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COMMITTEE HEARING

BEFORE THE

ENERGY RESOURCES CONSERVATION AND DEVELOPMENT

COMMISSION OF THE STATE OF CALIFORNIA

In the matter of,	)	
	)	Docket No. 15-IEPR-05
	)	
2015 Integrated Energy Policy	)	
Report (2015 IEPR)	)	

IEPR COMMISSIONER WORKSHOP ON

EXISTING BUILDING ENERGY EFFICIENCY STANDARDS

CALIFORNIA ENERGY COMMISSION

FIRST FLOOR, ART ROSENFELD HEARING ROOM

1516 NINTH STREET

SACRAMENTO, CALIFORNIA

MONDAY, JULY 27, 2015

1:00 P.M.

Reported By:
Peter Petty

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CEC Staff Present

Stephanie Bailey

Maziar Shirakh

Presenters

Randy Goodwin, City of West Sacramento

Bob Barks, Interwest Consulting Group

Cynthia Moore, Contractors State License Board (Via WebEx)

Wes Sullens, StopWaste

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Public Comment

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P R O C E E D I N G S

JULY 27, 2015 1:00 P.M.

COMMISSIONER MC ALLISTER: I'll pass it to Stephanie.

MS. BAILEY: Thank you. Good afternoon, welcome to today's IEPR Commissioner Workshop on Existing Building Energy Efficiency Standards.

I'm Stephanie Bailey and I work on the IEPR team here, at the Energy Commission.

I'll begin with a quick update to the agenda. Walker Wells was originally included as a speaker for today's workshop, but will not be participating this afternoon.

I'll also, quickly, go over the usual housekeeping items. Restrooms are in the atrium, out the door and to your left. And we have a snack room on the second floor, at the top of the stairs.

If there's an emergency and we need to evacuate the building, please follow staff to Roosevelt Park, which is across the street, diagonal to the building.

Today's workshop is being broadcast through our WebEx conferencing system and parties should be aware that you are being recorded.

We'll post the audio recording on the Energy Commission's website in a couple of days and the written

transcript in about a month.

At the end of our presentations today there will be an opportunity for public comments. We are asking parties to limit their comments to three minutes, so that the maximum number of participants have an opportunity to speak.

For those in the room, who would like to make comments, please fill out a blue card and give it to me. When it's your turn to speak, please come up to the center podium and speak into the microphone. It's also helpful if you can give our court reporter your business card.

For WebEx participants, you can use the chat function to tell our WebEx coordinator that you want to make a comment during the public comment period, and we'll either relay your comment or open your line at the appropriate time.

For phone-in-only participants, we'll open your lines after hearing from the in-person and WebEx commenters.

If you haven't already, please sign in at the entrance to the hearing room.

Materials for this meeting are available on the website and hardcopies are on the table, at the entrance to the hearing room.

Written comments on today's topics are due August 10th. And the workshop notice explains the process for submitting written comments.

With that, I'll turn it over to Commissioner McAllister for opening remarks.

COMMISSIONER MC ALLISTER: All right, thank you very much, Stephanie.

And I want to thank everyone for coming. We have a great long -- long panel, essentially. I'm going to -- there are a lot of people on this, right, and we just have the whole afternoon.

And I think I'm going to sort of take -- put my prerogative and interject with questions when I feel like I need to, for clarification for the most part, rather than wait until the end. But, also, want to try to keep things moving along because we do have quite a number -- even without Walker, we have quite a number of presentations.

So, you know, why are we here? You know, I think clearly code, building code, as expressed through Title 24 part 6, and also, now, part 11, we -- particularly, part 6, what we'll be focusing on today, is a key policy arena for California. We've shown leadership for decades. We've gotten incredible results from code, from using that as a way to kind of highlight

best practices and encourage the marketplace strongly through code, and on the local level, through voluntary adoption of stretch codes to push the building sector, the new construction sector, and the existing buildings, to do high rates of energy efficiency. And I think it's been just a social and private, if you look at those two economic perspectives, a no-brainer, a winner all across the board.

So, we do have these days, over the last few years, an increasing focus on the existing buildings. And we know that there are many energy savings opportunities there. And we know we have to go get them because our goals have gotten stronger, our urgency, certainly, every year is greater.

And it's not just about California being a leader and seeing how far we can go. It's about meeting our needs for a cogent, rational response to our energy situation and climate change, among a number of other goals. But they're all in alignment that we need to do better getting the performance of our existing building stock up.

At the same time, code is quite increasingly complex, I think. The degree to which it's complex, I think is something we can differ about. And I think part of today's goal is to come to the table with well-

founded viewpoint and opinion on -- partly on that point.

Are there issues that are keeping existing buildings from getting upgraded? Are there issues with code that are keeping projects from happening? You know, what is the state of permitting compliance? We're talking about residential and commercial. We have some representation from both. I think we're a little tilted towards the residential. But I think we want to open up this conversation in a very forthright way.

And that's really why I wanted to have this workshop in the dual contexts of the IEPR and the AB 758 Action Plan.

So, you know, AB 758 is something that we're really focusing on in a sustained way, here at the Commission, trying to engage on all the different fronts with stakeholders who are out there doing stuff in the marketplace on existing buildings, commercial, all types of commercial, all types of residential to see how we can encourage those projects to occur.

I think there's maybe not quite consensus, but there's a general feeling that there's a lot of savings that aren't getting harvested. Or if they are, we don't really know about them or we can't really see them. And so, you know, what is the reality out there? What are

the barriers that all of you, practitioners, and building owners, occupants, managers see? What are those barriers and how can we identify them, unpack them and come with solutions?

So, really, I would really -- I would encourage everyone today, whether it's the panelists, the presenters, the panelists, the audience in the room, on the web, on the phones, stakeholders of all types, but today and in written comments to think about what the nature of any -- you know, any barriers, certainly, but an aspects of code, as it applies to existing buildings you want to talk about and get comments in on, and help us understand.

And, certainly, I would ask that to the extent those are barriers or issues you need addressed, you would like to see addressed, solutions are really a key part of it. You know, obviously, we want the dialogue to be respectful and driven by actual experience and, where possible, data. But we certainly want to be able to chart a path towards solutions, towards making it all work better.

I think our existing buildings are, to some extent, and you know, again, the degree of this is, I think, an issue of some debate, but the cost effectiveness of a given measure in a new construction

setting versus an existing setting, a retrofit setting may be different.

And so we've asked a question along those lines, where is it -- where is kind of the focus or the generally conditioning for the conversation by new construction? Where does that kind of inadvertently become a problem in existing buildings? You know, I think there are some areas where that's the case, but probably it's not everywhere. So, need you all to help us understand that.

You know, we're hearing towards zero net energy. And to the extent that that focuses on new construction, to a large extent, we also need to see code as something that can help us perhaps get there in retrofit settings, as well.

So, I really think it's an opportune moment to have this conversation, to talk about sort of -- let's call them best practices or how we can sort of update code as it is developed, and practices, you know, implemented on the ground to focus on our existing buildings and really get those savings that we believe are out there. And, you know, that have all sorts of co-benefits. There's no reason why they shouldn't be happening. So, if there's something in the way, let's get it out of the way. If there's something that we

need to highlight, then let's do that.

So, with this long, kind of preamble to today, I just wanted to frame this issue for everyone to let you know here's what we're trying to do. It's really focusing in the context of AB 758, the context of the Governor's third goal, which is to vastly improve the energy efficiency of our existing building stock.

This is an issue that just comes to the fore repeatedly. And so, with that theme, we've seen that we really need to have, start a dialogue about it.

And, really, the IEPR, and the AB 758 Action Plan that's in a draft out there for comment, presents a great opportunity to have that conversation.

So, I really appreciate everyone thinking about this, and your effort, and looking at ways that California can kind of use this process to get to solutions that really help our citizens, and their buildings operate better, their performance of their building, and just all the co-benefits that we know existing building upgrades generate. And do that in a way that works with the marketplace and leverages code for that purpose.

So, again, I really thank you all for coming. And with that, I will pass it to our panelists. I believe, Mazi, you're first? Yeah, there we go. Great.

So, thanks again, everybody, for being here.

MR. SHIRAKH: Good morning. You want me to speak from here or you want me to come up there and drive? I can do it from here, if you think it's best.

This is Mazi Shirakh. I'm the Project Manager for the Building Energy Efficiency Standards, the 2016 was adopted a few weeks ago, mostly.

So, I'm here today to talk about compliance documents, or forms, and the vision form.

Next, please. So, you know, what are compliance documents? These are basically a set of forms or documents that are published as part of the residential and nonresidential compliance manuals. They generally include a certificate of compliance. On the residential side, that will be a CF1R. A certificate of installation, which would be a CF2R.

There are also certificates of acceptance, which are nonresidential forms. Certificates of field verification. They're mostly residential, with a few exceptions for nonres. These would be the CF3Rs.

There are also a number of worksheets that are used for performing calculations, and area averages, and so forth.

These forms all have -- or documents -- I'm going to be using the compliance documents and forms

terminology interchangeably. The correct form is compliance documents, but sometimes it slips out of my mouth as forms.

Instructions are always included, either on the documents, themselves, or as a separate document. Sometimes it's embedded at the end of each chapter in the nonres.

The residential forms tend to include the documents as part of them. Currently, that's the way it is.

The next, please. They're used for -- the primary use of the compliance documents would obviously be compliance enforcement for plan checking, and field verification.

In addition, the electronic registered documents have additional benefits. They can be used by the Commission, or the CPUC, or the utilities for existing program evaluation. Or, if they want to develop new programs, they can also see the information in these forms.

They can be used to assess the effectiveness of incentive programs. And one of the best uses would be data mining. That, you know, you can have, at your fingertips, a gold mine of data, and you can go in there and assess, or know, or learn about the different

equipment and practices that go into the buildings. I'll talk about that a little bit later.

And electronic data registries also can augment the RD&D efforts. For instance, if you want to know how many mini-splits go into the buildings versus traditional air conditioning system, without it you have to basically develop an RD&D program.

With this system at your fingertips, you can go in there and find out what that information is, in minutes.

Next, please. So, why have these compliance documents? Why so many? Title 24 has 11 parts. All 11 parts have forms to different degrees.

Part 6 tends to have the most complicated forms. And the reason is that by law the energy, or part 6 is the only code that requires a prescriptive and performance alternative in all 16 climate zones.

For most of the other codes, the requirements tend to be fairly static. For instance, you have to have so many feet between each receptacle, so it doesn't really change from building to building, or climate zone to climate zone. The toilet should be 17 inches from the sidewall, and things like that.

So, the building code is very different because these requirements can be significantly different

between retail, office, schools, residential, nonresidential, and it also varies significantly by climate zones. And by law, we have to provide these alternatives. So, the forms will tend to be more complicated.

And again, similar to that, the part 6 forms often require complex calculations. For instance, calculating lighting power densities and lighting allowances for nonresidential buildings. You know, they could be fairly calculated. Or, HVAC air flow calculations are two examples.

But then, again, these are things that you need worksheets and perform calculations that are different than the rest of the building code.

And so, having documentation retained indefinitely can also enhance compliance with the standards.

Next, please. Then why so many forms? The residential have about 120 plus forms, nonres have about 90. But the reality is that for any given project, you only need a subset of these forms.

For example, there are five MCH-20 duct leakage testing and about five MCH-20 refrigerant charge and verification forms. You know, they handle different situations that may exist in different buildings. But

for a given project, you'll probably need only one of them. You can ignore the other four.

And, also, many of the forms are developed specifically for newly constructed buildings, or for additions, or for alterations so, for your project, you only need one of these, not the rest of the buildings.

And if you're using performance path, which is the majority of compliance in the State, the performance path will provide, basically create the CF1R for you. It will update it into a HERS data registry automatically. And then that data in the registry can further populate the CF2Rs and 3Rs.

So, the amount of data entry into the system is greatly reduced by having the registries and the performance path as an option.

Next, please. Even for the prescriptive, you know, you can go up to, you know, a data registry and upload your form, your information into the registry and you'll create a CF1R, and you'll populate the 2Rs and 3Rs.

Is that correct, Mike?

MR. BACHAND: Yes, it is.

MR. SHIRAKH: Yeah. Can the number of compliance documents and the input be reduced? Absolutely, especially taking advantage of the

electronic documents and the HERS data registries.

The fact is that we have -- what we've done so far, we've created paper forms, which is traditionally been used, and we've transferred those into an electronic. What needs to be done is, basically think about an electronic universe, and think within that context what would the best, and most compact, and efficient thing to do to create documents that would meet those three criteria, compliance and enforcement activities, program evaluation and development, and data mining.

So, I think the forms we have does that, but they can be certainly more compact and more efficient, but it requires redesign of the forms.

The next, please. Can the compliance documents be further simplified? Yes, they can be, depending on what the requirements are.

There are some sections in the standards that are mostly just mandatory requirements and they do not require complicated calculations, but they do have a lot of, basically, specific requirements for specific applications.

Examples are sections 13 through 133, which is lighting controls, or section 130.5, which is the electrical power distribution system.

So one option, maybe, instead of repeating all the different requirements for these sections is basically have one checkbox and the responsible person will check that box. And by that, they agree that they're complying with all of the requirements of that section, without repeating it.

And the thought is, because this is electronic data that's going to be retained, the responsible person's license is on the line, then it will enhance the opportunity for better compliance.

Next, please. What are the benefits of electronic documents and data retention? Obviously, it reduces the amount of paper documents that are needed.

It can be used by the Energy Commission and others for program evaluation and development. It can autofill a lot of the data fields, using information from other documents, or the registries, greatly enhancing the need for manual data entry.

Ability to reduce the number of signatures required by the same responsible person. Instead of signing five different documents, or ten, you can do it once and apply it to all the documents.

It allows for data mining. It makes possible, through research, the kind of system that are in practice, that are installed in buildings.

Some examples here, for example, the percentage of 2-by-4 versus 2-by-6 framing for exterior walls. And some of these we've already used in the 2016 standards development.

Or, to verify duct leakage in the buildings. You know, it can be very simple and easy to go to the CF3Rs and see what kind of leakage people are measuring in buildings.

Or, the type of HVAC systems. Like, for instance, the mini-splits versus traditional. Looking to the future, it's also going to be possible, you know, as we're moving to ZNE, to add other building systems. For instance, how many homes are having PVs on the roof to meet the ZNE goals? You know, what are the sizes and capacity of those PV systems? What kind of inverters are they using? Are these mini inverters or centralized inverters? And then, can also some people can go back and check the performance of those systems, and the longevity, and other characteristics of those systems. So, it's going to be really convenient to have those into the registries or a repository.

And then, again, data mining can greatly replace or enhance existing RD&E projects.

Next, please. What are the benefits of electronic documents and registries? In mind, it's one

of the greatest benefit of having electronic data retention is that if somebody who maliciously claims compliance with the standards consistently, you know, they're at a greater risk of being exposed by having this data retained indefinitely.

Next, please. So, going paperless, the compliance, you know, the CDs, the compliance document, the electronic can eliminate nearly all the paper forms. This is actually a concept that I think was introduced by the gentleman sitting to my right here, Mike Bachand -- Charlie, I'm sorry. Mike is your father.

MR. BACHAND: Yes.

MR. SHIRAKH: So, you can help me actually present this. So, the idea is to have a compliance summary sheet. This is a new concept to replace the paper CDs generated. It's generated by the registry, one for each project. At least all the registered compliance documents associated with the project, including all the CF1Rs, 2Rs and 3Rs that are associated with that project and are on that registry.

And then the compliance summary could also, in the electronic version, could include hyperlinks to each of these forms that are on the registry. And the paper form could list all the URLs.

And then, probably the compliance summary would

be the only form that is submitted to a building department or left on the building, with the associated hyperlinks and the URLs. And then anyone, the enforcement agency or the homeowner, if they want to view and print the other forms, they can simply click on the hyperlink, view that form and print it and, you know, do whatever they want to do.

So, do you have anything to add to that, Mike? I mean, Charlie.

MR. BACHAND: I have a presentation that more or less focuses on just exactly that.

MR. SHIRAKH: So, this was probably a good segue for his presentation. But the idea here is that, you know, with this concept you don't need to bring a stack of forms to the building department anymore, you just give them one paper.

Next, please. So, along with the registries, there's always this idea of a document repository. And so what is it? It's currently we have several HERS provider registries. Some of them do newly constructed buildings, some of them do alterations, some of them do all of them.

So, the idea would be to have one centralized location where all this data will eventually reside. So, that's what we call the central document repository.

It has certain benefits, that I've listed a few of them here. Automatically receives and retains copy from each document listed by a registry. So, every time a document is uploaded into a registry, it's approved, it's finalized, you know, a copy of that will automatically get transferred into the central repository.

And by doing that, all these registered documents are centralized in one location, instead of four or five different places.

The documents will be retained in custody of the Energy Commission and, thus, are admissible as evidence for enforcement proceedings. Supports building energy efficiency research by a variety of stakeholders.

Data mining becomes a lot easier. Instead of doing data mining in four or five different registries, you do it in one central location.

It makes it much more convenient for us to comply with the Freedom of Information Act, or public information requests because then we have to go into one central repository, instead of many different registries.

And you can actually customize the software to do all kinds of things. And if you're just looking for a very specific piece of information, you know, you can

customize that. Again, how many windows in the State meet Energy Star requirements? And you can easily customize that. How many SEER 15 HVAC systems have been installed throughout the State? You can easily do that.

Or if you need to redact certain information, which cannot be publicly available or published, you can do that very easily through the central repository.

Next, please. The resources needed for the document repository. The software has already been pretty much developed and it's now complete. So, the only infrastructure we need is, basically, server space on the Natural Resources Agency's server.

The URL and storage space, as a server at the Natural Resources Data Center must be approved. And this is something they're doing for many of our activities, so this would be an additional task.

The IT technical contractor and administrator of the Natural Resources Agency must have some oversight over the central repository. And there would probably be some staff resources involved at the Energy Commission to oversee this document.

But, essentially, you know, it's an additional thing that the IT service should be doing at the Natural Resources.

Next, please. Nonresidential compliance

documents. So far, when we've talked about electronic registries, we've been talking exclusively about residential documents since, currently, there are no nonresidential registries approved or operational in the State. All the prescriptive forms for nonresidential is still a stack of papers.

However, all of the infrastructure and the knowledge that we've developed for residential forms is available or is applicable to the nonres form.

There are more nonres forms and sometimes they contain more calculation, especially the lighting forms. And, therefore, there are significant resource commitment to develop these.

The electronification, I don't know if that's an English word or I made it up, but Word didn't recognize it, but I think the intent is understood, of nonres, the compliance documents represents a greater opportunity for compacting the CDs and eliminating duplication.

If you go through our nonres forms, again I'm very familiar with the lighting forms, there's a lot of repetition in there, and there's a lot of data input. Again, because these were paper forms. They were not meant to be -- or they're not meant to be directly transformed into electronic forms.

So, a first step here may actually be

redesigning some of these forms before we start the transferring to electronic documents.

Again number five says most of the knowledge we'll gain from nonres forms, like the design layout, data dictionary, which is a standardized dictionary that has to be followed, and the report generator, all of that can be applicable to nonres CDs.

The main missing element is the XML schemas that we developed for the residential forms in 2013. So, that's what's missing for nonres, that's the biggest piece.

The other approach would be to have each registry develop their own XML schemas, similar to the 2008 standards. But the advantages and disadvantages, with the Commission, when we did what we did with 2013 standards, it was definitely a resource commitment. You know, we missed more than a few nights of sleep over that, as the deadlines were approaching.

But the big benefit was that it provided a standardized platform for all providers and an eventual repository, where everybody spoke the same language. We didn't speak French and English. And so, that greatly enhances the chance for data mining, and having a useful and, you know, limiting any confusion when that happens.

But we did have the 2008 approach where each

registry developed their own version of the XMLs.

And there's been some interest by private parties to develop nonres registries, but so far we haven't had any takers, yet.

Next, please. So, in summary, compliance documents are needed for part 6 because they're more complex than the rest of the Building Code. Compliance documents are used for compliance and, therefore, it's program evaluation and development.

Electronic media can, you know, greatly decrease the number of the forms, the data increase, and have very compact and efficient documents. They can eliminate the need for printing paper forms altogether, almost entirely. And they can supplement the traditional enforcement efforts and not replace them.

So, I think next. So, that's it and I'll be happy to answer any questions or move to the next.

COMMISSIONER MC ALLISTER: Thanks, Mazi. I did have one question. So, you know, when you were thinking about the migration towards electronics, obviously, I think that on its face that's a good thing, and simplification is good and sort of, you know, rooting our redundancy is good.

In terms of how, you know, say, a given project, in a given jurisdiction, what that looks like to the

building department and whether the building department can sort of interface with that, or whether it's really a hall pass to their existing processes, how do you see that? And, you know, are you kind of in contact with building departments to make sure that as we move forward on that, that that works with them?

MR. SHIRAKH: Yeah, we're definitely planning to work with building departments. They're a critical partner in developing this.

The vision that I've described would be for them to make their jobs easier. I think the problem that we have, currently, is over the past 30 years we rely on building departments to enforce the standards. But their role is very limited and they come in mostly at the end of the process, where they're doing a field inspection.

And so, at that time there's very limited opportunity to do the things right that should have been done nine months ago, when the building was being built.

So, part of this vision is to basically transfer that responsibility from the field inspector, who comes in at the very end, to the practitioners, the professionals that are supposed to be designing and installing the systems, as the building is being built.

For instance, you know, we're talking about

lighting. Somebody is doing the lighting power density calculations. They're specifying the type of fixtures that are going into each room and, you know, they must make sure that the installed power is equal or less than the allowed power. And then, they also have to install all of the controls that are needed.

So, it's really not fair to expect the building inspector, at the very end, to come back and try to correct all of that. It should really be done correctly from the get-go.

So part of this effort, by holding the responsible person and their licensed responsible for this is an effort to actually augment and help building departments to do the compliance.

So, we would like to work with the building departments and hear what they have to say. And so, this was an initial vision that we're putting forward, but we definitely want to work with them.

COMMISSIONER MC ALLISTER: Great. Okay, so let's see, we have a number -- like I said, we have a number of presenters and I think that's a great segue, actually, to the next presenter, who's from the City of West Sacramento.

And I think, depending on how things go time wise, we might sort of break in the middle, if there's a

natural break, possibly, where Walker was, to have a little Q and A on the residential side. But we'll kind of see how the timing goes on that.

So, stay tuned. I know people -- I would encourage everybody to just, you know, write your questions down so you remember them, and when the time comes we'll have that dialogue.

And I'll also give some advice about these pitchers here, with the water in them. You kind of need to open them up before you pour, or it's a big mess. And we know how precious water is these days so --

Okay, so Randy Goodwin.

MR. GOODWIN: Yes. Mazi, thank you. I really don't have anything in detail to say, beyond what you've said. You said it. And I've worked with you in the past on other things. I'll look forward to working with you on this.

You know, one of the programs that spun off of the good work that the Energy Commission does is the ACE Program. And that is a program that I think represents not only integration, but simplification. And it created, you know, not necessarily a single repository or even a group of repositories, but it really focused on the process.

And, Mazi, I don't contradict, in fact I agree

with everything that you've said.

What I hear from my colleagues and what I hear from my staff is what we've all heard many times, it's too complicated.

And we, as regulators, don't have the time to deal with the volume that is required and the complication, especially on the nonres side. On the residential side, and maybe that's just the nature of the business that I'm in, many of the inspectors and plans examiners, current plans examiners, came out of the residential side as contractors, construction professionals through the residential side of construction. And so, they get it. They understand it. They understand the importance of it.

When it comes to the nonres, as you said, Mazi, I mean there are numerous forms. And we, the collective we, as regulators, have done our best to instruct many of the industry professionals that come in, the mechanical contractors, and even some of the mechanical engineers to help. But, frankly, we don't understand the complications and we have limited time at the counter.

And that's where the ACE program, just as an idea, worked. West Sacramento was a beta site for the ACE program. And I've received nothing but positive

feedback on that from folks at the counter, from my permit staff, to the inspectors and the plans examiners.

And, Mazi, you put it well, too, that the code is -- you know, we're really dealing with a different approach between part 6 and most, if not all, of the rest of the code. That it's minimum standards for fire and life safety, there's accessibility. And as I think most of us know, we're at the 25th anniversary of the ADA, as of this last weekend.

And it comes down to time, that between accessibility and energy compliance, I know my plans examiners, and they're forthright, dedicated people, and my inspectors, and especially the plans examiners, they spend easily 50 percent of their time on energy compliance and accessibility.

Well, it's very, very important to them and very, very important, just period, for the fire and life safety portion to be reviewed thoroughly, and to catch any discrepancies.

And so, the energy provisions are just naturally competing with many, many other things. And again, in the regulatory environment, the profession, fire and life safety almost exclusively comes first. Accessibility has a constituency and a voice, and it's very important. It's civil rights law and that's

important stuff. And so, accessibility has received a lot of time and a lot of attention.

Well, the energy provisions are competing with all of that. So, the more we can simplify it, the more educated the professionals are that come to the counter, so we don't have to spend time educating them, the more compliance we'll get.

And, you know, back to my early comments about the ACE program, I saw, and we've all seen a significant uptick on the residential side with that program. And we've been able to, at the counter, run residential contractors, developers through that and they get their arms around it pretty quickly.

If we can do that on the nonres side, that would really help and I think focus, not so much on -- you've got a captured audience with the regulators and the building officials but -- and I do have to compliment the Energy Commission, again. The Commission is the most responsive. I'm President of Sac Valley Association of Building Officials. The Commission is there, as a State agency, every month during our meetings. You're available.

But it's just the complexity and the amount of documentation that just it can't be done, there's just not enough time right now for it to be completely

captured. So, things fall away. And it's not purposeful, it's not malicious, it's not a bunch of building officials who don't care, because they do. It's really trying to get it all accomplished. And it's a very difficult to impossible task with some projects, or collective projects.

And just, again, I'm repeating what all of us know. I'm coming out of the recession, building departments divisions were eliminated in some jurisdictions. I mean, completely eliminated. All jurisdictions were cut back. And we're trying to catch back up but, as we know, government responds slowly. And we're all busy. And there's a big lag between having enough people, which we'll never have, that's not how government works, we all wear a lot of hats, and actually being able to do what's given to us.

So, as a group we're committed to helping, to enforcing, to getting to zero net. We need your help.

COMMISSIONER MC ALLISTER: Thanks very much, Randy.

So, really, two things. What's the scale -- so, you know, I think I'm interested in whether the kind of constraints and priorities that you have, and the difficulties you have are uniformly felt in other jurisdictions across the State? I think those themes

are something we hear often. So, I want to dig into that a little bit and, hopefully, other presenters can, as well.

Is there a fundamental problem of resources that, you know, really is unsolvable, I guess? Or is there some balance that you can reach, where you're really getting the right kind of coverage. You know, maybe there will always be details that you can or can't get to, or they'll fall off. But I guess I'm trying to get a scale of the time and resource problem relative to the status quo, kind of. You know, how much would it be, double, triple, tenfold? You know, what would it be? And trying to see it within that regulatory context that you referred to.

Right, I mean, we shoot for the moon, obviously, but what's the sort of minimum requirement for some kind of balance where you feel like you're not just triaging all the time?

MR. GOODWIN: Well put. Well, I'm an optimist. I have colleagues that just say we'll never get there, you know, quite honestly. I think if -- that's why you started talking about the ACE program. If we simplify and we are able to have a central repository, there will be some problems electronically. There are always problems electronically, getting platforms to talk to

one another, integrating platforms. But a central repository.

and I have heard from my colleagues that if the Energy Commission takes more responsibility, not necessarily for the front end, but for the back end, and the repository, as I understand it, is that idea, that's you're partnering with the jurisdictions and that's helpful. That is very helpful.

I think at this point, to get greater compliance and greater efficiency is to just simplify and do not incorporate new documentation, or new any -- new regulations at this point.

And if we simplify, refine, we'll get better performance, we'll get better compliance, and I think you'll have a constituency in not only the regulators, but then, you know, the professionals out there, the installers, we'll all work together to get there.

Right now, we're still scrambling. And so, things aren't getting done. And if we can roll back a little bit and simplify, and work together to simplify for greater compliance, we'll get there.

COMMISSIONER MC ALLISTER: Thanks. So, maybe either you or Mazi can describe the ACE program. Again, what it is? I'm not sure everybody knows exactly what it is.

MR. GOODWIN: Well, Mazi, I'll let you get into the detail. Again, I'm kind of the backstop. And when I was approached to implement the ACE program, I mean the fundamentals that these are intelligent forms, that you can check boxes and it sends you to where you need to go. And they're user friendly in they ask fairly simple, technical questions, but in a nontechnical way.

So, a user is walked through the process and then directed to the forms or the protocol that they need to go to. And on the residential side that works well. They haven't really developed nonres, because it's more complicated. But on the residential side, it's worked well.

And there were some kinks and still are kinks. But it's, again, a program that with a little bit of training it's understandable. And just on the nonres, I keep -- I'm knocking it a little bit. But on the nonres side, I've had side go to nonres training and come back more confused than when they -- you know, before.

And they've said, and it's not just my staff, I've had colleagues say that they ask questions in nonres training and the trainer doesn't know how to answer the question. So, there's just a lot of confusion out there.

And the ACE program, circling back, simplifies

the res program, and already understandable program even more. And I encourage us to go that direction with the nonres, as well.

MR. SHIRAKH: I agree with everything Randy said. In fact, on what he's saying is the reason why, you know, we're proposing a division. You know, simplification is what, I think, we're after, you know, all of us, in designing very compact and efficient forms for an electronic universe, you know, that's definitely a goal we have.

And also, again, not holding the responsible practitioners, professionals responsible throughout the whole design and construction process. That is something we need to be pursuing.

As far as the ACE, I'm not very familiar with it, but from your description it sounds a lot like TurboTax where, you know, you're doing your --

MR. GOODWIN: That's a perfect analogy because that's what they use. That was their approach.

MR. SHIRAKH: And there's probably a gazillion IRS forms, which we're not familiar with. But when you use that software, you don't need to know the number of forms. You just answer simple questions and it will generate the forms that you need.

To an extent, our CBEC Res actually is that.

You know, it kind of comes close to it. Because when you do the CBEC Res, it's not asking you about any specific forms or data fields. You have to model the building and then it will generate the necessary forms. And then, once it goes to the registry it will populate the CF2Rs and 3Rs with some of the data that was originally inputted into CBEC Res.

So, I think that is the concept. And, you know, we've talked about it in a great deal. It is a resource commitment on our part but, you know, that's something we can definitely pursue.

COMMISSIONER MC ALLISTER: Okay, great. So, I think we ought to move on to the next speaker just to keep things rolling here. But, you know, hopefully, you're all kind of noting down the issues you want to dig in more later on.

So, Bob Barks, thanks for being here.

MR. BARKS: Good afternoon. I approached this from the compliance perspective. I'm just going to kind of give some general thoughts, if we could have the next slide, please.

A little bit about me. My name's Bob Barks. I am from Madera, California. I am a California certified plans examiner. That's what I do every day. I look at plans, I look at the documents that are turned in.

I am the current Chair of the Western HVAC Performance Alliance Compliance Committee. I have chaired approximately 12 meetings in the last year and every one of them had to do with compliance.

COMMISSIONER MC ALLISTER: And I think I was at one of those along the way, yeah, at least one.

MR. BARKS: I am also on the CALBO Energy Advisory Committee.

The next slide, please. I specifically addressed these questions and I'm sure that everybody's seen them, they were on the announcement. So, we can just skip right on to the next one.

I need to start with what is compliance? That's probably the single largest question we have to answer. There's a lot of misunderstanding out there.

If we could have the next slide, please. Over the past year, in the meetings that I've chaired, and over seven years of working on a building counter, and a little over another year working for a private consultant doing plan review for jurisdictions up and down the State, basically, there is misunderstanding of what is compliance out there. Some people think it's the documents. Some people think that when they get the jurisdiction to sign off, they're in compliance.

Some people just say it's the law. And most

people say it's something someone else does. That's probably the biggest issue that I see having to do with building compliance in general, and energy compliance even more so, in the specific.

What I see on a regular basis is a situation where a developer is building a spec building and he has the mechanical contractor do the mechanical documents, and the electrical contractor does the electrical documents. And somebody, somewhere does something about the envelope. But it's not coordinated. And this is something that's already on the desk, being reviewed for a building permit.

You know, as Mazi and Randy has said before, we need to get this started nine months before it gets to the building desk. You know, building departments don't have time to be teaching people how to comply with the energy codes.

Mazi is completely correct that, you know, it needs to be introduced in the early stages. But we need to get the people coordinated so that they are talking together. And that's something that just isn't happening enough.

I think, among the people in this room, I could say we're in the top tier. We have an interest in this subject and we do our own homework, and we study, and we

learn everything we can, and we try to be professional and apply it as best as we can.

But that doesn't always get down to the fellow putting it in, in the field, or even to the 80-year-old grandmother that needs an air conditioner replaced and she has no idea what compliance is. She has no idea what energy code is.

So, we need to do a better job of educating and we need to get people taking some responsibility and not saying it's something somebody else does.

COMMISSIONER MC ALLISTER: Unpacking that just a tiny bit. On the existing -- so, I get the new construction where it's, you know, a lot of gears have to mesh and there's a longer time frame.

I guess on existing buildings, you know, that grandmother, who are the touch points that code kind of really -- you know, where are those leverage points where code really kind of needs to be front and center? I mean, I imagine the contractor's one of them.

MR. BARKS: It's throughout the system. We need to do a better job of educating. If you're working on a major project, with large, professional organizations, they know what to do. You know, they're in contact with people here and they know what to do. Whether it's residential, commercial or a retrofit to an existing

building, the large, professional operators know what to do.

It's the other 95 percent of the population out there, you know, contractors, architects, engineers, the laborers, you know, and the general public that don't really have a good understanding of this.

So, we need to get everybody involved. You know, there needs to be some push from the bottom, where people know that there is energy code and know that there are some expectations of certain levels of performance, and they need to push the contractors, and the architects, and the engineers to provide it to them.

And we need to work it from the other direction, as well, to where the professionals are incorporating it as a holistic package. It's not something that somebody else does. You know, the mechanical person isn't talking to the electrical person, who isn't talking to the person doing the envelope.

So, you know, spent a little more time on this than I intended to. But it needs to not be something someone else does. You know, it needs to be something that is more specific.

If we could have the next slide, please. So, what should compliance be? It should be simple. You know, we've heard that today.

It should be specific. It should be measurable and it should be scalable. By specific, if we're talking about fenestration -- well, we have standards for fenestration. You know, there's a coefficient, there's U-factors, there's VT. We have a standard for that. Do we need 50 pages to say what that is? You know, it can be done on a single line, on a single page. So, you know, specific. This is what we're looking for.

It needs to be measurable. Sometimes the documents we see, you know, where is the measure in that? How are we actually measuring that in the field? How are we applying it and making it more than a concept or a goal? How are we making it measurable that can be done in the field?

And it needs to be scalable. It could be as simple as one page for some items and, in other cases, it might be 500 pages. But let's make it scalable to the project and somehow get it down to those simple basics that the Energy Commission needs in order to understand what's going on out there in the world, so the building officials know that they are looking at the right items, and that the people building it and designing it know what to plan for.

If we can move on to the next slide, please. Okay, Mazi's done a very good job of covering all of

this, so my comments are really just a summary of what he's already said.

You know, the documents provide a measurable standard for the energy efficiency of a project. You know, that is basically what they are there for.

As he said, you know, it shows that the documents -- the documents show that the project was done to that standard and was somehow measured against that standard. It's a data mining, it's a database, it's a place where you can look at this information over time and see improvement. You can look at this information and see where improvements might be made. So, it's a valuable resource for everybody. Not just the Energy Commission, but everybody in the State to know that there's a place where you can get information to help answer some of these questions. So, yes, the documentation is very important.

It provides the property owner some measure of, you know, what he has purchased. When they do a project, did they get what they paid for?

How can we improve it? Simplify. Get it down to the absolute minimum.

Educate. We need to get the information and the goals out there to the general public, as well as the professionals that are doing this work, so that

everybody begins to have some understanding of what we're trying to accomplish.

And we need automation tools. We need -- you know, that has been covered as well, but I think we can do even more. We need to make this as simple as possible.

The next slide, please. Boy, I'm having trouble seeing that far. What can we do to reduce the transactional costs? Reduce the confusion. You know, a perfect example is this current code. You know, it has been trying. There has been a lot of confusion. I spend a lot of time just trying to explain to people what documents are and how they have to do with their project, and why they need to turn them into the building departments that we are working for.

There's a lot of confusion and we need to try and eliminate that. Education would help with that.

I'm going to have to pull out my -- I can't see that far.

COMMISSIONER MC ALLISTER: You can go behind the dais and actually look at the screen back there.

MR. BARKS: I've got copies here that I can look through.

COMMISSIONER MC ALLISTER: Oh, great.

MR. BARKS: Okay, part of reducing the confusion

is, again, be specific, make it measurable. Make it something that's scalable and that people can understand.

I find professionals that they have a lot of questions about what these documents are for? How are they being used? Why do they have to do them? We need to educate them better. Yeah, the more we can do on that, the better.

We need to start the training on the changes that may come from the Energy Commission, probably at the same time that we adopt the code. You know, if we adopt it in July, we should start the training then. The training should be ready to go then, so that by the time people actually have to use it, they have six months of training already.

Because now, they are going to be prepared to start providing that information that is being asked for and required.

Simplification, get it down to the absolute minimum. As I said, if you can get it down to a single page, a summary, that's best. Because as we've heard, the people inspecting these in the field don't have a lot of time to spend on it. A lot of the construction workers, working on it, don't have a lot of time to spend on trying to make sure that they have the right

document or that it is filled out in the proper form. If we can get it down to the bare minimum, that would be the greatest assistance to those people out in the field that are trying to comply with the code, and are required to comply with the code.

Automation tools, you've got some great ones. The registry is terrific. Let's use it for everything we can.

Do we need paper documents? Other than maybe a one-page summary that goes to a building department, or is supposed to, can that registry be used as the resource that everybody goes to, to see the volume of information that is associated with that project, without having to leaf through a lot of papers that get lost on jobs, and get smudged with coffee. Simple, but one source that anybody can get to.

Multiple actors should be able to work on the same document. You know, why do we have a mechanical contractor doing the mechanical documents and the lighting contractor doing another set of documents, and they are not merged together in one place? Why can't they just do it all on one website, or something, where they can go in and the mechanical contractor can do his part, and the electrical contractor can do his part, the architect can go in and do his part? And somehow link

those documents so that they follow the project all the way to completion. So that when you're designing the project, you have one group of people working on it, and they do their part. But then, as it goes into construction, the mechanical contractor could somehow have his crew chief or his mechanic log into the same site and put in his installation information, without having to worry about a bunch of paper.

And while I'm on that subject, if we can make it as simple as possible. You can go online with your smart phone and order a bed from Amazon, but we can't go online and fill in the checkbox that says that the water heater was installed properly. That would go a long ways to improving compliance by making it easier for people.

And it needs to be multiple platform. Can you do it on your i-Phone? Can you do it on your i-Pad? Can you do it on your laptop? Those are things that would be very valuable to the people that have to create the project, build the project and comply with the requirements is if they have multiple platform availability to do that.

The next slide, please. How can we assess compliance? Mazi's already talked about mining the data in the registries. That's a very valuable database.

But are there other databases out there that could be mined and used over time? Power usage by city, or county, or by region? Gas usage, you know, by city, county and region.

Are there other large, publicly available measures of energy usage that might not necessarily be energy usage? Economic data, something that would be representative of what is going on within a region or within an area that could be somehow mined and measured, and used to determine what energy usage is, and especially if it could be done over long periods of time.

If you could go back 5, 10 years and get a trend line on this, so that you can see what has been happening for the last 10 years, and then look at what happens as you introduce codes. Does it change the curve?

If you introduce a measure, does it change what happens in a specific region. And then, cross-compare that to the information you might get out of the registries so that you start getting more granular information on maybe specific equipment or specific types of projects.

So, mine large databases and use that to begin creating some decision models as to what compliance is

and where it should go.

COMMISSIONER MC ALLISTER: Yeah, I'm going to ask you to speed up just a little bit, Bob, because I think we're at risk of falling behind.

MR. BARKS: I'm very close to the end here.

COMMISSIONER MC ALLISTER: Great. Thanks a lot. These are all great points though, by the way.

MR. BARKIS: We do need to provide the jurisdictions with tools and funding to monitor compliance on the permitting side. You know, we heard earlier they don't have the time, and a lot of times they don't have the money. That needs to be provided. I don't expect the Energy Commission to do that, but that needs to enter the conversation.

We need to encourage, somehow, those companies dealing with construction to hire people that are energy specialists, people that are informed on what the code requires. You know, all of the resource that you've done on the code, and the ideas and the concepts that you've come up with to try and save energy, and how to incorporate it into the building industry. We need to get more people into companies that can carry that standard because they are few and far between, in many cases.

Engineer the complexity out of compliance.

Again, that's more of the same. Let's figure out how to think ahead of the people that are going to have to incorporate these compliance measures and documents into a project. And let's try to make it invisible to them as much as possible, so that they can do it, but it's not a burden on them.

Linking the ownership and the asset value of buildings to the efficiency is really important because a lot of times it is not linked. People do not see the value of improving the energy efficiency. It just simply comes down to a first cost situation.

So that, again, could be an educational element that could be certainly helped by the Energy Commission.

And my last slide is, you know, keep it simple. You know, don't give people excused not to do it.

COMMISSIONER MC ALLISTER: Great, thanks very much. And I appreciate that. I mean, I guess I see a lot of different constraints that in some cases, many cases perhaps, but different ways. You know, you want a robust database that you can do research on, but you also want to make it the bare minimum in terms of data collection. So, there's some tradeoff there, potentially.

But some of your final points, you know, I think are broader issues that this discussion we're having

today fits into, but that we're also think about for -- certainly, for AB 758, but more broadly even just on the energy policy landscape in general, in the State, and maybe even across agencies in terms of building the kind of datasets that allow us to look longitudinally across the building stock. So, I liked those points.

In the issue of time, I'm going to see if we can move on here. Is Cynthia --

MS. BAILEY: She's on WebEx.

COMMISSIONER MC ALLISTER: Oh, she's on WebEx. Okay, great. Great, perfect. So, we'll move on to Cynthia Moore. Thanks for being with us.

MS. MOORE: Hello, this is Cynthia Moore from the Contractor's Board and I do not have a presentation today.

COMMISSIONER MC ALLISTER: Did you want to say any comments or just participate in the Q&A or --

MS. MOORE: Yeah, I can just participate in the Q&A.

COMMISSIONER MC ALLISTER: I guess, you know, maybe if I can put you on the spot just for a second?

MS. MOORE: Sure.

COMMISSIONER MC ALLISTER: Not for long. Yeah, have you had a chance to tune into the presentation so far?

MS. MOORE: I have.

COMMISSIONER MC ALLISTER: So, from the perspective of, you know, the agency that sort of oversees and maintains the licenses for the contractors that are operating in the existing building space, you know, what's your perspective on sort of where, I don't know, the pain points are in terms of sort of marketplace behavior, I guess? And where the -- just where the weaknesses are in the system in terms of getting compliance and making sure we know that compliance is actually happening?

MS. MOORE: We are just simply not getting compliance. We're getting complaint after complaint, where permits are just not being pulled. And we get so many different reasons for it.

But as soon as we get involved, magically, they're able to work all of this out and get permits, and get them finaled.

COMMISSIONER MC ALLISTER: And so, what's the -- could you describe sort of a typical scenario, maybe on a single-family residential building and then maybe, you know, a medium-commercial upgrade, or something, respectively?

MS. MOORE: Typically, we see a lot of HVAC, of course. So, typically, on a residential we'll have a

complaint come in because of the workmanship issue. We'll get into the workmanship issue and try to resolve that, but there's never been a permit pulled and we have zero compliance for that.

And we mention that to the contractor, let them know that it's going to have to go to the field for an action against his license and boom, bang, bam there's a permit, and it's done, and the HERS is done, and they've got a final.

Still got to go to the field because you're still going to get disciplined for it. But, you know, I hear over and over, because I'm in lots of different meetings and lots of different meetings about this same issue, but the contractors that we're seeing can get these permits and they can get it done when they're put to the task.

And as far as nonresidential, we don't get a whole lot of nonresidential complaints. And I would say the majority of those are -- there's no so many that have permit issues.

COMMISSIONER MC ALLISTER: So, this is more sort of a consumer issue in your sort of daily experience?

MS. MOORE: What do you mean by consumer issue?

COMMISSIONER MC ALLISTER: Well, just you hear from sort of consumers that feel like their job wasn't

up to snuff, and start an action against a contractor, say?

MS. MOORE: Yes. We also get complaints from different industry. We get competitors, we get different cities and counties that are complaining as well. The same thing, no permit was pulled or they're refusing to final it. And once we get involved, all of the sudden it's not a problem and they can get it done.

COMMISSIONER MC ALLISTER: Do you get sort of the heads up from local jurisdictions who are sort of, you know, driving the streets in their towns and seeing -- sort of double checking. You know, they see a construction project and ask if it has a permit and, lo and behold, they're talking to you?

MS. MOORE: We get some, but I'd like to see a whole lot more.

COMMISSIONER MC ALLISTER: Let's see, and if you could characterize sort of the scale of this problem? I mean, you basically say, you know, we have zero compliance, essentially, with HVAC retrofits. I mean, I know it's not zero, but it's not great, right, so --

MS. MOORE: Yeah, not zero compliance, zero --

COMMISSIONER MC ALLISTER: Oh, great, okay.

MS. MOORE: Yeah, and that's something everyone's been trying to nail down. Is it 10 percent,

is it 20 percent? There's no way to know because you don't know how many jobs are out there unpermitted.

COMMISSIONER MC ALLISTER: Yeah.

MS. MOORE: And there's no way to capture that.

COMMISSIONER MC ALLISTER: Yeah, so that's a conversation that I think we need to have. I'm not sure if it's today, but it might be, in terms of how we actually create the database or create the information that allows us to pin down, you know, where permits are and are not being pulled.

I guess, could you maybe characterize this as what percentage or what portion of the problem do you think you actually hear about? Are you just sticking fingers in the dam or do you feel like you've got, you know, sort of a significant percentage of noncompliance you hear about?

MS. MOORE: Well, we get a lot of noncompliance. But as far as how much more is out there and if we're sticking our finger in the dam, there's really no way to know. You know, there's been different groups, with lots of different ideas. And I'm not going to go there, but there's lots of different ideas on how to find these out. So, we just really don't know. We don't know how much is out there, but there's a lot of it.

COMMISSIONER MC ALLISTER: And my final

question, I really appreciate your letting me grill you with the 20 questions.

MS. MOORE: Sure.

COMMISSIONER MC ALLISTER: In terms of your database of contractors, you know, how -- at any given moment sort of what -- that contractor, say, that you have to do disciplinary action on, you know, typically how long -- do you have to put them on suspension or put a note, you know, on the database, so that when people do a search they see that that contractor has issues? And, you know, a contractor that goes into that status, how long do they typically last with sort of a disciplinary status on the database that's public?

MS. MOORE: When we do a citation, which is what you're pretty much talking about --

COMMISSIONER MC ALLISTER: Yeah, yeah.

MS. MOORE: -- It's at least five years of disclosure. And it's a minimum of five years. If they have another citation or disciplinary action within that five years, the disclosure will continue to the public, on our website.

COMMISSIONER MC ALLISTER: So that from a programmatic perspective -- I guess, I know you did those or the CSI program, the Solar Initiative really, I think, relied on that database to see, to make sure that

a contractor was in good stead with CSLB in order to continue to participate in the program.

MS. MOORE: Uh-hum.

COMMISSIONER MC ALLISTER: And I guess, you know, I would assume that you could serve the same role on -- you know, you actually do kind of serve the same role for the marketplace on existing building retrofits.

MS. MOORE: Absolutely. And it's instant data. When we enter in a pending citation, or a pending revocation, or a pending criminal action it's instant, it goes right to the website. So, it's not a week backlog or a 48-hour backlog. It goes right into the website.

COMMISSIONER MC ALLISTER: And then, finally, and then we'll move on to the next speaker, I guess I wanted to put -- if you could put this particular set of issues on energy compliance in context with all of the other stuff that the CSLB does, you know, I imagine this is -- you know, it's on your radar and you do quite a bit. But where does this sort of all in the pecking order of priorities?

MS. MOORE: Well, our first priority is consumer protection, so that's the first thing that we're dealing with. But as we're dealing with every single one of these consumer issues we're looking at this, through

permitting. Because we don't really have the jurisdiction that the building departments do to enforce the code. But we can make sure that they're getting these permits and if they're not, we discipline them.

COMMISSIONER MC ALLISTER: Okay, great.

MS. MOORE: And every case we get, we're looking for that, unless it's an advertisement complaint, something like that.

COMMISSIONER MC ALLISTER: And it sounds like you --

MS. MOORE: But when any work's done, we do --

COMMISSIONER MC ALLISTER: It sounds like you sort of immediately bring in the local jurisdiction, if they aren't the one that called you in the first place?

MS. MOORE: Yes. If we get a case, and we look at the work, and it looks like it might need a permit, because we don't always know, we'll call the local jurisdiction, find out if this work required a permit. And if so, was it pulled? And we'll take action after that.

COMMISSIONER MC ALLISTER: Okay, great. Okay, so, I think I've gotten my immediate questions answered, so thank you very much.

MS. MOORE: Sure.

COMMISSIONER MC ALLISTER: And look forward to

having you on the Q&A and feel free to chime in at that point.

MS. MOORE: Okay, will do.

COMMISSIONER MC ALLISTER: Okay, thank you for being here.

MS. MOORE: Sure.

COMMISSIONER MC ALLISTER: Let's see, so, finally is Wes Sullens, from StopWaste. Great.

MR. SULLENS: Okay, thanks. I have a couple of animations, so I don't want to bother you with clicking through that.

So, I'm Wes Sullens. I work at StopWaste. Here's a little thing about our agency. We're a local government agency in Alameda County and work on -- I particularly work on energy and green building policy areas.

So, I'm coming kind of wearing that hat, as well as the hat of the next slide, which is BayREN. I'm working on the codes and standards program of BayREN, which is a public agency, energy-efficiency program made up of the nine counties in the Bay Area.

And we have programs for single-family retrofit, multi-family codes and standards, and financing.

And I guess the difference with BayREN, than some other programs, is that we are of the local

government, doing programs on behalf of local government.

And there's much more on that program, but I wanted to highlight one of the areas we're working on, which was getting right at this, the compliance question. And we issued a report, back in April, that's called *The Permit Resource Opportunity Program*.

This was an investigation of 15 building departments in the Bay Area. They were self-selecting. They let us come in and basically shadow them through the process and see how enforcement was happening. What was the process? What was the intake process, the field review, the plans inspection, all those things? And come up with some ideas on best practices, but also challenges that are happening.

And we've got some results and some of these are pretty startling, but maybe not, so to a lot of folks in this room.

Based on the metric we used, we saw that only 16 percent of projects were error free throughout the whole process. And most of those, a big, significant drop in error rates happened from plan check. So, from original submittals to plan check we saw the greatest drop off in errors.

And that doesn't necessarily mean the projects

were out of compliance. But we did measure and see that about 51 percent of those projects performed worse than expected as a result.

Now, there's a lot more in this study. There are, again, some positives. And it was not statistically significant, but these are just kind of showing the magnitudes of some of the issues that we uncovered.

Some of the major themes is that there were incomplete, inaccurate, and conflicting information on the plans, and then on the compliance documents. That leads to challenges in the field.

There was also lots of issues where the installed measures were different than what was actually specified at the permit stage. And then, you'd find cases where the documentation was missing in the field.

So, in kind of thinking this through and also thinking, Commissioner, about your idea of unpacking some of these problems, I spent some time looking at what could be considered the roots of this. And this is just my own kind of thing, it's not BayREN sanctioned.

But I found this slide -- oops, where is it? Let me go back. It seems to be out of order. But, I'll start here anyway.

There was a study that was done by Jen

Rasmussen, in 1997, and it was called *The Drift Toward Danger*. And he talked about these boundaries of influence of acceptable behavior.

So, the first boundary, if I can use my mouse here, is the cost boundary. And the idea here is that at some point a company or an organization will just simply go out of business if they cannot afford to serve their duties, if they cannot have enough finances to do the work they're supposed to do.

There's another boundary at the skills and resources side, which is even if you have enough funds do you have the right people, the right skills, the right assets in place to do the work that you're supposed to?

And these two forces tend to compete with each other and push towards the safety or boundary risk of acceptable safety.

And this is where building officials, of course, are always towing this line of, as we heard earlier, energy code compared to things like health, fire, life, safety.

And so, it's an interesting way to look at this, at least I thought. And some of the things here that are raised are we've got 12 chapters of the building code that are updated every few years. We've got the

energy code, itself, which is complicated. Then we have things like green codes that come online. And legislative actions that also happen.

Like a recent one was the water reg, so now the building officials are in charge of outdoor water. That's a new skill set. So, even if we have enough money to recover those responsibilities, do we have the right people in the right seats to verify and enforce those things?

And another way to kind of triangulate this or to illustrate it, and I think Randy said all this, I'm just doing it in graphics, is to look at the total construction spending for the U.S. in the last 10 or 12 years. And we saw that there was this boom of construction and then followed, quickly, by the economic downturn, the recession. And we've had a pretty steady, but slow, recovery since then.

And that's all good and fine, but when you look through the lens of a local government and you see these code changes happening in these buckets, well, here you see one that happened right at the peak of the market. And that meant governments were staffing up for that. And all of the sudden, by the next one, this was a pretty steep decline and there were some significant cuts. Like, as was mentioned, some building departments

were eliminated altogether, or outsourced completely.

And then at the bottom here, in 2011, that's when the green building code comes in, which is a whole new chapter, a whole new section to take a look at.

And then we had a six-month delay with the energy code as things were starting to get back out.

But, basically, if this time curve is of the construction spending, I'd say the local governments' ability to react to those are a year or two behind, at best, just at the speed of the way things are going.

And that's not true for all, but that's true for kind of a lot of what at least I've seen.

So, enough about the kind of negatives or the reasons. So, competing priorities require some creative solutions. And that's something that we're trying to work with both at StopWaste, locally, and at BayREN with our codes and standards program.

So as you've heard, we need some innovative ways to measure and assess compliance. There's one jurisdiction that's smart phone based. There's at least one. Where you take photos of stuff and send that to your jurisdiction. That's a way to prove compliance.

Electronic, online types of inspection tools that help prioritize things that are the most important on the spot, rather than looking at various spot checks.

We've even looked at ideas like self-certifying through qualified contractors. And not something that a lot of building officials, at least when we looked at, were enthusiastic about. But that was something to maybe get around some of the HVAC issues.

There's also new models to address the resource constraints. So, this is something we're doing in BayREN, and I'll have another slide on it, about this regional plan check center.

But how can we find solutions that augment resources or that are funded outside of, say, energy efficiency dollars, or things that can help build upon those trades that are already on site.

So, if you've got a HERS inspector out there, maybe that's also a good reason to get something, a third-party, to inspect your outdoor landscapes, now, and maybe some of the minimum green building standards. Because those are all things that have to be done by somebody, and there's places like Green Point Rated, and other trained raters that are ready and able to do that.

And in terms of resources for the local governments, we can have enhanced training. So, not just having training, but tailoring it to the department, going to the department and delivering those trainings.

And then, as we've had actually with Brian, and others, we take those trainings to those jurisdictions and actually get projects that have submitted to that city, and train exactly on what to look for in those cases.

Because it doesn't help if you're a jurisdiction that deals mostly with single family, to have a big, long training on multi-family and nonres. So, really having that type of permits that are pulled most and training to those.

And then streamlining, something we've talked a lot about, electronic, TurboTax. Outcome-based codes is another one that's got some interest. And then zero net energy, and how can you prove that for outcome-based codes? These are all thing we're interested in looking at.

But then, I'll include with this slide, which is the Regional Plan Check Program, which is -- it says concept, but actually in practice now, we just started it. This is taking place in Contra Costa County. They are a local government agency that actually oversees and does plan check for several of their smaller cities, as well as the unincorporated area.

So, they already have this up and running and we're basically, with the BayREN program, adding in a

plan check stage review of the energy plans. And we're providing experts that come to that regional center and train the plans examiners, as well as help report on compliance improvement metrics that we find, to try to track and get some data on.

If we found an error and it was corrected, what was the result of that?

Another piece of this is to conduct stakeholder engagement. So, once we have this up and running, we're going to try to find other interested entities, whether it's other cities, or other counties, and see if there's a way to expand the program in the next coming years.

And the final part of this program is we're going to issue an RFP. We have a little bit of funds left to do some enhanced compliance activities. And it's kind of casting a wide net as to what are some of these things. Online permitting, plug-in, tablet, i-Pad-based inspection things, and then doing a feasibility study for expanding online permit service.

So, these are some of the ideas we have, that we're working on to enhance compliance. That's all I've got today.

COMMISSIONER MC ALLISTER: Great, thanks. Thanks very much, Wes, really appreciate all the work you guys are doing.

Could you maybe describe outcome-based codes a little bit? So, I'm not sure everybody knows what those are and maybe it would be good to get a little description of that.

MR. SULLENS: I'm not sure I know what they are. The idea that -- well, I guess there's a couple camps. There's the outcome-based codes as a way to simplify compliance, and then there's kind of outcome-based codes as a way to show what we call reach codes, or going above and beyond minimum energy standards.

But the idea being, instead of proving that the project has met all the prescriptive requirements, or even performance requirements in the simulation, actually showing that, once up and running, the building is actually performing as intended. That's, I think, the purest form of an outcome-based code.

COMMISSIONER MC ALLISTER: Is it another way to say performance-based code? Or, I guess you're trying to avoid the word performance?

MR. SULLENS: Yeah, it's a loaded word.

COMMISSIONER MC ALLISTER: Okay, great. Yeah, maybe the Q&A staff can chime in on sort of whether we've thought about that at all. I'm not sure we have. But it would be a big change and trying to start out what that really would mean.

MR. SULLENS: Yeah.

COMMISSIONER MC ALLISTER: And as a way to figure out whether we actually want to go there or could go there.

Okay, well, thanks a lot, appreciate it.

I guess I wanted to see if Matthew Hargrove is here? I've not seen him today. So, and is he not on WebEx, we're pretty sure about that?

Okay, so I think I'm going to propose to -- hopefully, we're trying to get in touch with him to see if he's going to be here.

But lacking his presence, I think we move on to Charlie. And let's see, Mr. Selby, are you mostly residential or commercial?

MR. SELBY: Residential and commercial.

COMMISSIONER MC ALLISTER: Okay, both. All right, terrific.

And, Mr. Langston, you're residential/commercial?

MR. LANGSTON: Strictly commercial.

COMMISSIONER MC ALLISTER: Strictly commercial. Okay, great. So, maybe we can group you and Matt together, if and when he shows up, sort of have the commercial in one place.

And then, we maybe pull Jesse forward to group

with the residential folks. Just doing a little shuffling here to try to make things more cogent.

So, Charlie. Great, thanks a lot.

MR. BACHAND: Hi, I'm Charlie Bachand, Vice-President of CalCERTS, a HERS provider in California.

So, let's go ahead to the next slide, please. Just a brief overview slide. We've already gone over this quite a bit.

The core questions that we were addressing were why are compliance documents needed and how can we simplify or improve the process?

So, let's go to the next slide, please. The problem statement, compliance needs improvement, and the compliance documents need improvement, and documentation requirements add costs to ratings. These are all things that we all agree with, to a large extent, and have already been covered. So, I'll move on to sort of the core of my presentation.

One more slide, please. Why are compliance documents required? Mazi covered this in much better detail than I could. I broke it down into compliance, accountability and data, all of which we have discussed already.

I would also like to mention, though, by having compliance, by having accountability, by having data

that is how we achieve consumer protection, homeowner protection. Lacking accountability and lacking compliance, we know that homeowners are not only unprotected, but are actively being underserved and having homes that are not only not energy efficient enough by today's standards, but are grossly below that because installations were not performed correctly or according to the rules of Title 24.

The next slide, please. The real problem is not why do we need compliance documents. I think that everyone in this room knows why we need them and what the benefits are.

The real problem is that it's so complicated and so confusing that many people would simply push back on doing it. Even with the thorough grounding in Title 24, part 6, stakeholders, such as building departments, can find the documentation flow to be confusing, at best. Well-educated energy consultants, or architects, builders who have been in the industry for a long time still find the documentation flow confusing.

There is a large number of forms. Currently, there really are too many forms that building officials are expected to review.

Just last week I had a building official, from a jurisdiction I won't name, e-mail me a very angry

message, saying how can you possibly expect there to be energy efficiency in California when you have to kill so many trees just to get the forms done, to drop them on somebody else's desk so that he can then throw away all of those forms that he doesn't need. And we get that kind of regularly from building departments, and from contractors, and from everyone.

Compliance documentation in this process can be improved, though.

The next slide, please. There already is an existing solution, maybe a partial solution you might call it, and that's called the project status report. This is a link to the CalCERTS registry. And this page -- the project status report, the purpose of the project status report is for building department officials to be able to log into their registry, using a registration that they already have from a CF1R, and at a glance be able to see whether or not the project has truly met all of the HERS requirements.

So, this screen shot is a bit small. This page actually extends quite a bit longer. But you can see the details of this page right here, address, permit number, information. But most importantly, as we go down towards the bottom, we see, ah, there was an additional CF1R form required and it was registered.

There's the registration number, if you're interested. The light is green. That means that that form has been completed, signed off, paid for, it's ready for review.

We've got the 2R information, the same exact thing. Every single document that's in the registry and the registry, by the way, knows what is required, as Mazi said earlier, because of the extensive schemas that were developed for the 2013 forms. The 1R informs the 2R, the 2R informs the 3Rs. So, we know which forms are required.

And here we see the MECHA-1 and the ENV-01 for contractors. Those have evidently filled out, the lights are green, good to go.

In principle, and I didn't have enough space on this page to show all the 3Rs, as well. But in principle, the building department officials should be able to log into this page and just at a glance, if it's all green, it's ready to go. If there's any red lights, there's a problem.

If the building department officials want to review an actual PDF, they can do so. Note the arrow. If they want to see individual forms, to see the actual test data for whatever reason, they can download those as well.

So, in a nutshell, this is meant to solve a lot

of the problems that people are reporting already. Particularly, for building department officials who have so many stacks of paper that they need to go through.

Now, this option has been available since late July and we've been tracking use of project status report in the registry. And, unfortunately, it's been a little under-whelming. We suspect that there are still very many building departments that are unaware of this, or are uncertain about how and when to use it, are uncertain about whether or not it's simply a service that we, as HERS providers are offering, of it's truly an Energy Commission approved page. Which in fact it is. There were extensive rules written about this and joint appendices in the 2013 code.

And when we do have building departments logging in and using this page, sometimes they log in once or twice, and then don't return.

It's one of my great hopes that by showing up today and discussion this issue, we'll hear from a lot more building departments in the near future. Because I genuinely feel that this would be a large step forward towards simplifying their existing process. But that's just what we have. We can do more.

The next slide, please. So, we're proposing that there be a CF3R final or, as Mazi called it, a CF3R

summary sheet, I believe. And the name doesn't matter. The idea is that this form -- and by the way, this PDF that I'm demonstrating on this page is the one that I had the arrow pointed to on the previous slide.

This, I think, is the other half of streamlining the documentation process. The idea is that this is a one-page PDF that is generated by a HERS providing registry, when and only when the project is complete in the sense that all of the measures for Title 24 have been met, and complied with, and signed off on, et cetera.

So, this would be a single piece of paper that would be handed to building department officials, or homeowners, contractors, whomever else might be interested. This single piece of paper, arguably would list all of the forms and all of the registration numbers on it that the building department officials might be interested in. Or, in the interest of saving space, it might just have one number on it that officials, or homeowners, or whomever else uses to log into the appropriate registry and see all of that information, again.

Next slide, please. So with that idea in mind -- oh, and I did forget to mention one thing. Those PDFs can also be released electronically and

probably they should be, e-mailed to building departments or homeowners, instead of being printed out on paper.

Some people don't know and are very concerned about the idea of whether or not these documents can be gamed. Under the 2013 standards, all of the PDFs that we generate are digitally signed so that there's a way for building departments to verify whether or not the document they're receiving is actually authentic or not.

So, to continue with this slide. I don't purport to have all the answers to all of the questions. I don't know all of the different needs that might be met by this form. So, there are some questions that I think are still open and that CalCERTS would be happy to workshop with stakeholders or with the Energy Commission.

For example, should there be test data or registration numbers on the CF3R final or should it just be a very short PDF that says this address is complete. And if you want to know more, type in this identifying number into the HERS registry.

Should the signatures of responsible parties be listed? That's an open question to me. There could be easily 10 or 15 different documentation authors and responsible parties involved with a project. Different

contractors, builders, energy consultants and, of course, raters. So, that might be way too much additional information and it might increase the page count from one to three, et cetera.

Another important question, would building departments be interested in automatic notification of when a project was complete? To me, this is a very simple, yes, of course. And as a provider, it would be very easy for us to provide this information. Of course, we'd be concerned about bombarding building departments with too much information at once or filling up their mailbox with a lot of forms. So, again, that's a question that needs to be workshopped.

Between the project status report and the CF3R summary sheet or CF3R final, I think that we have the backend solution that Mr. Goodwin was talking about earlier. It just so happens that our website is already multi-platform, in the sense that it can be accessed from i-Phone, or your tablet, or your computer. So, this really should be accessible to both people in the office and people in the field.

Next slide, please. Stepping away from that proposal for just a second, I did want to take one slide to quickly talk about the other major complaint that we, as providers, receive. And that complaint is the

absence of signature authority.

Now, I've got a typo in my next bullet point. I say this should be incorporated in the 2016 standards. Well, it is incorporated into the 2016 standards, which is great.

What this does, this addresses serious problems for builders and contractors. By letting contractors assign signature responsibility to raters in the registry. Because what's happening in the field, we're finding out, is that contractors who are -- who are bothering to comply, in the first place, typically do have the test equipment and the knowledge to perform the field diagnostics, and to try verify, themselves, whether or not their installation is already Title 24 compliant.

What they don't have the time or the interest in doing is hiring data entry personnel to type all of that information into a database. To resolve that problem, in 2008 and in 2016 standards, they can simply give all of that information to the raters and the raters can enter that information into the registry.

For contractors, that's great because they simply have to perform the tests and they don't have to be aware of all of the registry requirements, and how to log in, how to navigate, et cetera. And there's a

certain percentage of contractors out there that don't even want to use a computer.

So, providing them with signature authority is a great way to close the loop on documentation, make sure that everything's in the registry and, also, put the bare minimum requirements necessary on the contractors to be Title 24 compliant, without being burdensome.

And so, we would encourage Energy Commission to consider sort of reactivating signature authority for the remaining -- for the remainder of this code cycle, if it's possible. And it's not necessarily an easy lift. It needs to be subject to legal review. It would require a rulemaking, possibly, et cetera. But I think it's another way to address the streamlining problem, from stakeholders that we may not have heard from too much today, and those are contractors.

So, next slide, please. So next steps, assuming that this is something that finds, you know, support with the Commission, programming of the CF3R final could easily be completed by the end of the year.

I, of course, have to be very careful about speaking for the other providers, because there are other providers in California and I don't represent them all.

But the project status report was a requirement

that was placed on all HERS providers that were approved for 2013 standards. And that's the core of what we're talking about here.

So, development of this should be a fairly straight forward task for all the providers. And, furthermore, development of it should be a straight forward task for the Energy Commission because they've already laid their own groundwork for this, as well.

Assuming that we were to go forward with this, CalCERTS would be extremely happy to partner with any of the building departments that are even remotely interested out there to pilot this to test it.

And in general, we are very interested in receiving feedback from building departments that have used our project status report, or that haven't used it, and have some reason to communicate with us about why they haven't and what we can do to simplify that report even further, or make it easy to access, et cetera.

So, next slide, please. Conclusion. I've spoken very fast today. I hope that's not too bad. Mazi already stole a lot of my thunder.

The 2013 documentation requirements have been met. Implementation could be much improved. And we know that improved implementation will lead to improved compliance because we know that a large part of the

pushback on this is not that people are unwilling to comply, it's that they don't know how to comply or they find it too burdensome.

And I'll just stress one last time, compliance documents provide much needed data and information to the Energy Commission and to all the other stakeholders that are out here. We should never consider removing that requirement. We should simply consider what we can do to aggressively simplify and streamline the documentation process.

So that's it. That was a short presentation. Any questions or anything?

COMMISSIONER MC ALLISTER: Great, thanks. Thanks, Charlie.

Yeah, I guess it seems like there are, you know, a number of things going on in the marketplace. And I'm going to go ahead and ask this, even though I'll probably wait to the end, and others, the final presenters can maybe chime in on this, as well.

But, you know, part of it is the hassle factor and kind of, you know, the complexity, and some of the things we've brought up. And I'd say those certainly apply to people who, in good faith, want to do the right thing and are giving it their best shot. And then they're, you know, sort of going through the steps and

identifying places where it makes life difficult, or places where things are easy, and it's great to hear about that, too.

I guess, you know, it seems like there's this issue where, you know, I've heard this many times, okay, just residential HVAC retrofit. You know, your contractor comes, they're a fully licensed contractor, and you ask them for a quote. And it's sort of like, okay, well, here's the price with a permit and here's the price without a permit, and there's a significant difference between the two.

And, of course, the contractor's like, well, I'll install the same either way, right. You know, I'm not going to opine about whether that's really the case or, you know, what the sort of gaming or positioning might be, but just face value. You know, if I'm a homeowner, and my contractor's telling me that, and I'm inclined to trust them, you know, what's my response going to be?

And I guess it's really there are a lot of things to unpack there but, you know, partly it's for the good faith contractor, we want to make it as easy as possible for them to get through the process, right.

For the others, and I don't know what percentage is in each camp, it's probably a continuum, I'm sure.

But for the others, you know, we need more of a stick approach.

And so, I guess where is the balance on that in terms of the transaction costs? You know, how low -- how can we get the transaction costs to be down such that the good guys want to and can do the right thing?

And then, you know, the flip side of that is, well, what's our enforcement? What's the stick? What's the local building department going to do to hold accountable? How do we create a system where the flag goes up when we're not getting a permit or when we're not getting compliance?

So, there's really two sides of the same coin here and I absolutely want to find places where we can make it simpler and, you know, as straight forward as possible for the good guys to comply. Right, that's a basic requirement.

And once we can show that we've done that, right, and we get compliance up to, you know, a reasonable level, then I think it becomes much easier, we have a much better case that we can go out there and say, look, it's not that hard. You know, we've got a stick that we're going to use.

So, you know, I'd be interested in folks' opinion about is that -- I want to back up and, you

know, I recognize you got a comment from one of your building officials, you know, and there's tons of paperwork and it's a big problem and everything. But, you know, we've got to distinguish informed opinion from whining. You know, everybody's opinion is not equal here.

The well-informed opinion that's based on reality, and that comes with data, is the one that we're going to listen to more, right. You know, there's a lot of people who think the government, just every interaction with the government is just kind of shouldn't happen. And I just do not believe that, obviously, right, fundamentally.

You know, in my experience, the local building officials, the local city government, they want to help. They want to do the right thing. They are concerned about their constituency and we need to help them. Right, we need to help and they lack resources. I mean, we heard Randy and others.

So, you know, I definitely do not buy into the just sort of -- you know, the sort of low touch approach. I think we need this to get quality installations.

You know, I think in general government really wants to help its building stock be as good as it can

be.

So, in any case, that's sort of, I guess, an admonishment or a recommendation that, look, you know, we really want opinions that are not knee jerk, but really well informed and based on experience.

So, but we do have an issue. I mean, we do have this difference, sort of this transaction cost issue. And, you know, lots of different opinions about it. But I think it is an issue that we need to sort of figure out. And that's kind of why, one of the reasons we're here today.

So, you know, I guess I'd be interested in sort of folks' ideas, you know, given that we have a process to open a permit, interact with the building department, get compliance, get the building official -- you know, get the HERS rater in there, if that's needed, get the building official to sign off on the permit. That process takes some resources. And sort of figuring out where, how we can help, maybe it's electronic tools. You know, I don't know whether building departments are really ready for that or not.

Certainly, really like what you're saying about the, you know, and what others have said about having open access to forms so that others can chime in at the right moment. Sort of like a property transaction when

you buy and sell a property. You know, I mean it is kind of similar in some ways.

So, anyway, creative thought about how we could do that. I mean, you know, different paths we've been talking about today result in vastly different resources requirements for the Commission, potentially, so I want to be very cognizant of that, as well. And, certainly, staff knows that way better than I do.

So, I don't want to sort of commit to doing any of the above at the moment, until we can kind of figure out what it really entails in practice.

In any case, I guess what I'm hopeful is that some of these electronic approaches and new approaches that make the system sort of more streamlined and more flexible for compliance, we can put into place. So, I guess there's really no question there.

But I want to just key off on some of the stuff that you said about the process. Because I think that really is what we hear, the getting through this process takes some effort and some resources, and we want to try to get that to be as small as we can.

Okay, so let's see, maybe we should -- Jesse Fulton, maybe we should pull you up to be next, sort of to build on the -- you know, we're having pretty much a residential conversation so far.

And then we can go to Mr. Selby and Mr. Langston. And then, if Matt Hargrove shows up, we can put him in at the last.

MR. FULTON: All right, thank you. So my name is Jesse Fulton. I'm a Product Manager with an organization called Renovate America. We're the program administrator for a PACE financing program operating throughout the State of California, called the HERO program.

The HERO program's available in 326 communities throughout the State of California. We've financed about 38,000 residential projects over the last couple of years, so definitely had some business going. And represent about, a little shy of 2,000 participating contractors in our listed network there.

So, we have a lot of contractors who are using our product out there in the field.

I kind of serve as a unique approach and maybe can summarize a lot of what's been spoken about here in the field from more of a private, or a public/private partnership perspective.

I think we're kind of a unique case study in that we have privatized building standards. I don't really know if many folks are out there doing that. But from our perspective, PACE financing has been enabled

under California legislation to finance energy efficiency, renewable energy and water efficiency products.

So, from our perspective, it's in our credo to go out there and set standards for every product that we finance. Not only from a program, kind of legislative guideline compliance perspective but also, under our consumer protection policies, we want to be assuring that every consumer that's using a HERO financing product is getting an energy efficient product, water efficiency product, or renewable energy product that meets some level of standard there.

So, I'm here today to kind of provide some insights about our approach. I think our approach aligns with a lot of the best practices that have been talked about here, as far as taking a technology-based approach to doing that. And I'll provide a couple of insights into some of the things that have worked best for us.

So, some of our key drivers here. The first is having clear, and concise, and consistent requirements that we're publishing out there for our contractors to comply with.

We do that with a number of things, and I'll talk about a few of those a little bit later on. But

having that clear basis of understanding, so that all contractors using our product, out there in the field, kind of know what's the level playing field that they're working on. That provides us with a lot of operational efficiencies, but also provides us with kind of the trust factor that we have, as the program administrator, that when we're publishing something out there that they can clearly understand, and that they know how to comply with the requirements that we're putting out there in the market.

The second is a streamlined operation process. So, when somebody's using our financing product, we kind of have -- we work under this operational agreement that in order for a contractor to kind of partner with our program and use our financing product to serve their customers, but also for customers to use our financing product to finance the energy efficiency, renewable energy or water efficiency products out there, they want that process to be streamlined so that it's not undue timelines. If they have a product in mind or a project in mind, they'd like to go through our financing process so that it's not creating undue burden.

We do everything as much as we can to kind of maintain that balance between the components and the process steps that we have within our process that keeps

us compliant within our own regulations, but also maintain the operational efficiency that our customers are looking for out there in the field.

And, ultimately, this all boils down to a balanced experience between the program participation, and similar to what Commissioner McAllister was talking about just a second ago, kind of finding that balance between the transactional costs, so that we're providing as much benefit back, or finding kind of the trigger points where we can have that balanced experience. Where someone is willing to comply with regulations, willing to comply with standards, and at the same time is getting some benefit back and not carrying undue transactional costs through their own business practices.

So, within our product standards we publish out an eligible product list. This is part of that clear and concise presentation of information. We want our requirements to be clear to all users within our program.

So, this product list, we offer over 62 eligible products, ranging from toilets and urinals, all the way up to solar panels and inverters. And that range is a very broad spectrum through that.

Each one of our products, on our eligible

product list, has prescriptive eligibility requirements, a finance term, minimum performance specifications, and many of the products also require third-party certification that goes along as part of that.

This is a 10-page document. It's 60 products on 10 pages. You can kind of do the math, as compared to some of the published standards that we have. That we feel that that's kind of the concise presentation of information.

They're all written in pretty plain English, with the intent that we're really looking to maximize the user experience and really craft the way that we're presenting information based on who we intend to read that information.

We publish product call-in specifications. And I'll talk about a little bit of our process steps here, in a second. But our protocol and specifications clearly represent the information that we need to be provided in order to get that product assigned to a funding request within our financing pipeline.

So that when a contractor's getting on the phone, if they know they're selling an HVAC system or spec'ing that out to the customer, what they can do is get on the phone with us, provide us with one H or I reference number, part of the system that I'll talk a

little bit about later.

I'll talk about the duct system insulation that they're installing. You know, we key that into our product system and assign that into their funding request.

That provides transactional efficiency so they're not spending 10 minutes on the phone, they're spending more like 10 or 15 seconds on the phone to get that product set up on their system.

And finally, with the funding requirements checklist, again with the compliance here, we want to make sure that all our standards are complied with. So, we have a system that automatically triggers certain funding requirements that must be complied with, depending on the product that was called in through our data system.

That funding requirement actually triggers into a portal that all of our participating contractors have, so they can actually see, by the time they get finished with that product, they'll know exactly what they need to check off in order to comply with our standards.

So, our process. I'll talk a little bit about our financing process, which will provide you a bit of perspective on kind of what we're looking at here.

Our financing approval, I won't get into too

much of the details about how people actually become eligible for HERO financing. But once they're eligible, typically that transaction is between a contractor and a customer, a properly participating contractor through our program.

Once they have an approval and they've decided on a project scope of work they'd like to do, they'll go ahead and call in. We have a service center, HERO hotline is open seven days a week. I think on weekdays it's 7:00 in the morning until 10:00 at night. Weekends have shorter hours, but are still available when contractors are doing business.

As a part of that product call in, I talked about the information that's being provided, the contractors are aware of. They're specifying each and every product that's included in the scope of work that we're financing.

That product call-in information is actually pulling from a pretty robust database on the back end, that we've configured, that actually allows us to operationalize or gain some efficiencies out of that product call-in process. So that every product that they're assigning to our funding request, through their scope of work, has been pre-filtered based on the eligibility criteria that we have set up on our eligible

product list.

That then provides us with assurance that each and every skew that's included, we have everything down from make and model number, to the performance specifications that go along with that product. Or, if they're calling in an insulation or window and door product, each and every one of those are pre-filtered. So that if they're trying to call something in that doesn't meet our specifications, the call center agent is then prompted to provide the contractor with the information to say, you know, this window needs to have a little bit lower U factor, a solar heat gain coefficient, and they'll adjust their scope of work, accordingly. Or else they wouldn't be able to provide or to add that product to our funding request at that point.

Once that product call-in has been completed and they've finished, they've kind of finalized the scope of work on the specific products they're including, they generate a set of documents, including a completion certification, to which the product details of the project scope of work are actually printed directly on there, as well as the funding requirements that will be required at project completion.

When they do complete their work, we usually

give them about 110 days to 135 days depending on the nature of work that they're doing. Once they've completed that, again we have an automated process, an electronic submission process where they're going through, both the property owner and the contractor, are signing a completion certificate, which verifies that all of the products that were called in, in the initial product call-in, were completed to the satisfaction of the property owner. The contractor verifies that they pulled all the necessary permits.

We actually require some of the pulled permits to be attached, along with the submission of our completion certification. And they submit that, along with an invoice for the product or for the project scope of work.

All electronically and all done through a portal that we provide to our eligible or to our participating contractors.

Our funding department then reviews that within a 24- to 48-hour timeline, and then gets the money out the door to our participating contractor networks.

And that's kind of a key piece there, that short turnaround time on the financing. Our financing really is kind of the -- I guess, it would be kind of the carrot end stick for compliance, so that's kind of a

unique position that we're in. We get a little bit higher compliance rates in that we do hold funding until they've verified that they have complied with all the standards and requirement documentation that we have set up in the process.

So, a lot of that is performed through an in-house technology platform. I manage a product development team that focuses primarily on the eligible products section, so that product catalogue piece that I was talking about earlier. A product database is something that we manage.

This is very similar to that TurboTax style. We actually have a lot of people at Intuit that work for us, so that's very near and dear to our hearts.

And managing that customer experience for the property owners that are using our financing platform, the contractors that are participating in our network, but also the municipalities that we're partnering with to make the HERO program available is all operationalized through a technology platform that allows us to gain those process efficiencies.

So, this product database that we're talking about, over the 60 eligible products, there's 62 product types. We acquire product data from 15 third-party data sources, all certified data sources that we're

aggregating. That aggregates up to a little over 1.3 million product records that we're maintaining in there, on a product SKU basis, all with efficiency attributes and things that we need to verify compliance with the standards that we've set up.

And all of that's updated on a daily basis. We used to do it on a weekly basis. But in order to maintain alignment with the third-party data sources that are out there, updating their products on an ongoing basis, we wanted to make sure that we always were up to date with each and every model that meets our eligibility criteria. So, we're updating that on a daily basis.

So that when a contractor -- this is kind of the service level agreement that we have, when a contractor does their due diligence to go out there and find a product that meets our specifications, we're ensuring that when they call that product in it's in our system and there's no undue time trying to figure out whether the product does or does not meet our specifications.

Finally, the platform that I talked about, that the contractors are utilizing to do this, this electronic document management system, we have an e-sign platform in here, where they can go through, manage all of their documentation, manage signatures, manage

submittals. But also, get notifications on what needs to be submitted depending on what stage their financing project is at in our financing pipeline is all managed through our HERO Pro platform.

And that's pretty much the case study or a little bit of a real-life application of a lot of the standards' operational efficiencies that we've spoken about today. We're kind of putting some of those things into play in the HERO program.

COMMISSIONER MC ALLISTER: Thanks very much, Jesse. So, I guess my main interest here, there's a ton of interesting stuff here and, you know, certainly the PACE discussion is a big one that we could probably spend the rest of the day and more on. And, really, the fact that it's kind of catching fire a little bit in California I think is great for mobilizing the marketplace.

You know, with the caveat that we really need -- if we're going to sort of have quick financing across the kitchen table, it's got to be done in a way that has consumer protections built in, right, which has not always been the case with, really, any service that folks get in their home, right. Or at least it's sort of there's a buyer beware kind of mentality.

So, what I was very interested in, and the

reason that I'm gratified that you're here, is to talk about, really, the fact that, you know, you're getting some scale, you're getting tens of thousands of projects. And where a permit is required, you don't give them their money unless they open and close the permit, right. They've got to finish, they've got to do it by the book for that local jurisdiction.

And so, maybe you could talk a little bit more about that and sort of how, you know, I'm presuming that you're building sort of a database about -- to make it easy, and you've got all that information about each jurisdiction, and what has to be done, and sort of the contractor -- helping the contractor navigate, in any given place, what that really looks like for them.

But I think the idea that you have -- you know, you get all the public benefit of compliance, we've talked about fire, health, safety and energy, in sync with the sales process in a private market. I think is a really intriguing idea. And particularly if it can scale and can, in a lot of ways, allow projects to happen that may not have even happened otherwise.

So, that gets to all the goals that we want as a State. You know, it scales up the existing building retrofits and it does so in a way that, you know, hopefully, and I think you've made a lot of progress on

this, builds in the consumer protections that we're looking for and gets code compliance, gets permitting.

So, maybe that system, you know, you could talk about the customer experience, sort of what they see, and how it all wraps up with a bow so that they can see something that is good for them, that they want to buy into.

MR. FULTON: Right. Yeah, so from a -- one point of clarification that I do want to make, I don't want to misrepresent some of our specifications. We do have permitting requirements for the majority of our broad categories, HVAC, roofing, windows and doors, water heating, solar.

So, when a permit is required, we usually require the initial permit. It's not always the case that we're requiring the final or closed out permit.

And it actually brings up a good point of kind of that balance, that balanced approach or balanced experience that we're speaking about. Early on in our program, we actually did require closed permits for the majority of our product types.

One of the things that we were constrained by was balancing the experience that a contractor has out there, when they're trying to operationalize a business, trying to make money out there in the field. And that's

primarily one of the reasons that they're attracted to a financing product.

It's not always the case that when we're holding their cash flow back, that they can actually maintain a business when they're trying to, you know, make payroll that week. And a building department, you know, we talked about some of the shortcomings of some of the building departments in terms of staffing. We weren't always getting the timelines to sync out so that a contractor could hold cash flow in order to get a closed out permit. Waiting three weeks for a roofing permit to be closed out isn't always the case.

And we didn't feel, from our perspective, that that was a balanced experience, kind of holding a contractor's money so they were kind of at the behest of understaffing.

But that being said, we still do require the initial permits and have it stated so that the contractors are definitely required to close those out on their own time. And many are -- each and every one of our contractors do pull that initial permit and we don't really have transparency on how many are actually being closed out on their end.

COMMISSIONER MC ALLISTER: Yeah, okay. Is that something that you could follow up on or maybe, you

know, have that -- to the extent that the local building departments, it's sort of in their court if they've got an open permit, and what that looks like to get it closed out?

I mean, is there any effort to sort of circle back with them after the transaction is said and done to see whether that got closed out?

MR. FULTON: I certainly think there are opportunities for partnerships along those lines. Speaking about some of the data mining that we were talking about, that database that we maintain is a pretty neat thing in that we do have the data mining capabilities. Each and every one of those 38,000 funded projects is made up of, you know, a combination of different products and different product attributes.

So, when we're talking about going out there and finding all of the windows that are Energy Star certified, or the average SEER of an air conditioner that's being installed in a California home, we've got a great sample.

I can pull that up right now on my data query. So, it's a pretty real life example of some of the things that we're kind of looking forward to through some of the document compliance management systems, and the ACE system that's been set up.

So, I certainly think the types of systems that are being designed here and a lot of the approaches that are being talked about today are right in line, and they've worked for us. So, I think we can kind of serve as a good case study example of -- for the State, if that's the direction that it's going. It certainly works in a smaller kind of case sample setting.

COMMISSIONER MC ALLISTER: Yeah, and I guess I'm -- you know, the wheels are kind of spinning in my head, and probably in somebody else's head, too, where to the extent that we wanted to do some additional research on what's happening out there with permitting and compliance, you know, we might be able to work together to sort of do that study. You know, based on a big sample and look at -- you know, work with some local governments, local jurisdictions to figure out, you know, to sort of triangulate between what data they actually have and what data -- you know, what this population of projects has generated.

So, that might be a very productive kind of partnership to sort of help understand the landscape better.

So, thanks a lot for being here. I appreciate it, Jesse.

MR. FULTON: Great, thank you.

COMMISSIONER MC ALLISTER: Okay, so we're a little behind schedule, but not horribly so, I would say, at least by my standards.

Let's see, so Brian Selby next. Okay, great. Thanks.

MR. SELBY: Should I come up here?

COMMISSIONER MC ALLISTER: Yeah. Just a reminder, also, if anybody wants to speak, blue cards are available back there. I've got a few of them already, but if anybody -- for public comment, if you have something you want to talk about, please do submit one of those.

MR. SELBY: Good afternoon, my name's Brian Selby, Selby Energy, Inc.

I've got a little background in energy efficiency, Title 24 work. I've been working as a residential building designer for the past 30 plus years. I've been doing Title 24 work, compliance work since about 1986, when my boss, working at a residential design firm, came up with a stickful of books and said, hey, our building department's enforcing this new energy thing. Learn it. Dropped it on my desk.

So, I was fortunate enough to be in the right place at the right time. And I'm amongst a lot of friends here and been in the same industry for such a

long time.

HERS rater, certified energy analyst, KBEC (phonetic) board member. You can see, you know, I get around a little bit with energy efficiency.

I've had the privilege of facilitating, for some part, as well as being a member of the CIG, of the complaints and improvement advisory group. A lot of these issues that we've talked about today have been discussed and written out in white papers. And I encourage you to go to the CIG website and check those out.

I'm also an instructor. I teach Title 24 essentials courses for the Energy Codes Team.

Today I'm coming here on my own behalf. I'm not speaking for my utility friends. But I will share some of my experiences as an instructor.

I know Randy brought up a few good points. Building inspectors, plans examiners come to class. One of the major complaints that I hear as an instructor is there's too much information, this is very overwhelming. And I hear it all the time. It's really difficult to teach a very complex energy code in one day, in a seven-hour period of time.

We can touch on the high points. We can touch on the most important points that we feel are necessary

to give them the minimal competency to perform their duties as with respect to Title 24 part 6.

Today, I wanted to focus on, mostly, just on the solutions. We all know what the problems are. We've heard them all. It's too complicated. It's too expensive. Too much of a hassle. Too many forms, obviously. Not enough time to enforce. Not enough resources to enforce. My competitor isn't doing it, et cetera.

Have I missed any? Anybody want to contribute? I think we understand all of the problems.

But what I wanted to do was bring up, you know, what are we doing about solving these problems or what can we do to solve these problems?

So, these questions that the Energy Commission approached us with, us speakers to answer, very well written questions. Thank you very much. It really makes my job a little easier to come up here and explain these things.

So, how can compliance be assessed and improved? I had to dissect that into two different pieces because it's really two questions.

How can compliance be assessed? We need to understand the extent of the problem, first, before we can address lasting solutions. There are solutions, but

are those solutions going to last? Are they going to be solutions that are going to work with this iteration of the code, with the 2016? And as we approach zero net energy, are those solutions going to stand the test of time? So, we need to understand how compliance can be assessed.

Wes, I've had an opportunity to work with BayREN. Actually, I did the very first prop visit and I've led several of the prop assessments with building departments. Wonderful, wonderful work that's going on there. We need to leverage that and what others are doing to assess compliance.

We need to look at other potential solutions to assessment. Assessing each individual building department is time consuming. It's labor intensive, it takes a lot of resources. Am I correct?

That's why BayREN's only been able to sample. They assessed 13 jurisdictions -- 15 jurisdictions. And that was done over, probably, a year's amount of time and a lot of data.

There are other ways. You know, looking at volunteer building departments. They collect an enormous amount of data regarding permits. Now, their permit classifications may not be in the same language we're used to seeing for Title 24 purposes, but a map

can easily be determined, what their permit classifications are in association to Title 24 part 6.

We take that information, as far as possibly residential HVAC change outs, or commercial lighting retrofits, we can take that information and compare it to either HERS registries, or in the event we do have a nonres registry, at some point in time we can compare that information.

Not to use that as a hammer or a tool for disciplinary action. We need to use that information to understand what the industry is doing. That way, we can develop solutions that can address some of these problems.

So, the old adage, we don't know what we don't know, right. We're proposing solutions that may not be the answer to the problem. So, it's really important that we understand the problem, first.

Once we do, how can compliance be improved? Well, I've got a pretty bold statement here, change the way we do compliance. We need to think differently. We need to think not in an energy consultant or engineer way. We need to think in how the consumer, or the person who is actually using the forms, the building departments, the contractors, and the homeowners. If we don't think in that way, the forms have no value. The

forms don't have a value to the particular people performing that role.

So, Mazi, you covered why are compliance documents required and, Charlie, backing that up, wonderful.

You know, I would rather address how can they be improved. And there have been numerous suggestions here, ranging from simplification to technology.

But I want to point out that we need to focus on the user of the document, the primary user, the plans examiner, the building inspector, occupant or homeowner. Those are going to be the primary users of these documents. Everybody else is kind of in addition to it.

I'm an energy consultant. I speak energy consultantese [sic]. Not everybody does. In certain circles, we can talk and nobody else can understand what we're saying. So, usually, we speak in acronyms and a lot of information, a lot of real geeky stuff. And I love it and I enjoy it. But most of our population that lives and occupies buildings don't speak in that.

Speaking towards compliance documentation. Building departments, specifically plans examiners and building inspectors, we need to help them prioritize measures.

One of the biggest complaints I hear, and I can

share some examples, is I don't know which measure is the most important. We have limited time and we cannot inspect them all. Tell me what is the most valuable piece to inspect first?

A perfect example, I was at a building department, we had a particular project. It was a nonresidential project. It was a large addition and alternation to an existing large building. The plans or the Title 24 documentation included a performance whole-building approach for existing, plus addition, as well as documentation from the mechanical engineer for prescriptive mechanical and prescriptive lighting.

The building inspector said, which one's right? He had no idea which one's right. Which one do I accept, which one do I approve?

It turns out they were both wrong. Even though they issues a permit, they issued a permit and they went out to construction.

So, once we get out and visit the site, and look at what was actually installed, it didn't even resemble what was promised.

Look at the CF1R and the NRCC Perf 1 as documents based on what I promised to install, right. And if they don't install those, then they get a document, a CF2R, or some sort of installation

certificate that says these are documents that say this is what I actually installed.

The problem is, and builders and installers know this, building department doesn't have the time to compare these two documents side by side and say, look, here's what you promised to install, here's what you actually installed. Wait, this doesn't jive, this doesn't work. There's a lot of noncompliance in that department.

So, we need to prioritize the highest value measures first, so that they can systematically go through there, as they have time, and do this.

Also, develop user-centric compliance forms that are designed specifically with the user in mind. A lot of suggestions have been either streamline or provide a summary document that would summarize information.

This needs to be an at-a-glance, measure-by measure. Most of my clients, when I compliance documents, I do that form. I write it in their language. I write it in a way that they can understand it. And they love it. They love this information. It's not a CEC-approved document, it's not generated by the HERS provider or anybody else. I take and decipher energy consultantese into plain English and put it down.

Generally, even a large commercial building

could be summarized on one page, very easily, and in terms that they understand and they can implement.

The risk is, if they don't understand it and if they don't incorporate that information on the plans, the likelihood of it being built is pretty low.

A perfect example is rating bare roof sheeting. If it's not on the plans, the framer's not going to know that he needs to put rating bare roof sheeting on. That one gets overlooked a lot. Or continuous insulation, whether it be residential or commercial. There's a lot of issues that need to be put in plain English so that they understand.

Develop a compliance format that provides value to the owner or occupant. I think if we want to encourage compliance through the vehicle of pulling a permit, and providing all of the compliance documentation, that compliance documentation has to have value to the owner or occupant so that they have value for their money.

A lot of people have asked me, what does all this stuff mean? Well, it means you get to add on to your house. Or it means you get to remodel your building. Beyond that, we could spend hours of me explaining to you what all this information is.

Some sort of rating or some sort of value that a

homeowner could use. I think, Bob, you touched on that, the value of energy efficiency will definitely increase compliance. Homeowners, building owners will ask for permits because they get that value from the documentation.

Streamlining the process, installation forms. Charlie, I think with work that's going on with the 2016 code, I think this is pretty well addressed. There is a major disconnect between contractors and going to a registry to fill out forms.

So, even a step further now, in most cases, with residential construction the HERS rater is the one filling out these forms. So, there's opportunity to possibly allow the HERS rater to do more third-party inspection and take the burden off the building department.

What can be done to reduce transactional costs of compliance? Time is money. Really, the value of compliance is save time. Contractors are on tight deadlines. Homeowners want to get in and they want to get the certificate of occupancy. So, the faster they can do it, the less it's going to cost them.

So, streamlining the documentation process, you know, CF2Rs, NRCI, NRCA forms, streamlining that process to make it easier, less burdensome, less of a barrier

towards compliance would be very helpful.

Possibility of providing, I don't know if the performance-based, construction phase compliance approach, meaning that we have a process in place right now that works. That is a prescriptive process. What you've promised to install becomes a prescriptive list. You need to install all of that. Otherwise, you've got to change it, and redo that list, and start over again.

You know, this approach would allow a HERS rater to verify all of the energy efficiency measures. Not just the HERS verified measures, but all of them. And this would provide a very streamlined approach, utilizing as-built model.

If it's run via the performance approach, modeling approach, use that as that model, as the compliance documentation. What better way to accurately capture savings than have an accurate model. So, that could be done on the performance approach.

This approach could also be done via the prescriptive approach. Have the HERS rater be the one that verifies all this information and compiles the documentation. It's one idea, one approach that may have some merit and we're exploring.

That wraps it up. Any questions?

COMMISSIONER MC ALLISTER: Thanks a lot, I

really appreciate your being here. I think we're so close to the end here, I think maybe we'll go with Mr. Langston. And then, I don't see Matthew Hargrove here, yet, so I think we're going to assume that you're the last speaker and then we can open it up for Q&A, and then everybody can pitch in.

So, thanks a lot, Brian.

MR. LANGSTON: Okay. Well, good afternoon, everyone. My name is Don Langston. I'm the President of Aire Rite Airconditioning and Refrigeration in Southern California. We're a third generation air conditioning contractor that started in 1972.

We strictly do commercial buildings. So, a lot of the dialogue going on here today does not apply to me. But it's very interesting.

My role, besides being a contractor and employing over 127 people, and dealing with over 70 technicians and installers over the southern half of the State of California provides a good vantage point to look at the marketplace. And we do a lot in office, retail and restaurants.

And, especially in restaurants, those are very high energy consuming, energy intensive buildings.

I'm very intrigued by Assembly Bill 758 because I see that as a very promising approach to really kind

of setting codes aside, in their current terms, and actually going after performance, and measuring that. And then, from there, coming up with some really outcome-based code approaches. I'm very intrigued by that.

So, just real quickly, I know that I'm the last speaker here so I'm going to make this as quick as possible. And it's ironic that the contractor goes last. Ironically, we are the tip of the spear that makes everything happen. We're the ones that are dealing with the --

COMMISSIONER MC ALLISTER: I'll just speak up just a second.

MR. LANGSTON: Yes, sir.

COMMISSIONER MC ALLISTER: I would really have liked to have more commercial participation in this, because I think they are very different, residential and commercial. And, you know, in some respects residential has maybe a certain urgency because we are pushing towards ZNE on the new construction, et cetera.

But many of the kind of loudest voices in terms of, gosh, you know, this is unworkable for me, have actually come from the commercial space. And it's really just particular places where I think the, you know, TI and stuff like that, where it's -- anyway, I

won't get into the details.

But I would like to extend this conversation more in the commercial space. I think we've done a good job on the residential space, but probably ought to think about how we can get some of your colleagues, and some of the other folks in the commercial space to submit comments to this workshop or within the IEPR.

MR. LANGSTON: Well, and to that point, Commissioner McAllister, what I would recommend is going to gatherings where these contractors are. It's very difficult. I mean, I was invited here last minute and I'm very pleased to be here, to represent contractors in general, but especially those that are dealing in the commercial space that I am.

So, I mean, a good example is in this November, in Pasadena, IHACI has their annual convention and it would be great to have some kind of a forum where we had contractors, we had code officials, we had State officials and just have a forum and talk about these things.

I mean, there's nothing that I think will help us more than get people, you know, get seats or get a round table and talk. Because there's a lot of things that everyone looks at this from their various perspectives, and those perspectives are all right to

them. But, once again, it is just a perspective.

So, just real quickly, so besides running the business that I do, I'm also representing the Air Conditioning Contractors of America, over 4,000 contractors throughout the United States. I'm on the Executive Committee for the WHPA, representing ACCA. I also Chair the Commercial Quality Maintenance Committee for WHPA. I'm also the Vice-Chairman for ASHRAE, ACCA Standard 180, which is the commercial maintenance standard.

So, we're also involved with a lot of emerging technology projects for both Southern California Edison and San Diego Gas & Electric. And we're currently doing, through SDG&E's emerging technologies, a 758 pilot.

So, yeah, so we're moving forward. So, next slide, please. So, real quickly, I'm going to go through these really quickly, because no knowing exactly who was going to cover what, I think we've kind of flogged this all pretty well as far as the challenges here and what we need to move forward.

So, this is in the Power Point and it can be looked at, and we've already kind of covered these.

So, next slide, please. I brought it with me, at least on the commercial side, and it's in a three-

ring binder, and it's about a ream of paper of just some of the things that we have to deal with. I should bring it out, but it's not going to have the value, that we've already covered a lot of this stuff.

So, we'll move on to the next slide, please. Once again, I think that there's some opportunities here. We have to change our approach because we keep doing the same thing, and we're just adding more complexity to it, and we're getting further away from the goals. So, I think we've got some opportunities here to move forward.

The next slide. Once again, I think AB 758 provides us a great opportunity. And once again, from a commercial building and from a residential, also, every system is unique. It is kind of like a snowflake. They're in different climate zones, they were installed by different people. These are not being done in a factory. The building envelopes are different.

So, I really think that more time needs to be spent looking at, you know, what are the most appropriate energy efficiency measures that will work for that specific building owner or homeowner in that climate zone.

The next slide, please. This was a very intriguing study that was done through NIST, and through

ACCA, and Oak Ridge. This was very intriguing because it not only applies to a residential aspect, but also for commercial buildings.

And the NX36 report really kind of gets into the problems of poor installation and maintenance. And then, if you have multiple faults, how does that impact energy efficiency? So, this is a great one as a reference point.

The next slide, please? Oh, I'm sorry, I thought I had -- yeah, if you can just roll all the way through there, I thought I had changed that. But sorry about that.

So, really, what we're looking at here from the outcomes from that report was looking at duct leakage, refrigerant charge issues, under-charging, over-charging, and then under-sized cooling with expansion valve. So, all these have an impact. And if you have multiple faults, it actually creates more of a snowball effect.

So, we know that duct leakage is a very big issue, both for residential and commercial applications.

The next slide, please. All right, I just threw this up here just so we can actually talk about HVAC from a kind of commercial stand point.

We talk about raising the standards, the energy

efficiency ratios of the equipment that we're putting on the roofs. And since, you know, the bulk of the work we do are in equipment replacement, one of the things that we've been very involved with, both with Southern California Edison and San Diego Gas & Electric, is actually looking at the whole system performance, and not just changing rooftop units.

Because you can actually just change a rooftop unit and you can go with the highest efficiency unit you have, but if you're connecting that to the existing ductwork, or some marginal roof adaptor curb, it's a waste of money because you're not going to get the efficiency that was calculated in a laboratory.

So, we do a lot when we're measuring the actual performance in the field. And what we're finding across the board, with over 500 plus systems that we've evaluated in the last four years, is that return air duct is severely under-sized in almost every application. There's a lot of just ripped duct or compressed, crushed ductwork in the ceilings and so it's really not getting -- even if you've got an efficient rooftop unit on the roof, it's not getting into the conditioned spaces.

The next slide, please. So, once again, we've talked about some of the ideas around the table here, so

these were just my ideas that are really kind of being -- already been mentioned before. It's about just being able to pull licenses online.

You know, just I'll jump to the very bottom point there. The City of Los Angeles has a pretty nice permit system online, and it's very helpful. And us, as contractors, I have project managers and supervisors, so I don't pull very many permits myself anymore. But, you know, they're working a lot of hours. They're trying to coordinate with the code officials, you know, having the field inspections, and a lot of these things really delay the work we're doing. The guy's going to be there tomorrow. You know, we have someone there who waits all day, and he does show, because the guy ends up being sick. I mean, life happens, we're all human. But that really delays our project.

So, the more we can do online, through a smart phone or other applications, will just -- it will lower the costs, the transactional costs for doing work.

The next slide, please. Really, being able to have some uniformity between the jurisdictions would be so helpful. There is so much confusion out there, even within the same county. It doesn't matter if it's Los Angeles County or Orange County, San Diego, you know, we deal in seven counties in the southern half of the

State, and they're all different. So, really, we need something that's simplified.

And it reminds me of an old saying that says that a mist in the pulpit creates a fog in the pews. And so, what we have here is a lot of mist and it's causing a lot of confusion, and that's having a ripple effect in a negative way throughout all of the different jurisdictions.

And then we, as contractors, are trying to do things a certain way, in a certain jurisdiction, and then it's done completely different in another.

I had a situation, this last week, out in the Coachella Valley, with some inspectors that just didn't like economizers and they don't care if that's the code. And so, I'm like, okay.

So, what do you do? That's just reality right now.

But that last point, bullet, I did there in red. I really think that to be able to help the inspectors understand the importance of energy code, and spend more time helping them educate on that would be very helpful. Because they're being asked to do a lot. And with the complexities of the code going up, we really need someone that we can really rely on, and talk to that's actually speaking that very unique language.

So, next slide, please.

MR. SHIRAKH: Can I ask a question? What do you mean by having different criterias for different jurisdictions? Are you talking about different climate zones or --

MR. LANGSTON: Well, let me rephrase that. It's how it's being interpreted, interpretation of codes.

So, this slide here, really, the compliance, I think, in the commercial segment is pretty good because building owners realize -- they're a much bigger target, too, they're a bigger building. If a crane goes up somewhere, it draws a lot more attention when we're changing equipment. So, we really don't have a lot of pushback on pulling permits, it's just what we do.

But there's been many times where, when we show it as a line item on our proposals, what's involved. Because a lot of times if it's over a couple hundred pounds, we have to pull a structural permit. Well, a structural permit, with a structural engineer can be anywhere from $500 to $1,000. That adds time, it adds complexity.

Even if we're doing a like-for-like change out, in certain jurisdictions they require it, others don't. Okay, well, this is only 100 pounds more. Well, that requires a structural. Why? Because I said so, you

know. So, we have a lot of confusion going on with these types of things.

So, if we show a line item for all of the extra fees related to pulling a permit and, you know, changing out a 15 or 20 ton package, you know, it could be 3,000 bucks. And they'll say, thank you for your proposal and they'll go with someone else. And that happens. But that's just reality.

So, we're trying to do the right thing and then someone else goes out and changes it. So, we need to have a little more teeth to what's going on.

COMMISSIONER MC ALLISTER: And that's $2,000 or $3,000 on top of what project costs, for like a typical rooftop unit?

MR. LANGSTON: Well, it could be -- yeah, that's a great clarifying question. You know, we could have an $18,000 job and there could be $3,000 to $5,000 in permits depending on the city or depending on the jurisdiction. Because, once again, a structural review, depending on where it's at, could add several thousand dollars by itself, let alone the other permitting fees.

COMMISSIONER MC ALLISTER: So, I guess I'm hearing from you, between the lines, that there's a competitor out there that will bid it without a permit, and without a structural review, and that it will lop

off 5,000 bucks from the bid. And possibly, in some cases, get the project?

MR. LANGSTON: Yes, and it happens all the time.

COMMISSIONER MC ALLISTER: Okay, thanks.

MR. LANGSTON: The next slide. Once again, I think helping people understand why they need to follow code is important. There's so many things we've already talked about here, and I'm kind of hitting on some of these.

But there needs to be -- and once again, this is more geared towards the residential, than the commercial side, but it is still a challenge in commercial with building owners, and with property managers. We work with a lot of large property management firms. And even, once again, we have full disclosure and we show what that cost is.

And it's a pain to them because they don't see added value. So, we have to try and explain that to them. But we have to show that, so that when we're being -- we're always going to be, usually have one or two other bids going against us for proposals, so we have to show that just for the nature of the competiveness of getting the job.

So, the next slide. I look at this that, once again, I think there's a great opportunity with AB 758.

And once again, I think the goals are to improve the building performance. I've got all these on here, I'm not going to read them line by line and point by point.

But there's been some great points made here about verifying, about simplification. And the technologies available today, for us to go out and measure system performance, measure delivered efficiency into the conditioned space, so we can submeter equipment. We can measure delivered Btus. We can measure delivered CFM. We can measure the CFM. We have everything we need to be able to give a great field test that shows where we're at. And I think that technology needs to be expanded upon and contractors need to be encouraged, and so do building owners and other decision makers, to take this route.

The next slide. Okay.

COMMISSIONER MC ALLISTER: So, Don, just one question and then I'm going to open it up for a little bit more discussion. So, how big -- so, it really seems like there are two sort of discontinuities across, you know, say your service territory.

One is that the different jurisdictions actually interpret the code differently, which is what you said before.

The other one is, you know, I think, you know,

I've heard over and over again that different jurisdictions just have different systems in place, and permitting processes. Some are over the counter, some aren't.

MR. LANGSTON: Correct.

COMMISSIONER MC ALLISTER: You know, et cetera, et cetera, with L.A. has a good one, but the next door neighbor might not.

How much, sort of relatively speaking, you know, how big a problem is that latter one for you? Like, just having to jump through different hoops for each local jurisdiction?

MR. LANGSTON: Well, it adds time, which adds cost. And, I mean, the percent of municipalities or jurisdictions that have online permit processing is probably in the single digits. It's a very low percentage.

So, we've got to go pull the permit, pull all the information, bring the drawings or, you know, go over it with someone over the counter. Depending on the time of day, the day of the week, they may not be open a full eight hours. And so, you know, there's times, many times we have to go multiple times to get something done.

And we may have a piece of equipment that's

down. We've got an AC unit that's not working. I've got some unhappy customers. And we're like, look, they approved it and now we're trying to get the permit so we can actually move forward. So, the speed of delivery varies from each jurisdiction. I'm not sure if that answers your question.

COMMISSIONER MC ALLISTER: Yeah, I guess, you know, that's another transaction cost that isn't exactly what we're talking about with respect to code, but it is something that's important and could help the marketplace function if it worked better, and they were more uniform, say, I would imagine.

MR. LANGSTON: Yeah, I mean in a perfect world, if we could be able to have an i-Phone app, or an android app, just to keep it neutral, that we could go through and be able to fill out the basic information from the customer, and then apply online, so at least now we've teed it up, this is what we're trying to do. And here's an attached file for what we're trying to do. And we're following a simple process that's uniform, that's the key, that's uniform, that everyone can use, I think we could really move on, really streamline this process a lot.

COMMISSIONER MC ALLISTER: Okay, great. It looks like Mazi -- yeah, go ahead.

MR. SHIRAKH: May I ask a question? You mentioned that the code is complex and the 2016 standards are making it more complex, if I understood your introductory comments.

I wasn't sure if you were talking about the energy code or other parts of the code.

And you also had a slide that was showing all the problems with the HVAC system, the air flow, the static pressure, the charge and all that.

What we've tried to do, at least, is try to come up with a code that will address, specifically, each of those issues.

So, is there a way that we can present the code or write the code that's simpler, that would still accomplish what you were trying to accomplish in that graphic?

And I was -- I'm just basically looking for ideas of coming up with better code language that's simpler, but still accomplishes everything you had in that graphic?

MR. LANGSTON: And that's a great question. I think whatever we measure will be improved. So, being able to measure performance -- filling out forms are important because you're trying to establish some guard rails, right, and move people in the right direction,

and I agree with that.

The problem is that there is -- the forms seem complex to a lot of what we're trying to do. Most of what we're doing are unit change outs.

So that the code applying to the new building makes perfect sense because we have a clean slate. We have all the architects, the other engineers together. They're going through their process. There's no problem, I have no complaints with that because we're all kind of gearing up for it and understanding it. We're going through that maturation process.

Where the problem is, is when we're changing out just units, we're changing out rooftop units, right. We know that over 80 percent of the building stock is already built, so we're not going to have that much new construction when you look at the total inventory.

So, being able to have a simple form for a rooftop or a split-system change up, be it residential or nonresidential, is critical. And this is the condition of the equipment, this is what it's doing. We did some simple measurements. This is how much power it was drawing. You know, and just take some key information, put that into an app, and then here's your before and after.

And from that measure, your Kwh per ton, and

then we could actually see a performance improvement, we could actually measure it. How much better can we get than that, you know, than just wet my finger and this is what Deere says we're going to do. I'm sorry, I don't have a lot of faith in that. Sorry.

MR. SHIRAKH: I think we all agree that the alterations are the biggest challenge. We've attempted, you know, to address some of these issues. But, you know, I think what you're suggesting is having, again, electronic forms, apps, and that sort of thing. Those are the kind of ideas we're looking for.

MR. LANGSTON: Right. I'm a firm believer in measuring. So whatever we can measure with power, with temperature, with air flow will give us a better picture because that's how these systems are designed.

So, I'm concerned that forms being filled out sometimes may not have accurate information. But if we're actually measuring them and maybe you're having a couple of pictures you're taking for a verification process along the way.

We helped pilot a program in Southern California Edison for early retirement, kind of a cash-for-clunkers for package units. And it's had some great success. But the idea was the equipment had to be working.

Right. Well, it did. You know, you couldn't

just take -- because if it had a dead compressor, it's not drawing power on the grid and that's not helping with demand response.

But being able to measure the performance of that old piece of equipment, before and after, is important because then we can actually calculate what impact does that have for the grid.

But I would invite you down any time to Southern California, you can go out and we can look at that stuff together. That invitation's open any time.

COMMISSIONER MC ALLISTER: That's great. I'm a firm believer --

MR. SHIRAKH: I'm going to take you up on that offer.

COMMISSIONER MC ALLISTER: I'm a firm believer in ride-alongs.

MR. LANGSTON: Yes.

COMMISSIONER MC ALLISTER: I think that's a great learning experience.

Well, I want to give an opportunity of folks on the panel to ask questions of each other, if they have any, because I think probably that could be helpful to elicit some additional information sort of at a relatively high expertise level -- a relatively high level of expertise.

So, does anybody have anything they want to ask to anybody else on the panel? Then I'm going to open it up for the blue cards.

Yeah, go ahead.

MR. SULLENS: Yeah, Charlie, I was intrigued by your HERS registry and the fact that you were asking would it be useful for building departments to be able to see the green lights, the checkoffs.

And there's a similar software that's out there for construction waste recycling called green -- what's it called, Waste Tracker, Waste Tracking. I'll send you the link.

And it's been really helpful because there's a number of jurisdictions in our area that have this. It's a third party, private sector software that is free for local governments, and it basically -- they're able to set up their criteria and check off permit steps along the way, and review it. And then the contractor can upload forms and things like that.

And our users of that, the local government users love it because they have this e-mail communication that's quick, it's effective, it's fast, and they can see clearly where they are.

So, I think maybe that's a good kind of reference. And the more that we can bundle these

things, too, so it's the energy, it's the other parts all -- has all the more kind of strength behind it for enforcement.

So, I don't know if you've heard of that or --

MR. BACHAND: I did hear it, thank you. I'd be very interested in looking at the link to see what else we can do to help.

And I think that, you know, the notification thing can be very helpful. I hope it proves helpful to the building departments.

MR. SELBY: I wanted to add to that. The key thing is getting building departments to use that feature. I know, through our classes, we tell them that they have access to HERS registries. And they're like, really, how do we do that?

So, there is a disconnect, there is a learning curve that they will need to -- you know, maybe some very specific training would be in order for that.

MR. BACHAND: If I may, just real fast, we actually have already put some webinars online for building department officials to learn out to use our Project Status Report. And those are available from CalCERTS.

We'd certainly be open to doing such a thing again, or again, and again, and again if that's what's

necessary for jurisdictions to learn. Because it will take, you know, a 15-minute presentation before they really know exactly what they're doing.

COMMISSIONER MC ALLISTER: Let's see, I'm going to -- well, I want to take a little pause here to thank staff for organizing this. Certainly the IEPR staff, Stephanie and crew. And Raquel and Heather are off in San Francisco, at another concurrent workshop, so they're working overtime these days. So, thank you for that.

And for Charles Smith, also, my adviser on IEPR and other matters, who really helped to put this thing together. There he is back there.

And also, Eurlyne Geiszler and the buildings team. I see Bill there, as well, and there's Peter. Really, thanks for all of your suggestions on how to put this thing together. Because it was a little bit challenging to figure out how we sort of cover a bunch of topics all at once. And we ended up with sort of one big bucket of presentations and kind of, frankly, seeing how it would go. So, I think it went well.

A lot of interesting ideas, both for kind of our existing system and how to oil that a little bit to decrease friction in the system. But also, you know, thinking towards the future, I know staff is doing that

already, on thinking how we can leverage electronic tools. And there's a lot of interesting thinking going on about utilizing actual consumption data from project sites, pre/post, and doing some of that analysis that, Don, you were referring to.

It's not a trivial thing to do. It's quite a turn from our current trajectory, but it is -- actually, you know, we're in 2015 and data is a resource that we ought to figure out how to use better.

And to the extent that we could possibly create a track where, if the customer consented to that kind of access to their data in terms of -- and in exchange for that, you know, injecting their data into a system like that, maybe their process on the compliance side is maybe streamlined somehow, or improved, or they jump to the front of the line, or something like that. You know, I'm certainly open to those sorts of ideas. Obviously, more fully backed than I've just sort of suggested.

So, go ahead, you have a response?

MR. LANGSTON: More or less just to add on to what you're saying. So, we're working right now with SCE, through the Quality and Maintenance Program, on a large portfolio customer that I have. And they were actually one of the earlier adopters into the Quality

and Maintenance Program.

And what we're doing is we're actually looking at, now, about two years of their electrical data. And we've gone through, in all the different measures involved with the quality and maintenance, along with some very robust and aggressive economizer upgrades, where the economizers did not work prior to that.

So, we're going through that to kind of look and see, on that whole portfolio basis, how has that changed, you know, has it bent the curve in the right direction. So, that's going on right now.

COMMISSIONER MC ALLISTER: Do you do things like continuous commissioning as part of your services? You know, do you provide ongoing services to a given customer to make sure that their units are operating well, and that they're perceiving the savings over time?

MR. LANGSTON: Yes, we have some customers we've had since the mid-1970s, that we've had continual maintenance and just maintaining that equipment. So, we've got a long history of that.

COMMISSIONER MC ALLISTER: Yeah, not directly a code issue, but it's certainly a customer value issue. And if they can see that the code helps them get to that level, when they do a big investment, then that's all for the good, I think.

MR. LANGSTON: Real quickly, what we're doing is we're just trying to move the conversation with the customers to helping them understand the increased energy cost.

And so, what we're doing is we're taking portfolios and just keeping it simple. Saying, well, what are you spending on a summary basis over the course of a year, and what is the square footage of your buildings, and let's just benchmark each building on your energy cost per square foot, and Kwh per square foot.

And it is amazing, when I talk to customers that didn't -- I mean, very high level, CFO type people that did not realize they were spending three and a half to four million dollars a year on electrical costs, and it had gone up 18 percent last year. Because when they look at their business models, you know, they have key things, they're trying to drive sales. Even though they're looking at costs, they don't realize how much the energy cost is creeping up and eating into their margins.

So, once again, it's another one of those conversations to have with them about energy efficiency measures.

COMMISSIONER MC ALLISTER: Anybody else on the

panel want to --

MR. BARKS: I just wanted to --

COMMISSIONER MC ALLISTER: Okay, great.

MR. BARKS: -- add a couple of comments about what Don spoke about there.

You, and a couple of the other speakers, actually sort of filled out what I was talking about on that measurable.

MR. LANGSTON: Right.

MR. BARKS: It needs to be measurable. And an additional comment to Mazi, in how you would do that is -- I'll use an aside here to describe a way to make something measurable.

A number of years ago, I was working with a large refrigeration company, in the country, and this refrigeration company was using between 30 and 100 thousand dollars a month at most of their plants, and they had about 30 plants within North America. And they were owned by a company that was based in Hong Kong.

And some accountant in Hong Kong started looking at the bills each month, $30,000 here, $100,000 there. And he went to the CAO and he pointed out the huge amount of money that was being spent.

And without talking to anybody, you know, just kind of on the spot, the accountant then, the CAO made

the decision that this large company in North America was going to cut their energy costs 50 percent in the next year. A very big number.

So, they called the president, you know, responsible for the refrigeration side in the U.S. and they told him that he had a year to reduce the energy cost in all of his plants by 50 percent if he wanted to continue to have a job.

So, they hired a professor at the University of Washington, and they analyzed their facilities and they determined where the energy was being used.

And then they hired, you know, the company that I was working for to upgrade their facilities around the country to get that energy savings.

And, basically, it was a thorough analysis of the plant and the goal was pretty straight forward. Okay, you're going to save 50 percent. We're not going to tell you how to do it. You know, here's some research, here are some ideas.

You know, my comments to the Energy Commission and to Mazi, earlier, is you're a great resource. You have a lot of information that can be shared with people on how to save energy, but you don't necessarily have to tell them how. Set a goal. What is that goal?

And for an existing building, are you setting an

existing building standard for a project of 10 percent, or 20 percent? What is the goal for that specific project and then measure to that project -- or measure to that goal.

So, you know, kind of coming off of your comments and some of the other comments that were made earlier about outcome measures. If you can somehow create the -- the code is the code. But there might be ways that you can link the compliance with measurable aspects of a project, where maybe they don't do all the measures, but they accomplish a given number of things that will accomplish 10 percent savings in energy for that building. Well, that's what the code -- or that's what the permit requirement is for that particular project.

And try to somehow incorporate that into the code so that people have, you know, a definite goal to reach for, but you don't necessarily tell them how to do it. You know, they can borrow from all of the different measures that are available within the code, as to what will be most effective for that given project.

COMMISSIONER MC ALLISTER: Thanks. Go ahead, Wes.

MR. SULLENS: Can I follow up to that? I think that's absolutely right. But we're kind of edging on

the limits of jurisdiction. So, after a certificate of occupancy the building official technically has no responsibility, unless you're pulling another permit.

So, how do you -- I guess I'm asking, is the building department the right place to be doing this? I guess that's a huge question to ask.

But, or are there ways to get third parties or some other way to enforce it? Because, really, with this conversation we're coming up to the limits of what the code can do.

COMMISSIONER MC ALLISTER: Yeah, and not just the local level, but the Commission, right. I mean, to some extent code is a dance between sort of -- you know, it's sort of we want to be uniform and we want to be simple, but we also want to make sure that we're capturing the good opportunities out there, which aren't always the same across the State and aren't always simple.

So, I think -- and incorporating a -- I still can't really get my head around incorporating, in code itself, a performance-based approach. So, that's a conversation I think that's really -- not performance-based in the way we have it, but this kind of an outcome-based approach where your sort of measured performance, you know, and having that code. That would

require sort of a new approach that, I think, define what that specifically means.

So, Mazi, go ahead.

MR. SHIRAKH: But isn't that what the performance pack is? I mean, it doesn't tell people how to comply. You can -- you know, the performance software establishes a baseline, based on the prescriptive measure, that is true. But it doesn't tell you what you have to use. You know, it basically comes with an EUI. You know, the Btu per square foot, per year.

And as long as your design meets or beats that criteria, you can comply and it doesn't tell you, you know, what specifically what to use. You can do tradeoffs between windows, higher performance equipment. Isn't that what that is, essentially?

COMMISSIONER MC ALLISTER: Well, aren't you talking about actual consumption versus modeled consumption?

MR. BARKS: I'm speaking actual. Yeah, the performance approach is excellent for determining a method to reach compliance, but it doesn't actually measure compliance.

So, you can have beautiful documentation that shows complete compliance and have a building that is

absolutely horrible energy-wise, just terrible. So, there's a disconnect there between we can document it or we can prove it.

Proving is, I think, what Don is talking about.

MR. LANGSTON: Right.

MR. BARKS: Proving that it works and give some flexibility in accomplishing that. But we still have to have documents that show what the goal is. So, we still need registries, we still need documents.

But instead of maybe being a long list of compliance features that are going to be like a specification for the project, it might be a simple, one-page goal that says we are going to improve the efficiency of this building 15 percent, on this project.

Well, now, Don can go and he can measure the existing current efficiency of that building. And then, at the end of the project, somehow it can be measured to show that the efficiency was actually gained and make those the reporting documents. You know, a pre-document that says this is what it is now, and this is a post-document that says we've accomplished this.

And that's a different -- it's a different way of doing it. You can continue to collect documents, but they're going to be different documents. And it might be something that I think -- I do a lot of commercial

plan review, myself. And I see the issues with the commercial plan reviews that there's a lot of disconnect on them, and there is no measurement.

And showing that you're going to take a nonresidential project and make it comply, I don't think the documents really do that right now. You know, I see a lot of these documents and I don't think that they do that.

Measuring, having a set goal and a measured outcome is a much better way to approach that, I think, than throwing more documentation at it.

MR. BACHAND: I have a mixed question/comment to all of this discussion. Charlie Bachand, from CalCERTS, again.

The outcome-based, as-built model, as Brian was talking about, outcome-based as you were discussing, what you were discussing just now, that seems to me to dovetail very closely with sort of the original intent of the whole-house rating.

And I realize that this applies to residential, but we can extend it to commercial, as well. Where you did have a test in and a test out. And while you didn't have, say, smart meter data, necessarily, to prove your efficiency gains, you did have somebody that was documenting. Previously, they had a 9 SEER air

conditioner, and no insulation in the attic, and now they've got 13 SEER and the correct level of insulation in their attic.

And so, I think that this idea of streamlining, it dovetails really nicely with the work that's being done in AB 758, and with whole-house ratings. Thank you.

COMMISSIONER MC ALLISTER: And I would just, you know, reiterate that in all of the above, definitely in the whole house and in code, sort of figuring out ways to make it not such a hassle that nobody wants to do it is really, really important.

You know, and having that customer see the value of that, you know, that they're going to get what they're paying for and here's what they can point to, to show that. You know, and I think that's the challenge is kind of having it both ways, in a way.

Go ahead, Brian.

MR. SELBY: I want to point out one other thing. A lot of compliance for single measure change outs aren't done using the performance approach. So, it does very much limit that to have some sort of performance goal.

So, most HVAC change out measures are done using the prescriptive approach, which is a very simple

approach.

So, you know, if improvements were to be made or, you know, it could be a condition to further monitor as feedback, another source to data mine for the Energy Commission to provide validation that these prescriptive measures are appropriate for this type of energy savings and we are actually achieving them.

COMMISSIONER MC ALLISTER: Great, okay.

I want to go to the blue cards, now, so I've got six. Ken Whiting. And I'm assuming all six are still here. Go ahead. Just push the green light there. There you go.

MR. WHITING: Okay. All right, I'm Kent Whiting from Stack Lighting. And I just want to thank the Commission for giving us the opportunity to comment on the existing building energy efficiency standards here.

A little background. Stack, on how Stack Lighting is in alignment with AB 758 and the Governor's goals. We're a California-based company. We develop state-of-the-art, commercially available, autonomous daylight harvesting indoor lighting technology. It improves energy efficiency an additional 50 percent beyond conventional LED lights.

The autonomous bulbs automatically respond to changes in their environment by adjusting brightness and

color temperature without any user intervention. Thereby, improving the efficiency without needing to do any retrofitting to any of the light fixtures.

It provides an accessible and affordable technology. It allows for a wide distribution and delivers immediate energy savings, which will help carry out AB 758 and the Governor's initiative to double energy efficiency by 2030.

I just want to comment that as the Commission implements and develops standards for existing buildings, it's important to maximize the accessibility for all homeowners, renters, businesses to deploy state-of-the-art technology and energy efficiencies which are -- sorry, with technology that's rapidly evolving in order to recognize the benefits of innovative technologies that will play an important role in helping California meet its aggressive energy efficiency goals.

We need to allow for new technology to help meet these goals. So, incorporating, again, this available, currently available autonomous daylight harvesting lighting into the State standards and model ordinances would help meet that goal.

We look forward to working with the Commission and other stakeholders, and we'll file additional written comments to the docket. Again, thank you.

COMMISSIONER MC ALLISTER: Great. Thanks for being here.

George Nesbitt.

MR. NESBITT: George Nesbitt, HERS rater. Without building permits, I think we can assume mostly noncompliance. With building permits, we can't really assume that great a compliance.

As a contractor, I've almost never had to file a CF1R. I have never filed an installation certificate or a HERS verification.

As HERS rater, there's been maybe a very minor uptick in calls with 2013.

As an energy consultant, do a CF1R with HERS verification, put it in the registry and nothing happens.

So, we talk about -- well, you know, CF1Rs don't match the plans. And what's in the CF1R doesn't get put on the plans. And then, what gets built doesn't match, either.

I mean, sadly, this is how our industry works, including when we get to large projects, and there's architects, and engineers, and contractors who have been doing it for 40 years, and they've never done up in an attic to see if the insulator actually put anything in there, yet they paid them.

This is why most of the utility rebate programs have us HERS raters out there, verifying all the measures. Where it fails is we're not necessarily checking things like window areas, wall areas. Supposedly, that's been done at plan check. But I can tell you most of the plan checks probably don't look as hard at some of that stuff, as they do others.

And this is also why we have a HERS rating system. I mean, we -- it's come up, you know, we -- and some of the utility programs actually are requiring as-built of the energy modeling. So, from the HERS rater, they actually go back and will adjust things to kind of see on paper what it is.

The thing is, with the code we can get around so much of the performance testing, the things that we know make things work right.

And as far as permits, permits can be as easy as walking in, filling out a one-page form, providing no plans for your HVAC change out, or rewire a whole house, or replumb a whole house. You just tell them how many outlets. No drawings, nothing. It can be that simple, to it taking me ten weeks and three trips to pull a permit for a PV system in the City of Berkeley. How much did that cost?

The plan checker, obviously, didn't understand

what he was looking at because some of his comments kind of proved that. And none of it changed what I did. I didn't do anything differently.

So, there can be incredible cost to doing business and it provides very little, yet we also know there are plenty of people out there doing bad work. So, that's why we have it.

And then just a comment about the process of this workshop. This and the plug load workshop both being half day. Sort of you slam all the presentations together and then comment at the end, I find even sitting in the room to be extremely boring.

Honestly, this should have been an all day, ten o'clock on. Really, we've got so many great minds, there really needs to be more room for comment from others, instead of just slamming all the presentations.

COMMISSIONER MC ALLISTER: Thanks for your comment. Please submit written, if you have additional things to say. Really appreciate it.

Sebastian, is it Acevedo, maybe? I can't really read the handwriting here. Sebastian, anybody submit a blue card named Sebastian? No.

Okay, Jonathan Changus. Huh-oh, saw him back there before.

Bob Wiseman. Great.

MR. WISEMAN: Hello, thank you. It's kind of hard, so much information it's hard to know where to start.

But I am the Chairman of the Institute of Heating and Air Conditioning Industries, IHACI. I'm also a C-20 contractor in the State of California, doing residential and commercial work.

And, you know, this is great conversation. I think we're missing, you know, one key component. Because most of the conversation here started with, you know, once something gets into the building departments. Okay, that was the vast majority of this conversation, okay.

Our problem is the jobs that don't get into the building departments, that don't get that far. We have an 80-10-10, you know, situation, where 10 percent of the contractors are following the rules. The other 80 percent, you know, are kind of in the middle, and you have 10 percent who are not ever going to follow the code, okay.

It's that 80 percent that we need to try to move and that's where the Energy Commission can have its biggest impact, okay. Obviously, once something makes it into the building department, it has to be correct. It should be fairly simple to go through.

But, you know, from my perspective it's -- it's morally wrong to have a contractor, ask him to do something and violate code in order to stay in business. And that's the reality of where we are today. And that's wrong on many levels. We should not, as a State, be asking people to do that.

Now, obviously, we can rationalize, oh, you know, if we're not -- you know, if we're not pulling permits, you're just breaking the law. Oh, we have to pull permits. Well, of course we do. You know, but that's not reality. That's not the world we live in. And we've made it much too difficult, for many reasons, in order to do that.

And I'll just throw a couple of things out there. You've mentioned the cost, Commissioner, you know, a simple furnace that used to cost $2,200 is now $3,000. That's a problem.

But, you know, if there's a level playing field and all contractors have to do the same thing, the cost is irrelevant. You know, as long as it is enforced.

A statewide permitting system for a single change out of a system, I think is imperative. Okay, there are hundreds of building departments with different requirements, okay. If we have a single, for a simple change out, a simple -- you know, a simple

form, something easy to do, because that's the vast majority of the work that we do, that is what has to happen.

You know, and going across all these different jurisdictions, trying to get everything, you know, correct for different jurisdictions, the cost involved with the permitting is huge, okay. It needs to change. We don't start tracking equipment when it comes to the building departments, we start tracking it long before it gets to the building departments. Okay, it has to happen.

Increasing fines to contractors. Contractors don't care if they get fined, because the fines are so low and they have almost no opportunity to get caught, okay.

One other thing, I know I'm done, cities don't see the value in permits, either. I haven't heard it mentioned here. I've talked to many building departments, you know, and say, well, why don't you have somebody driving around, going out and finding all this work that's not being permitted? There's no incentive for them to do that.

Some cities do. They should be used as models to be compared with the rest of the State. And, I mean, I know there's one city that if I don't pull a permit,

they put firetrucks on either side of the street and I'm not getting out.

COMMISSIONER MC ALLISTER: I'm not going to speculate.

MR. WISEMAN: And that's followed. It should be followed. So, anyway, thank you very much.

COMMISSIONER MC ALLISTER: Thanks for your comments.

Alima Silverman.

MS. SILVERMAN: Hi, I'm Alima Silverman. I'm an architect and a LEAD Accredited Professional. I work at Tierra Resource Consultants, and we're an energy consulting firm. I'm no longer doing design work in architecture, but part of our business is advising utilities, advising municipalities, and also advising business owners how to retrofit existing buildings.

So, I feel, personally, like this is really an important part because so many existing buildings are out there. The codes more or less cover new construction. And we just, in order to reduce greenhouse gases and to reach all of our other goals that we have here, now, in California, we really have to deal strongly with existing buildings.

So, I don't really have a plan, but I'm just going to reiterate some things that were said today,

that I feel are most important.

One thing that Bob said, linking the cost of ownership and asset value to energy efficiency is really critical to building owners. And I know at one of the previous workshops there was a gentleman representing realtors and building owners here, who said, well, we should set our goals lower because it's just too hard for them to comply.

But I don't agree with that. I think we should really set high goals. And I think it's very possible. There's a paid-from-savings approach, there are other approaches for building owners to make small increments but then, eventually, at times of big capital investments go for the high efficiency, and really improve their buildings. We just have to do it.

So, we're hoping to support the AB 758 efforts with both owners and municipalities. I think what Don said, over here, about measuring performance is also really critical. That if we really want to get the buildings performing so that we're going to reach our goals, measuring is very critical.

So, those are my comments, thank you.

COMMISSIONER MC ALLISTER: Thank you, very much.

MR. SALAS: Good afternoon. My name is Adrian Salas, from San Diego Gas & Electric. I'm representing

the Statewide Codes and Standards Team.

First, thanks to the Commission for keeping this issue top of mind and moving this conversation forward with discussions like this.

Sir, you had asked what the ACE was, earlier today. And I wanted to add to some of the user feedback that Mr. Goodwin provided.

The Energy Code ACE, is an online, completely free resource developed by the Investor-Owned Utilities' Codes and Standards Program, with public funds, to assist with referencing, building to and complying with part 6 requirements. There is a hyperlinked reference tool, code trigger sheets that informs ACE, installation guides, and in-person and online training information, all branded under the ACE tool's umbrella.

The Energy Code ACE team is thankful for the Commission, the Commission's staff's willingness to partnering with us. And as we look forward to continuing to collaborate on the issues discussed today, the Energy Code ACE team also looks forward to supporting the Commission on new compliance tools, as our program implementation plans allow. Particularly, in the areas of digitizing compliance forms and tailorizing compliance improvement tools, as Mr. Selby brought up, specific to the different market actors

involved with effective compliance as we increase the focus on energy efficiency opportunities in existing building stocks.

So, thank you.

COMMISSIONER MC ALLISTER: Thanks for being here.

I think that's it. I have a Sebastian, I think it's Acevedo, and Jonathan Changus. Neither one of them, okay. Great.

All right, is there anybody else who wants to -- who did not submit a blue card, but who wants to say something here? I see a lot of folks listening in and that's great. I hope it was interesting for people.

I definitely, within the constraints that we have and, you know, we have a lot of IEPR workshops. We have a lot of workshops, generally, in many, many different parts of the marketplace.

Come on up, I'll just finish my comments here. One more commenter here. Oh, do we have one on the web, too?

MS. BAILEY: We do have one comment that somebody had actually just asked me to read, a question.

COMMISSIONER MC ALLISTER: Oh, great, okay. So, you know, I'll cut my comments short and pick it up later.

So, why don't we -- the gentleman over here, do you want to say something? And then we'll get the commenter from the web.

MR. CHISTI: Ishtiaq Chisti, with Southern California Edison. I just wanted to make one point. I think, you know, I definitely agree with what Adrian had just mentioned about the Energy Code ACE, and representing the statewide team.

But as you go and develop the data repository, one thing I think you probably want to keep in mind is privacy issues and data security. That was my only point.

COMMISSIONER MC ALLISTER: Okay, thanks for being here.

And one more comment from the phones?

MS. BAILEY: Yeah, there was a question from Steven Long, for Cynthia Moore, if she's still on the line.

His question was, "Some contractors don't offer pulling permits by default. Have you considered a mystery shopper program, where contractor bids would be collected to confirm where contractor-specific, noncompliant issues exist?"

MS. MOORE: Could you read that --

COMMISSIONER MC ALLISTER: Cynthia, are you

still there?

MS. MOORE: I am here. Could you repeat that question?

COMMISSIONER MC ALLISTER: Hey. Could you read that again, Stephanie?

MS. BAILEY: Sure. Yeah, it says, "Some contractors don't offer pulling permits by default. Have you considered a mystery shopper program where contractor bids would be collected to confirm where contractor-specific, noncompliance issues exist?"

MS. MOORE: A secret shopper program. No, I don't think we've considered that. We have done different stings on licensed contractors to confirm their compliance, so they're usually based on complaints.

COMMISSIONER MC ALLISTER: So, stings, yeah.

MS. MOORE: Am I answering the question properly?

COMMISSIONER MC ALLISTER: Yeah, so a sting, could you describe what a sting is? Is that sort of you find out about a -- well, go ahead and I'll let you describe it.

MS. MOORE: Right. What we'll do, usually our stings are with non-licensed contractors, but we have done them with licensed contractors, as well. Where we

have a house that someone donates. And, usually, it's an elderly person that we have pose as a homeowner. And we would have an industry expert come out and inspect the air conditioner, do the HVAC, some sort of energy system to ensure that it is completely functional, everything's working. And then we would have contractors out to come and do bids and see if -- there's many different things that we can be looking for.

But sometimes they'll tell the elderly person, hey, you know what, we don't need to do permits because it's going to cost you too much more, I don't pull permits, things like that.

That's probably the closest thing we've done to what the question is.

COMMISSIONER MC ALLISTER: It sounds pretty close, yeah. Great, well, thank you very much.

Let's see, so I would very much encourage folks to submit written comments, both those on the panel, if there are things that you weren't able to get to, please. But, also, just all stakeholders interested in this topic. I mean, I see many of you, with a lot of expertise in the room, who have been listening patiently and, hopefully, formulating your written comments, the structure of y our written comments.

MS. BAILEY: Did we want to open the phone lines up, as well, so if there's anybody --

COMMISSIONER MC ALLISTER: Oh, sure. Yeah, go ahead. Go ahead.

MS. BAILEY: So, if you are participating via WebEx, and you're on the phone, and you had a comment or question, feel free to go ahead and speak now.

Hearing none.

COMMISSIONER MC ALLISTER: Sounds like none. And, Stephanie, you said what the date was that comments are due by. Can you maybe say that once more?

MS. BAILEY: Yes. Written comments are due by August 10th. There are instructions in the notice on filing those and there also are instructions here on the screen.

COMMISSIONER MC ALLISTER: Great. And we heard a lot of ideas today and I'm appreciative of everybody on the panel. Thank you very much for taking your day to be with us. I know everybody has many, many things going on and we value your participation here very much.

I certainly do. And, you know, pushing this existing building sort of problematic forward is probably my highest priority here at the Commission. And figuring out ways to do that in ways that work in practice, and that are most likely to get out there and

have some traction and scale is really what, you know, I'm looking for and staff is looking for. You know, and we can't really claim success if we have a perfect system in theory, but it doesn't go out there and really move the needle.

So, I think that's the difficulty of doing good public policy is figuring out, you know, okay, what do we want? And then, really rolling up our sleeves and getting dirty to figure out what the marketplace is really going to do and not do.

And I really appreciate all your efforts because you're out there on or nearer, certainly, to the front lines than I am.

We heard a lot today. I guess I came away with a couple of top themes, one of which was local governments -- I mean, we all knew this, I think, local governments are the key in many, many ways here. They have the critical jurisdiction over the building stock. We've got to figure out ways to assist them.

And, you know, I think where we may not have complete consensus here is how much uniformity we should compel them to have in terms of their processes. Because there's a lot of don't-tread-on-me jurisdictions out there that I -- you know, without a clear statutory mandate, it's really hard to go out there and say, hey,

what a good idea, you should be like your neighbor. Well, you know, it doesn't always work that way.

So, how do we kind of get that discussion or at least get the bulk of the jurisdictions where the population is, in the State, to adopt similar types or just effective types of processes for their permitting and compliance.

And then, second, education all up and down. I really appreciate the ACE team and that project. I think it's really having an impact. I appreciate everybody who is using it and developing it.

But education really needs to apply to all stakeholders, from the customer on up. And so, how do we create the system? And I mean we, broadly, not the Energy Commission, necessarily. But how do we make sure that without requiring everybody to be an energy expert, which is a fate I really would not wish on most people -- you know, t hose of us who are in the field love it, but that's not everybody, I recognize.

So, you know, there's no need for that. We need to set up the system so that the value is perceived but, you know, without necessarily getting into all the details. And so, how do we tilt our education, develop the kind of tools that target the right person, with the right message.

Those are the two big ideas, kind of that I heard over, and over again. I'm sure there were others.

But again, I want to thank staff and thank you all for being here. And those of you who have been listening patiently, hopefully, you've got some comments that we can avail ourselves of. This is a really important conversation, so thanks very much, Mazi, and everybody else.

All right, have a great one and we're adjourned.

(Thereupon, the Workshop was adjourned at 4:33 p.m.)

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