INTEGRATED ENERGY POLICY REPORT STAFF WORKSHOP

BEFORE THE

CALIFORNIA ENERGY RESOURCES CONSERVATION

AND DEVELOPMENT COMMISSION

In the Matter of:	)	
	)	Docket No.
2008 Rulemaking on Appliance	)	09-AAER-1A
Efficiency Regulations Rulemaking	)	
Proceeding for Landscape Irrigation	)	
Efficiency Standards	)	
	)	
	)	
_____	)	

STAFF TECHNICAL WORKSHOP TO DISCUSS POSSIBLE EFFICIENCY STANDARDS AND LABELING REQUIREMENTS FOR LANDSCAPE IRRIGATION EQUIPMENT

CALIFORNIA ENERGY COMMISSION

HEARING ROOM A

1516 NINTH STREET

SACRAMENTO, CALIFORNIA

MONDAY, JUNE 1, 2009

1:30 P.M.

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Peter Strait

ALSO PRESENT

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Lynn Flores

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I n d e x

1:30 P.M.

MS. WHITE: All righty, welcome, and thank you for coming to the Staff's Technical Workshop for the Landscape Irrigation Equipment Standards and Labeling Requirements, directed to the Energy Commission to establish through AB 1881.

My name is Lorraine White; I'm the Program Manager for this proceeding here at the Energy Commission.

And as part of this effort, it's not a one-person task, but actually the culmination of several people's efforts, three of whom are there at the table, and also walking around is Ken, who is assisting us to make sure we have good communications on our com link.

But there we have Betty Chrisman, who's part of our technical staff; Bill Staack, who's our lead legal counsel; and Peter Strait, who's also part of the technical staff.

And through the course of this proceeding you'll get to know these folks, they'll be the ones that help develop the analyses, compile the information that you provide us and really coalesce it into a meaningful record on which we will be able to establish any kind of regulations for standards or labeling requirements.

Just a couple of comments, logistical announcements, if you don't mind, we here at the Energy Commission are required to inform you that in the event of

an emergency an alarm will sound, which directs us then to exit the building as quickly and orderly as possible.

Of course, there are two exits we can choose from. Going out the back there is a set of double doors and you're please directed to go through those double doors and then head towards the park.

For those of you on this side of the building, it's probably easier to go out the main door to the Energy Commission and likewise head towards the park.

We do have some refreshments, because it's going to be a wonderful, long, and productive afternoon. So in the event that you would like any refreshments, we do have a snack bar on the second floor, under the awning.

For those of you who have joined us via WebEx and are viewing this on our website, there is also a call-in number I direct you to, in order for you to ask questions or comments as we go through the materials today.

And for those of you who are participating in person, if this was a more formal event, we would ask you to fill out blue cards, but I think we're going to be kind of comfortable and straight forward today.

The only thing I ask, as I had mentioned before, is that you please go up and use one of the microphones, either at the podium or sitting at the chair to make your comments, and such, so that we can actually get it recorded and people

who are participating remotely can hear this.

Throughout the course of this proceeding our materials will be available on our website. I encourage you to go to our website and join the list serve for this proceeding.

I've provided the website here; it's in the presentations in the front there, and the idea being, of course, when new information is posted on the website you'll be notified so you can take a look at it.

Our agenda today is fairly packed, so I'm hoping to get through it pretty quickly. The idea being, of course, to engage you in as much discussion about the information for our proceeding, the types of requirements we have, the type of information we're in need of developing or gathering, and to also discuss what we've actually learned to date.

Betty and Bill will be talking about our analytical and legal requirements for our appliance efficiency regulations.

We will also be hearing from Peter Mayer and Rich Brown about performance studies that have been done to date on the irrigation equipment.

Unfortunately, Amanda Stevens, from Energy Solutions, will not be able to join us today. So Rich, you're on your own.

We will also be discussing some key questions that we've developed and just recently been able to post on our website. And the purpose of these questions is to focus people with the information that we need to gather or generate, to solicit from parties and stakeholders as part of this process, and combine or coalesce into a meaningful record on which we can base any kind of a recommendation or regulatory labeling or efficiency requirement.

And if possible, we may even be able to start discussing what the regulatory language may look like.

Of course, we always open up, towards the end, an opportunity for just general public comment on issues that are related to the proceeding, but may not have necessarily been brought up through the course of the discussions today.

And then, hopefully, we'll just have some very brief closing remarks and a summary of some of our next steps.

A lot of you have already seen this slide, it just points out the key requirements for the Energy Commission, as required by AB 1881. And that's to set labeling requirements for irrigation controllers and sensors by January 1st, 2010, and we're endeavoring to do that to the best of our ability.

We also are looking at additional items as a result of the scoping order, and those actually were identified in

the course of our discussions at the scoping workshop as items that are really important to include in systems, to ensure that the controllers and sensors work properly.

And then, of course, the ultimate purpose of all of this is to ensure that we can reduce unnecessary, wasteful, or uneconomic water use or energy use in these kinds of systems.

Of course, Betty is going to talk about this in great length here, momentarily. But essentially, when we're talking about the appliance efficiency standards, in which these appliances will be or devices will be regulated, we're really talking about the California Code of Regulations, Title 20.

And the main criteria imposed on us in establishing these regulatory requirements is that these appliances need to use, in this case, a significant amount of water or energy, the standards need to be feasible, i.e., we can't just be pulling things that are on the fringes out, we have to make them so that they are achievable, and that they're cost-effective to the consumer over the life of the product.

This is a formal rule making. In some regards it seems a bit bureaucratic, I'm sure, but there is a method to this madness, it's to ensure that governmental agencies don't just willy-nilly impose things upon people, but that we do it in a thoughtful, responsible manner and have a

transparent record on which we base any kind of requirement.

(Music from speakers.)

MS. WHITE: Operator, this is the call leader, could you please stop the music? Call leader? Asking the operator to please stop the background music. Thank you.

We've completed our first preliminary activity, which is establishing our scope for the proceeding. We're now simultaneously taking on three major parts of this, and that's information and data gathering, our public outreach and engagement, and developing our analysis on which to document any proposed language or regulation.

Over the next several months we will be developing a report, having more formal hearings with the Committee, and then ultimately submitting our proposed regulations to the Office of Administrative Law.

In particular, the scoping order, which was issued on May 13th, directed us to focus, as the legislation requires, on the landscape irrigation controllers and sensors, but that we wanted to provide additional clarity to that. And we're not just talking clock timers or Smart controllers, but in order to establish some regulation that has some meaning, look at all the types of things that would fall under that definition of irrigation controller.

And then when looking at moisture sensors, they be also rain and soil, not just what might be considered the

rain sensors.

To the extent that we can, we will also be looking at those items that are required in the system to ensure that things operate properly.

And in particular, we heard a lot on the 1st of April about check valves, anti-drain, low-head anti-drain devices, automatic shut-off devices and the like. So we will be looking at that and including, as appropriate, any regulations for those items, too.

The schedule, which was included in the notice and the scoping order, essentially has us as quickly as possible coming up with a staff report at the end of July, based on the information we can gather between now and then, and provide input to the Committee on the type of language that we think we can substantiate with a record, for any regulations directed at these devices.

And, ultimately, a Commission adoption or approval of a regulation by about the 16th of December. That way we meet our statutory deadline of January 1st, 2010 and can get the documents to the Office of Administrative -- or the final packet to the Office of Administrative Law for their last check and review, with the regulations becoming law within the time frame of this statute.

The idea here is to get your input as much as we can, information, analyses, data, anything that can help us

develop the record.

In the notice for this particular technical staff workshop we had identified a June 8th date for submitting comments. Because we were so late in getting the key questions out, we've extended that date to June 15th, in hopes that it provides people a bit more time to be able to respond as completely as possible.

We're looking for another workshop on the 30th, the same time frame, 1:30 to 5:00. We have quite a few workshops going on in different venues right now, so our options here are limited. And unfortunately we, with the budget restriction, are pretty much restricted to here in Sacramento because our travel budgets are pretty tight.

Proceeding information is also provided. I encourage folks to take a look at the sites.

I offer information here on the Department of Water Resources' landscape ordinance website as well, because they're complementary to each other, they reference what we will decide and we will hopefully be able to incorporate the kinds of things in our analysis that they're recommending through that model.

So at this point, before I call Betty up to provide some more detailed information on our proceedings for appliance standards; are there any questions that anyone might have?

Okay, Betty.

MS. CHRISMAN: Thanks, Lorraine.

I'm just here basically to give a non-landscape irrigation specific background as to why we have -- how we set up the appliance efficiency regulations, the basic background behind what a rule making needs to be.

So this is just a real quick overview. First of all, what is an appliance, because you could be saying landscape irrigation appliance regulations?

Well, in law there is no clear definition. Dictionary.com says "a device or instrument designed to perform a specific function." Some of its synonyms include contraption, gadget, gizmo and widget.

In 1976 the Energy Commission adopted the world's first appliance efficiency standards. These first standards covered refrigerators and air conditioners.

We now regulate about two dozen appliance classifications and Federal standards, and standards in other states, are often based on standards that are first set in California.

Statutory authority. The Warren-Alquist Act, more formerly, the Warren-Alquist State Energy Resources Conservation and Development Act, which is found in California's Public Resources Code, is the -- was originally the 1974 legislation that created the Energy Commission.

As you might tell from the title of that statute, California Energy Commission is actually a nickname. The Commission's formal name is the Energy Resources Conservation and Development Commission.

The Warren-Alquist Act simply tells us what to consider when we set standards. They say that we are to prescribe, by regulation, standards for minimum levels of operating efficiency, based on a reasonable use pattern and may prescribe other cost-effective measures, including incentive programs, fleet averaging, energy and water consumption labeling not preempted by federal law, and consumer education programs to promote the use of energy and water efficient appliances whose use, as determined by the Energy Commission, requires a significant amount of energy or water on a statewide basis.

The minimum levels of operating efficiency shall be based on, as Lorraine said, feasible and attainable efficiencies, or feasible improved efficiencies that will reduce the energy or water consumption growth rates.

And the standards are to become effective no sooner than one year after the date of adoption or revision.

New appliances manufactured on or after the effective date of the standards may not be sold or offered for sale in the State unless it is certified by the manufacturer to be in compliance with those standards.

And Title 20 does not typically restrict anything relating to installation.

The requirements under AB 1881 are slightly different in that they prohibit sale or installation of non-complying irrigation controllers or moisture sensors for landscape use on or after January 1st, 2012.

The appliance efficiency regulations have never previously addressed installation, as that has been covered by Section 111 of the Building Standards, found in Title 24, and that section specifies that any appliance for which there is a California standard established in the appliance efficiency regulations may be installed only if the manufacturer has certified to the Commission that the appliance complies with the applicable standard.

There are a few appliances for which data certification is not required, mostly in the commercial refrigeration area, including walk-ins, and units without doors, and external power supplies.

And the Warren-Alquist Act also requires that the standards shall be drawn so that they do not result in any added total cost to the consumer over the design life of the appliances concerned.

I apologize if this sounds rather dry, but it's how the statute reads.

So the statute also requires, it says, "in order to

increase public participation and improve the efficacy of the standards adopted, and prior to publishing the Notice of Proposed Action," abbreviated as NOPA, "the Energy Commission must involve parties who would be subject to the proposed regulations in public meetings regarding the proposed regulations."

That's one reason why you're all here today.

All potential affected parties shall be provided advance notice of these meetings and they must be given an opportunity to provide written or oral comments.

During these public meetings the Commission will receive and take into consideration input from all parties concerning the design recommendations, the cost considerations, and other factors that would affect consumers and California businesses of the proposed standard.

And the Commission is to take all of that into consideration prior to the start of the NOPA any input provided during these meetings.

Cost effectiveness, sometimes people have different definitions of what that means. I'm providing this here also from the statute, so that the public will understand why we are asking some of the questions that we are asking and why we are requiring some of the input we are.

The statute requires that the standards adopted or

revised shall not result in any added total costs for consumers over the design life of the appliances concerned.

When determining cost-effectiveness, the Commission shall consider the value of the water or the energy saved, the impact on product efficacy for the consumer, and the lifecycle cost to the consumer of complying with this standard.

The Commission shall also consider other relevant factors, including but not limited to the impact on housing costs, the total statewide costs and benefits of the standard over its lifetime, the economic impact on California businesses, and alternative approaches and their associated costs.

And then outside of the statute, but how the regulations are drawn up, the key components of the regulations, for all regulated appliances, must include terminology and definitions, consensus test methods, marking and labeling requirements, the data collection parameters, special -- specific efficiency or usage standards. They can possibly include design standards.

But AB 1881 requires performance standards. And we also include in the regulation rules for enforcing these standards.

And as the final summary, just that we all keep it in mind, the appliance efficiency regulations cover

appliances sold or offered for sale in California. Typically, the building standards regulate what can be installed, but AB 1881 prohibits the sale or installation of non-complying irrigation controllers or moisture sensors for landscape use on or after January 1st, 2012.

And that's the conclusion of what I had to present, so if anybody has any questions.

MS. WHITE: Does anyone -- yes, please come to the podium. And when you do come, for the court reporter, could you provide us your name and affiliation. Oh, if you have a business card, we'll snag that so we get your spelling right.

MR. GALINAS: This is Gary Galinas. I have a question on the energy management systems that you've regulated in the past, ENS, are those defined as an appliance or not?

MS. WHITE: Bill, do you know? Bill Staack?

MR. STAACK: Yeah. I'm actually thinking. This is Bill Staack.

I know we have standards for external power supplies, which would be a lot of the controllers, I believe. My current one that I have in my garage has an external power supply, so that would be regulated by us.

I'm not quite sure about the ones with the internal power supplies.

MR. GALINAS: And you know that there will be management systems, that HVAC, and it's a management system, an energy management system, is the entire system defined as an appliance?

MR. STAACK: We don't, I don't think, define it that way.

MR. GALINAS: Okay, so how can we call an irrigation control system an appliance? It's the same thing as an EMS.

MS. WHITE: Well, actually, an irrigation controller is more like a thermostat and we do regulate thermostats.

MR. STAACK: The statute also has provided us with the authority to regulate these controllers and any water sensors as irrigation system, so we do have the authority to do this as a system or we could do this as components. I believe it would be what is more logical to us in terms of how these systems would be operating.

MR. GALINAS: But if you have a building management system that's regulating the entire HVAC system inside the building, that system by itself is not defined as an appliance.

MR. STAACK: Right.

MS. WHITE: Are you referring -- pardon me, this is Lorraine. Are you referring to the software programs that

do this work?

MR. STAACK: Or just the management, itself.

MS. WHITE: Okay.

MR. GALINAS: Yeah, a thermostat, by itself, doesn't save any energy; it has to be managed through a management system of some sort, software, hardware, communications, sensors, all kinds of things.

So as a grouping would you define that as an appliance or as a management system? And if it's not an appliance then what do you guys call it?

MR. STAACK: Well, if part of that system is managing a sprinkling system, I believe we have the authority underneath this new statute to regulate that part of the system that's controlling the irrigation system.

I'm not sure, technically, if we have even had those discussions on management systems and how they would fit in. But I don't think a management system, underneath the statute, would be allowed to be operated in water efficiencies that are different than what the standard wants landscape irrigation to be done. So somehow that system, I would believe, would have to provide the same efficiencies that we are looking for in terms of adoption, in terms of water use, maybe water sensors, and so forth.

You can't have a management system and say, well, I don't have to comply with landscape irrigation, if the

design of our system is that way.

But if we just have systems that say if you're going to buy a controller, it has to be this, then the management system is not part of that system.

MR. STRAIT: I think one way to look at it is that we're going to be defining what a controller is. And if you have a system that operates as a controller, that is it integrates those functions, it would be similar to saying integrating a clock radio in some water device, or putting that general house plan with some water device, where we would still be able to have regulations that concern that portion of what it's doing, based on its function, to that portion of the system.

Part of the reason we're approaching this in a kind of -- looking at the separated parts, as opposed to the entire system, is for this exact reason, we are trying to isolate specific elements that we can look at, such as emitters, such as sensors, such as the actual plug-ins, control box, and approach it at that level.

And once we've got them to apply to those, if there are larger systems that integrate those functions, then to the extent that they do so, they would still be in our regulations, in most cases.

Keep in mind we still, the scope of this is still not ready; it's a work in craft so --

MR. STAACK: And to add to that, the statute itself says that it's including, but not limited to irrigation controllers. So the statute does give us the latitude to go beyond just the controllers, if that's what this rule making process does.

MR. GALINAS: Right. I understand that you're quoting the statute and I understand that you're trying to proceed to promulgate regulations with respect to the statutes.

MR. STAACK: Correct.

MR. GALINAS: I understand that. I'm only asking about precedence with respect to energy management systems, whether if you have thermal sensors, if you have controllers that are controlling baffles, or HVAC ventilation, are those, itself, broken out into parts or are those considered to be a management system, therefore, not regulated by individual parts?

MR. STRAIT: I can answer this fairly straightforwardly. When you talk about an integrated system like that from -- one way that that could be looked at, what you're describing is to say that because adding an actual air conditioner into system that's controlled by, that's integrated into this whole building management system that, therefore, it's not going to be regulated as an air conditioner.

And what we're saying is that to the extent that we have regulations that apply to an air conditioner, that is a unit that meets a definition that we have in our regulations, those regulations must be met.

So these components that we are defining, such as a controller, such as an irrigation system controller, if they're integrated into a management system that would not exempt them or hide them from regulation; does that make sense?

MS. WHITE: Let me put it this way, Gary.

MR. GALITAS: Gary?

MS. WHITE: Yes, you.

MR. GALITAS: Okay.

MS. WHITE: The statutes define parts of a system and we were, in discussions at the scoping meeting, made very aware that these parts are part of a bigger system, much the same way that the walls in a building are part of a bigger system, but that that system is actually part of a bigger HVAC system.

And so we're approaching it very similarly, where you basically can look at the parts, acknowledging that they are part of a bigger system; you don't have just an emitter, you have an emitter to a pipe, to a valve, to a controller, to a sensor.

And so when you look at these parts what we're

doing, as directed by the Committee, is to look at those things that are probably the biggest savers, first, in the eyes of those that wrote the statute and support the legislation, are the controllers and the sensors, but recognizing that there are other devices that too are needed to make those devices to work properly, like the automatic shut-off valves, and the check valves, and things like that.

But we are doing it not in abstract, we are looking at these controllers as part of a landscaping irrigation system, but we are going to set standards for the controller, we're going to set standards for the sensor that is attached to a controller or could be attached to a controller. We're going to look at the valves that are a part of a system, but we're doing it systematically, but we're doing it based on the devices.

We look at air conditioners, but they're an appliance, but they're an appliance in a bigger system. And if we didn't actually look at it from that stand point, we wouldn't be able to achieve certain savings; if we ignored the ducting for example.

So did I answer your question now?

MR. GALITAS: Sort of.

MS. WHITE: Okay. Do you have another question because there's some questions --

MR. GALITAS: No, I'll wait until later, thanks.

MS. WHITE: Okay. John, did you have a question? Operator, do we have John on the line, wanting to ask a question? John, your line is open if you want to ask a question.

MR. BOWER: Are you asking John Bower?

MS. WHITE: Yes, John Bower.

MR. BOWER: No, I don't have a question.

MS. WHITE: Oh, I'm sorry.

MR. BOWER: Okay.

MS. WHITE: Okay, does anybody else have questions for Betty or anything we've heard so far?

Okay, can you please ask the operator to release Peter Mayer's line?

And Peter, if you're listening, I'll go ahead and set up your presentation. And while I'm setting up your presentation, Peter, and your line is opening, Bill Staack would like to say a couple things.

MR. STAACK: Well, I just wanted to kind of restate some of the things that Betty has said in terms of our legal obligations for adopting appliance standards here and that is that in order to do this the statute requires us to quantify with studies, reports, and/or supporting date what the statewide energy and water savings will be, what the efficiencies will be, and what the consumer costs will be.

And what that means in terms of data is that we're

probably looking for supporting data on the current water waste and the expected water savings that will occur when we have these standards in place.

We would also be looking for supporting data on the current energy use and the expected energy savings, if we choose to have an energy efficiency standard as part of this.

We also need to know the design life, at least in this first part, the design life of the irrigation controllers and the moisture sensors.

And the reason why I'm bring up the moisture sensors is in our last workshop I heard some testimony concerning the life of moisture sensors maybe being a year, or maybe not even knowing when these controllers are no longer functioning.

So part of the design life for us, in calculating, would be such as if the irrigation controller, let's say, lasted ten years and the sensors only one year, that means you're going to have to buy ten years' worth of moisture sensors and that's going to be added to the incremental cost to the buyer, and that incremental cost is what needs to be looked at because the statute basically says that the incremental added cost of the new controller and moisture sensors, if it's higher than the current products that are being sold on the market right now, we have to show through

energy and water savings that through the design life of that controller, which could be ten years' worth of sensors, that that customer is not spending anymore money for that controller than if they would have bought a current product today.

Anyway, I just wanted to clarify in terms of the kind of numbers that we need in terms of water waste that's occurring and what, exactly, are we saving, what kind of numbers can we come up to -- you know, how many acre feet of water is being wasted in a community or throughout California, what kind of numbers can we actually generate.

And then determine whether these devices that we are adopting regulations for, are they actually going to, are they feasible to stop that water waste and how much would that water waste be.

And all those numbers are going to be used to make calculations to meet our cost-effectiveness requirements under the statute.

MS. WHITE: Thank you, Bill.

Peter, you're line is open.

MR. MAYER: Yes, can you hear me?

MS. WHITE: Yes, we can hear you. Can you see your presentation on the internet?

MR. MAYER: I sure can.

MS. WHITE: Great. Just I'll try and scroll along

with you as we go through your presentation.

Peter Mayer, with Aquacraft is actually providing his presentation remotely, from Colorado. He was kind enough to agree to provide us with some results of field studies that they have done on the Smart Controllers. And this project was done with funding from the Department of Water Resources, and we really appreciate his ability to do this for us. Peter?

MS. WHITE: Well, thanks so much, Lorraine. So this is Peter Mayer, from Aquacraft, coming to you from my desk in Boulder, Colorado.

I'm sorry I can't be with you in person today, but I hope through the miracle of modern technology that you can hear my voice and can see the slides, and I can talk to you about the project that we just completed for the Department of Water Resources, looking at Smart Controller programs in Northern and Southern California.

So let's go on the next slide. So, yeah, this is a real long and intense project, I would say. It started -- the work started, I believe it was in 2004/2005, and it included providers in Southern California and six providers in Northern California. Our research was at Aquacraft National Research Center and Dr. Peter Bickel from California Berkeley, our statistician.

The project management was led by the California

Water Consolidation Council, and by Marsha Prillwitz and Chris Brown. And we had funding and supervision from the California Department of Water Resources and Bekele Temesgen.

All right, enough of that. The next slide is just briefly about what are Smart controllers. I'm presuming most of the people understanding what it is when we say smart controllers, or weather-based irrigation controllers. Just briefly, they utilize prevailing weather conditions, current and historic evapotranspiration, soil moisture levels, or other relevant factors to adapt water applications to meet the estimated needs of plants.

In this study we looked primarily at weather-based controllers. We had only one site that was equipped with a soil moisture sensor, so that we reported on the results on only one site.

All right, let's move on. All right, this chart, which I hope is legible, just presents the number of sites that we looked at in this study. There was a total of 2,294 different sites, of which 411 were in Northern California and 1,883 were in Southern California.

So just to be clear what a site is, a site will be like a single-family residence where a Smart controller was installed, or it could be a homeowners association, a campus where five or even ten, or more Smart controllers were

installed, and that would still be considered one site.

The reason we consider that -- those large sites, all of those as one site, the way the water meters are set up in order to look at water use we had to combine the usage from all the meters survey a particular site. You know, it's not known exactly which irrigation systems are served by each meter. So large campuses were all combined in a single site and the analysis was done, similarly to what was done for a single-family residence or a more discreet site.

This table also breaks out just the percentages of a single-family versus multi-family, commercial and other non-residential sites, and irrigation only.

Over 86 percent of the sites in the family were single-family, we had nearly 13 percent that were either multi-family, commercial, or other non-residential and only about half a percent were dedicated irrigation sites.

In terms of the installation methods for the Smart control, about nearly 60 percent of the controllers in this study were self-installed. That is that they were obtained by the home owner or the property manager and installed by those people, they were responsible for the installation.

Now, they could have hired a professional to do the job, but we weren't privy to that information.

The professional or "slash" utility installed sites were sites where we know that the controller was installed

or programmed by either irrigation professional or someone from a water agency, who came out to the site, inspected it, and adjusted or actually did the physical programming on a Smart controller.

Just in terms of the climate zones, we really covered a lot of different terrain in this study, although largely it was called the intermediate climate zone in the system, so that about 53 percent really had intermediate zone and we had about 28, almost 29 percent in the coastal zone, and about eight and a half percent of the sites were inland climate zones.

Can everyone hear? Lorraine, is it coming through okay?

MS. WHITE: Yeah, you're coming through fine.

MR. MAYER: Okay, great. So next --

MS. WHITE: So we're on your next slide.

MR. MAYER: Yes. So I want to completely skipper the methodology that we used for this study, and I encourage you, if you're interested or even if you're not really that interested, to go ahead and download the final report. It's available at the California Urban Water Conservation Council website, see UCC's water genie, it's right there.

The report, itself, goes into great detail about exactly how we did the analysis for this study. And with the limited amount of time that I have today, I thought it

would be more important to focus on the actual results. So I encourage people to do that. Also feel free, if you have questions, you can send me an e-mail or give me a call.

But this graph that we're looking at right now shows the percent of the theoretical irrigation requirements that would apply before and after the installation of Smart controllers. So the theoretical irrigation requirement is essentially a version of evapotranspiration, and you can read about how we actually generated that.

But just imagine that that is our estimate of what the water requirement of that site was based on the landscape size and the evapotranspiration from data and a few other things.

So we have the pre and the post there. I drew the red line, the vertical, to separate sites -- to separate the hundred percent lines. So everything to the left of that red line were sites that apply less than a hundred percent of the theoretical requirement before or after -- and after the installation of those Smart controllers.

And the dark blue is the pre and then there's a lighter color that's the post.

Everything to the right of that red line are sites that applied in excess of that theoretical irrigation requirement before and after.

So before the Smart controllers were installed, a

little over 50 percent of the sites were applying in excess of the theoretical requirement. And about almost 13 percent of the sites were applying in excess of three times the theoretical requirement. That's the group that would be over 300 percent or higher.

After the Smart controller was installed, those numbers improved, albeit only a little bit. But when you see -- when I get into the analysis it actually looks a little better when we bring in some of the other factors.

But anyway, after the Smart controllers were installed, 47.8 percent of the sites were applying in excess of their theoretical requirement, and only 11.4 percent were applying in excess of three times the theoretical irrigation requirement.

Now, one thing I thought was kind of interesting was that we found out by looking at the extreme outliers on this curve and actually we ended up eliminating from the pre-group, they were on the slide more than I believe it was 300 inches of water on their site.

And so if you find more than 300 inches of water on their site in the pre period, we determined, we had a feeling that there might be some error in the data, either in the landscaping or the water use data, and so we eliminated those groups.

No one was eliminated based on their performance

after the installation of their controller; it was only based on pre-data that anyone would be screened out.

But we did look at some of these outliers. And the group that's up at the very high level in the pre period was not necessarily the same group that was in that same grouping after the post period. So there was a shifting within that group.

So of the people who applied a tremendous amount of water in the pre period actually decreased their water use and we found out, to some extent, were replaced by people who increased their water use after the installation of the Smart controller.

All right, let's go to the next slide. This is the one I want to spend the most time on today. This shows the changes in application rates, so it's essentially taking that pre-Smart controller distribution that we saw and tracking the post-Smart controller distribution, and we can end up with something that looks much more normally distributed.

And again, I've drawn a red line right down, right at zero percent. So all of the sites who had a decrease in their water use due to the installation of a Smart controller are on the left-hand side, and those that increased their water use after the installation of the Smart controller are on the right-hand side.

Overall, if you just take an average, based on this distribution, there's a reduction of 14 and a half percent in application rates and water use based on the installation of the Smart controller. That would be average. The median was a reduction of 6.4 percent.

So if we look now at the sites that decreased water use, we can see that overall 56.7 percent of the sites in this study had a statistically significant decrease in weather normalized irrigation application.

So over half of the sites, nearly 60 percent of the sites is getting some sort of decrease in water use that was statistically significant.

If we just look at those sites that had a statistically significant decrease in water use and we ignore all the people that increased their water use, we just looked at the ones that decreased water use; those sites reduce water use by about 35 percent. So that's really good, but just if you're looking at those sites that decreased water use.

Unfortunately, there was -- if you look at the other side of this graph, there were a 41.8 percent of the sites that had a statistically significant increase in weather-normalized irrigation application after the installation of the Smart controller.

And if you just looked at those sites that

increased their water use, about 8.9 percent of them -- I mean, I'm sorry, their average increase was about 8.9 percent.

So percent of increase among those that increased was not as large as the average decrease, but there still were a lot of people who had increased water use as a result of installing this Smart controller.

Overall though there was a savings, so I don't want to oversell the fact that people did increase water use because, really, the net impact was a savings, but it can't be ignored that this technology will increase water use for some people.

Okay, let's go on to the next slide. So one of the things that we did was to run some statistical models to determine what -- what were the factors that influenced water savings. So what were the -- we only had a limited set of factors that were available to us to model, so we wanted to try and determine what -- to what extent we could, the factors that influence the data.

The single most important factor in determining whether there were going to be water savings or not at a site was the level of over- or under-irrigation that was occurring before a Smart controller was installed.

And this may seem like sort of, well, of course, you know, a gee-whiz type of a thing, but it's really a very

important point to understand.

The savings from these Smart controllers can be tremendously enhanced if they can be targeted at people or sites with a history of over-irrigation and that the amount and level of over-irrigation, in many cases, is going to determine the level of savings that can be achieved from the Smart controller.

The other three factors -- or the other two factors that we saw as statistically significant in influencing water savings was the installation method. And in this case we saw there was a small improvement -- not improvement -- there was a small correlation with greater savings associated with self-installed controllers versus professionally installed controllers.

And we looked at this pretty closely because it was somewhat of a surprise, but it was definitely something, it was not just an artifact, it was really in the data.

And, you know, in the popular -- and people familiar with the technology, it was suggested that one of the reasons for this may be that the people who did the self-installs were more likely to make adjustments to the controller after it had been installed.

And there was a lot of agreement that the technology, so the modern technology can be installed and then set up to initial default settings, and then left to

run and then do you achieve all the savings.

Rather, it needs to be installed with the default setting and then it needs to operate for some time, and then adjustments need to be made because there really are differences on each landscape, in terms of shoot-in and flow. And even controllers that attempt to take these factors into consideration are going to need some adjustment over time.

And so we speculated that people who did the self-installation may have been better equipped to make those adjustments and perhaps adapt their controllers.

It should also be pointed out that the people who were self-installers had a greater potential for water savings, they had -- they had over-applied more in that pre-installation period than the professionals.

But the modeling effort, in doing the modeling effort we did our best to try and correct for those factors to try to level the playing field.

So to the extent that we were able to level the playing field, the self-installers did a little better than the professional installers.

In terms of the participating agency that was doing the program was also occasionally significant. So not every agency had a statistically significant difference, but some of the agencies did. So that would have to do with how an

agency selected participants for the study, and how they actually then trained people or had the controllers installed, so there was some different methodologies that were engaged by agencies for the program.

So those were the three factors that we found to be influential in water savings in this study at statistically significant levels.

Next slide, please. So a list of the factors that did not influence water savings at a statistically significant level, and the first was site classification. So we did not see a difference in water savings between residential and non-residential customers.

So the savings rates that were found are generally applicable across different -- both of these classes of customers.

We didn’t -- although there were changes and considerable differences between Northern and Southern California, they weren’t big enough to be statistically significant.

We did not also see differences in savings based on the climate zone. So it appeared that where the controller is installed really is less important than you expect with irrigation prior to the installation.

And finally, we did not find any real statistically significant different between different control

methodologies. There were about nine different brands of controllers that were included by the agencies in the study, including historical ET controllers, a controller that had on-site readings, some that had remote, received remote signals, and also there's one soil moisture sensor site.

We weren't able to try to model based on these different techniques, we weren't able to say one does appear to be able to achieve more savings; they all contributed to the savings.

Okay, let's go to the next slide. So just some general conclusions from the research, Smart controllers we believe can reduce water use at sites that have historically over-irrigated. We also feel that based on these results Smart controllers are likely to increase water use at sites that have historically under-irrigated. Weather-normalized change in usage were averaged, a reduction of 14.5 percent across all 2,294 sites.

Next slide. We believe that water savings can be maximized by two particular things. One, improved programming, so that means that an improvement over whatever the default programming is.

So it may be possible on sites that historically under-irrigated, if that information is known at the time of installation or adjustments are made to that clock such that it will not increase water use, so improved programming may

be a way of reducing an amount of increase that we see, particularly in sites that have under-irrigated.

The other thing is for utilities to focus on targeting their customers that are -- they're currently over-irrigating, and trying to get their Smart controller technology into the hands of people who actually have the potential to achieve the most savings.

That can be done, really, with two fundamental pieces of information. One is the water use at the site, which the utilities have through their billing records. The other is some measurement of the landscaped area at the site. And that measurement could be made from a GIS, an aerial photography, or on site.

And our feeling is that it doesn't have to be, you know, super precise area, I mean the more precise the better but, you know, if you're a utility and you're trying to target the customers in your service area who are over-irrigating and all you have, let's say, is a pack of records of loss, go ahead and use those and try and estimate application rates based on those, and then target the people who are over-applying.

I think with those two factors or changes, I think we can see easily, can even imagine a savings averaging a reduction of 20 percent or more through this technology. I don't think we're very far away, actually, from getting

there.

We did do some cost-effectiveness analysis as part of this study. We found that the Smart controllers are cost-effective for water provided and calculated in many cases, but they're not going to be cost-effective for all utilities or all customers.

And then there's a way that we did in the analysis, in the report, you can sort of match your own personal or utility cost of water, or your own personal water savings, and the water that you pay and determine whether or not you get X amount of savings, whether it makes sense or not.

On average, we found that all of the controller brands and technologies reduced demand, but not all of those reductions were statistically significant.

We did a -- there was tremendous variation in terms of the number of sites that were involved. And if you're at a -- and there's quite a bit of variability, you get a high, a very broad error bar, a five percent error bar. So it's not particularly surprising there.

So we weren't able to say, hey, this one brand is somewhat better than the other brand. Really, they all save water on average. So you can look at the data and judge for yourself about which ones were the most effective but, really, they all achieved water savings on average.

And that includes, actually, there were some

controllers in this -- programmed controllers that do not have or have not published their slot test for. So most of the controllers in this study have gone through slot testing and have their slot test scores. At least one controller did not have published slot test scores, and that controller performed very comparatively to the ones that did have slot test scores, which we thought was also interesting.

The next slide is the last slide. So there's a website where the report can be downloaded for free, it's the California Urban Water Conservation Council. It's about, I don't know, a five megabyte feed up so, hopefully, your internet connection will download that for you quickly.

The agencies who are participating in this project have agreed to continue to monitor performance for five years. The results that I've presented you today are only based on one year of post-installation data, which is really, probably not official to draw any long-term conclusions.

In the report there's also an analysis of about 600 sites where they've had three years of ongoing data, and that results showed that savings increased a little bit of time, so the savings got better for those 600 sites over time.

So I look forward to the next five years' data from these agencies and I'm optimistic that we make an

improvement based on just the analysis that we were able to do on 600 sites with three years' of data.

Again, please contact me if you have any questions. There's my e-mail and telephone number, and I hope I finished up in enough time.

MS. WHITE: You did great, Peter. Please hang on the line, and are there any questions from anyone?

George. For people's knowledge, Chris Brown, from CUWCC is here, as well, if there are any questions that folks may want to answer.

We do have a couple of questions on the phone, as well, but I'd like to have George ask his questions first.

MR. GEORGE ALEXANIAN: Okay, thanks Lorraine.

MS. WHITE: Let George ask his first. Okay.

MR. GEORGE ALEXANIAN: Thank you, Lorraine. This is George Alexanian from Alex-Tronix Controls. You know, I've been in the irrigation business since 1972, in the design and manufacturing of irrigation controllers.

And my mission statement for the company is design and manufacturing controllers that are only involved with saving water, saving energy in the simplest way possible.

And in view of that, I'm very dedicated and I'm pro-water conservation, but I'm also trying to be a realist here.

Just for information, my company did receive

recommendation from the U.S. Department of Energy for developing energy efficient irrigation control systems and we're now, of course, into the water conservation end of it, both with drip irrigation and landscape irrigation controllers.

Now, getting to a couple of my questions, Peter, were rain switches used prior to this study and after, or you added as a part of the study, if they did not have rain switches installed; that's the first question?

MR. MAYER: Well, we don't know if they had a rain sensor beforehand. And the only thing -- we only got limited information about whether a rain sensor was included after.

In general, I would think these sites did not have a rain sensor unless that sensor was specifically part of the controller, such as I think Weathermatic controller has a rain sensor that's part of that package. There may be some others, also. But in general my answer would be no, there were not rain sensors.

MR. GEORGE ALEXANIAN: So in other words your study was based on only changing out a controller and not adding a rain sensor or any other device, so basically it was strictly refined or limited to just changing controller, regardless of whether it had any other -- a rain sensor or not, if I understand you correctly.

MR. MAYER: That's correct.

MR. GEORGE ALEXANIAN: Okay. Now, the percentage -- I do appreciate all of the study that has been done and all the work that has been done. The study that was done, frankly, I'm a little disappointed in the percentage of the water savings.

But I may offer, from my perspective as a designer and manufacturer of irrigation controllers, is that simplicity is a very important factor that I believe in, it is one of our mission statements.

And I believe, and this is my opinion, that most ET-based controllers are not that simple to program. We were talking earlier about self-installed, and you didn't know whether they were installed, did the homeowner use someone professional to install and program it or not. But I believe that if these systems were to be simpler, my best guess is that you would find that you may increase the savings significantly, and I think that's one of the shortcomings.

The second shortcoming, as I see it, is that some of the controllers, and correct me if I'm wrong, because you did not say which models were used, some of them required monthly service fees; is that correct, Peter?

MR. MAYER: Yes, there were controllers that require a monthly service fee, but the utility had retained

for those service fees for the period of the study. So we know that everyone, during the time when the thing was going on, have an active service fee.

There is a -- we did survey people, though, about their willingness to continue paying for this fee after it runs out and I can just tell you that we got a fairly small sample responded, only six people, 20 percent said, yes, they would continue to pay the service fee. Almost 47, 48 percent said no. And 32.6 percent said they weren't sure.

MR. GEORGE ALEXANIAN: Yes, and that was actually my next question because I believe that most systems that are monthly based, monthly service fee based are going to be discontinued if the person, especially in this economy, has to pay a -- even if it's $5 to $10 a month, they'd rather not do that. So that is a concern that I would like to express as a possible reason why in the future, if the service fees are suspended, in other words the homeowner has to pay it, that there would be less conservation, let's say, because basically they would left with what I would call a conventional controller. So that would be something you may want to take a look at.

What was the average cost, would you say, of the Smart controllers that you investigated; and I'm talking about to the end-user, to the homeowner, unless they were just given to them?

MR. MAYER: Well, in many cases they were just given to them. And there really isn't average cost information because these were all through the utility incentive programs, so they were either rebates, or they were just provided to them, or there were a variety of mechanisms.

MR. GEORGE ALEXANIAN: Well, don't you think -- this is not a criticism, just a question. Don't you think that in order to do a water cost benefit analysis we would need to know the average cost of a Smart controller for the purpose of this meeting here, or future meetings, that would be, I believe, some important information to have.

Especially again, once again, in this particular economic environment, if the average cost of a controller is $500, let's say, to get it -- not only the controller, but to get it installed and programmed, whether they use professional assistant or so forth, that would be a significant expense.

If it were given for free some of the data -- or not the data, but some of the conclusions, let's say, may or may not be valid, in my opinion, unless that is taken into consideration.

In other words, if something is given for free the people are going to use it and probably report. But if you say, go buy a controller, install it, program it, and then

report to us, you may find some resistance to that.

So if you can or have some of that information, which we can get if you provide us with the different models that were used, that may be some value to us.

Maybe I'm just talking out of my head here But --

MS. WHITE: No, George, it would be valuable to know.

MR. MAYER: And actually the report, in the appendix of the report there's detailed information about each of the brands included and as part of that we tried to obtain retail price information, so that you can look and see how much one of these controllers would cost if you were buying it off the shelf.

In terms of how that falls into the cost-effectiveness analysis, we -- what you could do, one thing -- so we did look and we say, oh, the controller you're interested was, you know, $500, you can look and I can say 10,000 gallons and my water rate is $5 per thousand gallons, then there's the analysis of justifying expenditure, that's in the report. So that's the way we handled the situation of not actually having, on a site-by-site level, the cost numbers.

MR. GEORGE ALEXANIAN: Yeah. But I think this Committee here is going to need more specific information

related to that in order to be able to make that determination.

Now, finally, my last question and I'm sorry to take up all of your time, or the people's time here, and I'm really for the person holding the line, but I feel these are important issues that we need to address.

You were talking about these charts, which are very detailed, and that showed the water savings before and after, and so on; have you done an analysis -- yes, that's the one. Have you done an analysis as to that 14 and a half percent savings, how much of that that is in real terms, in terms of the overall water usage in the State of California or is that strictly -- if I understood it correctly, that's strictly the water savings of using or not using the Smart controller?

MR. MAYER: No, that is strictly from these 2,294 sites. There was no extrapolation made to the State of California whatsoever.

MR. STRAIT: I think he was asking does that represent the percentage of the water they were using for irrigation and the before water use?

MR. MAYER: Yes, that's 14 and a half percent of outdoor water use.

MS. WHITE: Thank you. Thank you for that clarification.

MR. GEORGE ALEXANIAN: Okay, I'm going to stop here for now because I'm sure there's other questions, but I'm going to reserve the right to come back later on, if I could, and go into my analysis of water conservation throughout the State of California, which I think is very important for the Committee and everyone concerned here to be aware of where I think we are, because we're all concerned with getting the best bang for the buck.

As I said, my thing is to do it as simply, to save water as simply, and energy, as possible.

So thank you very much, Peter, for your answers.

MR. MAYER: Yes, thank you, George.

MS. WHITE: Peter, Andrew Davis is on the phone and would like to ask you a question. Andrew.

MR. DAVIS: Hi, Peter. On this, in the report you report on the Hunter Controller System, and they have two kinds of add-on devices, one's called an ET system, that has a retail price of $450, and another one is the solar system that costs $129.

Do you have in your report any analysis of which of the add-on devices was used in the 44 or so controllers that Hunter used?

MR. MAYER: That is a very good question and I will look it up for you. I believe it was -- I don't believe it was the solar system. I think it was the other one, but let

me just double check.

MR. DAVIS: Okay. Well, are you going to be doing additional report from this?

MR. MAYER: Well, not at this point.

MR. DAVIS: Okay. Well, I hope you do because this is an ongoing thing. Particularly when we get to like where you're dealing with the issue of the homeowners may not opt to pick up the signal feed.

Right now, all these timers that are based on the signal feed are saving water. Well, when the homeowner, it seems likely, is going to shop, change the signal fee, then that Smart timer becomes a dumb timer and starts wasting water like everything else in the field, so I hope you do continue going on with your field testing here.

MR. MAYER: Well, the system that was reported to us in terms of Hunter was the ET, the ET system.

MR. DAVIS: Okay, that's the expensive one. And in two places in your report you state that our company has no slot report posted. I wanted to say, as President of the Accurate Weathersite Company, that that statement is true. We're not having bad test results, we've simply not submitted our timer for testing because I could not justify spending $3,500 for a 30-day report on slot testing that I viewed as essentially meaningless in measuring water conservation.

Slot testing is not able to measure the relative effectiveness of timers that it tests, for the Proposition 13 field studies that you have presented to us is third-party field tests of the relative effectiveness of the ET controllers in the hands of contractors and homeowners. And so that's why we have not posted any results to the slot testing.

As you know, the slot testing allows manufacturers to suppress that finding, you know, if the results don't show a lot of savings or show a lot of waste, the manufacturer says don't publish these yet, come up and preprogram it and get it right. And so that's why the slot testing, most of the results of the slot testing show that everybody gets a hundred percent on most of the testing. That's all I have to say.

MS. WHITE: Thank you, Andrew.

I do have another person here who has a question, Gary.

MR. GALINAS: Thank you, I'll be short.

MS. WHITE: Thanks.

MR. GALINAS: Hi, Peter, this is Gary Galinas, Watersafe.

You said one percent of the population had dedicated irrigation meters; is that correct?

MR. MAYER: Yeah, half a percent of the sites in

this study were placed on a dedicated irrigation meter.

MR. GALINAS: Okay, so we all know how difficult it is to derive outdoor irrigation from a meter, and it's going to vary from meter to meter, to meter, to meter.

MR. MAYER: Yeah, and I can explain how we did that in this study, which was through using minimum methodology, so that, you know, like in a single-family residence, that the minimum month resident indoor use only, and then we annualized that and deducted it from the total.

MR. GALINAS: We've done the same thing before and we had to cross-reference per capita use and end of the month, and sometimes there's a discrepancy of like a hundred percent difference when you use those two methodologies.

And so unless you have dedicated irrigation meters, it seems like you can't really get this fine in terms of your results and your statistics, because you're going off, really, an inability to strictly define how much was the irrigation versus, you know, a mixed-use consumption mix.

MR. MAYER: Well, you know, I think that's a fair criticism of the study methodology. I think other people would disagree and say that, you know, this method is adequate.

We also did analysis on total water use, just to make sure that we weren't saying that was not a fact in the methodology, and we got, you know, comparable, essentially

savings. But that's not surprising.

So I, you know, I accept your point. And I've done studies where you've utilized alternative methods.

But when you do a large study like this, you know, the 2,000 sites, it's sort of more unrealistic to try and go longer, or even install separate dedicated irrigation meters for these customers.

So we do look at the usual water use and, you know, it was quite similar to what has been found, particularly when we looked at it for the residential sector, you know, what we were coming up with was right in line with what's been found through other studies.

So I think it's unlikely that that methodology greatly influenced the findings.

MR. GALINAS: I appreciate that, Peter. This is for the Commission, we are doing a study with San Diego Gas and Electric, where we have about 80 to 90 meters, and they're all dedicated. And although the study's not completed yet, it's been implemented and I think the Commission would be well-served to receive some of this data. But we have to check with the utility to find out whether they would release this or not.

MS. WHITE: If you can get it to us, we would definitely appreciate the favor.

MR. GALINAS: Thank you.

MS. WHITE: Thank you.

MR. GALINAS: Thanks.

MS. WHITE: Now, Peter, I actually have a question for you. What types of controllers were you replacing? Did you, in this study, have any uncontrolled systems, essentially the hose systems?

MR. MAYER: No, no. All of the controllers that were replaced were, you know, the standard clock timers. But we don't have the information about the make and model. There's a nice storeroom in Southern California where there's a whole stack of old controllers that they had dropped off at one of their distribution events and you can see, you know, kind of every controller under the sun in that program.

MS. WHITE: Did you -- so you did not have information on the type of equipment that was being replaced to see if there were statistically different results between a particular type of dumb timer that was replaced with a Smart timer, or another?

MR. MAYER: No. No, that's not something that we looked at.

MS. WHITE: Okay.

MR. STAACK: This is Bill Staack; I have a couple questions, myself. Is this batter that you have is it possible that we could group the data in terms of types of

controllers with the associated water savings?

MR. MAYER: Yeah, that's actually been done in the report. We looked at the water savings by controller.

MR. STAACK: And then also break that down in terms of which ones have a monthly fee and which didn't have a monthly fee?

MR. MAYER: Yeah, you can certainly do that if you wanted to, yes.

MR. STAACK: Okay, and then also the actual volume of water savings?

MR. MAYER: Yes, and that's reported in the report, in the report document. You know, I can tell you, if you're interested, but the overall savings in one year was actually 970 acre feet.

MR. STAACK: Okay. Because one of the issues that we may have in terms of enforcement is I'm not sure we have legal authority to enforce a homeowner to continue having monthly service fees. I don't see that as part of our authority underneath the appliance.

So the problem might be that we may not be able to -- if we can't guarantee that monthly service is going to be part of this appliance, with the -- we can't guarantee any kind of savings on those and we may have to remove that data from your report and only be able to use the information that we know that we could accomplish with the regulation in

our regulations.

MR. MAYER: Uh-hum, I understand.

MR. STAACK: Okay, because that's what we're stuck with is our authority to adopt and to enforce.

MR. MAYER: Right.

MR. STAACK: Unless, you know, there's mechanism, just off the top of my head, that the controllers were sold with monthly services, which is kind of a bizarre thing to do, that would at least guarantee that there's a service associated with that.

MR. MAYER: I understand.

MR. STRAIT: I'd actually offer two pieces of information. One, a few of the companies -- we've got company representatives that may use controllers that require a service contract, and some of them will retain the settings that are downloaded when they are purchased, so they will -- it will make initial contact and get that general profile. They won't react to weather events or anything. But in terms of getting an aspiration profile for the areas they're serving, sometimes those things are maintained, you'll go to the radars and say they have to be maintained.

I think we have a situation, somewhat what you were talking about with water sensors, where there's a real cost-effectiveness, the question is raised so --

MS. WHITE: Any additional questions for Peter? Ken?

MR. RIDER: Hi, my name's Ken, I'm with the California Energy Commission.

MS. WHITE: Ken, please give your last name, too.

MR. RIDER: Rider.

MS. WHITE: Thank you.

MR. RIDER: The first question for you, Peter, is when you say under-irrigated, are you referring in respects to the controllers, what they would expect, or just in general what people -- are these like brown grass or what do you mean by under-irrigated?

MR. MAYER: What I meant -- I don't mean brown grass by any means, and it doesn't relate to the controller either.

What that means is that when you were to go -- let's say we were to look at the water use on site and then we look at the area, too, and compare what the theoretical requirement is for that site versus what they actually used.

So when I said under-irrigated, applied less than a hundred percent of what we determined to the base theoretical requirements for that site. So those are -- they look actually fine using 50 percent of the theoretical irrigation requirements, or even 30 percent. There are some landscapes that can do just fine with under a hundred

percent of the theoretical irrigation requirement.

MR. RIDER: So if you --

MR. MAYER: But we're not trying to decide any kind of a value judgment about the quality of the landscape at all.

MS. WHITE: So you want to actually -- when you say you're looking at the site, you're doing an evaluation of plant need as well, not just the --

MR. MAYER: Yes, that's --

MS. WHITE: Okay.

MR. MAYER: You know, there's a variety of assumptions that you have to make with a study like this, so we're essentially looking at the requirements of turf grass across the state, or a little bit less than full requirement for turf grass, but pretty close to that.

So, you know, sites that were slow in maintenance, or a partial, probably had lower requirements, it would have been less than a hundred percent.

MR. STRAIT: So you're talking about a generalized profile, not one that's actually computed for each residence, individually?

MR. MAYER: Well, it was computed for each. We computed it, absolutely, for each site in the study.

MR. STRAIT: Well, was that then based on the plants that were being found to be planted at that

residence?

MR. MAYER: No, we did not have any information about the plants at that site.

MR. STRAIT: But you're using, for at least --

MR. MAYER: We're just assuming that it's turf grass.

MR. STRAIT: Okay, thank you.

MR. RIDER: Yeah, thanks for the clarification.

MR. MAYER: Sure. But, you know, I might say as it stands though that we're showing the fact of water savings, though. Because, you know, the sites that, you know, applied with a 70 percent of the theoretical irrigation requirement before the controller, and 60 percent after the controller, that's still a ten percent reduction at that site. That doesn't impact the fact that there's actual savings that occurred there.

MR. RIDER: Yeah, that makes sense. Another question is so I'm looking at these factors that you have here for what has caused water savings versus not to cause water savings, and the water savings factor seemed to be mostly human-related factors. You've got their habits beforehand, the installation method, and the agency that's participating, all human touches.

And then you have what did not influence, which was climate zone and the style of irrigation control. So I'm

wondering, I mean, the whole point of the Smart controller is that it recognized the location of the site and adjusts. And you show that the climate zone did not impact the amount of water savings. It makes -- it confuses me on where the controllers actually caused the savings.

And did you do any kind of controller where you just replaced a timer with a timer to see if it was confounded, any of these variables were confounded just by the fact that you were testing these sites for water?

MR. MAYER: Well, we had a neutral group so that -- yeah, so that's the way, we had a control group.

It's an interesting point; you're kind of looking at it in a way that I haven't even thought about. You know, I look at the fact that did it impact savings, and the controllers were successful in all of those different climate zones.

MR. RIDER: Oh, okay.

MR. MAYER: That it didn't make a different which climate zone they were in, they were able to achieve comparable results in each climate zone.

MR. RIDER: Okay, that makes a lot more sense, thank you.

MR. MAYER: So that kind -- you know, it's the same thing with technology, you know, it didn't really matter whether it was a controller, or a signal-based controller,

they achieved relatively comparable results, you know.

MR. RIDER: Yeah, thanks for the clarification.

MR. MAYER: Sure, okay, I hope that helps.

MS. WHITE: I have one last follow up and it's related to a question that Ken was asking. If what you were programming the Smart controllers for was essentially turf, and you were using real data based on clock timers that had been set more specifically to a site --

MR. MAYER: Well, Lorraine, can I interrupt you for one second?

MS. WHITE: Sure.

MR. MAYER: When you said programming for turf, that's not -- we don't know how they were programmed. Hopefully, they were programmed for the actual plant material on the site.

The turf was only our calculation of the theoretical requirement for the site, so that would only figure as to whether we found that hundred percent line insightful.

MR. STRAIT: Well, I think that's the point that's being raised, though, that if there were adjustments raised to the specific plant life that was there, either by a professional installer or by the person that was a self-installer, and the -- what was present at that site was not turf grass, it was in fact something that might have been

more water intensive or less water intensive, that would confound the results and obscure what savings or what additional water use was the responsibility of the controller.

MR. MAYER: No, I disagree. Because what we're looking at is how they were doing before they got the Smart controller, and we're assuming the landscaping didn't change. We had some survey on whether people had made changes to their landscape on a limited set and whether it would show if there was any -- if that appeared to have any real difference.

But let's just assume it's the same landscape before and after, okay. So again, so the customer has a conventional controller beforehand and let's say we got a mixture of turf and, you know, natives and once they were there, they applied 80 percent of their theoretical irrigation quality before the Smart controller; right?

MR. STRAIT: I know that we're not going to be able to observe a relative reduction in water usage.

MR. MAYER: Okay.

MR. STRAIT: Absolute change in water use. You found that out. I'm saying it might -- the -- this estimate need might be a little bit misleading as it's being presented.

MR. MAYER: Oh, okay. Yeah, you could argue with

that, that -- you know, that would be a way to improve this project, absolutely, would be to get more detailed information about plant material at each study, then you could customize the theoretical irrigation of plants at these sites.

I still think, though, that your savings would come out pretty much the same based on the methodology we used, because the ten percent reduction, you know, from 80 to 70 is still a ten percent, just like a ten percent change from 130 to 120.

MR. STRAIT: Okay.

MS. WHITE: Okay, and I'd like, actually, to finish my question.

MR. MAYER: I'm sorry.

MS. WHITE: Don't worry. Actually, I want to go to this slide. If you're calculating a theoretical need, and you're not tracking how the previous clock timer was installed or what the previous clock timer was, and that your main factors that influence the water savings include participation by agencies, such as follow-up visits, you may have actually had this follow-up visits be part of the reason why you got some savings in some areas and some increases in other areas.

Because if, for example, you had someone who knew how to run a clock timer and they now have a professionally

installed Smart time that is programmed for, you know, based on your theoretical, for the ET at the site, and people come back and say, well, you know, you need to adjust it this way, you may have actually influenced the ability of that homeowner to control what their watering schedule and application actually is.

And I'm concerned that where you saw the best influences of participating agencies, that same influence may have resulted in savings with a dumb timer, you know, just knowing that you don't need to use your dumb timer three times a day for 20 minutes, and that could be simply an educational thing.

So did you address any of those possibilities as a result of these significant factors that influence and whether or not that same influence could have occurred with a dumb timer; did you address that moving point?

MR. MAYER: Well, not specific. Specifically, no, it was not addressed. The significance of the agencies, I need to go back and look at that, and review. But I'm not sure that those agencies that did follow up, that appeared to be significant. I need to take a look; I'm just looking at it right now, here.

So the agencies that came out as significant, they were only a few --

MS. WHITE: Okay.

MR. MAYER: -- and I feel in Northern and Southern California, where they do do follow up, and one -- one in Northern California where they did.

So it's a mixed batch. I don't think you can say I did -- enable you, or they had sites that save water versus those that don't save water in those agencies.

MS. WHITE: No, I think this study is a great one, I'm really glad that you're continuing the work. We just need to make sure that we understand the methodologies, the actual analysis and the results of the study so that we know best how to use them.

And of course, we will be contacting you quite a bit over the next couple of months to make sure that we don't misuse the data.

We have one more question.

MR. STAACK: And I have one more question after that.

MS. WHITE: Okay, and Bill has a question. And after these two questions, we'll move on.

MR. CARLSON: Hi, I'm Peter Carlson with Hydropoint Data Systems.

I just want to make a few notes about some of the things that have been talked about. First, we have over 1,600 controllers, Smart controllers that are currently installed and being used. Of those we have a very high

subscription renewal rate.

As I think Peter noted, his sample size of the people who weren't were being asked about the question of payment was 46.

MR. MAYER: Yeah, very small.

MR. CARLSON: So when you ask somebody are you willing to pay for something, typically, they kind of vary. When they actually see the results, specifically in our controllers, we see that they actually do pay those subscription rates again and again. So that's one thing that I wanted to express.

The other thing as far as the actual savings percentage on average across the different controller brands, regardless, it doesn't match many of the other actual studies that have been done so far, even the big studies. For example, in the LEDWP study we saved 95 percent of the savings potential and we were at 95 percent of the actual savings potential.

So when you go and look at the actual weather normalized requirements, these irrigation controllers can save significant -- can have significant savings.

And the other thing, to your point, there has been many -- before water usage jumped into Smart controllers, or the Smart controller technology was even developed, many agencies had tried to do user-based knowledge mechanisms,

and those have been shown to be very ineffective in terms of either asking somebody to do something, sending them a postcard, and you can go through different agencies, IRWD or others who have tried that in the past, and those have been shown to be ineffective in terms of actual water savings or sustained water savings.

MS. WHITE: Peter, as a follow up, can I ask that you help me get connected to those other studies, just so we can bring them into the record as all.

MR. CARLSON: Great.

MR. STAACK: I do have a follow up on a statement you made, in terms of --

MS. WHITE: Okay.

MR. STAACK: You used the word “saving potential.”

MR. MAYER: Uh-huh?

MR. STAACK: How did you calculate that and is that the type of information that --

MR. MAYER: It’s part of the study that’s available on our website and I can provide that to you, so that would be in detail.

MR. STAACK: Because that’s one of the issues that we have is trying to figure out savings potential, so we need numbers and how that was calculated, and we haven’t quite figured that out.

MR. MAYER: And that was done by a very detailed

study, going through that, to go and look, and then we also have other studies. As I said, we have 22 other independent studies that show, and some also correlate them to energy and water savings associated with that.

MR. STAACK: Okay. And my question to Peter is for the study that you are describing today, what percent of the data came as a result of monthly fees?

MR. MAYER: What percent of the data? Well --

MR. STAACK: Like half, or a quarter, or a third or --

MR. MAYER: No, no, that's -- I believe, I'm not sure, I know that the Hydropoint and their controllers were on 642 sites, so those definitely had a fee.

MR. STAACK: Uh-hum.

MR. MAYER: And then I'm not sure which -- I'd have to refresh my memory about which of the other brands that have a fee, but it's around 50 percent.

MR. STAACK: Okay, I just wanted to get a rough number, I'm just curious. Thank you.

MS. WHITE: Okay, we're going to need to be at the end of this presentation because we also want to talk about studies done to evaluate energy savings.

Gary?

MR. GALINAS: A fast question.

MS. WHITE: Okay, very fast, you promise?

MR. GALINAS: I promise. Okay, I just wanted to iterate about this Hydropoint comment. LADWP, in case studies, refer to when they came up with the six-month report about half or more, and I can provide you with this documentation as well, about the Hydropoint use, it actually used more water.

We were also in that study, with water saved. And by the way, we have a management program, it's not a user's fee, it's a usage fee, it's an actual full on, two-way remote management.

In the 95 percent, what he's talking about is the ability to water according to what the ET requirements are. We fell below that. And if you fell below that, that means you can actually save more.

Their controller saved about 16 percent, or 16.7, or whatever it was, and we were saving about 27 percent with a management program.

LADWP had a study, when we were talking about sending people out to the sites to -- you know, the water utilities actually went on out to the properties. With these kinds of systems that you have to program, additional, which is kind of like the Hydropoint system --

MS. WHITE: Gary? Actually, this is a much more appropriate discussion for when we start talking about our questions.

MR. GALINAS: Okay.

MS. WHITE: Because we're getting at some of the point we have to evaluate. How do we define waste?

MR. GALINAS: Right.

MS. WHITE: How do we measure savings? So if you could just hold those comments --

MR. GALINAS: Will do.

MS. WHITE: -- and please avoid any kind of sales job.

MR. GALINAS: Right.

MS. WHITE: Uh-huh. So Rich Brown, please, from Lawrence Berkeley National Lab, has done some evaluations on the energy side. And this is just to remind you that as part of AB 1881 we are also to look at potential energy savings.

And before you go, Peter, I just want to thank you very much for doing such a great remote presentation and tolerating our many, many questions. So thank you, Peter.

MR. MAYER: Thank you very much for the opportunity, appreciate it.

MS. WHITE: You bet.

Okay, so Rich.

MR. BROWN: Okay, thank you. As Ms. White has said, my name is Rich Brown and I'm from Lawrence Berkeley Laboratory.

This is a little bit narrow, something completely different, most of the focus here is on water and I'm going to be talking about energy. So which is a little unusual for the Energy Commission, usually its energy is the primary focus.

So Peter's presentation, he was just talking about a large field study and I'm going to be talking about a small field study, so it's a little bit of a change of direction there, also.

So we have an ongoing PIER-funded project. PIER is an R&D program that the Energy Commission runs, with some funding from the buildings program under PIER, to look at what we call build/installed miscellaneous equipment. They're the things like security systems, garage door openers, things that are in houses when people buy a new home.

And so we went out and investigated and metered the energy use of several different types of equipment. And so it turns out that irrigation controllers were one of the types of equipment that we looked at. And Lorraine found out about the study and invited us to come and present our findings.

So these are -- I just need to be clear that the purpose of this was not to inform this proceeding, you might consider it more of a pilot study, or an investigative

study, rather than a large-scale study, but I think there's some relevant information.

And the point of this was to develop information that home builders could use in selecting products.

And I wanted to point out my colleague here, Peter Biermayer, was the one who collected the field data in the study and he can probably answer questions you have about the details of the study.

So what we did is did essentially a sample of convenience, trying to get a cross-section of the controller products that are out there on the market and meter their electricity consumption.

We went to a couple of water districts and also found a few devices actually out in the field. And we metered about 20 different units, representing 12 manufacturers; most of these were residential controllers. And they weren't all new units, some of them were a few years old, so there's a little bit of a cross-section there.

But what we tried to do was, you know, through a sample of convenience try and get a broad cross-section of the market to better understand the direct electricity use of these devices.

The power measurements we did are using this plug-in power meter here that you see in the slide. It's a very accurate meter at low power, especially designed for stand-

by power studies, so it has an accuracy of about a tenth of a watt. And we were just doing spot power measurements, we weren't doing data logging or getting usage patterns, it was just instantaneous power use of these devices.

And we looked at two different modes, what we're calling standby mode, which is essentially when the timer is just in -- you know, waiting to activate the irrigation system. And active mode, we consider active mode to be when it's actually activating the cellanoids and, you know, activating the irrigation system.

And because these were demonstration units, by and large, that we metered, most of then we couldn't actually meter the active mode because they weren't connected to functioning irrigation systems.

So mostly we just have -- all of them we got standby readings and a few of them we got active readings.

And based on what we think are typical usage patterns, how much of the year these things are actually on active mode, based on -- you know, our best estimate is about 90 percent of the annual energy use of a timer, either a conventional or a Smart controller. About 90 percent is in the standby mode, just sitting there waiting for the irrigation sequence to happen.

Okay. So the Y axis here, that's a file conversion issue. The Y axis is watts in standby mode.

So what we found, looking at that sample of about a dozen conventional controllers and about eight Smart controllers, was that the Smart controllers have higher standby use by a couple of watts. And you see there's a pretty good spread there.

Again, the Y axis is watts. Just for comparison, one watt, if it's a standby type of consumption, it's 8,760 hours for year, that's about a kilowatt hour. Or, excuse me, about a dollar a year in electricity consumption in California.

So a two-watt difference is, you know, in energy terms for a retail customer is about two dollars a year difference in energy, which doesn't sound like a lot, but when you multiply these by ten million or so houses, or whatever the stock is out there, it adds up.

Like I said, there's a pretty big spread there. You see at least one of the units we measured was under one watt. One watt is considered kind of a good criterion level for standby power consumption, so it does seem to be possible to produce devices that use lower standby power.

Another question was what type of power transformer was used, because some of these have a plug-in transformer that produce 24 volt AC, and others are hardwired to 120 volt AC and have an internal transformer.

So one of the questions we had was, well, does it

really matter whether it's an internal or an external transformer?

And, you know, based on what we found it doesn't seem like there's that much of a difference. Again, it's a small dataset so it's hard to draw conclusions. But just based on the scatter in the data, it doesn't seem like the type of transformer makes much of a difference.

There is an issue here that, I think as somebody mentioned earlier, that power supplies, external power supplies are regulated by the Energy Commission, and because of the vintage of the devices that we metered, it's very possible that most, if not all of these, were manufactured before those standards went into effect.

And some may not, the standards may not apply to, so that's something that the Commission should probably consider in their analysis of this is how the external power supply standards interact with any standard that's applied to this product.

Another question or another factor that we looked at was whether the number of stations that are provided by these devices affects the standby power. Again, the Y axis is standby power to draw.

And similarly for the conventional controllers, the simple clock timers, it doesn't seem like there's much of a correlation there between the number of irrigation stations

that are provided by the device and the standby power.

The Smart controllers seemed to have more correlation there. From my admittedly naïve perspective, I don't know a lot about the design of, you know, what's inside the box here. It doesn't seem like the number of stations that could be activated should affect the standby power consumption of these things but, you know, there may be reasons why that should be the case. And we think that's a question that the Commission staff should consider in evaluating options here.

Okay, so we're going to take a little bit of explanation here, this slide. So there's this question, okay, these devices are ultimately designed to save water and I think most of us know that embedded in the water consumed or the water we save is some amount of energy that was used to transport the water and distribute that, and we're conveying that savings off against potentially an increase in electricity consumption in moving to Smart controllers, you know, if these data are truly at this higher power consumption for the Smart controllers.

So that raised the question in our minds about what's the trade-off there? You know, you can save embedded electricity in the water versus higher consumption at the device, itself.

So we built this trade-off curve. And again I'm

sorry; the Y axis doesn't show up here. But that's the percent savings of the baseline irrigation water consumption. So this is analogous to that 14 and a half percent savings that Peter showed in his slides, the kind of summary of their study.

And that's compared to the baseline irrigation use. And then the two different curves are showing Northern California and Southern California because there are differing levels of embedded energy in water. Basically, it takes more energy to transport water to Southern California.

So what this is saying, essentially, is that the less water you consumer or less water, let's say, a house consumes in its baseline condition with the standard timer, we have to save a higher percentage of that water in order to justify, in order to pay back the additional energy use of the Smart controller. That's essentially all this is saying.

And these curves give you a sense of where that break even happens. So essentially these are threshold, so anything above the curve you have a positive payback, energy payback from switching to a Smart controller. If you're below the curve, you have a negative payback from switching to the energy curve -- or excuse me, the Smart controller.

So for instance, in Southern California, if you're getting, let's say, the 15 percent savings that Peter's

study showed, roughly 15 percent, you don't have to use much irrigation water in the base case to have a positive energy impact from a -- that's from a societal stand point.

Now, there are issues here, distributional issues that the homeowner or the site operator is paying the energy for the controller; whereas the water utility is paying the energy for transporting the water, there's differing water rates.

MS. WHITE: Rich, hold just a moment.

MR. BROWN: Yeah, is there an audio problem?

MS. WHITE: Go ahead, thank you. We just lost the transcript person in --

MR. BROWN: Okay. So this is just to show this, try and start to illustrate this tradeoff and give a sense of what the thresholds are there.

So just kind of summarizing, some quick conclusions from what we've found, it does appear that the Smart controllers use slightly more standby power.

For all the controllers, based on what we think are typical usage patterns, the vast majority is used in this standby mode and so, from an energy stand point, that's probably where you want to focus your effort.

It doesn't seem that the transformer type and the number of stations strongly affects the standby power. But let me be clear, this is a small sample and so that's the

best tentative conclusion.

And based on these tradeoff curves, it does seem like the saved energy embedded in the water, the saved water, can offset that higher power use on site but it, again, depends on the site-specific conditions, where it's located and how energy intensive the water is that they're using or saving.

A couple other observations that I think the Commission should consider, and this has come up a few times now, and this is the analogy to programmable thermostats. The basic idea is that these don't save water unless they're programmed properly and I think that has been mentioned a few times here.

And something in the programmable thermostat world, something that's really very strongly being looked at and considered now is the idea of user-interface and usability standards.

And when I say standards here, I don't necessarily mean a government regulatory standard, but more of an industry type of voluntary standard that looks at how do people actually use these things, what's the knowledge level that one can expect, how do people interact with these, and try and come up with best practices or essentially standards on how we can present information and have the users interact with these so they get the best performance, the

best water performance possible. So that's one thing to point out.

And the other is that as these Smart controllers become smarter and higher tech, you know, eventually I would expect these, and they're probably already controlled on the market, to have full two-way network connections, either through Wi-Fi or internet, or Ethernet.

And one of the issues with network connections is they tend to drive up the energy use of the device that's connected to the network. So just the act of getting connected to the network and maintaining network presence tends to drive up energy use.

And so as another part of this project that funded this work, we're working actually on standards to be able to allow devices to remain on the network, but be in a low-power mode. And so I think that would be another factor for the Commission to consider for setting standards for these devices is how do the information services that they consume and rely on affect their energy use, and possibly their water use as well. And I think that came up with the subscriptions, for instance.

Okay, that concludes my summary of our work. And I just want to mention, again, that this was funded by the PIER Buildings Program here, at the Energy Commission.

So if anyone has any questions -- sure.

MS. WHITE: Does anybody? George. Actually, I think he addressed your simplicity comment in his last presentations; didn't he?

MR. GEORGE ALEXANIAN: This is George Alexanian again, from Alex-Tronix.

The question that I would have is let's assume that the 14 and a half percent for water savings, it could be 15 percent, 18 percent, 20 percent, whatever it is, that translates, hopefully, to pumping energy savings, which may be more important to communities, especially in view of the infrastructure. So that if you have more people that occupy an area, they have to provide more services and part of that is water, which means not only availability of water, but the energy required in pumping the water.

So has any study been done or are you aware of anything that somehow correlates water savings to pumping energy savings, and delivery savings, or anything like that?

MR. STRAIT: I can jump in and say we do tend to refer to that as the embedded energy cost in water and we recognize there is a significant embedded energy cost in extracting, purifying, treating and pumping water, and delivering, all of those steps. In terms of explicit --

MR. BROWN: Well, implicit in this chart, this is the tradeoff curve here, implicit in those two curves or each of the two curves is a different value for Northern

California and Southern California. And we took that from Energy Solutions, we think their from an Energy Commission report.

MS. WHITE: They're from a study that we made --

MR. BROWN: Yeah, so they're Lorraine's numbers.

MR. BROWN: Well, let's say 20 percent water, everybody in their community after 2012, sooner or later, sometime after 2012 everybody will have a Smart controller, and where everybody is saving 20 percent water, just to pick a number, how does that translate or is there a rule of thumb if you're pumping energy and processing --

MS. WHITE: Me, without my calculator, George, you're putting me on the spot.

Actually, when we did the study and we were able to break out the differences between Northern and Southern California, the water savings, especially communities in which you have imported water requirements, the embedded energy savings, of course, are going to be a lot higher.

There are some regions in Northern California that rely a lot on pumping, deep well ground water, and you're going to see significant embedded energy savings there.

MR. GEORGE ALEXANIAN: Well, it seems to me we'll have to know those figures.

MS. WHITE: Yes.

MR. GEORGE ALEXANIAN: And us, manufacturers and so

forth --

MS. WHITE: Yeah.

MR. GEORGE ALEXANIAN: -- one thing that we'll know is saving -- as you need, I need the water and energy conservation, so I would like to know personally, and I don't know to this point --

MS. WHITE: I will make sure those studies get to you.

MR. GEORGE ALEXANIAN: I mean, hundreds of thousands of dollars of designing and manufacturing of a Smart controller, hey, I'm also saving some energy. Because then I'm not accomplishing my second issue statement, which is saving energy. So that's a personal thing --

MS. WHITE: Oh, yeah.

MR. GEORGE ALEXANIAN: -- and providing, of course, every --

MS. WHITE: And in fact -- and in fact you'll also be helping to reduce greenhouse gases associated with the --

MR. GEORGE ALEXANIAN: Well, there's a lot of benefits, sure.

MS. WHITE: And the requests are listed on our website and I can make sure that there is an appropriate link to that through the irrigation controller website, so that anybody who's interested can find those easily.

We did two reports. One we did in 2005, as part of

the Integrated Energy Policy Report proceeding, in which we produced numbers that have been quoted a lot. It represents about a 19 percent of -- the whole water use cycle represents about 19 percent of the statewide electricity use, and about 33 percent of the non-generation natural gas consumption.

MR. GEORGE ALEXANIAN: Wait, wait, wait, 19 percent savings on all the energy use in the State?

MS. WHITE: No. Water -- the water use cycle, that means capturing the water, delivering it to a treatment facility, treating it, delivering it to the end-user, taking it from the end-user, putting it through a waste water treatment process or disposing of it, that whole process represents, statewide, about 19 percent of the overall electricity use.

MR. GEORGE ALEXANIAN: Okay. Now, how much of that can we save? I know you don't have the answer to that off the top of you head, but how much of that can we save because of the Smart technology and less water use; that's my question?

MS. WHITE: And this is what -- this is what Rich is getting to. There are regional differences because of the energy requirement for that.

MR. GEORGE ALEXANIAN: Oh, I understand the transportation and all of that, yes.

MS. WHITE: But we will be able to rely on these numbers. We actually refined the 2005 numbers with a PIER study in 2006 and it showed that essentially about, you know, more than 70 percent of the energy, the electricity in particular, associated with the water use cycle is at the end use, and almost all of the natural gas. But that natural gas use is mostly indoors.

MR. GEORGE ALEXANIAN: Uh-hum.

MS. WHITE: But for many -- for the embedded energy, you're talking about 28 percent of that 19 percent, to six to eight, depending upon where you live.

MR. GEORGE ALEXANIAN: That's the number, yeah.

MS. WHITE: Yeah. And so when you're looking at, through water conservation, saving a significant amount of water at the end use, and the Governor's mandate right now is that we get at least 20 percent per capita reduction in the State, if we can get at 20 percent, 30 percent just in irrigated, outdoor watering, then that will contribute to that per capita reduction.

We, as part of this analysis, will take that into consideration. You can crunch the numbers yourself, if you want to do it sooner, because the reports are there on the web for you to use.

And we did want to differentiate for people what we're talking about in terms of indoor water use, outdoor

water use, in Northern California and Southern California. So it's there. And Rich, you can go around that --

MR. BROWN: That's where this is drawn from, yeah.

MS. WHITE: Yeah.

MR. BROWN: And the numbers used in this analysis are the outdoor water use.

MS. WHITE: Right.

MR. BROWN: So we don't include the waste water treatment.

MR. GEORGE ALEXANIAN: All right, thanks, Lorraine.

MS. WHITE: You bet.

MR. BROWN: One other thing I'll add is that the Public Utilities Commission has a study underway to update this and I think provide more detailed embedded energy numbers.

MS. WHITE: Yeah, they want -- we're working with the PUC to try and get more granular regional numbers and to also be able to identify specific energy savings for a given BMP, best management practice. So we're working on trying to do better, but I doubt any of that data will be available by the time we have to come up with the decision.

He's first and then Dave.

MR. CHARLES ALEXANIAN: Thank you. My name is Charles Alexanian.

In response to your findings on standard wide power

consumption on the various controllers, that probably has more to do with the current state of manufacturering with the transformers used in these type of controllers.

They're used in the lower performing styles; they're smaller, associated with smaller, less expensive controllers.

More Smart controllers on the market nowadays, our more expensive models are based on the more expensive models of the various manufacturers, especially ones with hardwire transformers are generally seen in larger transformers that will have a larger waste component technology. Which I would wager more power is wasted through heat and loss in the transformer, itself, than in the actual controller.

Any irrigation controller sensor only draws a few, it costs more operating to keep the lights on. But as much as several watts of power may be lost just simply through any currents of that, plus all of the manufactured imported transformers.

MR. BROWN: Well, I think there was an issue, we had kind of a discussion about this, about the same transformers used for the power to actuate the cellanoid balance, and that's a pretty high power drive relative to the standby power. And so you're essentially designing one transformer to do two very different purposes. One is to provide this low voltage DC, you know, DC to electronics,

very low current draw versus this larger, but infrequent active load power.

And so there may be some design solutions where you have some --

MR. CHARLES ALEXANIAN: Yeah.

MR. BROWN: It's on the --

MR. CHARLES ALEXANIAN: Well, it can be manufactured, but they're a higher cost to the end-user and may not be palatable.

And additionally, since cellanoids, in industry we have a standard 24 volt AC; you're not going to see a switching power supply giving us an effective cost for quite some time.

MR. BROWN: Right. And so this sort of question always comes down to the manufacturing cost. And I think this shows from, I guess you'd call it from the homeowners, or the purchaser's perspective, what's the impact on their energy bill, essentially, or their energy consumption.

MR. CHARLES ALEXANIAN: Yes. And then just I'm sure that you know, but on average most of the landscape types cellanoids draw on average about six watts, a quarter amp in use is the number most of us use.

MR. BROWN: Uh-hum.

MS. WHITE: What was it your study showed in active use?

MR. BROWN: It was -- Peter, what was the --

MR. BIERMAYER: Inactive use of cellanoids?

MS. WHITE: Peter, could you come and mention it into the microphone so people on the phone can hear?

MR. BROWN: So one of the issues is how many cellanoids are being activated at any one time.

MS. WHITE: Okay.

MR. BROWN: And I believe the measurements we took were only activating one cellanoid at a time, which is common.

MR. BIERMAYER: And in this study we were focusing on standby power, not active power, but I just remember one was nine watts and there was --

MR. BROWN: The average is -- the standard controls that we measured were an average of about five or six watts, and active, and we only got active on one Smart controller and I think it was around nine watts.

MS. WHITE: Okay.

MR. BROWN: So that's the only one showing the active power because it's really not --

MR. BIERMAYER: And also in the standby power, as you can see form this chart --

MS. WHITE: Yeah.

MR. BIERMAYER: -- some were one watt and some were six watts, and there's some overlap.

MS. WHITE: Okay, great.

MR. CHARLES ALEXANIAN: Thank you very much.

MS. WHITE: Thanks, Charles.

MR. ZOLDASKE: Dave Zoldaske, Fresno State.

Just a couple of thoughts, really, and could we go back to your curve that you guys did, the two costs of water in Northern and Southern California?

I know we're looking at the energy and I know the government, I think 15 percent energy reduction and 20 percent water reduction; is that right, by 2020? Is that what that is per capita?

MS. WHITE: Certainly the 20 percent per capita by 2020.

MR. ZOLDASKE: For water?

MS. WHITE: Yeah.

MR. ZOLDASKE: Isn't there a similar one for energy?

MS. WHITE: There are efficiency goals set by the PUC for all of the investor-owned utilities and we set them for the public utilities through our various planning proceedings.

And essentially, the only goal I know of for the Governor's Executive Orders has to do with renewable power generation. Do you guys --

MR. BROWN: Well, there's also greenhouse gas

goals, AB 32.

MS. WHITE: There is, I'm sorry.

MR. BROWN: Which is one percent by --

MR. ZOLDASKE: Well, what I wanted to point out here is my information on the energy savings, but the likelihood of being short water in this State, you know, we got to reduce our -- and the average in that, I thinking, for PTO is a thousand gallons for water. So we live on 25 gallons for two watts or something, I mean, if you want to put it in those terms.

And I think that the price that the consumer's paying for the utility also includes, I would think, opportunity costs by having additional water sort of coming, so the potential of having to buy very expensive water.

So I guess what I'm saying is we got to look at this stuff and do an analysis, and I think it's important that you look in the opportunity costs of having to bring in additional water, and those costs are going to be extremely high going forward.

So it's more than just the energy equivalents here we're looking at, and so I just -- I want to make sure we don't lose sight of that because we're going to have a very difficult time in the next 10 or 11 years trying to meet our water demands around here. And I want to make sure we're just not trading energy --

MS. WHITE: Right.

MR. ZOLDASKE: -- and really look at if those extra 25 gallons, where would those come from, you know, is that from the deeper holes, is that from --

MS. WHITE: And it's going to be regionally different.

MR. ZOLDASKE: That's true, that's true, there's no question about that.

MS. WHITE: Right.

MR. ZOLDASKE: But I just want to make sure that it just doesn't -- the energy side, I know, is what you guys are about and it's pretty easy to make those distinctions. But I think the total sum of things, in lieu of what the State's trying to do, it seems to me that we really have to look beyond at it and what's the additional cost of that water going to be if we don't achieve these savings, it's not just the energy savings, the additional costs here.

MS. WHITE: And this is where we're really hoping that some of the water agencies can help provide us with data. Because is it going to be an issue of the next incremental cost of water, the marginal cost of that next increment, or are we talking about in some systems an average of the water cost, and that's what we should be looking at?

So I'm -- we're all trying to figure out how to do

this cost-benefit analysis, and one of the reasons why you have so many of those kinds of questions on --

MR. ZOLDASKE: Right.

MS. WHITE: -- those key questions list that we have.

MR. ZOLDASKE: So, you know, so I'm just hoping when you get into the value of saving water that we take in all of those externalities, because I think those are very real if we're going to try to meet this 20 percent by 2020.

MS. WHITE: Thank you.

MR. ZOLDASKE: And make sure we account for that.

MR. BROWN: And another issue here is that the embedded energy numbers here I believe are average numbers.

MS. WHITE: They're average, yes.

MR. BROWN: And those -- those marginal water supplies are probably going to be higher energy per watt.

MS. WHITE: Significantly.

MR. BROWN: The other point you make, you really did point out the tradeoff. I posed this as a tradeoff, but I don't think it has to be a tradeoff. Yeah, I don't see any reason why a Smart controller, in standby mode, should use more than a conventional controller.

MR. ZOLDASKE: Well, if this is -- they're going to be referencing weather --

MS. WHITE: Dave, you need to be --

MR. ZOLDASKE: I'm sorry.

MS. WHITE: I want to catch everything and, unfortunately, we don't have everybody in the room, and this is very --

MR. ZOLDASKE: I would just mention that some of these do reference a station or zone, so they're periodically irrigating stuff --I would just mention that some of these do reference a station or zone, so they're periodically irrigating stuff --

MR. BROWN: Right.

MR. ZOLDASKE: -- so they're not in standby mode as often.

MR. BROWN: Yes, sure, and there are analogies for regulating those type of -- for instance TD's download and program guides periodically, and the standards have been crafted in a way that allow them to do that, but the vast majority of the time they're in this low-power, you know, energy-saving mode.

And so it's possible, I think, to craft it in a way that allows you to have the functionality, but get the energy and the water savings, hopefully.

MR. STRAIT: Yeah, let me add onto there, that you can have -- there's differing kinds when you're pulling like every two minutes, every ten minutes, or some of them pull like every two hours.

MR. ZOLDASKE: Well, that's -- or some may be 24 hours.

MR. BROWN: Yeah, exactly.

MR. ZOLDASKE: At that point they're pretty level altogether, because I think some of those different platforms will perform better or worse, if you believe some of the philosophy built into those.

MR. STRAIT: Yeah. Well, from a standards perspective what we can do, what we've done in previous -- maybe similar devices, of similar circumstances, is that if there's an overall cap on the amount of power that they're running in a standby mode, or in some sort of average over a 24-hour period that they're -- obviously, whatever method will get them below that. But it's very interesting that some of it is updating every five minutes probably will not, or will have significantly more trouble meeting that threshold as some that is only updating every, you know, 24 hours.

MR. ZOLDASKE: I'll just give one example. Those that have tipping rain buckets will claim that they can then stop and adjust irrigations immediately, as opposed to other devices that might, on 24 hours, measure rainfall and not account for initial rainfall, and then edge that to a saved water applied in water, so a higher level of instrumentation.

And whether that's of value, I'm not here to say, I'm just saying that there are those different platforms out there. And so I just would expect that it's in detail that you need to look at those different platforms and --

MR. STRAIT: Sure.

MS. WHITE: Well, I think we're actually moving into the discussions now on our questions.

And Charles, I know you have a question for Rich or do you have a comment?

MR. CHARLES ALEXANIAN: I have a comment.

MS. WHITE: Okay, we're going to be going through, as part of the next section of this workshop, the key questions that we're posing. And if there are no more specific questions for Rich -- yes, sir?

MR. POPE: Ted Pope, with Energy Solutions at PG&E.

MS. WHITE: Hello, Ted.

MR. POPE: I apologize, I may have missed it, Rich, did you hypothesize what the load of the moisture sensor is and so forth would be in those who are connected to the test data? Maybe the gentleman over here had said, I may have missed the number.

MR. BROWN: Yeah, that was something we didn't look at. All of the Smart controllers that we looked at were not connected to sensors.

MR. POPE: Okay, so --

MR. BROWN: I think one was. And so I think that gets to if, in any kind of standard, there needs to be a test procedure to actually, I don't know, on an objective, comparable basis to compare energy consumption.

And so there's a lot of issues there about for these more sophisticated controllers, they may have sensors, and different modes, how do you actually create a test procedure that fully compares against different products.

MS. WHITE: So I'm just confirming, based on what I think is true, that there is no standard test procedure currently for energy land of controllers or sensors; is that correct?

David is shaking his head. The gentleman there is also shaking his head, okay.

MR. BROWN: There is a standard test procedure for standby power, generically.

MS. WHITE: Yes.

MR. BROWN: Which is defined as the lowest consumption level while still connected to the mains.

MS. WHITE: Okay.

MR. BROWN: So that will go and measure that very lowest level that any device has, it wouldn't account for these data acquisition modes, or other --

MS. WHITE: And those are more external, right, in terms of --

MR. BROWN: No, that's for any device.

MS. WHITE: Any device, okay.

MR. BROWN: Yeah, there's an IUC test procedure for standby power.

MR. POPE: So at the risk of standing out, I guess I just want to state for the record that, you know, if we are going to move forward with a standard that essentially encourages the Smart controllers, PG&E just wants to make sure we do it in a way that doesn't generate increase in the average energy use.

MS. WHITE: Thank you. Any other questions for Rich?

MR. RIDER: Hi, this is Ken Rider. This is mostly due to my poor vision, but on the few things asked here, do you know, based on the Aquacraft results, where the Smart controllers would land on that curve?

MR. BROWN: Well, the summary results that Peter showed were about 15 percent, so that would be 15 percent savings on the Y access, and Y access is water savings, a percent of baseline.

And so then where you fall on this chart would depend on what your baseline consumption is. So if you're a very low consumer and you save 15 percent -- a low consumer to begin with and save 15 percent, it may be -- and in Northern California it may not -- the energy tradeoff may

not work in your favor or society's favor.

MS. WHITE: And you're saying based on that chart?

MR. BROWN: Based on this chart it would probably fall below --

MS. WHITE: A hundred gallons.

MR. BROWN: Right, to get the threshold, in Northern California it's about a hundred gallons a day of baseline outdoor water use.

And Southern California is probably 25 gallons a day, something on that order.

MR. RIDER: And this doesn't include active mode; right?

MR. BROWN: This does not include active mode. So this assumes that it's in that standby level, the average standby level, 87/60 hours per yard.

MR. RIDER: And does your study have any kind of estimate of the number of hours of active mode use consumption?

MR. BROWN: No, we didn't do long-term field studies, so we don't know.

MR. RIDER: All right, thanks.

MS. WHITE: Thanks, Rich.

MR. BROWN: Sure.

MS. WHITE: Everybody's been sitting here, wonderfully participating in this workshop, and I think we

all could use a five-minute break to stretch our legs, and before we get into the discussion on the questions.

So if folks can be back here at about ten minutes to 4:00 or so, we'll get into the questions.

(Off the record.)

MS. WHITE: Thank you. All right, there are many questions that we explore as part of our regulatory proceedings, and in particular for this Appliance proceeding, for the irrigation equipment, we have defined probably the short list. It may appear to people to be a long list of very detailed questions, but they are all very important questions that we have to explore and we feel we need to be able to get answers for in order to do adequate analyses to justify any kind of regulatory requirement.

And in particular you'll notice that these types of questions get to those three criteria and our ability to meet the three criteria, essentially to identify a method or device standard that allows for significant energy or water savings, that can be feasibly achieved, and that results in true cost savings to the consumer.

And, you know, some of these things may seem kind of basic to you on the surface, but it really gets to be a bit more complicated than that.

For example, the very first question, which is how are we currently defining water's waste in landscape

irrigation that these components or these devices would address and actually be able to reduce?

And what studies have been done that document and substantiate this understanding of the water waste?

We are also getting at the devices, themselves, what is it about these devices, mechanically or electronically, that allows them to be a device that can achieve these kinds of savings, whether it's the controller, or the sensor, an add-on advice, allow for something like that, what is it that is actually being able to achieve that?

So when we compare devices we can define what kind of metric or performance requirement we need to define in order to achieve those savings.

So we're really differentiating well into performance of different kinds of devices.

We're looking at costs. What's the cost of the device at the retail store, to a consumer; what is the cost of the water; what is the cost of the energy; how are we going to be able to evaluate over the life of the product any kind of savings, or any kind of tradeoff, or any kind of additional expense, so on and so forth?

So what I would like to do at this point and Peter has agreed to help facilitate some of this discussion, is go through and highlight some of these questions. And I would

like to do this -- and I know you haven't seen these before, so we also want to explain the question and what we're trying to get at, so that you can provide us good input over the next two weeks, so that we can take that input, incorporate it into our analysis, and react to it appropriately and develop, as part of this proceeding, the report we keep referencing, by the end of July.

And extract from this information the kind of language, the actual language that will be in the regulation that is the standard. And it will be that language that we submit to the Office of Administrative Law for them to do their second phase of the proceeding.

And what I'm referring to is in this diagram, this green circle or portion of a circle there, where we're talking about publishing the actual language that starts the regulatory proceeding clock that is a rulemaking.

And once that's published, after we create it in this preliminary process, we have 45 days for a public review. And this public review will also include a public hearing, where people can make verbal comments, as well as written comments, where we try to make sure that that language is in fact what it needs to be, and that we have a strong record on which to substantiate that language.

We'll be looking at all of the material people have submitted, and the comments that we've gotten to date and,

if necessary, refining that language.

And if we have to refine it there will be an additional period for comments, just on the refinement.

If it's fine and everybody's in agreement, it actually goes into a final statement and will be finalized at that point.

Hopefully, we'll have done such a great job in the next couple of months that we come up with really good language that needs little or no tweaking by the time that we get to this process.

So getting the answers to these key questions is of imminent importance to us. And the more complete the answers, the more refined and strong the language can be to actually get the savings we're looking for.

So I have three slides here, because we have 17 questions that we've published. And you can respond to all of them, you can respond to some of them, you can just focus on the ones you know best; you can direct us to reports that hopefully will answer some of these questions for us.

But Peter and I will walk these through. I'll take the odd ones and he can take the even ones. And we welcome people to ask questions about them, we welcome people to provide us things that we have to consider.

Like, Dave, you were talking about some things that we need to consider about the next increment of the water

cost and things like that. So as we go forward, we'd like to have you provide that input.

So as I was saying, our first question gets to a real fundamental one, how do we define the waste of water that's currently occurring that these standards will hopefully address and reduce?

What are the different categories of those that we're really trying to deal with and are there other strategies we need to be considering to help mitigate them?

And the reason why we need to know this gets to the topic that was brought up earlier, what is the opportunity for water savings that these devices are trying to actually get us closer to?

And can we, based on what we know about what is currently being wasted, define what could possibly through these standards be saved and, therefore, defining a potential savings that we want to try and achieve.

So does anyone want to have any question on that question? It sounds kind of silly but it's true. Or will we be able to hear some good responses?

Gary? And then George.

MR. GALINAS: I'll try and be quick. With the new draft water restrictions that are being imposed in Southern California, most of them are requiring that you can only water for two to three days per week.

If this gets enforced and implemented, I don't think the opportunity for savings is going to be as significant, because then people will have probably deficit irrigating that's much lower than what the ET requirements would be.

So my concern is that if this is implemented statewide and lawmakers are passing, you know, local ordinances basically requiring this, then some of this becomes a rather difficult exercise in trying to identify savings. So that would be my comment.

MS. WHITE: Thank you. George.

MR. GEORGE ALEXANIAN: I want to echo what Gary just said, is the Smart controllers will generate water when they calculate the watering is needed for the specific landscape.

Whereas if watering schedules are implemented in various water districts, to me there appears to be a certain amount of incompatibility with water rationing, let's say, versus Smart water technology. Because if you can only water on the days that it's calculated to water, it's a non-watering day now, you have to put it off and that can put your plants under stress at the wrong time of year, so that's an issue that I think should be addressed.

As far as answering your question with respect to the water waste, it appears to me system inefficiency or

efficiency, as you might call it, is one area of water waste and that probably accounts for close to 50 percent of all the water used in landscaping.

Runoff would be another water waste. And this can be controlled by a Smart controller.

Once again, a system inefficiency cannot be addressed by a Smart controller, so that's probably the majority of the waste, along with the runoff. So that's how I would define water waste.

The only water you can save is the part that the controller or the Smart controller can control; basically, it's about 50 percent of the water used in landscapes.

MS. WHITE: George, just a clarification. Could you address the drought restrictions in programming for most of the Smart controllers on the market today or would they have to be redesigned to do that?

The Southern Nevada Water Authority looked at that question a couple of years ago and they asked Toro if they would design their watering restrictions in with their Smart controllers, and as far as I know they have not done that, did not do it at the time.

There may be a time when this needs to be addressed by the industry in being able to provide non-watering days, depending on the region that the people live in, because it's going to be different.

So in Nevada, for example, they have six different watering groups, depending on the time of the year, and the time of the day, and the watering group that they're assigned to.

In Fresno there's an even/odd. I don't know what they're going to do exactly in Southern California, maybe Gary knows that better than I do.

But there's going to be all different types of watering restrictions imposed, whether that's compatible with Smart controllers is an issue, at least in my mind it is. Maybe someone else can address that concern, that issue, but that's something that needs to be addressed.

MS. WHITE: Yes, sir?

MR. CARLSON: Peter Carlson, HydroPoint. I strongly agree with Gary regarding the water restriction issues. Depending upon the different controllers they handle the water restrictions differently.

Our controller handles most of the different combinations, if not all of them.

But either way it doesn't really lend toward plant health, which we think is a critical component for successful Smart irrigation.

And the other component is that if somebody is geared toward only watering two days a week, or odd/even, then he might be more likely, because more Smart controllers

have a user option for gardens, or other scenarios, it would be more likely for the user to convert it out of the Smart mode and then over-irrigate on those days.

So as far as wastes go, I think taking the control out of the Smart controller's option is probably one negative associated with that.

The other side of it is I think a lot of, also, landscape contractors, if they're tweaking it, which is interesting on this self-install versus professional, are getting used to Smart controllers and are getting trained as it's kind of come of age in the last couple of years.

MS. WHITE: Uh-hum.

MR. CARLSON: And sometimes they'll crank up on the percentage to handle system inefficiency issues, especially have the controller water more, than let the controller do what it does best and fix the system, when it's used appropriately.

MS. WHITE: Peter, when you say "plant health," could some of the water demand associated with particular plant types, if you were to switch them out so that they could tolerate lower water demand, would that address it, or is this a comment overall.

MR. CARLSON: I think this is a comment overall. Different plants have different crop coefficient factors. Cold season turf is different from warm season turf, is

different from shrubs, and so there's a whole study done, you know the Woocall Study, showing the different watered plants. Different controllers handle that differently, with a cap for the cost-efficient, and that's what our controller does, it caps for the cost-efficient for the plants, to be able to handle the slot protocol, itself.

Most of that question would be able to make sure that the different controllers would manage these different plant types and the different plant requirements. And so as far as the wastes go, I think that converting it out of an automated, or weather-based, or Smart controller methodology essentially -- and restricting it for certain days tends toward over-irrigation.

And I think there have actually -- I'd have to go look, but I think there have actually been studies on that, based on different people who have done that in the past, different water agencies, where setting up watering restrictions actually increases water usage versus lowering it.

MS. WHITE: What about water budgets?

MR. CARLSON: Water budgets, if you think about it from the perspective of how does a water agency management that; one way that many water agencies are doing it are through tier rate structures. So not necessarily going and saying here's your water budget and we'll cut you off in

water, right, because you can't do that, but by going and having water budgets based on a tiered water structure, we're definitely very supportive of that idea and being able to have weather-based or ET-based water tiers to be able to do that.

We definitely work with a lot of different water agencies to help them learn about how conservation and how the tier-based structures can help make that happen.

MS. WHITE: Thank you, Peter.

Yes?

MR. MURAKAMI: Hi, I'm Leah Murakami, with WaterSave. And I just want to address what I think the last two people have been saying.

I work in Los Angeles and L.A. can just -- as of today they have new water restrictions, properties can only water on Mondays and Thursdays for ten minutes.

So my customers, who have been saving a lot of water year after year is now saying, well, why should we have a Smart timer, or a Smart controller, or watering metering system when we're only limited to Monday and Tuesday, we're just going to maximize our watering on those two specific days? If there's a head, they're going to take out the one that's less efficient and they're going to put in the one that would put in as much water as possible, because they just want to make sure that their plants

survive.

And so even -- so now, of course, now all of the weather-based controllers and water management systems are not going to be used the way they should be used, and they will either cancel their service or they will revert to a conventional controller.

And I heard that a lot of the other agencies are looking at L.A. and they're going to follow that.

MS. WHITE: Uh-hum.

MS. MURAKAMI: And so it's interesting just because, you know, for years they've been pushing water-based controllers and saving water, and all of the sudden it's kind of gone off of that.

So here we are, talking about AB1881, and yet there's these regulations that are actually going against what our goals are.

MS. WHITE: Thank you.

MR. STRAIT: If that's all the questions, I guess, for question one, we'll move onto --

MR. SMITH: Yes, actually, I have one. Are we on question one because I'd like to address a question about that.

MS. WHITE: Oh, yeah, we're --

MR. STRAIT: Yeah.

MS. WHITE: Well, these kind of questions build on

other questions, build on comments but --

MR. STRAIT: This is going to be semi-informal that if you want to jump around a little bit that's fine; we're going to just walk through these.

MS. WHITE: And in fact, the idea is to try to introduce you to the types of things we're grappling with and try to get your input on how to address this stuff.

We may not get through all of the questions and I doubt today we'll get to try and get that language, but these are the things that we want by the 15th to get answers to, which we've got, and clarification.

MR. SMITH: Andy Smith, Irrigation Association. Nice to meet you.

MS. WHITE: Yes, face to face, nice to meet you, Andrew.

MR. SMITH: Real quick, fundamentally, when I think about how you characterize this water waste, I see water waste as either being direct or indirect/cultural. And when I try to characterize these things I look at the waste being runoff which was, you know, basically, some of the restrictions actually are current or not, which I understand where they're headed with that.

MS. WHITE: Right.

MR. SMITH: But also deep percolation losses that take place whenever we're applying water both beyond the

root zone, where the plants can't get at it; there's overspray, where we're delivering water to a non-targeting area or across turf surface; and then the distribution uniformity element that's in there, or system efficiency, or however you want to characterize that.

Consumers want green grass and healthy plants. And so, consequently, if there's a weakness in the system they do everything they can to compensate to that, and the first thing they do is go to that controller and turn them out.

So DU is something that's going to be critical as you start to address some of the other components to draw through, you know, the demand for some of these other devices that improve the distribution uniformity.

MS. WHITE: And DU is?

MR. SMITH: Distribution uniformity.

MS. WHITE: Okay.

MR. SMITH: As far as strategies for mitigating them, I mean when I think about that, I mean we can have something just as simple as a broken pipe. I mean, it's in the teens how much water is actually lost just in our water distribution systems in the country, it's a significant amount of water that's just lost through leaky pipes, getting water from point A to point B.

MS. WHITE: Uh-hum.

MR. SMITH: So we have leaks in irrigation systems

as well, so and if we don't have a way to contain and measure that, it's going to be kind of hard for us to determine whether or not we just have a leak out there in the system.

Going forward, I mean I envision this industry adapting to something where the clock and the calendar is used only to define water window, and we are making all of our scheduling decisions based on climatic data or sensory feedback; what's the plant feel, what's the weather like, et cetera, et cetera.

So I think that's, you know, where the rubber meets the road in this conversation. I think that demand-based controlled technology is definitely the place where we need to go because, as it stands right now, we drive up the driveway as contractors, that looks brown, I'm turning the controller up. We turn the controller up on a timed cycle and the chances of that ever being turned back down later on in the season, or as the demand goes down, or an ET drops is pretty slim.

If we automate that process, we've made a huge stride forward.

So technology can help us compensate for that.

The other thing that's going on with distribution uniformity and even drift off the target is over- and under-pressure. If we under-pressurize, sprinklers don't perform

the way they would normally like to perform, so people compensate for that by turning the controller up.

If we over-pressurize, we get atomization and wind drift and the water doesn't make it to the target.

Once again, everything that we do through this process, I'd like to think that we're trying to make the technology compensate for our over-abundance of human weakness in the field.

So with that I'll -- I've got a whole bunch of them, but I'll just leave them for questions. I'd just as soon do them one by one, if that's okay.

MS. WHITE: Sure, sure.

MR. STRAIT: And if there is some additional material that may not make it into the discussion, we are certainly willing to accept written comments and materials. And, of course, from people that may not hang around.

MS. WHITE: We're actually actively encouraging written materials.

MR. STRAIT: Yeah.

MS. FLORES: Lynn Flores, with Sonoma County Water Agency. And I'd like to suggest, from a water agency perspective, that we look at the water waste reduction ordinances that are in place, agencies have been articulating what is water waste and how to communicate it to the public for years and years.

They're, for the most part, pretty standard and they focus on landscape water waste, reducing breaks or water loss from breaks, leaks, over-spray.

So first off, getting the water back to the landscape, and then there's another level of water waste and that would be achieved through irrigating control water budget. So irrigating to what the plant needs.

And I wanted to let you know that, of course, the State Water Resources Control Board, whether their main focus is water waste, water reduction, and reducing water loss, we have -- we've been given an order to reduce water use. One of the -- you know, there's a lot of terms within that order.

One of the terms that we've learned is "no irrigating commercial turf grass." And then it was revised last week to say "only irrigating actively used turf grass," so passive commercial turf grass can't be irrigated in Sonoma County.

There was a coalition of landscapers and businesses that got together and they, you know, went to the hearing and talked about the restrictions in the order and they said, wouldn't you be willing to accept an alternative to the water irrigating the turf grass because we view that the businesses, you know, aren't going to be suffering, and you promised that already, how about if we agree to irrigate a

reduced amount per ET, would you consider that?

And we got the order and it is in the revised order. So we know the State Board is looking at that as being a way to reduce water use.

MS. WHITE: So it's a certain percentage of ET, so it's --

MS. FLORES: Twenty-five percent of ET. So it's the same percentage of ET, but remember that a lot of sites are down even more than ET.

MS. WHITE: So this they consider conservation water, or under-watering so the -- because if I understand the Smart controller, and I also understand the SWAB (phonetic), it's geared toward the adequate watering of a particular plant type based on ET.

MS. FLORES: Plant types with an s.

MS. WHITE: An s.

MS. FLORES: Correct. That's different.

MS. WHITE: Yeah. So they're actually saying you can do that, but it has to be 25 percent of the ET --

MS. FLORES: Exactly.

MS. WHITE: -- for those plant types.

MS. FLORES: It has to be less than they actually need. Well, a lot of plants can't survive on less than a hundred percent of ET.

MS. WHITE: Okay.

MS. FLORES: At least it's not turn the water off, and that was the goal of the landscapers.

MS. WHITE: Okay, great.

MR. CARLSON: Is it 25 percent of the plant's ET or 25 percent of the referenced ET?

MS. FLORES: There's a formula in the order, so it's a percentage of ET. Actually, I can just show you what it is.

MR. CARLSON: Okay.

MS. WHITE: Lynn, could you actually send it to us, that information, and then we can look at it?

MS. FLORES: I'd be happy to.

MS. WHITE: Great, thank you.

Gary.

MR. GALINAS: I just wanted to address the most difficult challenge I think you guys have, the cost benefit analysis, numbers, numbers, numbers. I can see you're smiling, so you know.

MS. WHITE: We're not only a customer, but we have talked about the cost benefit a lot.

MR. GALINAS: Yeah, but I just wanted to make a point that there's a valid water restriction in California, and they all have different water rates, and they all have different tiered rates, and they have all different requirements. And for you to come up with a generalized

number, you know, of what -- in general, what government's do, they all come up with a generalized number, it's not going to have much reality to specific sites, unfortunately, because of the shear number of different water districts and the shear number of different water rates.

So I know it's regarding the statute but, again, trying to calculate the water solution resolve is hell-a-crazy. But good luck.

MS. WHITE: Thank you.

Okay, Charles, did you have a --

MR. GEORGE ALEXANIAN: Yeah.

MS. WHITE: The whole idea of the workshop is just to discuss it.

MR. GEORGE ALEXANIAN: This is the idea, Charles was going to say this, but this is George again, in case of those that are listening.

Twenty-five percent of ET isn't going to save land, the grass. I mean, 80 percent is generally considered a minimum amount of water you need, of ET, to have something effectually done.

So it seems to me, unless I'm misunderstanding something here, that 25 percent is like throwing good money out for bad money, in fact. You know, am I all wrong on this, am I all wet?

MS. WHITE: Well, at this point we're not going to

make a value judgment on that. What I was asking them to do was --

MR. GEORGE ALEXANIAN: I'm just saying, it isn't making sense to us. It's a waste.

MS. WHITE: Well, at this point what we're trying to do is figure out the information we need to consider as part of our evaluation. Because the local agencies do have the authority to institute different programs, and if these controllers can't function properly because those programs override what the controller's supposed to do, that adds a level of complexity.

MR. GEORGE ALEXANIAN: Yeah, as I said, is it going to be compatible, as I said before, it's incompatible with of a Smart controller. I won't say ET, because we shouldn't be limited to ET.

MS. WHITE: Right.

MR. GEORGE ALEXANIAN: Is incompatible with a Smart controller, with the watering right restrictions, where someone has to go and actually make a change that may tend to over water, rather than save water, just to save their landscaping, which they have thousands of dollars invested in.

So something is out of balance here and we need to go one way or the other, but it appears to me there's going to be some issues with doing both.

MS. WHITE: And you --

MR. GEORGE ALEXANIAN: I guess I don't understand it. And then if we have time, if we go on, I actually have made an analysis of water conservation, itself, using Smart controllers in the State and I'd like to present that. Not right now, if we have time later on, or I'll just send it in, in an e-mail.

MS. WHITE: Okay.

MR. GEORGE ALEXANIAN: But right now we're addressing the issue of the water restriction versus Smart controllers and basically my comment, in my opinion it's that it's a waste of time, and money, and water, and energy.

MR. STRAIT: Yeah, I think I can understand the point that maybe if there's kind of a basic amount to sustain a plant that putting less water than that to it, the plant's going to die anyway, it might not be a useful use of water, I think, is the overall point. I mean -- okay.

MS. WHITE: And we now have actually crossed over into the realm of the model landscape ordinance.

MR. STRAIT: Yes, that's true.

MS. WHITE: We have to come back to what the controllers, what characteristics we have to be cognizant of for controllers and other sensors, and the devices, themselves, we don't have the authority to regulate what local agencies do or do not do in terms of their water

restriction programs.

But we do need to be cognizant that they have the authority to institute these programs and we wouldn't want to establish a regulation that is totally non-functional because it didn't take into consideration what the local agencies can do. And so we need to -- and I appreciate the dialogue because it is very important for us to recognize that and to factor those things into our evaluation of the potential any regulation can have for actually achieving savings.

We go through droughts all the time, local agencies have the authority under a variety of statutes to define what is necessary to protect public health and safety, to provide adequate water. And if it's a choice between people and plants, plants are going to lose. And that is their authority, not ours, so I want to clarify that.

MR. STRAIT: Yeah, I would like to second the point that regulations don't exist in a vacuum, that they are a work in process, that there are other agencies that have differing jurisdictions, and different topics they're considering and as such it really makes any particular portion very complicated because it's tied into all of this, all of the other sensor options, all of the other conditions and concerns that crop up when we're dealing with something as important and universal as water. So I've just seconded

Lorraine there.

MS. WHITE: Peter, I think we've done a lot of discussions so far about number two, I think people can provide us with a lot of reports along those lines. Can you -- let's go onto three.

MR. STRAIT: Okay, you want me to?

MS. WHITE: Yes.

MR. STRAIT: Okay. I'll read this aloud for those who might be listening in.

Definitions of specific terms and equipment are required for any standards or labeling requirements. What are the applicable definitions for irrigation equipment, performance metrics, and functions to be regulated? Are all of the definitions used for the terms for this equipment agreed-to within the industry? And if so, what is that terminology and what are the related definitions?

And what we're really asking is in order for us to craft regulations and related language, we have to actually define in the regulations, themselves, how we're using each of the terms that we end up using, and we'd like to match those as closely as possible with what's currently being used by people that are actually the experts and professionals in the field.

But at the same time, craft it in a way that it can be as definite and precise as the law requires.

So our question is what kinds of -- what terms of industry should we be using, that we may not be using?

I was just talking with someone outside, that mentioned this, rather than using emitter, since that's a far more specific device, we might want to say emission device and just put out, broaden the scope to include things other than what would specifically be an emitter to the industry. So issues like that.

MS. WHITE: One of the suggestions that has been raised is to use the glossary of the Irrigation Association, and so we'd like to have people comment on whether that's appropriate or if there's other kinds of definitions we should use. Keeping in mind terms and definitions, when it comes to regulations, can be very important.

So keep that in mind as we go forward. We do want to all be speaking the same language, and when I say irrigation controller, I want everybody to know what I'm talking about, versus an ET controller, versus a Smart controller, versus a, you know, moisture sensor, versus a raining sensor, and so on and so forth. So it really becomes particular.

MR. STAACK: And I wanted to add to that, the terms of legal definitions, like for moisture sensor, we're going to have to define what that is legally, so we know that this is a moisture sensor and this isn't.

MS. WHITE: Yeah.

MR. STAACK: You know, does there have to be some type of parameters, what it measures, how it measures, how it functions. I mean, all that is going to have to be in our regulations as to, you know, what is going to be considered a moisture sensor.

So if we do an enforcement action and somebody, a manufacturer's selling something that doesn't hit the parameters, you know, we can take action against them because this is not what a moisture sensor is. So we need to tie that down in actual language, almost like an engineering specification.

MS. WHITE: George?

MR. GEORGE ALEXANIAN: Okay, a couple of quick definitions. A Smart controller should not be limited to an ET controller. And an add-on device should be defined as an item that allows an existing, conventional controller to adjust itself to the weather conditions; in other words make the conventional controller act like a Smart controller. That would be my definition of an add-on device.

MS. WHITE: Thank you.

MR. GEORGE ALEXANIAN: And again, Smart controller not being limited to ET controllers.

MS. WHITE: Thanks, George.

MR. STAACK: We have had kind of a limited internal

definition for a Smart controller and we're talking about, in the broadest possible sense, things that are able to perceive and react to the environment.

MR. GEORGE ALEXANIAN: Right.

MS. WHITE: Okay. All right, moving on --

MR. SMITH: Maybe I should --

MS. WHITE: Yes.

MR. SMITH: I keep straggling on.

MS. WHITE: You know, actually, why don't you just sit up there.

MR. SMITH: Very good.

MS. WHITE: And I should have George and Gary sit up there, took they keep popping up all the time.

MR. SMITH: Just semantic in nature, but we probably need to stop using the term dumb controller. I mean, basically, these are controllers -- I guess a better term is conventional moving forward, even in the -- even in the discussions we have. It's not necessarily a very flattering term to the industry, so I would ask with all due respect that we maybe start to go down that path.

And there are a couple of things in here, controllers and Smart controller, they can be broken into several different categories as we stand right now, but climate based or sensor based.

And then along those lines on the sensors, we need

to make sure that we capture -- it's not -- and I just stumbled across this in our ANSI specification development process, moisture sensors, they were trying to lump them in one broad term and there's a huge difference between a sensor that senses precipitation, a rain sensor, i.e., or a soil moisture sensor, so we probably need to characterize those.

And I don't know that our glossary captures that specifically. We're going to have to probably add some definitions and maybe -- and maybe have the Irrigation Association, have you link off to us as far as for other terminology.

But some specific things that, you know, as we go through those definitions, we need to cover those.

MS. WHITE: Right. In terms of the conventional controllers?

MR. SMITH: Yes?

MS. WHITE: Those are exclusively just the timers?

MR. SMITH: Well, there again, timer is, you know, one piece of the controller.

MS. WHITE: A clock timer, I mean.

MR. SMITH: Yeah, I mean a conventional controller. I guess the only thing I'm just trying to point out is that traditionally -- okay, maybe they are dumb relative to the process, but it's probably not a good thing for us to move

forward using that terminology.

MS. WHITE: And all I'm asking is that when we define these things to differentiate which ones we're talking about, if you can help us figure out what falls within a conventional time -- a conventional controller.

MR. SMITH: A conventional controller uses a clock and the calendar.

MS. WHITE: Okay.

MR. SMITH: We put in a time cycle based on what our best guesstimate of what the needs are. Now, let's face it, the majority of the industry right now, we're driving in our driveways and making a decision based on what things look like, so it's kind of the drive-by control sequence.

So I guess if we start to move into what's the difference, one is a time cycle, a time and a calendar cycle, the other is demand-based.

MS. WHITE: Okay, got you, thank you.

MR. STAACK: You know, in terms of moisture sensors, you know, the standard might actually be saying that it has to meet ANSI specifications.

MR. SMITH: Yeah. Well, this is a definition from another woman, is that right, she said that you use the X rate specification.

MS. WHITE: Uh-hum, yeah.

MR. STAACK: Or actually, yeah, we might actually

be adopting those test methods or a reference standard that means that these sensors have to meet these specifications and that might be how the regulation will be written.

MR. SMITH: Well, in one of those things, and what I'll caution you, is that what we're dealing with is definitions within the ANSI standard development process; they are not characterizing those to the degree that you will have to define them for California State law.

MS. WHITE: Okay, thank you.

MR. STAACK: I think I should remind people, in case they're wondering why some of us aren't taking notes, everything is being transcribed. So anything that is proposed here, your text is being quite literally saved.

MS. WHITE: This gives us a chance to actually engage a lot more, without worrying about notes.

Moving on, this was an issue that has been brought up most notably with some of the presentations that were made today; how can we, through our standards, minimize water use increases and maximize water use savings through these standards for the irrigation devices? And what types of metrics do we need to include in such a standard? Are we to look at flow or application rate? Should we be looking at regulating pressure? Should we be looking at regulating the volume of water applied, the duration of that water application, and so forth?

And if there are any questions on what we're trying to achieve there -- yes, Charles?

MR. CHARLES ALEXANIAN: I have an immediate concern because there's such a wide variety of application methods and also we -- how it's applied and its specific deficiency, and how it's applied, for example spray versus drift.

MS. WHITE: Yes.

MR. CHARLES ALEXANIAN: It's going to be very difficult to determine one standard for the measuring of all systems.

MS. WHITE: And this is why we're asking the questions because if we can define what standards or metrics are appropriate for a particular device within that system, to ensure that overall the system is efficient, that's where we need guidance, that's where we need input.

MR. CHARLES ALEXANIAN: It may have to be some form of index switching, with multiple factors. For example, one supplier, at one pressure, is more efficient than at another pressure. And needing through other -- that they, themselves, are adjustable and have a very curved efficiency.

MS. WHITE: Okay.

MR. CHARLES ALEXANIAN: Maybe even something, an efficiency like a refrigeration SEARs standard, or something like that, which is an index that would take multiple things

into consideration.

MS. WHITE: And comments to that effect and any suggestions of what those factors would be is greatly appreciated.

MR. CHARLES ALEXANIAN: I don't know if the people who could comment on that are here. They're probably sitting right now working on the small problems that we're addressing right now, and we're completely unaware of what the solutions are.

MS. WHITE: Well, hopefully, if they're not here, you can help us bring them in.

MR. CHARLES ALEXANIAN: A few do come to mind.

MS. WHITE: Cool, thank you.

MR. CHARLES ALEXANIAN: Thank you.

MR. STRAIT: Does anyone else have any comments related to question four?

MR. SMITH: Dare I? One of the things we'd like to get our hands around is distribution uniformity --

MS. WHITE: Oh, okay.

MR. SMITH: -- and how uniform the system applies water. Because, actually, Mr. Wade here, I may ask you to address this as well. Bob Wade has done a lot of the original pioneering group in installing Smart controllers on different systems, and what it does is it flushes out some serious weakness, it would be safe to say.

So I don't know, Bob, if you want to add to that?

But to me, part of the reason that you might see this up tick in use is people compensating or changing inputs to compensate for poor coverage out there in the field.

MS. WHITE: Uh-hum.

MR. DASSO: So there has to be a method to this madness. If the system doesn't meet some sort of distribution uniformity criteria before you apply this technology, then perhaps we're going to see this up tick in use.

MS. WHITE: Okay, thank you.

Bob, did you have anything you want to add?

MR. WADE: I'm Bob Wade, I'm a landscape contractor, and I'm here representing the CLC, California Landscape Contractors Association, and the Irrigation Association.

What Andrew referred to, uniformity, is for these purposes a pretty complex question, because each emitting device has a certain method to get those things to work correctly, getting it uniformly as high as you can.

Certain devices are much better at seeming to do it, others need more work in even getting there. Keeping them is very difficult. The management is one thing that never seems to be addressed.

And once we get these things to a certain point and we get 70 percent uniformity or 71 percent is what AB 1881 wants us to get to, keeping it there is fairly difficult.

MS. WHITE: Uh-hum.

MR. WADE: But designing it on a broad-by-broad basis, head-by-head basis sort of becomes very difficult, and I would almost suggest that you have to be manning the emission device to get any sort of definition on uniformity just because it's attached to it.

MS. WHITE: Yes, and this may be an issue that we can delve into, certainly with more depth in the next round. Because with the resources that we have to try and get through the first set of standards, we did not -- the Commission did not feel that we could take on all of the emitters. But it is an issue that becomes problematic when you look at a controller, for example, and what ostensibly that controller can do by itself, without addressing other components in the system.

MR. WADE: Also, on Sonny's (phonetic) little slide earlier, my company probably installed half of those controllers in Southern California. And I will say there was one site that I saw that could need work. Every other site we saw over --

MS. WHITE: Uh-huh, and you were still able to achieve savings?

MR. WADE: We did get savings, but if the actual systems in the ground have been -- because I was not part of the free program, that was their responsibility, almost all of these weren't good.

MS. WHITE: Uh-hum.

MR. WADE: And that happened with results that have been dramatically affected.

MS. WHITE: Okay.

MR. WADE: Those we did work on, they're use was quite good.

MS. WHITE: Okay, great. Thank you.

MR. STAACK: Are you suggesting that in that study the systems even got a savings, even though the emitters were way out of whack, way out of balance --

MR. WADE: Yes, they --

MR. STAACK: -- and many of those were fixed by anybody, or the homeowners weren't made aware of that and then they fixed their own systems, or it just was left as you saw it?

MR. WADE: It was part of our process and the education was discussed, the education had -- of the consumer.

And also, there was sort of a comment made earlier about jamming. We believe and do this, one follow-up and educate the consumer, where they can change their

controller. And yes, we can, but it's only good for that day.

The conventional controllers don't have the ability to reprogram themselves.

MS. WHITE: Yeah.

MR. WADE: Not as the Smart controllers do. But the vast majority of homeowners didn't want to incur the expense to go through or get the uniformity correct.

We had to install the controllers and tell them what their problems were, and essentially walk away knowing, assuming no matter what we do, we have to water to the greatest need, and that's the weak point in the lawn. So that's on the lawn, we're getting a little water to keep that one spot green.

MR. GEORGE ALEXANIAN: That's the 50 percent efficiency I was talking about.

MS. WHITE: Thank you. Move on.

MR. STRAIT: Certainly, moving on. I think for questions -- I'm going to lump questions five and six together because what we're really after with this is what other appliances we regulate are? We talk about if they're not reporting direct energies, are they reporting an energy factor, are they reporting a SEAR or an EER.

And the question is what should we have for irrigation equipment that would be -- that would serve in a

role of being some of these comparable, and expresses the savings that can be expected or the water use that's going to be expected, in some metric, in some indexed sense, why is there someone that might be looking to install one of these superior devices?

So is there -- I mean, it really is two questions, but when we talk about water savings, because we're reducing waste, is that comparable between all the elements of the system or are different elements doing drastically different things that have the results somewhere down the line in insufficiency or water, less water -- reduced water waste?

MR. SMITH: Again, I sound like a broken record, I'm sorry.

MS. WHITE: No, that's all right. If we actually had a round table, we wouldn't have to people keep popping up, but this table wouldn't lend itself for that today.

MR. CHARLES ALEXANIAN: No, you speak better than the rest of us, go ahead.

MR. SMITH: What is the two characteristics that the spot protocol measures?

MS. WHITE: Okay.

MR. SMITH: And effective irrigation and excess application, is that -- Dave, am I characterizing that surplus, irrigation surplus?

I mean, these are two things that on the effective

side, I don't know you even want to look at that, but I have to say that the Commission has to look at that for the reasons we outlined in the previous question. If for some reason or another we are not applying enough water, consumers will find a way to bypass the system.

So having effective irrigation is as important as making sure that we don't over-water. So those are two very effective means of making that case. Unless we're measuring that water, and in Peter's -- I made a note from Peter's presentation, he said "one half of one percent of the sites had dedicated irrigation meters."

And I know the amount ordinance addresses some of that going forward, but without dedicated meters it's really difficult for us to make these determinations.

MS. WHITE: Thank you, Andy.

MR. STRAIT: Understood. I'd just like to understand these terms better. We have a term of surplus irrigation, or it's irrigation above what's necessary to maintain plant health. We have used deficit irrigation when we're not giving, we're not reaching that threshold.

And then I'm assuming that that middle area between those two is what's considered effective irrigation, so that's where it's supposed to and does what it's supposed to?

MR. SMITH: For consistency's sake, I would

collaborate with the Department of Water Resources because there are some actually agreed-upon definitions that have been vetted. And going and trying to reinvent the wheel, I guess I would cross paths with DWR first, and let's -- and I'd be happy to help you do that.

MS. WHITE: Well, actually, we had Kent and Gwen here earlier.

MR. SMITH: Did they sneak in here?

MS. WHITE: They sneaked in and they snucked out.

MR. SMITH: Sneaky old people.

MS. WHITE: Yeah.

MR. SMITH: But I think that we could actually pull a lot of those things because they actually do a good job of defining some of the terminology that could cross over to this process.

MS. WHITE: Okay, great.

MR. STRAIT: Any other comments on those two questions?

MS. WHITE: This particular question seven --

MR. STRAIT: I think we can skip questions seven and eight, we talked about that.

MS. WHITE: Yeah.

MR. STRAIT: And I agree we could -- we are definitely interested in hearing what alternate terminology is, so we might be saying an automatic versus a manual

controlling, just to avoid using Smart versus dumb.

MS. WHITE: Yes. One of the things that we'll need to be cognizant of, and I'm just going to comment on it and you folks can just provide comments to this. But in this stepping order, as a result of the discussions that we had on April 1st, we were given the latitude as staff to look at other components in the system that maybe are required to actually have any regulation for a controller device or a sensor device really work.

For example, a check valve, or a certain pressure, a pressure-regulating valve, or something like that.

So this particular question gets to when we set a standard, what other types of equipment need to be included in that for a given device?

And the reference is an element of the irrigation system, keeping in mind that we have the authority to regulate devices, not necessarily educating behavior. I want to distinguish between an education program and some of these other devices.

MR. STRAIT: Yeah, and when we talk about elements, we're talking about physical, built-in elements, not like the element of education.

MS. WHITE: Yeah. Yes?

MR. SMITH: One thing I would -- I would caution you is that we have a multitude of ways to accomplish

efficient irrigation. For example, how you refresh your regulation. We can do that as a sprinkler, we can do that in a valve, we can do that in a source, and depending on how well the system is designed we can achieve the exact same result. So we just have to use some very specific cautions.

So at some point, while we'd like to look at components and label this widget and label that gadget, at the end of the day we're probably going to have to look at a systems integration process.

MS. WHITE: Yes. And I think we can do that in part through the model ordinance and our collaboration with DWR.

MR. STRAIT: Yeah.

MS. WHITE: But I do want it being all one process, but the Legislature had divvied up some part of this. But the system integration is --

MR. SMITH: I mean, once again I would refer to the model ordinance just to see what's covered in there. I can't remember; maybe something else is there, I can't remember. Check values were in at one time, for example.

MS. WHITE: Okay.

MR. SMITH: And pressure regulation was in at one time, and I can't remember what all is still there. Can anyone remember what all is still there? Because I would just cross paths and let's make sure we don't reinvent the

wheel and create a duality here.

MS. WHITE: Right. And the issue for us is the specific requirement for the pressure, for the check valve, for the controller from a mechanical or electronic definition. It will operate at this pressure to do XY&Z or, you know, the water will flow no more than 2.5 gallons at 80 PSI, or whatever our regulation is. Those kinds of things, we have to be able to define that with the standards so people will know what they're being held to.

MR. SMITH: Right. Well, and so some basic terms with sprinklers, for example, when you start dealing with that, pressure, regulation and flow.

MS. WHITE: Thank you, okay.

MR. SMITH: Where, you know, design -- what's the design pressure, what's the -- what should be the operating radius and what's the flow rate of that sprinkler at that point.

MS. WHITE: Perfect, thank you.

One of the issues that we're trying to grapple with is the nature of the statute, which prohibits the sale or installation of non-compliant equipment past a certain date.

So unlike the model ordinance, which predominantly affects new landscape, this will actually affect existing and new.

So we need to understand how we would be able to

set a standard such that devices, whether it's new or old, would still be able to achieve the savings. And that's one of the reasons why we pose the questions in nine that we do.

MR. STRAIT: We have a question over here.

MS. WHITE: Yes, Charles?

MR. CHARLES ALEXANIAN: Once again, Charles Alexanian.

I am concerned, when you have a scenario down the road where otherwise efficient sprinklers or other devices may become inefficient due to their either improper application or, conversely, you can take what might be considered to be an inefficient emitter and it can be reconditioned.

There are things on the market right now if used properly, installed properly will go in and operate in an efficient manner, but now you fall into customer education, they have to know how to apply it properly.

And unfortunately, just driving around any family in the city, you'll see some people have lawns where one side's green and one side's brown. You'll see that a number of times, those sorts of scenarios. It's going to be very difficult to come up with one definitive standard to say this works and that doesn't. It may work in one situation and not another, and conversely, what did work before may now work.

MS. WHITE: Okay, you can back off.

MR. CHARLES ALEXANIAN: Sorry about that. But you can see how this may be -- this may be a concern where each system is different. Generally speaking, most systems can be made to function properly, if there's a proper level of education and maintenance.

MS. WHITE: Thank you.

Any other comments?

MR. GEORGE ALEXANIAN: No, premature.

MS. WHITE: Okay.

MR. STRAIT: Do we want to do --

MS. WHITE: I think some of our case studies may assist us in answering number ten, where we're talking the difference between overall net statewide savings and some of the tradeoffs between areas. But the goal here is whatever standards we're setting will help reduce overall water demand and energy demand associated with these systems.

And to some degree, where we can take into account the specific issues associated with sites, but it's a statewide standard and we want to be able to have net statewide savings, recognizing that there may be some internal tradeoffs.

And so respond to this question from that stand point. George?

MR. GEORGE ALEXANIAN: Concerning question nine,

are new controllers or add-on devices compatible with existing controller systems?

Yes, generally they are because existing controller systems do not all operate on 120 V AC. And a Smart controller can usually go on there and operate, because you're only talking about waiting how long to turn the valves on and off so it is not affected by the Smart controller.

And an add-on device that is hooked up with an existing controller or that will interrupt the common, let's say, to let it operate properly based on ET, or whatever other method, should be also compatible. So I don't see any real issues there, as far as number nine, with compatibility.

MS. WHITE: Just a question for you, what about those battery operated clock duration timers?

MR. GEORGE ALEXANIAN: Well --

MS. WHITE: Which are --

MR. GEORGE ALEXANIAN: -- that are still using --

MS. WHITE: No, the ones that are sold at --

MR. CHARLES ALEXANIAN: The super cheapie ones.

MS. WHITE: Yeah, the ones that are sold ad nauseum at Home Depot or Lowes.

MR. GEORGE ALEXANIAN: Well, those are -- and what I would do there is provide a wireless weather station, if

you want to call it that, whatever that entails. Some might entail solar radiation, wind, and temperature, and rain and a number of parameters. Some may be as simple as -- ours is used mainly as a weather temperature sensor. You wirelessly send the data down to the controller that may be sitting in the valve box. Of course, these would have to be mounted way up high so that they could see, electrically see the controllers. It can be done.

But I think battery operated controllers are basically ten percent of all of the control sales in the U.S., currently. And they're probably, not this year, but let's say a couple of years ago they were probably in the order of about one and a half million controllers sold in the U.S. total of which, as I said, about ten percent were battery powered controllers.

So it can be done but those would have to be modified, but there's very few people that are right now addressing battery powered controllers in terms of Smart technology.

We do it in our controllers, but they're commercial controllers, not valve box controllers.

I understand Dave is working on some kind of a Smart technology, but they're not AC type controller system. But most people, when we're talking about Smart technology, they're thinking AC power controllers because they are 90

percent of all of the controllers sold in the U.S. currently.

MS. WHITE: Okay, thank you.

MR. GEORGE ALEXANIAN: Any other questions?

MR. STRAIT: Well, we have quite a list, but we're going through them as quickly as we can.

I think, looking at question ten --

MS. WHITE: Actually, we've already done ten. Now, we're into label content.

MR. STRAIT: Well, I think that kind of relates back into questions five and six, and once we have a strong determination of how we're going to describe this type of -- these types of efficiencies, then we'll have something to discuss in terms of labeling.

But I think one of our things for now is what would belong on the product box versus what would belong on the product, itself. Most of these that are being installed, which need labels, they would not be pressed onto the device or able to stand the weather. And I don't know how much benefit it would be once it's installed, because I don't know how often that aspect would be looked at. On the other hand, we could have a situation when an inspector might want to know something in particular about a system, or they're doing their own inspection, or if you have a law against it, they want to verify that someone's claiming that they have

an automatic controller that they, in fact, do. So --

MS. WHITE: Actually, this is a really important issue for us because we will be asking the manufacturers to include additional information that they may currently not include in their labels or their packaging.

And so in order to get people to understand the abilities to save, whether water or energy, we need to know what kind of label content should we be asking?

And Andrew, you had a comment there?

MR. SMITH: I'd like to ask a question, first, because I picked up on something earlier that I can't remember, Bill or Peter, one of you guys said, how are we going to quantify that performance?

And I'm wondering, do you see this as being like an Energy Star type label, where we have an estimated cost of annual usage type label?

MR. STRAIT: Likely not. What we're probably going to do -- in most cases we're talking about performance, what we have for general devices currently, which is the date of manufacture, the manufacturer name, and so it can be identified.

In this case, given the need of certain regulatory -- certain regulatory agencies and how a site will be commissioned and people, other than the purchaser, need to know certain aspects about the device, both when

it's purchased and when it's installed.

But what is really appropriate to put on a label if it was held at a certain -- if it was an objective statement, similar to a SEER rating; wouldn't that be important to put on the device or on the box, if there's something, like we want a checklist of features? So that they can say this is a Smart controller because it does XY&Z.

Or if a city says all controllers in the city do X, are those things that we need to take into consideration now, so that the markets will put it on those products and those source decisions can then be made.

MR. SMITH: Well, a SEER rating would be quite a bit different than a pass/fail.

MR. STRAIT: Well, that's really the question.

MR. SMITH: So I think we're going down the path of a pass/fail -- I mean, I was under the impression we were going down the path of a pass/fail with this statement.

MR. STRAIT: Possibly. Part of the -- going back a little bit, as a general rule State agencies are instructed to pursue performance standards over --

MR. SMITH: Uh-hum.

MR. STRAIT: And now, a performance standard is usually based on some level like that, so that we have some quantification of energy savings, or some performance

quantification.

MR. SMITH: I see.

MR. STRAIT: We have been instructed to rely on that in preference to a simple pass/fail and do you have this feature or not.

MR. STAACK: And part of the requirement, like for quantification that's going to meet certain levels, a manufacturer, in order to sell this product in California will have to certify to us that it has met these criteria. That data will be sent to us with a certification name that, you know, under penalty of perjury, this product meets these specifications, and that goes into our database.

And that product, if it's not in our database, cannot be sold in California, and that's how this process works.

So whatever we decide in terms of data, which is in Section 1606 of our regulations, you can see all the other different appliances list what kind of information is required of that person.

Those are things that we also are going to need, it's like what information are we going to require to be given to us to certify, to meet whatever standard we're picking, so we need to have that kind of information, is what information are we going to ask for.

MR. SMITH: And in the precedent that you have now

can a manufacturer self-certify their product and submit an affidavit to the Commission?

MR. STAACK: Effectively, that's what manufacturers do, but --

MS. CHRISMAN: At the present time manufacturers are required to certify to us. After they've tested the product to the specified test method, they are required to give us certain specific data that is output from that test.

There's a table, there's a long, 15-page table in Section 1603 --

MR. SMITH: You're smiling.

MS. CHRISMAN: I helped create it. But it does not specify -- it specifies by appliance what specific information we require. That is based on the consensus test method that is referenced in Section 1604 of our regulations. So the manufacturers are required to give us the -- they're required to test the basic model and then give us the information on all of the specific model, so that if they have, you know, five models that each have slightly different parameters that they've been tested to, they have to give us the different parameters per model number for each one of those.

To get back to the labeling requirement, one of the reasons that we specified that certain information be on a label is that they're required to provide us by either the

manufacturer name, or brand name, or trade name the model number and the date of manufacture.

So that one of the ways that we can do that is so that we can tell when it was manufactured, so we know if it has to meet the standard, or if it was manufactured before the date of the standard, it doesn't have to meet the standard.

But we also request that the manufacturer name, brand name, trade name, and the model number so that if someone is out in the field someplace and they need to know if this model is certified to us, and they need to know what the specific information is that is certified, they can go online, look it up in our database and say, okay, this is the information that is specific to that model.

MR. SMITH: Okay.

The one other thing I wanted to add to this for clarification, related to labeling, this is based on some information that I got from an appliance manufacturer, probably about 12 years ago, they were reluctant to have us update our requirements for marking or labeling because they already had certain specific requirements from other their trade association, or some other government agency that was getting down into what type of material the label had to be made out of, what size it could be, what font the label had to be written in, in addition to getting down into what

specific information was on it. And they basically told us you're getting into an area you don't really want to go into.

So another piece of what we need to know is, is there already in the industry required information that has to be on that label, that can somehow fit into what we might be needing or, if there isn't, then are we basically -- do we have more leeway or is there some pattern we already have to fit into.

MR. SMITH: Today is your lucky day because it's the Wild West out there.

MS. WHITE: Well --

MR. SMITH: I mean, any labeling requirement is going to be fresh and brand-new here.

And I guess that brings back the other question I have, in the precedence you have with the appliance manufacturers now, do they have their own labs, or they do their own testing, or can they farm that out, or is there a combination of both? What are you experiencing or what do you expect happening with this process?

MS. CHRISMAN: Section 1603 of our regulations requires that the labs be approved by the Energy Commission. We do not specify that they have to be a third-party lab; we do not specify that they have to be a manufacturer lab. Each of them has to provide an application once a year. The

young man, who's been sitting there patiently waiting on phones, is the young man approves most of these applications that I need to sign.

And it's basically they have specified that they have done certain things, including having the equipment properly calibrated, allowing us to visit the lab once a year, for each basic model, if that comes up for any reason, providing us with copies of test reports, certain other criteria. And they have to specify which test method they test to, including if there are different iterations of that test method which -- you know, if it was published in 1997 and it was reissued in 2008, whatever version we reference in our regulations is the edition laid out to specify that they're testing to.

They have to apply every year and there are -- and we publish a list of the approved labs, and anyone that certifies to us is required to have that product tested at a lab that we have approved.

And that is the general overall requirement for how the regulations cover that.

MR. SMITH: And then how do you deal with like continuous quality improvement? Let's just an upgrade happens to a dishwasher, to they need to recertify then after something like that happens, or they -- something happens where they make a quick change, is there a degree of

change within the product that requires recertification?

MR. STRAIT: We have in our regulations a definition of what constitutes a basic model.

MR. SMITH: Uh-hum.

MR. STRAIT: And essentially a basic model is a model that does not differ in any physical or functional characteristics that would affect energy or, in this case, water consumption.

So did an update that did not actually affect how the unit performs, necessarily, for example, solar energy is the same kilowatts per watt cycle, it just might be distributed slightly differently, it's in -- how do I say this? Okay, it's on a case-by-case basis.

MS. WHITE: Beautiful, Peter.

MR. STRAIT: But having said that, in most cases, most of those sorts of changes are not significant, that it's not really that different than saying the red model performs better than the green model, and we believe the paint color isn't really affecting it that much.

So there might be a product line where minor tweaks are being made to kind of tertiary characteristics, that those don't require recertification, that either drastically raises or drastically lowers.

And to give you an example, energy consumption, then they might be required to recertify. However that's

done with one county. Manufacturers are allowed to, essentially, under-report the performance of their units.

If an air conditioner -- for example, I know my air conditioner meets a 13 SEER, in fact I know it's a 13.75, but I'm just going to round it off and report that it meets a 13, and it's actually better than that then that's fine. Then that means they've made a later improvement and improved to 13.95. The current listing is still an accurate listing, as far as we're concerned, and that would require a recertification.

MR. SMITH: Do you have an occasion to audit this process?

MR. STRAIT: Yes, we do.

MR. SMITH: The other question, as far as what's the precedent -- I mean, in the labeling, I guess in my mind, tells me that if I have a product that meets the criteria, I'm probably going to put the sticker every place I can or at least create some sort of visibility for that. And I don't know that you guys have to mandate, you know, the visibility of that.

MR. STRAIT: What we're asking, if there's -- we're not going to restrict manufacturers from -- if there is a metric that is developed, a metric in the promotional materials, that we would caution that you are not able to use the California seal or imply any sort of an approval or

endorsement by the California Energy Commission, merely because you are meeting our standards.

But in terms of what we're really asking is what does industry feel, what are they comfortable with or would want to be required information, as opposed to information they're allowed to use, but not specifically required to use.

MR. SMITH: In my mind, I mean, I see the label appearing on packaging and the product, itself, where practical. I mean, there are some products that it just probably isn't practical to work it into the -- like an inline drift meter or something like that.

MR. STRAIT: And that's kind of what we're getting at is we wouldn't know, necessarily, which of those would be feasible or infeasible.

MR. SMITH: So my suggestion is as we move to these, on a product-by-product basis would be to determine what the labeling requirements would be for that individual product because some products just aren't going to be practical.

MS. CHRISMAN: There is an exception in the labeling requirement, in the marketing requirements in our regulations, for example, for pulling things. Where the information that's required won't necessarily fit on the thing and so we say it has to appear on the packaging.

So, there's different -- you know, there's differences, but there's also a requirement, that isn't just a California requirement, or even just a state requirement, but it's an international protocol for the marking of the external power supplies, and that's based on a Roman numeral. And if you say this is Roman numeral V, the international protocol says you meet at least this standard, but you don't meet what that protocol says is number VI.

MR. SMITH: Uh-hum.

MS. CHRISMAN: And they chose Roman numerals because it's something that can translate every place in the world, you know.

MR. SMITH: Sure.

MS. CHRISMAN: So there's different ways of doing this and sometimes it's industry-driven, sometimes it's government-driven, sometimes it's user-driven, it just depends.

MS. WHITE: Actually, at this point, because we are running over a little bit, I need to interject. And the point that we're trying to get at here is one of informing us or educating us on what currently is in the content of most labels, why is it there?

And for purposes of demonstrating that the product is efficient and it can save water, can save energy, what other types of information content should be in that label?

And are we talking about on the product, on the packaging, stuff like that.

MR. SMITH: As I said, I think you're starting with a clean slate.

MS. WHITE: Great, I'm for that.

In the interest of time what I'm going to do is just summarize the last few questions, we've covered a lot of ground, and then just kind of open it up to general comments.

And for those of you who have stuck it out, I'm so impressed. But we'll probably go about another ten minutes or so, if that's okay?

But the question 12 gets at building a record, and what kind of evidence or resources can be relied on by the Commission, effectively, to substantiate a standard?

When we look at the question 13, this gets into a lot of what we've already discussed about the cost benefits, what kinds of costs can we be looking at, should we be using statewide averages, or specific product costs, so retail costs, how do we get that information, and so on and so forth.

Question 14 is the operational life question, one that is really important for us to know. Because this is where we either meet the criteria specified in the statute or we don't. If we don't know how long products are

expected to last, we can't determine what the costs over the life of that product to the consumer are.

We're talking about, in question 15, the partners that we can work with to address the enforcement of this because, unlike a lot of types of dual access from the appliance stuff that we deal with, this is also asking us to prohibit the installation of non-compliant devices. And we're looking at how best we should be doing these kinds of enforcements.

What other kinds of considerations should we be making for these devices in particular?

This was a question that was posed to us by Department of Public Health. They want to make sure that we address the use of recycled water in these devices and make sure if there are leveling requirements or operational requirements that our standards don't actually run afoul of those requirements.

We are working with DPH to address some of this, but I'm also asking everybody else's input as well, some of the local agencies and manufacturers.

And then lastly, this is going to be a, you know, in perpetuity situation. We want to be able to develop an appropriate data collection process, we want to know what data people think we should be asking on a regular basis to ensure compliance for the industry, to ensure fairness, and

to ensure adequate enforcement of these kinds of regulations. So what kind of ongoing data collection should we be engaged in?

So at this point those are our questions. Again, I had mentioned that we're looking for answers to any and all of them by individuals, by June 15th. And we very much are interested in receiving written comments, additional studies that you can direct our way.

When you do direct studies our way, if they are in response to a particular question, could you help highlight in that report we should be looking?

I've gotten a couple of really big documents sent my way and they were for a particular question or issue, but wading through them has been a challenge.

So be kind to us, we are on a very tight schedule, so any help you can offer is much appreciated.

So at this point, I mean, it's open mike now. We'll just have folks, if you have comments or questions about this last batch, just let me know.

MR. HORNQUIST: Hi, Edwin Hornquist, Southern California Edison.

MS. WHITE: Hello, Edwin.

MR. HORNQUIST: It struck me when we were listening to Rich's presentation, and looking at some of these graphs on power consumption on standby mode, that there's a wide

variation in -- a wide range among the Smart controllers, as well as the conventional controllers.

It would seem to me that the -- it would behoove you to better understand what creates that disparity in power consumption and determine what's effective and what's not effective as far as is there a correlation, as somebody was talking earlier, somebody else, regarding the basic implicit value of this increased standby power in correlation to any potential increased savings associated with the core performance of the system in producing water savings.

And so to the extent that we can find information or studies that -- or get into data that's already been presented, perhaps there's some data out there that we can obtain that can give us some more insight onto what makes a three watt, you know, Smart controller, you know, a Smart controller first of all, and why is it three watt versus, you know, whatever, six watts? And is the six-watt controller, you know, better than the three-watt and that explains the reason?

And also how this controller could be misused or the -- or the data or information that it receives are not being processed because of the owner not making use of that service that they need to pay for, potentially, that that information not be -- what would happen with that, that that

device is not used to the full extent and that, therefore, would go back to being a standard controller. What is the -- what are the implications of that? And if it is simply a standard controller at that point then, you know, the standby power becomes very important or even more important.

So I would say maybe in the context of -- I was trying to make a point in the context of the label, whether perhaps looking at setting a minimum standby power requirement be something that would be perhaps something that we should consider stronger.

MS. WHITE: Okay, thank you.

Any other questions or comments? Andy?

MR. SMITH: You knew it was coming, sorry about that.

MS. WHITE: I know, and I'm expecting George and Charles to pop up, too.

MR. SMITH: You know, the rest of the staff in Virginia calls me "Chatty."

One of the things I'd like to direct you to in the 1881 of 2006 bill text, it says, "landscapes are essential to the quality of life in California by providing areas for active and passive recreation and as an enhancement to the environment by cleaning air and water, preventing erosion, offering fire protection, and replacing ecosystems lost in

development."

And I think it's important to keep that framework in the back of your mind as you move forward.

One of the things that we're struggling with as an industry is just justifying this water use to begin with. And the truth of the matter is green and healthy plants do so much to offset the impacts of human activity, and we haven't done a very good job of quantifying that yet. How much carbon capture potential is there, and by getting to a certain break point in water use reductions might we at some point aggravate that situation or get to a point of diminishing return in the long haul, in the overall equation.

So one of the things, I think plants are pretty darn amazing in that it's not like putting a catalytic converter on your car and reducing emissions, because all of you've done is reduce the emissions at that point. If we reduce the emissions by irrigating efficiently, we're still keeping plants alive and keeping an active process that not only is reducing the emission up front, but it is also sequestering carbon in the plants, themselves, and providing all these other ecosystem service metrics.

So we would just ask the Commission to make sure to pay very close attention to that, because there are developing metrics out there.

MS. WHITE: Excellent. Thank you.

George?

MR. GEORGE ALEXANIAN: I want to --

MS. WHITE: I know, I'm not -- I looked at your face and I can see it.

MR. STRAIT: You don't have to.

MR. CHARLES ALEXANIAN: Don't say that or we'll be here all night.

MR. GEORGE ALEXANIAN: I'm a realist. Of the 79 and a half million acre feet of water that California used in 2005, usage was third behind environmental and agricultural and we used about 8.8 million acre feet, which is about 11 percent of that total. And when you get down to the bottom line, you get down to urban use, of the urban use you've got your residential use, indoor use, outdoor use, 15 percent inefficiency, 14 and a half percent, or 20 percent, or 25 percent of the water that we save, I came up with less than a half percent of water can be saved with Smart controllers.

That's assuming the six million Californians change their controllers to Smart controllers. That would cost us $3 billion. And us meaning the State, the water districts, the cities, or the individuals, somebody has to pay for all this.

And it appears to me, I mean on both the side --

and the landscape side, it would be better to do water conservation in the simplest way possible or the money spent could be much better spent giving 3 million acres of agricultural land to some kind of low-volume irrigation system, and we could pay that a hundred percent with that money.

Now, adding to this the incompatibility of the water restriction dates to the Smart controllers, to me this is a tough sell. And I'm dedicated to water conservation and energy conservation. I see a lot more energy being saved in the issue of water in agriculture.

I know you said this was a different study, a different committee meeting and all that, but I'm sitting here and I feel that my mission, my company mission, and my dedication is not being served here.

I'm not saying anyone here. I think the landscape industry should do everything we can to help with the situation, but the reality is that it's not a lot of water savings when you come to water savings on the controller decision for the State of California is pretty small.

In 2012, if ten percent of the people convert, we're only going to save five hundredths of one percent of water saved in California, or less if you're going to be looking at a hundred percent of baseline calculations based on 25 percent.

MS. WHITE: Okay.

MR. GEORGE ALEXANIAN: And if the DPA, or Department of Water Resources, or anyone to expect miracles here, like Charles said, and I think -- I wasn't going to say anything but you asked me.

MS. WHITE: Okay, so --

MR. CHARLES ALEXANIAN: Unrealistic expectations.

MR. GEORGE ALEXANIAN: So what we're doing, what we're trying to do in landscape is save water, but that's the reality of it as I see it.

MS. WHITE: Okay, so let's just view this from the little piece of the pie that we get to affect. And, you know, I recognize this is not the irrigation efficiency effort, and it was never intended to be.

Nonetheless, it is the statutory mandate that we're faced with and our goal is to do the best job we can. And so with this input, with information that you provide we will, hopefully, be able to achieve that.

MR. GEORGE ALEXANIAN: Yeah.

MS. WHITE: So thank you very much. And if there isn't anymore comment, I can say good night to you all. Thank you.

And this is the Energy Commission ending the Workshop on Irrigation System Controller Standards and Labeling Requirements, good night.

(Whereupon, at 5:20 p.m., the Staff Technical Workshop was adjourned.)

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