considering complexity
10 of Water-Energy Climate Nexus, there's a need for a tool
11 that integrates scientific tools from all these three
12 domains altogether. Building those interfaces up is
13 absolutely critical.

14 And the example on the right side of the slide
15 shows a prediction of the snow pack reduction in the
16 Sierras depending on the greenhouse gas emission, which may
17 decline to 74 percent in a low-emission scenario to 60
18 percent in the high greenhouse-emission scenario. What
19 does this really mean to energy and water infrastructure?
20 Where's the threshold lie for another crisis?

21 This question has not been addressed. So we have
22 to take this kind of research well beyond where it is now.
23 Now next slide please.

24 So this is a -- well, we all know that. So to
25 us, again, doing the scientific translation of the obvious

1 data is that we're looking at the system that goes in --
2 and if you try to understand and develop analytical tools,
3 the primary difficulty is that those systems are not
4 compatible. And they go across several orders of magnitude
5 of time and dimension scales meaning that there's no single
6 approach. There's no single tool. There is no single
7 analytical method that can ask the questions across all
8 those lands and all those granularities and all those time
9 scales.

10 To give you an example, looking at the climate
11 we're talking about decades and hundreds of years. If you
12 look at the water supply issues, we're looking at from
13 years into decades. And if you look into energy demand
14 response, we're looking at months to milliseconds. So
15 considering all these difficulties, developing appropriate
16 tools and integrating all those models is a true challenge.
17 So please next slide.

18 So again, in the last three years in the lab we
19 started looking at those projects that already exist, that
20 are very much relevant, although they were not defined
21 according to the needs that the states provided. But we
22 also are developing a comprehensive plan on how to address
23 problems in the long, midterm and also not to shy away from
24 providing support to immediate needs that California
25 government and authorities may have. And our record of

1 prior work with the California Energy Commission and other
2 agencies demonstrates that we can do that.

3 So I'm going to give quick examples -- next slide
4 please -- of what we are doing. The lab is one of a few
5 national centers for computational sciences and one of the
6 world-leading groups at Berkeley is the Climate Modeling
7 and Simulation Group. And I have been doing quite a
8 fabulous research into developing climate models and
9 looking at the implications of those models to what's
10 called extreme weather effects including drought or floods.

11 But the problem is that this is a very
12 computationally intensive branch of science. And the
13 problem has been always that the resolution of those
14 climate predictions is (indiscernible) looking at the 100
15 miles by 100 miles pixels, which are completely inadequate
16 to the needs of the energy simulation, you know, of the end
17 user level. So improving resolution of climate modeling
18 and linking climate modeling with existing simulation
19 models on the energy side as well as water side is
20 something that we really would like to explore and then
21 eventually building a comprehensive integrated model with
22 those interfaces within three different areas is obviously
23 a strategic goal for the next five to ten years. Next
24 slide please.

25 Another area of expertise and an ongoing research

1 funder by DOE is looking at hydrology of groundwater with
2 withdrawals and recharge. Also the disposal of highly
3 saline waters from geothermal operations or from oil and
4 gas wells, so looking at the geological formations, looking
5 at the point user with all demands and coupling it with
6 demand response on the energy side -- you know, whether
7 these operations and how these operations can be integrated
8 in demand response on the energy side is something that
9 we'd like to expand our ongoing research with the energy.
10 And we are developing a few proposals under ARPA-E in which
11 we plan to demonstrate some of those tactics and strategies
12 in the field in five months in California. Next slide
13 please.

14 So and finally looking at the supply side, water
15 supply side, on the big scale we are very much interested
16 and convinced that we need to take -- we have to challenge
17 ourselves strongly about how to increase water supplies by
18 tapping into what is called non-traditional water
19 reservoirs. I mean California is truly a water-rich state,
20 one of the coastal states, and it has an unlimited amount
21 of water. The problem is that the water treatment to make
22 that water suitable for human use is still too expensive.

23 And if you look at the cost of desalination, for
24 example, of sea water taking as an example the desalination
25 plant at Carlsbad, the cost is double the cost of importing

1 water and approximately four times the cost of recycled
2 water. So that is the factor that we decide is the
3 threshold for any proposal that the lab is currently
4 considering is not the scientific curiosity, but it's the
5 economy on a life cycle analysis that decides that if
6 successful, can we make it or not.

7 So what we really would like to challenge
8 ourselves is to reduce the cost of desalination of
9 nontraditional waters which include sea water, water from
10 geothermal wells, water from gas and oil wells and brackish
11 water from inland aquifers by a factor of five. And this
12 is a challenge similar to what UCLA scientists faced in
13 1949 when they started working on RO membranes. And it
14 took them almost 30 years to bring that technology into the
15 market.

16 We know we can't wait 30 years, so we would like
17 to do it fast, as fast as possible, but I think what is
18 necessary is a sustainable effort and support from the
19 federal agencies as well as from the state. So, next slide
20 please.

21 So if you look at the cost structure, I mean we
22 are scientists and we know that we can't beat the second
23 law of thermodynamics. And there's a cost associated with
24 that. So being realistic here, what we do believe is a
25 tremendous opportunity in the future is very specific for

1 California, is high penetration of renewable sources that
2 is going to happen in the coming decades. That's one.

3 The second is the cost of electricity currently
4 used in our operations can be offset by a low-grade heat or
5 renewable sources and by doing so the cost of an entire
6 operation can really do down. However, RO is not --
7 there's not much that can be done under RO. This
8 technology has been championed and fine-tuned by the
9 industry in the last 30 years. So there's a little room
10 for improvement and we can play in it. But I think we have
11 to take in not just one step, but ten steps back and look
12 at possibilities and opportunities for processes, which
13 will be quite revolutionary, considering a future energy
14 border landscape here in California. Next slide please.

15 So speaking about successes, DOE following this
16 general strategy, they have to address all problems across
17 all technology readiness levels. Issue the call, first a
18 comprehensive call in Water-Energy Nexus in March 2015,
19 calling for proposals from what's called the Clean Energy
20 Research Center for Water and Energy Solutions and
21 Technologies -- a partnership between the U.S. and China.

22 And it turns out that China's water-energy
23 problems are very similar in many instances to California.
24 So what we were able to do in a very short time is put
25 together a team of four campuses in California. Our

1 proposal is being very California-centric and the problems
2 that we address are California problems. And partnered
3 with the very famous Environmental Institute in Sweden and
4 built a comprehensive proposal that covers five different
5 areas, five topical areas that range from cooling,
6 thermoelectric plant cooling, water treatment, hydro,
7 climate impact and modeling and also data analysis to
8 inform planning policy and decision making.

9 So I'll be happy to talk more about that and
10 share the proposal with you. The good news is the DOE
11 announced the winner a few weeks ago and we got it. We are
12 in the final phase of contract negotiations of \$40 million.
13 It's just a beginning. And a national scale we put
14 Berkeley on the map as the Center for Water and Energy
15 Research.

16 So I think this is a good beginning. And three
17 days ago we learned about another \$4 million proposal from
18 the Geothermal Office of the DOE to support the research in
19 using waste heat from geothermal operations for
20 desalination purposes. We have some very unusual ideas how
21 to do it. If everything works well, this is going to move
22 after three years into the demonstration phase in one of
23 the California sites.

24 So with that I'd like to finish and take
25 question.

1 COMMISSIONER MCALLISTER: That was great. Thank
2 you very much, really exciting. Congratulations on getting
3 the getting that money for your consortium. That's very
4 exciting.

5 DEPUTY SECRETARY CONRAD-SAYDAH: I just have one
6 thing on the desalination that you were talking about. You
7 were talking about the costs. And it would be interesting
8 to include the non-market benefits as a reason for
9 desalination of waste water and reuse of that, because then
10 you're avoiding using fresh water. And that cost-
11 avoidance, the non-market cost avoidance, I think could
12 make it more compelling.

13 I know we've not yet monetized eco-system
14 services. The more people include them in our cost-benefit
15 analysis, the easier it will be for all of us to try to
16 monetize those in the future and show the real cost-benefit
17 analysis, market and non-market costs.

18 MR. KOSTECKI: This is an excellent point. And
19 definitely, we are taking this all into account. And in
20 some of our thinking we go along these lines and we think
21 of, for example, desalination operations that have no brine
22 disposal at all. Basically the only outcome of this is
23 fresh water and a bunch of commodities for chemical
24 industry like chlorine, for example. So all the
25 environmental issues, which is a large portion of the cost

1 structure, is eliminated altogether.

2 So speaking about revolutionary and out-of-the-
3 box thinking, I mean that's an example of where we'd like
4 to go.

5 COMMISSIONER MCALLISTER: And you have a
6 diversity benefit just straight out of the gate, you know?
7 Then that has some value, which is also kind of hard to
8 quantify, but its good.

9 Go ahead, Commissioner Sandoval.

10 COMMISSIONER SANDOVAL: And on desal, you
11 mentioned the cost, as we compare the cost to other
12 imported water or recycled water. We have to keep in mind
13 that the cost of an acre foot of water in California has
14 been skyrocketing. So I think the DEC can give us some of
15 the latest information, but I know last year by this point
16 of the year that water was going for about \$2,200 per acre
17 foot. If you were trying to buy an acre foot of water in
18 2012 you could have bought it for \$250.

19 So I know that there have already been deals this
20 year for over \$2,000 an acre foot. So the number that
21 actually San Diego is paying Poseidon for the desal water
22 is right on the money. So unfortunately we already are
23 experiencing high prices. And what I've heard from one of
24 the water districts is that if we don't get substantially
25 more water next year, and the drought continues, that

1 because we have pulled so much from ground water including
2 from our basins in some of the urban areas that they're
3 looking at the true scarcity cost of water. And next year
4 it's going to be \$8,000 to \$10,000 per acre foot. So at
5 that cost desal is a bargain.

6 Jack, do you have anything to add on this? Are
7 my numbers more or less --

8 MR. HAWKS: I'm going to make sure I've got them
9 accurate, so yeah.

10 COMMISSIONER SANDOVAL: Yes. So we mention this
11 in the -- in the Water-Energy Nexus this issue is
12 discussed. And one of the things that we actually put in
13 the cost calculator was the ability to vary the commodity
14 costs, because that's an important factor. I mean people
15 talk about the cost of imported water has historically been
16 cheap, but also when you're getting a zero percent delivery
17 on your imported water the theoretical cost of what you
18 could have paid last year doesn't matter.

19 So that's one of the factors that we have to look
20 at as well as certainly the diversity benefits and also
21 reliability benefits and resiliency benefits. So thank
22 you.

23 DEPUTY SECRETARY CONRAD-SAYDAH: Well, just from
24 the perspective of thinking again, the full range of costs
25 and benefits, distinguishing between desalination projects

1 that are from existing waste water versus ocean sea water.
2 I think it's really important to distinguish between the
3 two. Because obviously there's a wider range of cost once
4 you think about taking water that would otherwise just
5 still be there out of the system.

6 So those things I think from the CalEPA
7 perspective. And I'm thinking about we try to do the full
8 range of cost and benefits on our employment programs we
9 would look at the same things for the different types of
10 desalination.

11 MR. KOSTECKI: Definitely. And that's exactly
12 how we structure our efforts in CERC-WEST. We are looking
13 at different sources and locations.

14 COMMISSIONER MCALLISTER: There's an interesting
15 thread in the other parts of the IEPR, particularly if you
16 talk about renewables integration, that desal -- it'll be
17 interesting to kind of unpack the sizing, sort of cost-
18 benefit of different size, you know the modularity, and
19 different -- the capital cost versus the actual production
20 capacity as a potential essentially demand-response
21 resource to be able to aim some cheap or free very low-cost
22 renewables to desal during the middle of the day. And I
23 think it's a very open question. I'm certainly not going
24 to say that it's a worthwhile endeavor, but I think it's
25 really worth looking into in detail.

1 So if you have bunch of desal capacity sitting
2 there, and in the middle of the summer you've got a bunch
3 of solar, rather than curtail it you can go generate some
4 fresh water with it. And that's the way you would store
5 the energy. So a lot of interesting undercurrents in that
6 desal discussion.

7 All right, well thank you very much for being
8 here. I appreciate it.

9 And bringing up, bringing it certainly last but
10 not least, Bryan Kelly.

11 MR. KELLY: Good afternoon. I have the pleasure
12 of closing this out, so I'll be quick. I believe I only
13 have about 75 slides -- just kidding.

14 So Merced Irrigation District, we do a lot of
15 different things. Of course, we have an irrigation system.
16 That is our primary focus. We have a million acre foot
17 reservoir, built for water storage. And we deliver that to
18 our growers. But we also run an electric retail service.
19 And of course we have hydroelectric facilities associated
20 with our million acre foot acre foot reservoir. We provide
21 storm drain services to the cities within our districts and
22 run a large recreation area. Next slide, please.

23 So, we're located -- there's our Merced River
24 Hydroelectric Project. We're about two-and-a-half hours
25 south of Sacramento or two hours south, generally. There's

1 Merced. There's the Merced National Wildlife Refuge. Next
2 slide.

3 And our watershed is Yosemite National Park, the
4 eastern portion of it. So basically we collect water that
5 snow melt into the Merced River, collected into Lake
6 McClure, and then diverted out of the Merced River and
7 distributed in the eastern half of the Merced County area.
8 We have very senior water rights and have been around since
9 1904. Next slide, please.

10 So there's our New Exchequer Dam, next slide.

11 And McSwain Dam, which is a smaller after bay,
12 which really provides a benefit for in-stream flows
13 management and hydroelectric generation, because we have a
14 large after bay after our million acre foot reservoir that
15 we can discharge to and smooth out flows. Next slide.

16 So New Exchequer is capable of producing 100
17 megawatts of emission-free energy. As you all know, large
18 hydro is a critical component of balance in the energy load
19 demands, especially with the increase in the solar and wind
20 energy coming online. So if SB 350 is passed then there is
21 a new RPS target they're looking at by 2030, I believe, of
22 50 percent. So that's hydro will continue to serve in
23 importance. And we're in that Fresno area, the gentleman
24 earlier talked about, where hydro here is a critical
25 component of that whole electric system. Next slide

1 please.

2 So I'm going to show you all -- this has been
3 interesting, because you all have been talking about state-
4 wide issues and endeavors, so I'm going to show you how the
5 drought has impacted a local irrigation district on the
6 East side of the San Joaquin river. So next slide.

7 So someone showed something similar to this, but
8 is our watershed. That is the Half Dome in Yosemite. So
9 you can see 2009, below normal; 2011 was a wet year. And
10 yeah we talk about wet years above normal, below normal,
11 dry and critically dry. I've always asked the question why
12 isn't there a normal? But don't classify it that way. And
13 you can just see in 2015 there was no snow up in the
14 mountains, so that's just demonstrative too of the drought.
15 Next slide, please.

16 So this is a reservoir diagram. This is the
17 reddish line, that's our flood control curve. And the
18 dash-black line is the average levels in Lake McClure over
19 the past 50 years. The blue line is actually the actual
20 elevations. And this really demonstrates the impact to
21 Merced Region due to the drought.

22 So in 2011, which was a really wet year, we
23 filled and spilled that reservoir twice over. And you come
24 out of a really wet year and then you hit the drought and
25 you can see we follow the flood control curve really good,

1 like we always try to do. And then just over four years,
2 the reservoir kept dipping and dipping. And with no inflow
3 it's really hard to keep it up. Next slide, please.

4 So this is just a picture. This is Lake McClure
5 across Highway 49 Bridge and the picture on the left was
6 much better years. And that's what it looks like today,
7 it's been very challenging. So next year -- I mean next
8 slide.

9 So how's that impact hydrogenation? Well, you
10 can see in the wet year, 2011, we produced about 480,000
11 megawatt hours. And you can just see the impacts of the
12 drought as each year went by, less water, less diversions.
13 And not all of our generation is due to the drought, but
14 you can just see that decline. This year, our reservoir
15 was just so low we're actually not diverting any surface
16 water for our growers and hence the paltry amount of
17 generation this year. Next slide please.

18 And of course this is dear to my heart, because
19 I'm the DGM of Water Resources and so I have to talk to the
20 growers every day. But our reservoir did really well in
21 2011, which most folks don't realize in a really wet year
22 you divert less water, because every thing's wet and the
23 growing season doesn't need as much diversions. We
24 diverted 2.7 acre feet per acre we delivered to our
25 growers. And then you can just see the constant decline as

1 this four-year drought wore on.

2 So 2015, we really didn't divert any surface
3 water. We did a short three-week emergency diversion based
4 on some late May storms just to help out some folks who
5 were really desperate. But that's really insignificant
6 compared to what we normally divert or deliver. Next
7 slide, please.

8 So current planning activities, I'll talk about
9 what we're doing looking at future droughts. And for us,
10 regulatory activities are just as scary as droughts,
11 because they have the same impact on us. Next slide,
12 please.

13 So one of our number one things, and I'm hesitant
14 to talk about it, but we're working with the State Board on
15 its SED. It's a program they're looking at of diverting
16 unimpaired flows, so what we're trying to do -- I don't
17 envy their position. They have to balance what they know
18 are true impacts against other concerns in the system. And
19 we're making sure they have the data. And for you all's
20 benefit, generation will be impacted.

21 We've also replaced our turbine runner. We went
22 from a 94.5 megawatt capacity to 100 megawatts just a
23 couple years ago. Regrettably, due to the drought, we
24 haven't been able to max that out just yet.

25 And the Groundwater Sustainability Act, that is a

1 big, big piece of what we're working on right now. We're
2 actually very supportive of it. We're very fortunate,
3 compared to some areas. We're working hand-in-hand with
4 the county. And we believe that's long overdue and we're
5 taking a leadership role in implementing that.

6 And, of course, we're also leaders in the
7 Integrated Regional Water Management Planning, where with
8 limited resources you try to make them serve more than one
9 function whether storm drain, recreation, water supply,
10 etcetera. Next slide, please. Almost done.

11 So some long-term things we're looking at. We're
12 attempting to increase our storage in New Exchequer or Lake
13 McClure. And we're working with various agencies in the
14 Corps looking at raising our spillway gates to increase
15 storage by about 57,000 acre feet. Next slide, please.

16 This is one that is really interesting and has a
17 lot of potential. These -- we're talking about forest
18 management in the upper watershed. You can see back in
19 1909 what the forest looked like. And you can see in 1979
20 what they look like today. Well, for folks not in the
21 business, the more brush and trees there are the more water
22 the upper watersheds take up and the less runoff into
23 reservoirs. Next slide, please.

24 So we're working with UC Merced, the Sierra
25 National Research Institute, and we're doing a pilot study

1 up in the upper watershed and we're going to take two
2 basins. And one will not be managed any differently and
3 one will be managed to clear the undergrowth. And we're
4 going to see what kind of water supply impact that can have
5 to the reservoir. Next slide, please.

6 We're also modernizing our irrigation system.
7 We're a very old system. We were built or started in the
8 late 1800s. So right now we're putting together a plan to
9 spend over \$70 million over the next couple of years. And
10 the primary way you maximize efficiency in an irrigation
11 system, which we have 800 miles of open channels and about
12 200 miles of pipe lines, is with regulating reservoirs.
13 That's the most effective way to control the water. Next
14 slide, please.

15 We're also looking at working with the state and
16 California Fish and Wildlife tracking third-party
17 diversions. A lot of water comes out of the river below
18 our points of control. So that would minimize our need to
19 release water down the river for environmental purposes if
20 we can get a better handle on what's going on below. Next
21 slide, please.

22 One of the big things we're excited about is
23 river restoration. The Merced River was severely impacted
24 by legacy gold mining. And as you heard the number of
25 times the cold water is very important to anadromous fish.

1 But what we have is we have basically a big deep channel,
2 which is not good for anadromous fisheries. And that's a
3 legacy of gold mining.

4 But a lot of restoration projects -- there's been
5 three done in the Merced River already. We're working on
6 another one right now. And what you basically do is you
7 reshape the river to more natural shapes, so that it takes
8 less water out of the reservoir to keep the cold
9 temperatures the anadromous fish need. So we're really
10 pursuing those heavily. So next slide, please.

11 And one of the -- this is the last slide by the
12 way -- one of the big things we're working on that will
13 have a lot of benefit multiple purposes, is computer
14 modeling. So we're developing -- and you all have heard a
15 lot about improving your probabilistic modeling up in the
16 watersheds? That's exactly what we're doing.

17 So we're developing HEC-HMS models up in the
18 reservoir. HEC-ResSim is for our reservoir. Merced River
19 will be a HEC-RAS model as well as our irrigation system,
20 so we'll have a complete integrated model. And on top of
21 that it's going to be tied into a high-resolution
22 groundwater model throughout the Merced Groundwater Basin.
23 So we'll be able to actually model the effects of surface
24 water, groundwater and that will be provide a lot better
25 information for folks that are managing these things.

1 And that's all I have. Thank you.

2 COMMISSIONER MCALLISTER: Thank you, very much.

3 Any questions -- Ashley?

4 DEPUTY SECRETARY CONRAD-SAYDAH: Mostly, just a
5 comment. Well first, I guess both, it's great to see what
6 you're doing with upper watershed management and that
7 experiment that you're working on. And I just guess I want
8 to make sure we link up in the future, because the state is
9 right now working on an application with Tuolumne County to
10 do upper watershed management in a post rim-fire phase. So
11 we're eligible for Federal Disaster Relief Funding because
12 of the Rim Fire.

13 And we want to use that for pre-disaster or
14 avoided-disaster funding to do watershed management in the
15 forest. So it'd be great to actually link up your pilot
16 with what we're thinking about doing up there as well.

17 MR. KELLY: Sure thing, because the forest
18 management has multiple benefits. I'm, of course, looking
19 at it from a water supply standpoint, but it also helps in
20 the fire management of the forest.

21 DEPUTY SECRETARY CONRAD-SAYDAH: Exactly. Yeah,
22 so we're doing it for both. And we're trying to match up
23 with the bioenergy facility and some wood products
24 facilities. But our application is due in about a month,
25 so it'd be great to talk about it.

1 MR. KELLY: Okay.

2 COMMISSIONER SANDOVAL: Yeah. So I also wanted
3 to commend you on that and that project. I think it's very
4 interesting. The Santa Ana Regional Watershed has been
5 doing some partnership with forest management to actually
6 help to minimize debris flow, which also really helps a lot
7 to minimize costs in Santa Ana.

8 So this is an area that actually we've raised in
9 the Water-Energy Nexus Proceeding that we'd also like some
10 of the IOUs to consider. They often do a lot of forest
11 management within the boundaries of their hydrological
12 region for hydro, but the reality is what kind of water
13 they're able to get for hydro, as you mentioned, isn't just
14 controlled by whatever parcel, however big they may
15 control. But often happens outside of that region.

16 So I think these kind of partnerships are going
17 to be very important to give us information on whether
18 investing outside of your property line, if you will, helps
19 you to yield more water and thus more energy. So we'd be
20 very interested in learning more information about your
21 project.

22 MR. KELLY: Sure.

23 COMMISSIONER SANDOVAL: Thank you.

24 COMMISSIONER MCALLISTER: Great.

25 Okay. So I guess that's our Final Panel. Thank

1 you all for your durability, including those left up here
2 on the dais.

3 And I guess we have now Public Comment. I don't
4 know if we have any hands raised online. I've not gotten
5 any blue cards up here today. And I think pretty much at
6 this point it's insider baseball in the room.

7 Anything online? Nothing, okay. Great, yeah
8 friends and family, anybody's anniversary here? No --

9 MS. RAITT: We can open up the phone lines just
10 for a moment just to make sure.

11 COMMISSIONER MCALLISTER: Okay, great. Let's do
12 that.

13 MS. RAITT: So mute your phone unless you have a
14 comment, please.

15 COMMISSIONER MCALLISTER: Exactly, it's Friday.

16 MS. RAITT: Okay. I think we're good.

17 COMMISSIONER MCALLISTER: Okay, great. I'm not
18 going to make a significant closing comment, just to thank
19 everyone for coming. I think -- do we have a deadline for
20 submitting comments?

21 MS. RAITT: September 11th.

22 COMMISSIONER MCALLISTER: September 11th, okay.
23 So written comments due by then, lots of substance in these
24 presentations, so thank you Final Panel and all the
25 panelists throughout the course of the day.

1 I think with that I'm going to -- oh, go ahead
2 Ashley, yeah?

3 DEPUTY SECRETARY CONRAD-SAYDAH: So just one very
4 brief comment for anyone who's still sticking around, and
5 for all of you. We are actually in the midst of our second
6 Investment Plan for Greenhouse Gas Reduction Funds. And
7 the public comment for that actually closes on Tuesday.

8 So and if you have ideas for other areas of
9 funding that the state could be investing in, that first
10 and foremost reduces greenhouse gas emissions but delivers
11 many other co-benefits, we're looking for innovation for
12 the 16-to-19 Investment Plan. So any of the things that
13 you all are talking about would be, I think, eligible in
14 terms of the Water-Energy Nexus.

15 And, you know, we had seven meetings around the
16 state and didn't hear anything earth-shattering. But a lot
17 of what we've heard today is really innovative, so it would
18 be great to get some of these comments to that record as
19 well.

20 COMMISSIONER SANDOVAL: Okay. So thank you.

21 And thank you very much to the California Energy
22 Commission for hosting this very informative dialogue.
23 Also just people can file comments in the CPUC's Water-
24 Energy Nexus Proceeding. The slides there give some
25 information, so we will also be following up with the

1 workshop report, so that we can address the many topics,
2 which were raised today that are relevant to the embedded
3 energy and water, the embedded water and energy. And more
4 globally, to California's sustainability, safety,
5 resiliency and the day-to-day also of just water supply,
6 energy supply, and rates.

7 So thank you for this great discussion.

8 COMMISSIONER MCALLISTER: Great. All right, and
9 the IEPR will have -- this is a topic that will be a
10 subject of the chapter in the IEPR and when the draft comes
11 out, there's another opportunity to provide feedback.

12 And, you know, again as a reminder the IEPR is a
13 document that many in the Legislature and other agencies
14 look to, to make decisions going forward. And know what
15 topics they really need to focus on and so this is
16 important work and so I really appreciate everybody.

17 We usually don't do workshops like this, with
18 this much substance on Friday, so it's Friday afternoon
19 pushing 5:00 o'clock. I really appreciate everybody's
20 attention.

21 So with that we're adjourned.

22 (Whereupon, at 4:53 p.m., the workshop
23 was adjourned)

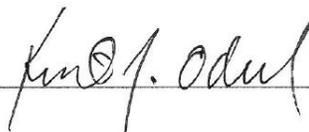
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IN WITNESS WHEREOF, I have hereunto set my hand this 7th day of August, 2015.



Kent Odell
CER**00548

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Myra Severtson
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