DOCKETED	
Docket Number:	19-BSTD-03
Project Title:	2022 Energy Code Pre-Rulemaking
TN #:	235961
Document Title:	Transcript for 09-22-20 Public Workshop
Description:	This file is the transcript for the public workshop held on September 22, 2020.
Filer:	Peter Strait
Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	12/16/2020 11:05:21 AM
Docketed Date:	12/16/2020

STATE of CALIFORNIA

STATE ENERGY RESOURCES CONSERVATION and

DEVELOPMENT COMMISSION

In the matter of:	)	Docket No. 19-BSTD-03
	)	
2022 Energy Code	)	STAFF WORKSHOP
Pre-Rulemaking	)	
	)	
_____	)	

WEBINAR RE:
Proposed 2020 Energy Outdoor
Lighting and Daylighting

Remotely held via Zoom

from the
California Energy Commission
Warren-Alquist State Energy Building
1516 Ninth Street
Sacramento, California 95814

Tuesday, September 22, 2020

Reported by:
Marlee Nelson, CERT 00367

APPEARANCES

Staff from the California Energy Commission:

Payam Bozorgchami
Simon Lee
Mazi Shirakh

Presenters:

Annie Kuczkowski, Clanton & Associates
Nancy Clanton, Clanton & Associates
Jon McHugh, McHugh Energy

Public Commenters:

Charles Knuffke, Watt Stoppers
John Busch, Certified Energy Alliance and Leviton
James Benya, Benya Burnett Consultancy

I N D E X

P R O C E E D I N G S

SEPTEMBER 22, 2020 9:05 o'clock a.m.

MR. BOZORGCHAMI: So with that, my name is Payam Bozorgchami and I'm the Project Manager for the 2022 Building and Energy Efficiency Standards. I want to welcome you to the Energy Commission Workshop Pre-Rulemaking Workshop for the 2022 Energy Standards.

Let me provide you some housekeeping rules. We will be muting everyone. And after each proposed measure or submeasure is presented, you can either raise your hand and we will unmute you or you can submit your questions in the question and answer box in Zoom and we will try to answer your question as they come in.

Also if you are participating by phone, you can use star 6 to mute and unmute yourself.

One important thing to remember is that when you do unmute yourself, please state your name and your affiliation. As I said earlier, this workshop is being recorded and will be transcribed, and by stating your name and who you're with, it will make it easier for us to be able to reach out to you in case we need to have more dialogue, a more indepth dialogue with you.

Also if you do notice that you're not getting your answers to your questions or to your comments, you can also submit your comment or questions through our docket. We're

taking all comments and concerns all the way up to October 6th. And on a few slides later, I will show you, I will give you folks the email address or the docket address that you could submit your comments to.

So with that, so this is what we're going to be covering today. Simon Lee is going to be presenting on Daylighting Controls and also Nonresidential Outdoor Lighting Proposals. But before we do that, we have some -- I just want to give you guys a quick, basic background how Title 24 has developed -- Part 6, actually -- and some time line of next rulemaking -- or pre-rulemaking workshops and how we're going to be developing the 45-day language and the 15-day and adoption.

So with that, as you guys, most of you already know, in California two assemblymen, Assemblyman Warren and Assemblyman Alquist, in 1974 came up with an idea and it's known as the Warren-Alquist Act that was signed by Governor Ronald Reagan and funded by Governor Jerry Brown in 1975 when he came into office, and that's what started the -- what's known as the California Energy Commission.

And the whole concept was developed into the program to help reduce insufficient, uneconomic, and unnecessary consumption of power or energy in California. And, in doing so, we do this through the -- through the Code development on a triennial basis and these requirements or

these Codes are supposed to or need to be enforced by the local jurisdictions. And this is through the building-permit process. So what they've done is they have actually developed what's known as Part 6 of Title 24.

It's not just energy anymore. We're looking at all other measures of not just energy savings, but we're looking at greenhouse gas reduction, we're looking at ways to promote all-electric buildings, we're looking at PV generations. Luckily, a lot of this in the hands of Mazi Shirakh, who is also one of the Senior Mechanical Engineers here at the Building Standards Office. He is leading that effort right now.

And to do so and in developing the Building Standards -- or the Energy Codes, we have partnered up with our local utilities. And I would like to thank the folks from Pacific Gas & Electric, Southern California Edison, Sacramento Municipal Utility District, and Los Angeles Department of Water and Power, who with their consultants have helped support the development of the 2022 Standards as we are moving forward. They have done quite a few utility-sponsored stakeholder meetings and where they have provided the initial proposal for these measures that you're hearing today. And they have taken comments from a few folks and fine tuned their proposals, and they submitted it to the Energy Commission.

And now we're doing what we call the pre-rulemaking workshops here at the Energy Commission for all the CASE measures that have been submitted. The utilities are not the only ones that have submitted proposals to the Energy Commission. The California Energy Alliance has also done so, and they will be presented later on during our workshop time line.

Every measure that has been submitted to the Energy Commission has to go through a lifecyle analysis. What does that mean? It has to be an energy savings to the building owner. And all measures have to show benefits to lifecycle costs based on the time-dependent valuation that has been developed. Actually the time-dependent valuation coefficients and methodology was developed actually under Mazi Shirakh.

So with that, this is our standard process for 2022. Right now we're within the August 2019 to 2022 stakeholder meetings were happening -- excuse me -- I said 2022, I meant October 2020. Stakeholder meetings were happening through the utilities. As final CASE reports develop, these workshop -- these CASE reports were submitted to the Energy Commission. The Energy Commission is reviewing and providing the final -- or the pre-rulemaking recommendations for Part 6 of Title 24. These workshops will happen through the end of October 2020, next month.

And from September to the second week of December, staff will be drafting code language that's going to be proposed at our -- for the 45-day hearings that will be happening here at the Energy Commission hopefully by February of 2021. These 45-day languages will be commissioner-ran workshops that will happen here at the Energy Commission.

Then we're going -- and then we'll take comments from those. And we're hoping to go for adoption for the 2022 Standards at a business meeting in July of 2021.

And, as you could see, the effective date of the Standards, -- there's a lot of stuff that still has to be done, develop the manuals, develop the training programs, develop the computer programs for compliance options, and -- and doing the performance path -- and we're hoping that we get all that done a year in advance of the effective date of January 1, 2023.

There is a lot of work that needs to be done. And if we could get your comments and concerns taken care of sooner versus later, it helps us a lot and helps the program move forward.

Here is the tentative schedule that we have right now. We have already conducted three workshops here at the Energy Commission. And today we're doing outdoor lighting and daylighting. Tomorrow we will be hearing on a few of

the mechanical measures for computer room efficiencies, refrigerant system operations, and pipe size and leakage tests for compressed-air systems. These are all for nonresidential buildings.

And then later on, on October 6th is one of the maybe key important workshops. This is where we will be presenting the methodology that we are looking into for implementing electrification and a PV metric into the program, and also the first time we'll be looking at multifamily all-electric path. This is a two-workshop process for this one. We want to submit and present you with our idea as to how we're going to move forward on October 6th, take feedback from you folks, and on November 17th, we will be presenting the final findings that we do here at the Energy Commission.

This workshop will be led by Mazi Shirakh himself and his team, and this will be an important one for you to listen in to.

There is also another workshop that will be happening later this month, on September 30th. That's on the discussion on indoor air quality. It's a roundtable discussion that's going to be led by Commissioner McAllister himself, where we're going to bring -- where the scientists and researchers that have been working on indoor air quality will be presenting on their findings and their scope on --

really on kitchen range hoods, per se. So that's not the full Indoor Air Quality proposal discussions at this time, it will be mainly for kitchen cooktops and range hoods and the fume hoses needed to remove some of those particulates out of -- out of the environment.

Here are some key websites that you should be -- you might be interested in. The first one is the Utility-Sponsored Stakeholder website. This is where you could find all the presentations that the utility team has conducted, all the CASE or Code and standards enhancement proposals that they have developed. The Building Energy Efficiency Program, this is where we have all of our current standards, manuals, and previous standards and manuals, and what's happening for 2022. It's all placed here in this website. And your comments website is right here, so please submit your comments to this. And please do so by October 6th, or if the sooner the better, just because we need -- the more time we have to do a thorough job, the better we are.

Key staff members' contact information:

Like I said, Mazi Shirakh. He's the lead. I shouldn't be calling it ZNE anymore, but for now he's the -- he's leading the program for Electrification and Decarbonization here in California;

Myself, the Project Manager for 2022 Building Energy Standards;

Larry Froess, he's our Senior Mechanical Engineer, he is responsible and he's the lead engineer over the Compliance Software Program here at the Energy Commission;

Peter Strait, he is the Supervisor of the Building Standards Development Team; and we have

Haile Bucaneg, he is our Senior Mechanical Engineer who has been assisting me with all the work that's been happening for 2022; and

Will Vicent, he's our new Building Standards Officer Manager. He just started last week. If you have any problems or any issues with any of us, you are more than welcome to communicate with him. Unfortunately, at this time we are still working on a phone number for him. As we're not in the office, so I don't have one. And I apologize for that. We just don't have one set up for him yet until we get back into the office.

Again I wanted to emphasize please submit your comments by October 6th for this workshop, and here is the link. It would be appreciated if you submit your comments sooner than October 6th, as there is a lot of work that needs to be done with a little amount of time, and our staff time is also very limited. So the sooner we get your comments, the better we are.

Thank you. And if there are any questions or comments?

If not, I'm going to pass that on to Simon Lee, who will be presenting on his first proposal on Daylighting.

And, Simon, would you like to take over, please?

MR. LEE: Sure. Thank you, Payam. Could you hear me?

MR. BOZORGCHAMI: Yes.

MR. LEE: Okay. Great.

MR. BOZORGCHAMI: You need to share your screen, sir.

MR. LEE: Oh, okay. Okay. Can you see my screen?

MR. BOZORGCHAMI: Yes.

MR. LEE: Okay, great. All right. Thank you, Payam.

And hello, everyone. My name is Simon Lee, from the Building Standards Office. And before I go over the first proposal, I would like to thank Jasmine Shepard and Christopher Ewing of Energy Solutions, and Eric Shadd of Determinant, LLC, who served as authors of this proposal.

I would also like to thank everyone who has provided their inputs and support in the process.

Okay, all right. Okay. In the Daylighting Controls Proposal, two essential changes are the daylight dimming to 10 percent and relocating secondary sidelit daylit zone requirements from the Prescriptive Section to the Mandatory Section.

In addition, there are proposed changes to the Power Adjustment Factor -- it is short as PAF -- for the daylighting controls and the daylighting controls acceptance test.

A number of sections in the Building Energy Efficiency Standards, that's Title 24, Part 6, are proposed to be revised. They include Section 130.1(d), Section 140.6(a)2H, Section 140.6(d), and Section 100.1. And in the Reference Appendix, Section NA 7.6.1.

Automatic Daylighting Controls. I have an image here. It shows daylight entering a building space through windows. Daylight is the most efficient light source, even more efficient than LED light source, commonly available to be installed in office space.

Daylight is free and does not cost anything for it to be produced. When daylighting is used, obviously it can improve energy efficiency by minimizing the use of electric lighting while balancing heating and cooling loads.

Current Code requires applicable general lighting system in daylit space to reduce the lighting powered by a minimum of 65 percent. Put it another way, this is to dim to 35 percent of lighting level, or lowered if decided by the occupants when full daylight is available to the space.

Current Code also requires applicable general lighting systems to combine with the multilevel control

requirements. We are continuously in the range from 10 to 100 percent for LED luminaires. This proposal is to leverage the widely-available LED luminaires and LED light source in general lighting application. Both LED luminaires and LED light source are able to be dimmed in the range of 10 to 100 percent. This is already required in the current Code, Table 130.1-A for dimming in the range of 10 to 100 percent for LED luminaires.

This slide shows the proposed language for Section 130.1(d). It's specifying that the general lighting power in a daylit zone shall be reduced by a minimum of 90 percent when daylight illuminance is greater than 150 percent of the sidelit illuminance. That means that when days of plenty of daylight are available to the space, that lighting power shall be reduced by a minimum of 90 percent.

The second essential change is to move the Secondary Sidelit Daylit Zone requirements from Prescriptive to Mandatory. This change is partly due to consideration of the information received from stakeholders that there is confusion and uncertainty during the code compliance verification process as to whether controls in secondary sidelit daylit zones are required.

Note that this does not change the daylighting controls requirement for parking garages, as parking garages are already required to have daylighting controls for daylit

space -- daylit zones.

Also it does not change the daylighting controls requirements for retail merchandise sales and wholesale showrooms, as these are exempted from the Daylighting Controls Requirements in current Code.

This slide shows the proposed Code language about the secondary sidelit daylit zone requirements. As the tests on the screen shows, secondary sidelit daylit zones are added as part of Section 130.1(d). I would also like to mention that all daylit space will be required to be shown on plans. By daylit zones, it means to include skylit -- skylit daylit zones, primary and secondary sidelit daylit zones.

Skylit daylit zones and primary sidelit daylit zones are already required to be shown on plan documents, so now this will add secondary sidelit daylit zones to the list, so that plan documents need to show skylit daylit zones and both primary and secondary sidelit zones.

And on this, our next measure, a quick history about this PAF, Power Adjustment Factors, for daylighting controls. The original measure for this PAF was based on fluorescent lighting systems which could be installed with either staff dimming controls or continuous dimming controls. Now with the widely-available LED lighting products for general lighting application, continuous-

dimming capability is now available and can be tapped to be used for daylighting controls. And this PAF update is based on the continuous-dimming capability of LED lighting products. The existing -- the existing name of the PAF, daylight dimming plus of control, will be modified. It will be modified to: Daylit Continuous Dimming Plus Off Control so that it is clear continuous dimming controls will be required to qualify for this PAF credit, and stepped dimming controls would not be qualified.

Are there any questions so far?

MR. BOZORGCHAMI: Any questions, anyone?

Simon, yeah, well, I think we can move on.

And if you do come up with an idea, please submit it through our docket or you can throw the question in the question-and-answer box, and we'll answer it.

MR. LEE: Okay. Thank you, Payam. I will carry on.

In current Code there are three subtests in the daylighting acceptance test. They are: The no daylight test, full daylight test, and partial daylight test. In this proposal, a new option is suggested for the full daylight test. And also a new method is suggested for the partial daylight test.

For the full daylight test, a new option is proposed to allow using flashlight to shine into the

daylight sensor to simulate a full daylight condition. There is also a revision to retract the proposal of daylight dimming to 10 percent, as you can see on the second -- the second sentence: Lighting powered reduction is at least 90 percent under fully dimmed conditions.

Our next, about the partial daylight test, an alternate method is proposed to address certain site conditions, when and where there may not be much daylight available. This could be scenarios such as in locations where the daylit space are surrounded with dark glazing. It means dark windows, tinted windows. In order to use this alternate partial daylight test, two preconditions have to exist in the first place.

About the first condition, there has to be sufficient daylight. Or, in test outline terms, there has to be 4,000 foot candles of outdoor illuminance. This can be measured by -- from outside the tested space or measured outside the building.

I will talk about the 4,000-foot candles on this next slide. This slide shows an image from Table 4 of the proposal report. This table with the Annual Clear Sky Illuminance is developed with the equations in the CIE Clear Sky Model. CIE is known as the International Commission on Illumination. Let's go over this table for a moment.

The left-most column is hour of the day. The

other three columns are the seasons of winter, spring, and summer. And the yellow-shaded cells indicate the hours that outdoor illuminance is higher than 4,000 total foot candles. And winter time is the second column for the left. In winter time, it is expected to have the least daytime hour with 4,000-foot candles. In spring, a good portion of the day time hour has about 4,000-foot candles on an average day.

And then to the column on the right. About half of the time of a typical middle-summer day, the outdoor illuminance would be over 4,000-foot candles and the ambient daylight should be large enough to provide enough interior daylight to conduct this proposed Alternate Partial Daylight test.

Next I will go for the cost, the benefit, and the feasibility of this proposal.

There is no expected change to the equipment from the current Code requirements. Typically, essential components, often automatic daylighting controls, include photocells, daylighting logic controllers, and powered controllers. And we are not expecting there are additional equipment required for this proposal.

And about the acceptance test. The acceptance test costs, as required for daylighting controls, are already covering these controls for secondary sidelit daylit

zones. And so, therefore, based on the analysis there is no incremental first cost and no incremental maintenance or replacement cost.

This slide shows the expected benefits of implementing the measure in the first year, when the requirements are in effect. The annual energy savings is expected to be 55.5 gigawatt hours and the annual cost savings is expected to be $107.6 million. In addition to the energy and cost savings, the other benefit of this measure is that the daylight dimming to 10-percent measure aligns with ASHRAE 90.1 requirements.

And this slide shows the greenhouse gas emissions reduction impact. The annual greenhouse gas emission reduction is estimated to be 11,516 metric tons of greenhouse gas. And this, preliminary findings. This proposal is expected to be cost-effective in all climate zones and for all building types. The proposal is also feasible as data income shows has been required in the Code since 2005. And daylighting control products are widely available.

I have on this slide two images. They are about daylighting windows and primary and secondary sidelit daylit zones, and they are all related to each other.

With that, it concludes my presentation. I will pause here and I will open the floor for questions and

answers. CEC staff and CASE officers are available to answer any questions about the presentation materials or about the proposal.

MR. BOZORGCHAMI: So, Simon, Mr. Charles Knuffke has a question. I'm going to allow, unmute him.

MR. KNUFFKE: Excuse me. Good morning, gentlemen. Simon, I was just wondering about the slide that you showed about the amount of hours during the winter where there's 4,000 hours of appropriate level of daylighting. Is that stating basically that an acceptance test technician would only have from eleven o'clock in the morning till one o'clock in the afternoon to do their acceptance testing on daylighting?

MR. LEE: Okay. I will jump in and then Jon can -- - Jon McHugh, he's the -- he's one of the authors. He can answer and offer information.

So my understanding is that, first, this is an alternate method and then, second, the table is showing based on a clear sky model. A clear sky model meaning that there is about 30 percent of cloud in the sky, so actually this is a conservative estimation, from my understanding, and this is also a typical average day. So there are more likely that there are more hours than what we show here.

MR. MCHUGH: Yeah. This is -- this is Jon McHugh. Can you guys hear me?

MR. KNUFFKE: I can hear you, Jon, yes, sir.

MR. LEE: Yes.

MR. MCHUGH: Great. Yeah, Charles, I actually think Simon covered all the major issues. One, if you were -- if it was the winter and it was cloudy and rainy, you wouldn't be able to use this test to -- to validate the calibration of your daylight and control system.

And, yes, as Simon noted, if I've got a space that has -- you know, there's -- this is in addition to the existing test method, so this allows the acceptance tester a broader range of methods for conducting the partial test. They could -- so just to recap, what you're currently allowed to do is that you would need to show that for the partial daylight test that you're between 60 and 95 of illuminance in the space. So if you've got a space that's just -- you know, has lots of glazing and even though it's dark outside, you could still hit those targets, then you could use that test.

Also the existing test allows you to simulate daylight, so there is really sort of three methods that you could use to conduct the partial daylight test.

MR. KNUFFKE: All right. I just wanted to ensure that we weren't asking the acceptance test technician to do all their work in two hours and then come back the next day, as opposed to -- so thank you for being clear that this is

an alternate test. And I take it then the other test would allow a broader range of time during the winter when it's not necessarily 4,000 feet outside the building.

MR. MCHUGH: Yup.

MR. KNUFFKE: Terrific. Thank you.

MR. BOZORGCHAMI: And John Busch had a question.

I'm going to unmute you, sir. Please state your name and affiliation.

John, you need to unmute yourself, sir.

MR. BUSCH: Okay. Can you hear me now?

MR. BOZORGCHAMI: Yes, sir.

MR. BUSCH: Okay. Sorry about that.

Okay. So a couple of quick questions. Number one, with regards to the daylighting and the changes that are making, has there any -- been any consideration of including similar to what we find in IECC with regards to a rating of the glass transmittance value for the, you know, possible exceptions?

MR. LEE: This is Simon. Hi, John. The -- yeah, the daylighting test is all depending on the available daylight in the space, so at this point we have not -- we have not looked at the IECC information that you mention.

MR. BUSCH: Okay. And then, secondly, you know with regards to the changes of moving the secondary, you know, zone into the height, I fully agree that that should.

It lines up with what the other Codes are doing as well, similar to ASHRAE. But one of the questions and maybe considerations would be to add the additional wording similar that would be found in ASHRAE 90.1, Section 9411(e), you know, that adds the wording that we get beyond just the 120 watts, but it addresses the -- you know, adding the -- the actual wattage of the primary and actually wattage of the secondary too, you know, in the limitation. So just ask maybe we look at the wording on that. Again, Section 9411(e) in ASHRAE 90.1 that gives us the -- specifically that started in 2016 to improve the understanding of that limit or the exception on the wattage.

MR. LEE: Yeah. Hi, John. This is Simon. Our office is aware of that language and we are -- we are contemplating on that -- on that ASHRAE 90.1 requirements.

MR. BUSCH: Thank you.

MR. LEE: About the formation about.

MR. BUSCH: Yeah. Again I'm just -- you know, so many engineers work across so many different states, so many codes, it always helps when those codes start lining up a little bit better, and -- but, no, appreciate the opportunity to ask the questions. Thanks, Simon. You're doing a great job.

MR. LEE: Thank you, John.

MR. BOZORGCHAMI: Thank you, John.

Any -- any other questions, concerns?

If not, we'll keep on moving.

MR. LEE: Thank you, Payam.

MR. BOZORGCHAMI: We'll move on.

MR. LEE: Yes. Very important thing, your comments for today's workshop are welcome. And comments can be submitted to the CEC Docket listed on this slide. As always, there is a due date. It is October 6, by 5:00 p.m. That's about two weeks from now.

And our contact information is listed on this line: Myself, Peter and Payam's information is on this slide. You are welcome to contact us about today's measures.

Okay. With that, okay, there are a lot of materials we will go through this morning. These slides and presentation is prepared and developed to bring the essence of the proposal to your attention. And before I start I would like to acknowledge the CASE officers who put together the Outdoor Lighting Proposal. They include:

Annie Kuczkowski of Clanton & Associates, Dan Drozdowicz, Rachel Lawin (phonetics), Christopher Uraine of Energy Solutions, and Michael Mamanski of PRC Companies (phonetics). We'd like to thank them for their efforts, and also everyone who has provided inputs and supports in the process.

In the Outdoor Lighting Proposal, there are three some measures. They are: Lighting zone reclassification, adjustments to nonresidential outdoor Lighting Power Allowances. In the CASE, we reported this title as General Hardscape Lighting Power Allowance; and then the last one, creation of a separate Code section for multifamily outdoor lighting. In the CASE report, it is titled as Multifamily Outdoor Lighting.

In this outdoor lighting proposal, a number of sections in the Code are proposed to be revised. They include: Section 10-114 and Table 10-114-A in that section. Section 100.1, Section 130.2, Section 140.7, and Table 140.7-A, and 140.7-B.

A new section will be introduced to the Code.

(Conversation heard probably between participants on Zoom.)

MR. LEE: Okay, I will continue.

A new section will be introduced to the Code. For the Multifamily Outdoor Lighting Requirements, two efforts are made to make it happen. One, it will have a new Multifamily Outdoor Lighting Power Allowance, and then based on and developed from the Nonresidential Outdoor Lighting Power Alliance.

The second, this new section will have existing outdoor lighting and lighting controls requirements

relocated from nonresidential sections and residential sections of the Code.

The first measure with classification of lighting zones. To quickly recap the lighting zones, the current classifications include five lighting zones: Lighting Zone 0, sometimes we refer to that as LZ0. Lighting Zone 0 includes undeveloped areas with essentially no artificial lighting.

Lighting Zone 1, it includes developed portion of government-designated parks, recreation areas, and wildlife reserves. Lighting Zone 2, LZ2, is defined as rural areas. Lighting Zone 3, LZ3, is defined as urban areas. And then one more, Lighting Zone 4. It includes areas with maximum artificial lighting, such as Times Square in New York City. At this point, no areas in California have been designated to be Lighting Zone 4.

Okay, with that now we can look into the details. This proposed measure aims to improve current outdoor lighting zone solutions, which use a population-based approach based on U.S. Census classifications of 2010. This proposal would also closely align the default lighting zones to the Illuminating Engineering Society's lighting zone definitions.

I will highlight the proposed changes as follows, and they include: Moving rural areas from a default

Lighting Zone 2 to a Lighting Zone 1; and adding a new classification, urban clusters, which is a U.S. Census classification; and rural areas will receive a default Lighting Zone 2.

One more: Adding Building Types. Adding Building Types likely to occur in each zone in Table 10-114-A. Another one is revising the conditions for designating a higher or lower lighting zone. And, lastly, this is not -- this one is a lot of the change, but I note that I want to mention Lighting Zone 0 and Lighting Zone 4 are unchanged in this measure.

In the next three slides I will show the proposed changes to the Outdoor Lighting Zone Table. That's like Table 10-114-A. It will show the proposed changes affecting Lighting Zone 1, Lighting Zone 2, and Lighting Zone 3. So the change -- changes affect Lighting Zone 1, 2, and 3, so I just want to mention that so that, yeah, that's the focus.

This slide shows part of the table for Lighting Zone 1. The red tags in the table are mean to show changes. And I'm repeating myself there: There are no proposed changes to Lighting Zone 0 and Lighting Zone 4.

Okay, Lighting Zone 1. Lighting Zone 1 will still include the rural portions of government-designated parks, recreation areas, and wildlife preserves. And rural areas previously part of Lighting Zone 2 will now be included here

as part of Lighting Zone 1, along with residential and agricultural areas.

And I will move on to Lighting Zone 2. Lighting Zone 2, urban clusters are proposed to be the new default locations of Lighting Zone 2. Previously thought as rural areas, but it is now urban cluster areas, as well as mixed use, residential, light commercial, and industrial areas. And now about urban clusters: Urban clusters is defined in the 2010 U.S. Census as territories with at least 2500 people and less than 50,000 people.

There will be a late -- this is the latest line that will lay out and list out all the U.S. Census terms that are being used in the Lighting Zone Table, and the slide will also include that definition. And so we have already looked at Lighting Zone 1 and Lighting Zone 2. We have one more to go, and now let's look at Lighting Zone 3.

Lighting Zone 3. Lighting Zone 3 is still defined as urban areas, but now includes high-intensity commercial corridors, entertainment centers, and heavy industrial and manufacturing.

So now I will turn to some Census definition classification. Someone may ask the questions what are rural areas, urban clusters, and urban -- urbanized areas as defined by the U.S. Census. Rural areas include all population housing and territory not included within an

urban area. Urbanized areas are territories with 50,000 or more people, and now one more, urban clusters. Urban clusters are territories with at least 2500 and less than 50,000 people.

Next we can look at some cost and benefits of this measure. The same kind of Code required luminaires products are used for meeting this proposal measure, and therefore there is no incremental first cost and no incremental maintenance and replacements cost.

This proposed measure is expected to have both energy savings and cost savings in the first year, when the requirements are in effect and in new construction and also additions and alterations. The annual energy savings is expected to be 2.82 gigawatt hours. And the annual cost savings is expected to be $7.6 billion. This proposed measure is also expected to have an effect on greenhouse gas emissions reductions. And this table on the slide shows the greenhouse gas emissions reduction for each of the three some measures and also the total of all three some measures.

And the second row from the top is for the Lighting Zone Reclassification. For this measure, the reduction is estimated to be 676 metric tons of greenhouse gas annually.

The findings. This measure is expected to be cost-effective in all climate zones and for all building

types. This update of the Lighting Zone Reclassification is a continuation with a population-based approach with reference to rural areas, urban clusters, urban areas, and example building types that are likely to occur in these areas.

Also this measure proposed continuation of the provisions to local jurisdictions, to be able to designate areas to a different lighting zone from defaults. And local jurisdictions can also use the same public process for assign -- for designating an area to different lighting zones.

I have this and next slide about some staff questions, seeking public inputs to weigh in on this measure. So our first one: Will the introduction of the Census-based default lighting zone of urban, rural area reclassification possibly be of unison to any area classification from the local development pen or zoning map?

And the second question: Will providing more of this question to local jurisdictions be enough to adjust this issue?

One of the posts that could be is that local jurisdictions could use greater authority to determine appropriate lighting zones for specific projects or regions, if they can do so without needing to file materials with the air -- the group CZ.

And -- and I have -- there is one more question: Would moving to -- would the move to a lighting zone result in under lighting? The reason being is that the Census blocks can be fairly large and there can be areas of dense development within a less populous region. There are some jurisdictions such as the City of Vernon and City of Industry that are focused on commercial, industrial development, and are comprised of highly urbanized areas despite having low population.

In the next two slides there are information about City of Industry and City of Vernon that could be impacted by this measure of Lighting Zone reclassification.

This is the City of Industry. The City of Industry is heavily urbanized, mostly industrial and with some commercial. There are about 3,000 businesses. The resident population is 219, according to the 2010 U.S. Census.

And next we'll look at some information about the City of Vernon. The City of Vernon is primarily composed of industrial areas and with about 1800 businesses and a small residential population of 112 from the 2010 U.S. Census.

And so, in summary, these two cities have a small resident population and it is under 2500 and, therefore, they are considered rural areas. Their default -- their default Lighting Zone would be changed from Lighting Zone 3

to Lighting Zone 1. As mentioned earlier, one of the staff questions is about whether providing more discretion to local jurisdictions would be enough to address this issue. And staff will be interested in your comments and inputs.

With that, it concludes my presentation for the Lighting Zone Reclassification.

Are there any questions about the presentation and the proposal?

MR. BOZORGCHAMI: Any comments, any questions?

If not, Simon, go ahead and start the General R Scape.

MR. LEE: Okay.

MR. BOZORGCHAMI: Hold on, hold on. Jim Benya has a question.

I'm going to unmute, sir. Please state your name and affiliation, please.

Jim, you have to unmute yourself, sir.

MR. BENYA: Hi. This is Jim Benya at Benya Burnett Consultancy, Davis.

Serving as consultant to Energy Commission staff on this measure, I just wanted to point out one other thing. I provided my comments to staff and they have incorporated them in their presentation. One thing I failed to mention in that is that this classification system is not necessarily consistent with IES publications the way it's

been used. Having been the author of the -- this methodology being entered into the Standards some 15 years, I can tell you that the intent was that communities would themselves take control of their lighting zoning, if necessary, and that the default zones is what these represent.

I think that system has not been used to its fullest potential, and so one of the things I run into as a professional designer in this state is that many building departments aren't even aware of the Lighting Zone system and certainly many communities don't take full advantage of being able to set the zones, as was just pointed out in the slides a minute or two ago.

I think this is a system we have to be very, very careful with. And reducing lighting zones in communities may be just theoretical. I'm aware of only a few communities that actually have done the Lighting Zone adjustments to better tailor to their community. One of them, for example is the community of Malibu. And I helped them set theirs. And their entire community is set at Lighting Zone 1. It's not that Lighting Zone 1 is bad, but it is certainly a departure from Lighting Zones 2 and 3. So this is -- this is a proposal that I'm not real, real fond of. I think it's a smart proposal, but because the Lighting Zone system really isn't being used fully as it was

intended, I'm a little nervous about changing things on some theoretical savings we might get. So I think that -- let's all be very careful about this particular one because it might end up not even being fully appreciated by the communities that have to enforce it. Thank you.

MR. LEE: Hi. This is Simon. Thank you, Jim. And also pardon for me forgetting to introduce our panelists. Jim Benya. Jim is one of our panelists. And also Annie Kuczkowski and Nancy Clanton, they are also here to serve as our panelists for the Outdoor Lighting Measures.

Yeah, thank you for -- for them.

MR. BOZORGCHAMI: Simon, John Busch also has a question, has raised his hand. I'm going to allow, unmute him, sir.

MR. BUSCH: Hi. Just to jump on to that comment that Jim just made --

MR. BOZORGCHAMI: Sorry, John. Please state your name. I'm sorry.

MR. BUSCH: I'm sorry. This is -- I'm sorry. It's John Busch with Leviton and CEA, by the way.

Just a quick comment on that, Jim, and again it's kind of a question, something that we might consider. Forgive me, I do think the world of our Title 24, but I always look to the other codes to try to understand intent.

You know similar to something like that was done

for exterior lighting in ASHRAE 90.1 was actually specifically with the facade and landscape lighting, you know, times of when they need to turn off. The actual wording was added to the Code language of changing from what the code calls of the times to actually times established by the AHJ, and might consider some -- some level of wording that might give that flexibility that Jim is talking about to the local AHJs.

MR. LEE: Hi. This is Simon. Yes. Yeah, piecemeal comes and we will -- we will consider them. We will look at -- we will look at all the inputs and also what we have in the proposal.

MR. BOZORGCHAMI: Simon, I don't see any other raised hand or any questions in the question box, so go ahead and start the general hardscape discussion.

MR. LEE: Okay. All right. Thank you. Thank you, Payam. I will continue on the next measure.

General Hardscape Lighting and Power Allowance. This measure is about the general Hardscape Lighting and Power Allowance. First some background information.

The 2019 Outdoor Power Allowance based on the recommended luminance were used for of IES RP-8-18. The title of that document is American National Standard Practice for Design and Maintenance of Low Rate and Parking Facility Lighting. This is a publication by the

Illuminating Education Association. Yeah.

In short, the 2019 Outdoor Lighting Power Alliance, based on the IES recommended lighting level for parking facilities recently an important reference document was updated or was released and this is Addendum 1 of IES RP-8-18 for Chapter 17. So this addendum was published on February this year. And in this addendum, the recommended lighting level for parking areas has been decreased based on parking facility research performed by the Transportation Institute.

As the recommended lighting levels for parking lots has been decreased, this proposal aims to align the General Hardscape Lighting Power Allowance for use in Table 140.7-A with the recommended lighting levels in the new addendum, Addendum 1 of IES RP-8-18.

I will highlight the proposed changes to you as follows. As the difference in lighting level requirements for ASHRAE in concrete parking lot surface are negligible. The proposal established one set of lighting power allowance were used for parking lots, at a level suitable for both surfaces. A new lighting power allowance is added for general hardscape applications with security cameras. The term "cutoff" is replaced -- also the term "cutoff" is replaced with "shielding" to better reflect current outdoor luminaire terminology.

Lastly, this one is not on this slide. The Hardscape Ornamental definition will be updated to a 50-watt limit. This is in order to align with the wattage proposed for an outdoor -- for an LED baseline in Section 140.7.

So we will go into the details of the proposed language. And this slide shows the proposed Outdoor Lighting Power Allowance values for Lighting Zone 1, 2, 3, and 4. And for area wattage allowance, linear wattage allowance, and initial wattage allowance. These allowance have been adjusted to align with the new IES-recommended illuminance values for making level, the allowance values are lower as the IES-recommended illuminance values are lower so that they -- yeah, so that they are in coherence with each other.

Security cameras. Security cameras for general hardscape areas are calling to the study in the proposal report, security cameras in using 2019 require higher lighting levels than those recommended by Addendum 1 of the IES document, RP-8-18. In order to identify people, animals, and objects of concern inside the general hardscape area. To address the need. This proposal includes a new additional lighting power allowance for general housekeeping application with security cameras. This new additional lighting power allowance for security cameras would ensure that current security camera technology can be applied in

general hardscape areas with security concerns.

Up on Serial 1A1 postgraphic is proposed for Lighting Zone 2, 3, and 4, for the general hardscape area with security camera installations. Also a new definition is proposed to define what can be considered as security cameras for this additional lighting power allowance for security cameras.

And I'll just read out the new definition: Security cameras are any operational camera used to enhance the safety and security within a general hardscape area.

For this proposed measure, since the 2019 LED luminaire productions can be also used is for submitting the proposed -- 2022 code changes. There is no incremental first cost and no incremental maintenance and replacement cost.

This slide shows the expected benefits of implementing the measures in the first year when the requirements are in effect. This proposed measure is expected to have both energy savings and cost savings, and in both new construction and additions and alterations. The annual energy savings is expected to be 24.3 gigawatt hours. And the annual cost savings is expected to be $64.58 million.

This proposed measure is also expected to have an impact on greenhouse gas emissions reduction. The reduction

is estimated to be 5,841.46 metric tons of greenhouse gas annually. And -- and these proposed changes are expected to be cost-effective in all climate zones and for all building types.

About technical feasibility. Outdoor area luminaires for achieving the default lighting levels are available. LED luminaires of warm CCT of either 3,000K or 2700K have been studied and are counted for being able to meet the proposed LPA requirements. These luminaries include those that are widely available today to ensure that less effective luminaires use it in current industry standard practice could still be installed in each lighting zone for meeting the Code.

And I have a slide here about a question, a staff question seeking public input: The outdoor lighting power allowance values are developed to provide sufficient lighting power to cater for the recommended illuminance levels. Are there any other illuminance levels that should be considered for California? And if you have information, please let us know.

With that, that concludes my presentation for the General Hardscape Lighting Power Allowance Measures.

CEC staff and CASE officers are available -- and the panelists -- are available to answer any questions about the presentation materials or about the proposal.

Now I will open the floor.

MR. SHIRAKH: Simon, this is Mazi. Can you hear me?

MR. LEE: Yes, I can hear you, Mazi.

MR. SHIRAKH: The question that allows for additional allowance for the security camera, why is that needed in Lighting Zones 3 and 4? I mean it seems like with the higher lighting level in those zones, you may not need that additional allowance.

MR. LEE: Okay. I'll jump in first and then the panelist maybe can show me how it works.

Okay, according to the survey and the investigations, security cameras, there are different modes of the security cameras, that the color mode, the black and white, and the infrared. So this additional lighting power allowance is for those in areas just in case the camera technology that they are using could not see in those high level -- at those hardscapes outside. And so this is provided just in case. But they are -- actually the most recent technology, they can see even with the current under with, I think, two level, they can see, so.

MR. SHIRAKH: Um-hum.

MR. LEE: But that's my -- that's my recap.

MR. SHIRAKH: Yeah.

MR. LEE: Annie or Nancy, would you like to chime

in?

MS. KUCZKOWSKI: I will add to that. This is Annie Kuczkowski here. I've been working with Clanton & Associates, supporting the CASE measure.

And Simon is correct, there are different power detection provided through different cameras.

None of the other considerations that we also made when proposing this security camera adder is that it's oftentimes areas that are in Lighting Zone 3 and Lighting Zone 4 that had the most safety and sensitive security concerns that are brought up by any of the occupants. So it's primarily those areas where we do want to make sure we can achieve the safety required by building owners, so in many cases that is having the camera so that people can actually watch what's happening down in the parking lot, or if there is an incident that they can go back later and review what happened and be able to see it at further distances.

Because security camera technology is evolving so quickly, we use current technology but we wanted to point this back to IES standards. So we decided to use a three-foot candle average for all of these areas that needed entry-lighting level for security, which could not currently be achieved with the general parking lot lighting levels and general hardscape parking lot lighting levels. So even with

LZ3 and LZ4, you do need a little bit of an adder to reach the IES-recommended security lighting requirements.

MR. SHIRAKH: Okay. Thank you.

Second question, just a clarification. We're not proposing any changes to the BUG rating of Outdoor Luminaires? That's been --

MS. KUCZKOWSKI: No, we won't.

MR. SHIRAKH: Okay. Okay. Thank you.

MR. BUSCH: Could I add a little bit of something here? This is Jim Benya. A couple things.

First of all, the applicable standard that's got to be considered is IESG-1, which is a guideline for security lighting. Security lighting isn't always applied in parking lots and hardscape. And so there might not be a power allowance for at all if one isn't provided for security lighting.

Secondly, the lighting levels that are required are vertical illuminates, not horizontal. And they have to be higher than the typical lighting levels we're using for hardscape and parking lots and so on. This is a smart addition, I think, because it provides additional power which may not be provided in any way regardless of lighting zones.

The other comment I want to make is that I tested all of the proposed values for changes to the exterior

lighting. I had a limited amount of time -- excuse me -- but I had one really good model and I tested everything using this model for all lighting zones. The lighting zone values appear to track pretty well. They do a pretty good job. And I think in this case -- in this case the CASE team did an excellent job of coming up with -- with new values. I don't have a lot of concerns about the proposals for outdoor lighting power density with this particular case. I think they did a good job.'

MR. SHIRAKH: Thank you, Jim. That was a helpful explanation.

MR. BOZORGCHAMI: Thank you, Jim.

Thank you, Mazi.

Anyone else?

I think we're ready to go to the Multifamily Outdoor Lighting Proposal, I meant.

MR. LEE: Okay, all right. Yes, I will.

MR. BOZORGCHAMI: Sorry.

Folks, if you do come up with ideas and questions and concerns, please submit -- again, submit your comments into our docket sooner than later. And I apologize for bringing this up. I just want to make sure that you folks are heard sooner than later. Thank you.

MR. LEE: Yeah, please let us know I mean if -- yeah. Please let Payam or me know. Payam and Peter. And

so I will go to the next -- or the last measure, Multifamily Outdoor Lighting.

In this Code cycle there is a restructuring to the requirements for multifamily buildings. There would be a new dedicated chapter for multifamily buildings and a new section for multifamily outdoor lighting.

So this measure. There will be a new multifamily outdoor lighting section. This new section will consolidate existing requirements that are split between residential and nonresidential chapters and sections. Existing outdoor lighting provisions, applicable to multifamily buildings, will be moved to this new section. Similarly, reference to these provisions will be replaced and referenced to the new chapter. So this creates a consistency between overlapping residential and nonresidential requirements, and simplifies requirements where possible. The next two slides will show some example language in existing conditions sections. This slide shows two nonresidential sections. The changes on the slides are prepared by staff. They are necessary to harmonize changes to existing sections and the new multifamily outdoor lighting section. And the text in red are proposed changes.

In Nonres and Res Planning Section 130.0, it is suggested to add an exception to serve as a pointer that there is a different section for outdoor lighting of high-

rise residential buildings, as there is a new section for Multifamily Buildings, and high-rise residential buildings are considered to be multifamily buildings.

In Section 130.2, is also a Nonresidential Outdoor Lighting section; the text "high-rise residential" is to be deleted from this section, as the Outdoor Lighting Requirements for Multifamily Buildings will be in a new section.

And some more examples of changes in existing language sections, in Section 150.0(k)3, that's for the Residential Outdoor Lighting, the language related to Multifamily Outdoor Lighting is suggested to be deleted from this Residential section. Additionally, it is proposed to add Multifamily Outdoor Lighting requirements as an option for low-rise residential buildings. And just a footnote, low-rise residential buildings are residential buildings with one, two, or three dwelling units.

Highlights of the proposal include: Number one, the calculations is simplified for the calculation of the allowed outdoor lighting wattage for multifamily buildings. In addition, a two-factor calculation method using an initial and an area wattage allowance is proposed to replace the existing fee factor calculation.

Number three, mixed-use buildings with residential dwelling units are allowed to be classified as multifamily

for Outdoor Lighting Power Allowance calculations.

And the next one: Allowance that are extremely uncommon for multifamily buildings. For example, car sales lots lighting, gas station outdoor lighting, they are grouped under a single common allowance for canopy lighting. And setback control requirements will apply to Outdoor Lighting -- let me go back. Setback control requirements will apply to Outdoor Family Lighting.

Lastly, adding a clarification that exception to lighting for public streets and roadways may include those owned or maintained by municipality or utility.

The new section for the Multifamily Outdoor Lighting will have its own lighting power allowance table. And, as mentioned earlier, about a simplified two-factor calculation method for multifamily outdoor lighting, the two factors are the area wattage and the initial wattage for Lighting Zone 1, Lighting Zone 2, Lighting Zone 3, and Lighting Zone 4.

In the new Multifamily Outdoor Lighting Section, there would also be a list of Outdoor Lighting Exception to the Code requirements. This is similar to those in Section 140.7 for Nonresidential Outdoor Lighting. It is proposed to add street lighting owned or maintained by municipality or utility to the list of exceptions. Also it is proposed not to include an exception for industrial sites and theme

parks, as industrial sites and theme parks are already covered by the existing exception in the Nonresidential Outdoor Lighting Section.

For this proposed measure, since the commonly-available LED luminaire products are also used for developing this Multifamily measure, there is no incremental first cost and no incremental maintenance and replacement cost.

I'd like to mention to you that there are four prototype buildings within the overall construction forecast are being used here to calculate the impacts of the proposed Code changes. And these multifamily-building prototypes include low-rise garden, loaded corridor, mixed-use mixed-use, and high-rise mixed-use buildings. And if you want to -- there is more information in the CASE report. Table 61 has the site -- has site characters. And some low-rise gardens are two- to three-story buildings. Mid-rise are four- to five-story high and high-rise are six story or more.

This slide shows the expected benefits of implementing the measure in the first year, when the requirements are in effect. This proposed measure is expected to have both energy savings and cost savings, and in both new construction and additions and alterations. The annual energy savings is expected to be 11.75 gigawatt hours

and the annual cost savings is expected to be $9.73 million.

Greenhouse gas emissions reduction. This proposed measure is expected to have an effect on greenhouse gas emissions reductions. In this table, the fourth row from the top, it shows the greenhouse gas emission reduction for the Multi Outdoor Lighting measure -- Outdoor Lighting measure is 2,800 and 12.68 metric tons of greenhouse gas.

And the preliminary findings: The proposed changes of the measure is expected to be cost-effective in all climate zones and for multifamily buildings.

About technical feasibility. Outdoor area luminaires for achieving the default lighting level are available, LED luminaires of 1 CCT of either 3,000K or 2700K have been studied and are kind of therefore being able to meet the proposed LPA requirements. These include those that are widely available today to ensure that less effective luminaires used in current industry standard practice could still be installed in each lighting zone for meeting the Code.

With that, that concludes my presentation for the Multifamily Outdoor Lighting measures. And CEC staff and CASE officers and panelists are available to answer any questions about the presentation materials or about the proposal. And now I will open the floor.

MR. BOZORGCHAMI: Simon, can I ask you to slide

over to the next slide, please? There you go. Thank you.

Any comments, any concerns, any questions? Not just on this proposal but any of the other proposals that you've heard today?

With that, if not and if you have a concern or comments and you want to bring them up, you can bring them up in writing and submit your comments by October 6th, and here attached is the docket link. And here you will see other comments and the PowerPoint presentation, and the transcript for today's call will also be posted here, so those will be available for you to view. The transcripts and the recordings will take a few weeks to get posted, as it's being recorded now and will be posted at a later time.

With that, I will ask Simon to go to the next slide for contact information, and -- thank you -- and here's Simon's information. Notice that I threw him as the first thrown under the front of the bus and myself at the end.

So if there are no comments or concerns, I will conclude today's workshop. Thank you, everyone.

MR. LEE: Thank you, everyone.

(Whereupon, the Workshop was adjourned at 10:35 o'clock a.m.)