HEARING

BEFORE THE

CALIFORNIA ENERGY COMMISSION

In the Matter of:	)
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Staff Workshop on the Electric	}
Program Investment Charge Program	}
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CALTRANS BUILDING DISTRICT 7

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PANEL 3 (CONT.)

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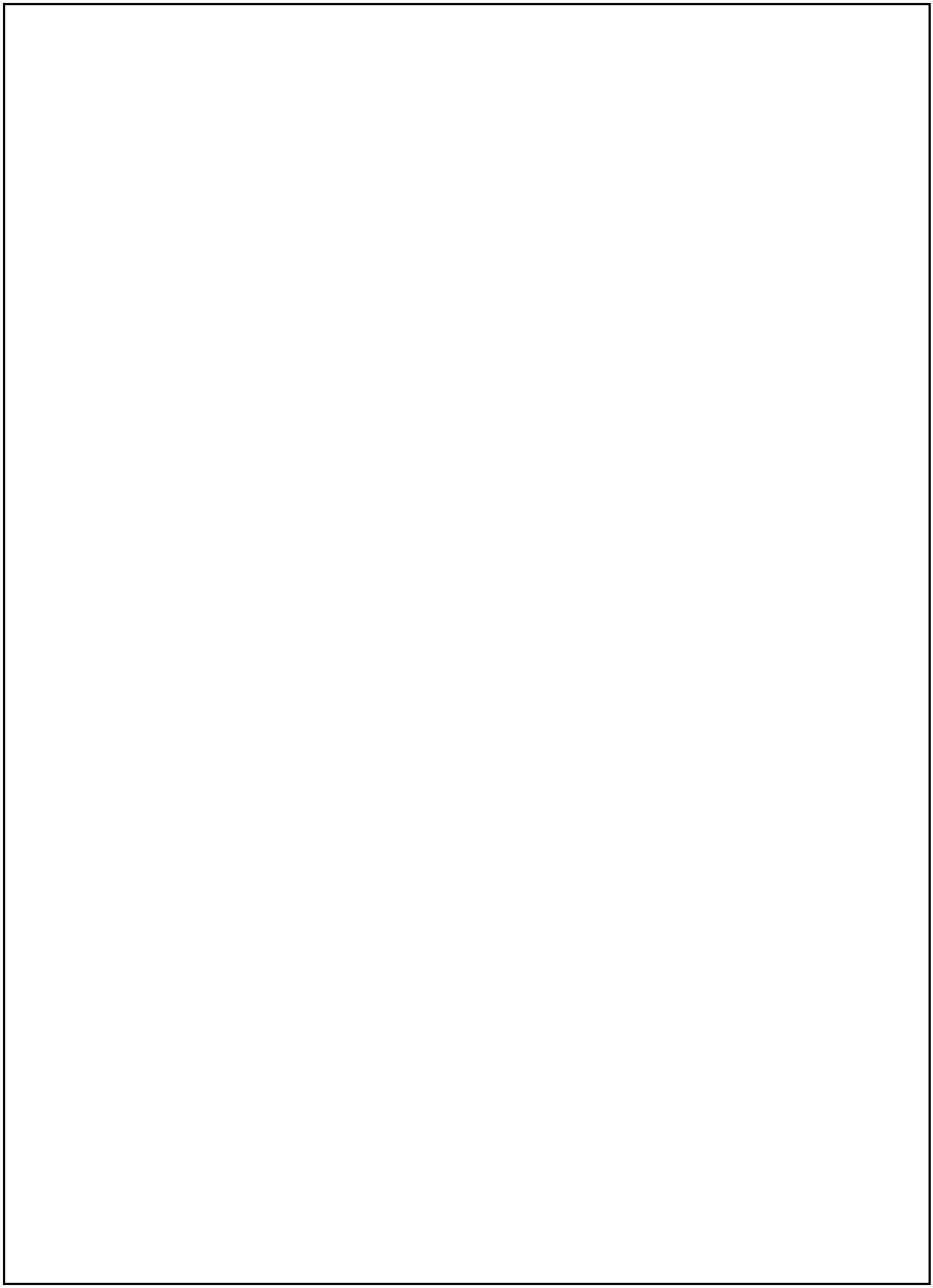


PROCEEDINGS

9:17 A.M.

MR. OGLESBY: My name is Rob Oglesby. I'm the Executive Director for the California Energy Commission. I'm not Mark Goodstein, but he's joining us here shortly. And I want to welcome you to day two of the Energy Commission's workshop on the EPIC program. Yesterday's program -- yesterday's workshop was well attended and -- both in the room and -- and on the WebEx. And today, for those who are on the -- on the -- on the phone on WebEx, the room is a little sparse but it's filling in now, and we're blaming it on Los Angeles traffic and parking. But we do have participants, both online and -- and in the room.

MS. TEN HOPE: You might need to be closer to it.

MR. OGLESBY: Let me try. Is this better at all? How about now? So -- but was I going over the WebEx?

MR. SCHINDLER: It was on WebEx.

MR. OGLESBY: Okay. So the only people who didn't hear me welcome you were the people in the room. So welcome again. Rob Oglesby, the Executive Director for the Energy Commission. So this is day two of the workshop.

Yesterday's workshop was more about the design of the EPIC program. And it's the -- was the third in a series of four workshops to help design the program. We had two workshops in Sacramento; very well attended. We had the one yesterday. And hopefully we'll lead to a plan that practically writes itself, a three-year investment plan for the EPIC program which is responsible for channelling $162 million for good purposes, to provide ratepayer benefits and -- and further the purposes of energy research and development and deployment. So today's panels are more about the benefits that are being brought about as a result of the EPIC program that are anticipated, or how to maximize participation and -- and the opportunities that the EPIC program will being -- will present.

I have to my left Dave Ashuckian who is the Deputy Director for Research and Efficiency at the Energy Commission who is going to lead off shortly, following me. But before I get to that point I wanted to thank the panellists, the Energy Commission staff who has worked really hard to put this together and will continue to work hard, and the participants.

At the conclusion of this workshop Staff has to go and draft the investment plan. And that will be vetted publicly in -- in a couple of weeks. Then based on the comments received on the draft that gets out on the street, it will be revised and put before the Energy Commission the last week of October at a special hearing just for EPIC program. And then following that it goes to the PUC where they have a process to -- to formalize it and -- and receive additional comments.

So without further ado, let's get to Dave Ashuckian, Deputy Director, and -- and the panellists.

MR. ASHUCKIAN: Thank you, Rob. As Rob said, I'm the new Deputy Director of Energy Efficiency and Renewables at the Energy Commission. And our program will be focusing on the technology demonstration, as well as market facilitation aspects of the EPIC program. That's broken out into three areas; the regulatory system and permit streamlining, the addressing barriers to commercialization, as well as market development. And there's about $15 million allocated to those three areas annually.

As we -- as you mentioned, yesterday's workshop was focused primarily on overview of the whole program.

And there were sections on clean generation, grid operations, and energy efficiency and demand-side management.

Today we're going to talk about energy innovation clusters, the regulatory assistance and permit streamlining areas, and workforce development. And we have a great array of panellists from federal, DOE, the military, as well as the defense industry, as well as local assistance programs, and universities. So I think it will be an interesting day.

As I mentioned -- had mentioned, it's a WebEx program. And so if you would raise your hand, I guess, as the -- as the mechanism to -- Cody is managing the WebEx.

And written comments will also be accepted. We -- we appreciate those by -- August 17th is the deadline for those -- those program -- for the written comments. I'm sorry.

And again, the areas we're looking for is addressing the barriers to -- to deployment and demonstration, identifying where funding should be and where funding should be prioritized, and what specific innovations and/or initiatives we should be focusing on, as

well as identifying the ratepayer benefits to the activities that we'll be funding.

And with that, I think Erik will be managing our first panel. And go ahead and come on up, and I guess we can get started.

If there's any questions, certainly I can entertain question at this point. Okay.

MR. STOKES: All right. If we could have the panellists come up.

MR. ASHUCKIAN: Just one more comment. For those of you who are new to the building, there is a cafeteria around the corner on the first floor. There's coffee and some refreshments there, if you need something.

MR. STOKES: Okay. Good morning, everyone. My name is Erik Stokes. I'm with the Energy Commission's Research and Development Division. And I'll be the moderator for this first panel discussion on energy innovation clusters.

First off, I'd like to thank all the panellists for participating, both in person and those who are participating remotely. The way the format is going to work is each of the panellists are going to have five

minutes to provide some opening remarks, share with us their experiences working as partners in innovation clusters. And then we'll have a series of questions we'd like the panellists to address. After that we'll open it up for a half-hour of public comment.

And so we'll start out first with the participants, the panellists that are here in person, and then we'll go to those that are participating remotely. First off is Holly Smithson. And she is the president of CleanTech San Diego.

MS. SMITHSON: Good morning. I'm Holly Smithson. As Erik indicated, I'm president of CleanTech San Diego, and delighted to be here. Thank you.

MR. STOKES: Sorry.

MS. SMITHSON: Now I can hold on to my coffee.

I want to thank, first off, the commission for holding this workshop, the scoping out of the roles that clusters play in fulfilling our mandates locally, and certainly those of the commission. I always appreciate the opportunity to see my friends and comrades in L.A. and Orange County.

Just to give you a little background about

CleanTech San Diego, for those of you who don't -- that don't know, we were hatched in 2007. So we're coming up -- actually we just celebrated our five-year -- fifth year anniversary. A very exciting opportunity for us, and a huge turning point for San Diego.

So the genesis of CleanTech San Diego was really born out of economic development. San Diego has a long tradition of bringing industries and clusters and turning them into economic engines. And the clean tech -- the clean tech cluster was certainly no exception. We have a tradition that's been demonstrated through the high tech and the biotech, and certainly clean tech was going to take a page from that play book. We now have over 800 clean tech companies that call San Diego home. And some of the key partners and anchors of our cluster are the utility and the universities who are the founders and cofounders of the organizations.

MR. HONRATH: My name is Taylor Honrath. I'm here on behalf of CleanTech OC. And thanks to the Energy Commission for having us. We're similar to CleanTech San Diego, and by that I mean we more or less copied their model because it's been so successful. So thank you for

paving the way and -- and lighting the way in that regard.

We actually began more recently, in 2010, in fact. So we're just a little over two years old. But we essentially were first founded to leverage a lot of the stimulus dollars that were being disbursed to clean tech companies and, I guess more broadly, clean energy companies throughout the United States. And a number of, you know, key players in Orange County realized that those dollars weren't coming to Orange County, despite the fact that there's a great deal of innovation happening behind the orange curtain.

And we ultimately realized that that's for a number of factors. Certainly, several are political. But a lot of it also had to do with the fact that there was very little collaboration between universities and pure play clean tech companies. And you had a lot of people advancing some -- some truly groundbreaking work and research on the university level, in the private sector, and in the public sector, but no one was talking to each other. So at the most fundamental level we essentially try to strive to be that connective tissue and foster those relationships.

And we were started by one of the larger VCs in Orange County, pipe equity firms, pure plate clean tech companies, the utilities, a handful of larger cities, and then, of course, some private sector companies as well. And we -- one of our -- our more recent projects has been this CSO roundtable. And this speaks more to the business development side that we try to facilitate for some of these clean tech companies. And by that I mean we essentially have organized a number of individuals in Orange County who are acting chief sustainability officers for Broadcom for Disneyland Resort, and very large buyers, essentially, that work for companies that have sustainability commitments. And they're striving to achieve them, but they don't quite understand how. And we try to pair them up with these clean tech companies so that not only can they begin building relationships, but they can also, hopefully, attract some very large customers in the process and do good by these companies trying to be mindful of their carbon footprint.

So I won't take any more time, but I'm certainly happy to connect with folks afterwards and share more, and appreciate your -- you being here this morning.

MR. GOODSTEIN: All right. My turn. I am Mark Goodstein with CleanTech L.A. It's interesting to see how these three organizations formed, a little different in each case, with different actors.

Thank you to the CEC for hosting us. There's definitely a role for the CEC and this EPIC money to help all of these innovation ecosystems.

The foundation of CleanTech L.A. is also funny. It's -- it was an effort by UCLA to get a $500 million climate change institute. The history is the money went away. The mayor convened the research universities, Cal Tech, USC, UCLA, and JPL, and a bunch of business associations, and formed this organization called CleanTech L.A. And it was stacked up at the mayor's office for a long time. But they formed a 501(c)(3) and had a website and a mailing list and did a little advocacy for federal grants. And then in March of this year I came onboard as the first full-time staff member.

So I've been spending my time figuring out what the program -- our focus areas should be. And we're really -- there are three main focus areas. One is a data program. We have the biggest -- we are an enormous

metropolis. We are an enormous market. In some ways we are -- we have a market the size of a G7 nation, and we're not cohering, and we don't really understand what clean tech means in the L.A. Basin. So we're going to do a ground-up survey of clean tech. So how many companies are there, how many jobs, revenues, size, scope, job openings, capabilities, and so forth, and start doing exactly what Taylor said and try to be connective tissue within the L.A. Basin.

And there's a second program which is the main driver for our being here and our interest in EPIC, which is early stage innovation grant pool, which is -- consists of industry money, industry input into commercially relevant focus areas, team-building help, and small amount of -- of capital. And our -- our hope is that we can get -- we can convince EPIC to match the industry money that comes in to fund early stage great ideas.

And I think that I'll close by saying the -- the third focus area, of course, is brining coalitions together to go after big federal grants. So we're going after a big, maybe $100 million advance money factoring into it in the company months in concert with UCLA and JPL

right now. That's a big deal.

I think the big -- there's a problem statement that we hope to fix. It is that L.A. is a place that does many aspects of innovation. We do a lot of discovery with the four billion plus in federal dollars that come into our research universities. But we don't do a good job of growing those companies.

So there's a professor at Cal Tech named Frances Arnold who started two companies over the last 15 years. They've both gone public, and neither of them are in L.A. That's a big problem. We do a great job of doing all of this, but then they leave.

And as an entrepreneur, as someone who has been a start-up person all of my life, I have watched friends and colleagues do exactly the same thing, develop ideas here and move north for money or east for talent or whatever else. So I think that's it.

MR. STOKES: Okay. So next we'll go to our panellists that are participating remotely. First off is Ilan Gur. He is the program director and senior advisor at the RPE for the U.S. Department of Energy.

MR. GUR: Hello?

MR. STOKES: Yeah.

MR. GUR: Can everyone hear me?

MR. STOKES: Yeah, we can hear you.

MR. GUR: Oh. Perfect. Sorry about that. I was -- I was on the line but it wasn't clear.

So thank you so much for -- for inviting us to participate on the panel. As the introduction mentioned, my name is Ilan Gur. I am a senior advisor and program director at RPE, the Advanced Research Project Agency for Energy. It's part of the Department of Energy. I'll just give a quick introduction to -- to what RPE is about, just for those who may not know, and specifically kind of the experience we've had thinking about sort of promoting innovation, and specifically around commercialization.

So RPE is an agency that was started under the Department of Energy, started in 2007, first funded in 2009 under the American Recovery and Reinvestment Act. Basically, our goal as an agency is to provide pivotal risk-reducing funding, federal funding for very, very aggressive high-impact research projects in energy, technology research projects in energy. We've had a budget roughly around $200 million a year since we've started. We

generally give out awards between, you know, on -- on average awards of about $3 million to teams that are really trying to think about the cutting edge of -- of what the future of energy innovation should look like from a technology standpoint.

And I think one thing I'd stress is that the mission of the agency is -- is very clear. You know, we're -- we're working on energy issues broadly, but specifically our mandate from congress is to support cutting-edge technology. So very clearly, we're not meant to be supporting incremental advances in technology, but really what's over the horizon.

And we have three very, very targeted goals for the agency. Everything that we support from a technology standpoint should have an opportunity to make a very big impact on one of the following three things. One is reduce our dependence on foreign energy sources in the United States. Another is to reduce energy-related emissions in the United States. And the third is to approve the overall energy efficiency of the country. And so the agency is really laser focused on those targets.

I guess, you know, just as it relates to -- to

this panel, you know, when the agency started we were modeled after -- after another agency that's part of the Department of Defense called DARPA. And DARPA is largely credited with really envisioning and supporting these next generation technologies. Some of the examples include -- you know, some which have very close alignment with the Department of Defense. All -- all of the innovation out of DARPA was originally geared towards defense. Some of it is defused. So you have Stealth Bombers, as an example. But -- but some have really made broad impacts. So DARPA is largely credited with the development of GPS, the development of the internet, which was originally called the ARPA-Net because of DARPA support.

And so when RPE got started we -- we largely copied the DARPA model for how the agency should be run, which is we bring in phenomenal technology, some of the brightest technology minds in the country. They leave academia, private sector jobs. They come to Washington to spend three years with RPE, and they basically manage these technology programs where we will come up with a problem statement in a given area where we see an opportunity for technology to make a big impact. That might be, you know,

new power routing technologies for the grid. It might be more advanced batteries for electrical vehicles kind of across the board.

We will solicit proposals from the top research groups around the country. We'll give funding to 10 to 15 projects all aligned towards a goal. So basically we fund a portfolio of the tasks because it's -- these goals are generally very risky, like double the energy net of batteries for electric vehicles is normally something that the industry takes 50 to 75 years to do, we'd like to see the best -- the best and very finest for the country, accomplish that goal in 3 to 5 years. And so we're generally picking the best proposals. We're funding a portfolio of effort. They're all competing toward that goal. And then we award a grant. We manage the technical progress of the project.

One of the things we realized early on in RPE was that the whole process was very much focused on technology. And that may have worked for an agency that was innovating for the Department of Defense because the Department of Defense had very clear needs. They had a large check book, willing to kind of adopt these technologies and move them

to the next stage. In energy, the past, from the lab-scale ideas to the impact that we're looking for, really in RPE we're looking for impact, is -- is -- is a tougher a path. And we don't -- the Department of Energy will not be customer for these technologies. It will have to go through the markets.

And so we thought very critically. And what we've done is basically created within RPE, within this government agency, a team of folks and a program that sits parallel to our technology program, which we call technology-to-market. And -- and basically the goal of this program is to take every single question that the technology team is looking at, every single opportunity that we're evaluating on the technology side, and apply a different lens to it. Have people with experience in business, experience in commercializing new technologies, thinking about the same issues, basically saying, well, what is going to be the paths that add impact? And more importantly, if this technology succeeds, if the technology models succeed, will it matter? Will it be relevant?

And so through -- through this technology-to-market program I think we've had some -- some really

interesting experiences around, you know, what did it take to try and position technology to be successful and have the impact on both the markets and -- and the energy goals and emission goals that a have. So I look forward to sharing some of that with -- with the panel. And with that, I'm done.

MR. STOKES: Okay. Our next panelist is Cameron Gorguinpour. He's a special assistant, Office of the Assistant Secretary for the U.S. Air Force.

MR. GORGUINPOUR: Hi. How's it going? Thanks for having me again this week. I wish I could be there in sunny L.A. But I do spend a lot of time there anyhow. So I guess at some point I'll probably just have to live out there and commute out here to D.C.

But in any case, I am Special Assistant to the Assistant Secretary of the Air Force for an office called Installations Environment Logistics. My boss, the Assistant Secretary, is responsible for the Air Force's policy on everything from basing decisions and occupational health and safety to energy and environmental rules and regulations and processes. So kind of a big portfolio.

My work, however, is really very focused on plug-

in electric vehicles. And, in fact, the Air Force is leading a DOE-wide initiative to integrate as many PEVs as possible into our non-tactical fleet. And some folks might be aware of the work we're doing at Los Angeles Air Force Base. We're working to make it the first federal facility to replace its entire vehicle fleet with PEVs. So that's -- that's sort of a big deal for us, and it's something that's in process. Hoping to get that all sorted out and in place by the end of the year.

So we -- we've been moving a lot of different funds, trying to make this work. You know, DOD has a non-tactical fleet of about 200,000 vehicles. So we felt we had some -- some -- some room to make an impact. And so my job has been trying to figure out a strategy where we can bring EVs into our fleet at cost parity, considering total cost of ownership, with conventional vehicles.

And so we think we've found some pretty -- pretty creative ways to do that, that include focusing on specific segments of our fleet, right sizing vehicle batteries to meet -- meet their usage, and then focusing largely on vehicle-to-grid activities, the idea that you can use the battery in the vehicle as an energy resource to the grid

when the vehicle is not being driven, and trying to draw financial value from that, but also operational value for -- - for different military functions. So it's sort of a broad swath of things that we're doing within the context of EVs. And we've been pushing on this for close to two years now and making some good progress.

So happy to be participating today and to give whatever inside I can. Again, I can speak mostly related to EVs. But -- but I am, obviously, familiar with -- with different DOD energy initiatives as well.

MR. STOKES: Thanks, Cameron. Okay.

So our first question for the panel: What are the benefits of innovation clusters in supporting the development and deployment of innovation clean energy technologies?

MR. GOODSTEIN: So I'll -- it's sort of a circular question. Clusters are important and are signs of growth. But I'll -- since this is Hollywood I'll quote Soylent Green, "It's people." So growth, attraction, and development.

The -- the thing holding back any cluster from growing, and this is the, at least in Los Angeles, the --

the consistent refrain from people who have moved is they couldn't find the right people. And so this -- this applies, actually, for both new companies and mature companies. Mature companies have, right now, today, in the manufacturing base in Los Angeles, a raft of openings. And they are looking for people that have the right skill sets, CNC operators, welders, etcetera. So this is a big deal.

And, of course, for new companies that are growing, they need start-up executives, they need people who have very specific skill sets, and often end up leaving because they think they can't find them in a metropolis of 18 million people. That's either true or not, depending on where you sit.

Attraction, you know, quality -- quality people like to be with quality people. And if you have quality people, and we certainly have many of them in Los Angeles, if the cluster is cohering it will act as a magnet for other quality people. And that will be an engine for innovation. And, of course, development, it's incumbent upon the -- the folks doing the assistance in the building of the cluster to provide programs that bring -- to fill that connection, and training and so forth. But EIR

programs, mentorship programs, putting experienced executives together with start-ups to help them more rapidly answer the core questions of growing the company, I think that is -- I'll stick with my answer.

MR. HONRATH: Yeah. I think that Mark pretty much hit the nail on the head. It's interesting, because here in California we've got parallels and, I guess, comparisons between Northern California and Southern California, and why clean tech supposedly is -- is home in Silicon Valley. And I think that all of us here would disagree. I think that's safe to say. I mean, clean tech is much more distributed. And if you have a very well educated workforce, you have a presence of investors who get the value of the industry and also their place in it, you have supportive universities and a generally supportive business climate, I think those are the -- the necessary conditions of the soil to really grow a clean tech cluster.

And I think that it's that last point that California is really still wrangling with. There's so many different layers of regulation and, frankly, bureaucracy. And that's not necessarily a bad thing, but California needs to figure out how it can be a better partner to the

business community, because companies are leaving, to Mark's earlier point. And they're not going to stick around and they're not going to come back if they get the sense that it's only becoming more confusing in California.

MS. SMITHSON: So at CleanTech San Diego, our day job is to really serve as an optimizer. That's really how we view our responsibility to the community. We work very hard to maintain a very robust marketplace. The cluster really serves -- the function that the cluster serves is to create a very supple ecosystem, a place that is recognized, not just in Southern California or in California, but globally. Because, let's face it, all of these companies are competing globally, and this isn't a Southern California issue or a California issue. I wish it was, but it's not.

So to the extent that these clusters exist, and that they collaborate, and that they're cohesive, and that play on a public-private platform is a huge-huge indicator as to whether or not we're going to be economically competitive, and that we're going to be able to be the leaders in clean tech that California is very posed to be.

Just to give you a case study for that premise,

so we at CleanTech San Diego, very early on, we organized in '07. The recession was in effect. And everyone, certainly in a leadership position, was trying to figure out how we were going to respond. And let's not just react; let's be proactive. And so because of the visionaries of CleanTech San Diego we -- we obviously were one of the first to organize and create this platform where all these different disparate stakeholders could come together and try to prepare our region for this -- this market, and try to be as competitive as we possibly could.

And so what we were able to do shortly after the ARRA was introduced, we organized a very regional coalition, UC San Diego, all of our municipal partners, the utility, all of these folks came together and we went after a big bucket of money in the federal government to the tune of $800 million. And that was eligible to everybody across the nation; obviously, the municipalities that wanted to actually finance and own solar on the rooftop.

And we were able to, in a very short timeframe, organize 18 munis. So offense against munis, but last time I checked they're not -- they're not quite as supple and quick moving as perhaps we'd all like. But nonetheless, we

organized this coalition. We brought all these partners together. We used a number of MBA students from UCSD to help these munis fill out over 300 applications.

At the end of the day we ended up getting over 20 percent of the national allocation awarded to San Diego under the Clean Renewable Energy Bonds, which was a huge-huge story that I think really speaks to San Diego's ability to collaborate. I say collaboration is king. And it's because we have such a robust sense of players at the table that see the opportunity. And if I can say this in the most humble way as possible, if cluster development were an Olympic sport, I dare say that UC San Diego, SDSU, and the utilities would bring home the gold for us.

I just -- I can't -- I'm an outsider. I'm not from California originally. But my experience has just -- it's just blown me away how effortlessly people come to the table to bring these big projects, to deploy the type of innovation that is required, and the ability to do and execute so effectively blows my mind. And I'm not saying this as anything to my folks from Washington D.C., which is I did a tour of duty for ten years on the hill. I came here in '07, started this organization, and was blown away

at the willingness and the spirit of everybody to come together, because there is no them versus us.

And I think the larger story in terms of how these clusters can help economic development is to think about it, for every, you know, UC San Diego micro-grid, and for every Soyatech (phonetic) that we're able to win and compete against nationally and internationally, every success that we have is an opportunity for another center of excellence and another cluster to leverage that success.

So I think the nexus is very clear in terms of how does this affect the public or the ratepayer; what's the benefit? Because for every success that we have we hope to continue to be the leadership that other folks can emulate and repurpose in their communities. And I'll get off my soapbox. Thank you.

MR. STOKES: Okay. Cameron and Ilan, do you guys have any comments for question one?

MR. GUR: Sure. I can jump in. This is -- this is Ilan. Just wasn't sure if I was -- if I was up yet. So, I mean, I think one thing I would -- I would point out, I mean, before getting to the -- to the question of benefits and clusters I think you've got to ask yourself

what problem you're trying to solve. And, you know, at RPE, if we looked at the innovations that we're supporting and -- and we said, well, our goal is to make a big impact, impact on emissions, impact on energy, etcetera, which means the ideas that we're supporting in the lab scale and in the minds of our scientists basically needs to turn into products and needs to get out on the market.

And so when we plotted that out and we said, well, what are the gaps -- and I think a lot of people talk about gaps, valley of death, whatever, you know, whatever language you want to use. I mean, the way I think of this is that there are a few -- there are a few gaps from a technology that might be at an early research stage. One is just get the private sector to care; right? So go from the researchers and the technologists developing something to the people who are actually using the -- you know, who might actually employee a product based on that technology, to actually care. And I say care for meaning the best; right?

So one of the early things that we'd like to see in terms of success along the path towards that impact is, is the private sector actually stepping in and -- and

investing in the technologies. And that might come in the form of companies licensing and -- and developing. It might come in the form of venture capitalists or other private investors. But that's kind of the first step.

And then I say the next step is, okay, you've gotten the private sector to care. Can you actually get the private sector or, you know, the market to buy what you're making? And that's another gap, meaning you've got to go from enough confidence to saying, okay, this is worth investing in, to now enough confidence in the value of what you're doing, to this is worth actually buying and deploying at some scale.

And then I think the third -- the third challenge we have is our -- our goal is to make an impact on a large scale. And so the third goal is can you get the private sector to actually buy this? Can you get the market to buy it at scale?

And so when we look at those three gaps, and I think those are all very different in terms of what the needs are to enclose them. At RPE, at least, we focus the most because we're dealing with early stage technologies on the first gap, which is how do we get the private sector to

care about the technologies we're interested in?

And what we have found the biggest issue that we have to address in that sense is that there is a very big disconnect between the individuals who are developing these next generation solutions for energy and technology solutions, and the -- the people, the private sector folks who are going to actually determine the fate of these technologies; right? And there, I don't mean just the, you know, the industry folks who -- who know about the applications and know about the market, but also the policy folks, and generally the whole ecosystem.

And so, you know, we see -- we saw that disconnect in a lot of the projects that -- that we fund and thought about ways to address it. And basically that disconnect comes in two ways. One is -- one has to do with the network and the people. And so researchers that are developing the technologies we're funding often weren't interacting at all with -- with those other parties, the folks who are actually applying the technology or who are going to determine how it's applied. So part of it was just community and network.

And then another part was really a language

barrier and a knowledge barrier. So, you know, researchers not being able to describe in strong terms what is the value of what they're doing so that industry folks can actually say, oh, wait, there is something interesting here and we should care and we should, you know?

So a couple of the things we've done to address this at -- at RPE, one is every year we do an annual innovation summit where we bring literally thousands of kind of top folks in energy innovation, but specifically not just the technology community. We've got large corporations there. We've got small businesses there. We've got policy makers from across the country there. And we're showcasing technologies. We're exposing technologists to -- to the industry folks and the policy folks and the business folks, and vice versa. And we're also trying to -- to get some language barriers, so we're talking to the whole crowd about both technology and policy and business.

And we've seen some very big impacts in terms of building that community and trying to -- trying to get everybody on the same page in terms of knowledge and language, everything from projects that we're funding, and

also projects that we're not funding, finding employees at these events, finding their first, you know, investors at these events, licensing deals happening, even between some of the big companies; right? So there's a really big value in doing that.

We've also seen a value in providing kind of resource and education, especially for the technology community. And so we've done some webinars. We've done some presentations specifically on how do technologists start thinking in the same way that the people they need to interact with and move their technology forward care about, and vice versa.

I think, you know, so for me, I feel like this is kind of -- what we're trying to do is create a mega-cluster, right, for this community in the U.S. And one thing that we very clearly realize is our -- our impact in doing that is very limited because we can't touch everyone and we can't -- there's just too much bandwidth. And so we've seen a very strong importance of the regional aspects of -- of this problem.

You know, I think when you think of clusters you can think just of geographic clusters, you know, whether

it's San Diego, L.A., as clearly a tech hub, a Silicon Valley, you know, the Boston Research Triangle, and I think that's one form of -- of clustering. And then I think these very deliberate attempts, you know, accelerators, incubators, we've seen examples of the new energy, I mean, dealing with the Clean Energy Council, NorTech in Ohio, Clean Energy Trust in Chicago, of saying, you know what, we're going to deliberately pick one of these gaps, or more than one of these gaps, and -- and really try and bring all resources to bear, whether it's coming from the state, the municipality, foundations, the federal government, to -- to close some of these gaps. And -- and our view is that could be -- that could be extremely valuable.

MR. GORGUINPOUR: And this is Cameron here, if I could chime in just briefly, just to sort of say that everything everyone else has said is great. Just to give sort of just a snapshot of what I'm doing, because essentially here, and I'm in the Pentagon right now, and it's sort of like a cluster -- I wouldn't necessarily call it an innovation cluster; it might be a different type of cluster -- but anyhow, the point is that in working on this project, trying to get EVs rapidly adopted within the

Department of Defense, you know, I've had some advantages over somebody at an industry trying to make a similar activity happen. That happened for obvious reasons. We have a large fleet. And I have fairly high-level people who are sort of opening doors for me to do this.

But what I can say is that the reason why we've been, at least to this point, successful in moving DOD into a position where we can be rapid adopters for -- or early adopters for vehicle-to-grid technology specifically is because I've had access approximately to experts in a lot of different fields that might have previously been considered unrelated, in this particular case, looking at folks who deal with electric infrastructure, also to deal with enough people who -- who work on transportation infrastructure, sort of merging the two and figuring out and bringing in our finance experts and other folks who do market -- market modeling, trying to find a way to make this work.

And just to give you a feel for -- for sort of the outcome of bringing in these people from disparate backgrounds in one common location and sort of working with them on an innovation objective, we've found ways that can

essentially pay for the full cost of leasing electric vehicles just by having them participate in existing energy markets. And that type of activity would never be possible if -- if it wasn't for me being one person dedicated to just look at the problem, but also having access to -- to a wide range of folks who know what they're doing from things I mentioned, electrical and transportation infrastructure. But really it also deals with folks who work on financing, work on regulations. Just having all of those people here right next to me and willing and able to help has enabled us to move this project forward really quickly.

So I could certainly see the advantage of having on a regional basis sort of similar groupings of people from different backgrounds and how that might help you move technologies out of the door a lot quicker.

MR. STOKES: Okay. Does any of our panellists have any follow-up comments or questions, or should be move to question two? Okay.

Question two: What are the pros and cons of different models of energy innovation clusters to accelerate a successful path to market, for example, technology incubators, incubation hubs, and test beds?

MR. GOODSTEIN: So this is a pretty short answer to this question. I happen to know a lot about incubators. I was one of the first people at a company called idea lab back in '96. I started several companies for them, watched them grow. They are a hugely successful private incubator. And their success rate is huge. Bringing -- again, it's the same answer as before, it's people, bringing people together and innovating like that.

One of the things missing from many of the things happening in L.A. and often griped about is capital. I think if you look -- if you -- if you sit from where we are down here we look enviously up north at a single street called Sand Hill Road in which we have the same type of density, a bunch of capital. But I tend to think after all these years that they are more of a spotted owl, if you will. That is to say if the innovation community itself is doing well and it's generating high-quality ideas, capital will be there because they're looking for deals.

So -- so all of that said, I'm going to speak more to the -- the -- capital in question number three, so I'll reserve the bulk of my time for my colleagues.

MR. HONRATH: Yeah. I would agree. I mean, it

really does down to the people who are on the ground. And I think that the aspects that make a cluster successful are fairly, I don't know if obvious is the right word, but I think the more interesting part is what makes it so challenging to make it successful. And capital is -- is the number one challenge. I mean, if folks get the perception that the capital is concentrated in one specific part of the state or the country, they'll go there.

There is some capital here in Southern California. But the real challenge of the capital markets isn't even the fact that it's all concentrated up north; it's the fact that there's very little appetite for any deal making right now. And early-stage entrepreneurs know that better than anybody right now. And I think that's where government funding and ARPA-E and the state area -- are truly instrumental in stepping in and providing that.

It's really a seed round for some of these early stage companies, because there is truly groundbreaking technologies being developed in garages all across California, in Orange County, San Diego, L.A., throughout the country. But there's such little appetite to invest in them right now. And I think that's really the critical

point for -- for government agencies to get involved. And I think really it's not even necessarily picking winners and losers on a company basis, but looking at the industry broadly and determining where the government can inject money into a specific part of clean tech, be it energy efficiency or, you know, more advanced renewables, rather than, you know, choosing a specific company because, you know, they have a particular management team in place that has the relationships to -- to attract those dollars.

I guess to turn to the cluster question real quick, it's also important having the right people involved. Because there are folks who say that they're interested in advancing clean technology, and they're really not. They're there to manage it's growth as much as possible so it doesn't impede on their operations. And while they talk a good game they're not there for the reasons that they say they are. I won't name them by name, but I think you all know who I'm talking about.

MS. SMITHSON: Well, I'm going to -- so I'm going to describe a model, the pros of a model that we use in San Diego to support our cluster and to attract companies and stimulate job creation. And that example is through

demonstration and power projects. I think we've worked really hard, and I -- and I hope we've done it successfully, to create a brand that we'll recognize globally.

I was mentioning earlier that I had the opportunity to speak at a panel in Iowa not too many months ago at the Global Clean Tech Cluster Association. And to my left was a gentleman from Singapore, and to my right was another from Malaysia. And they said, "Oh, yes, you're from CleanTech San Diego," and acknowledged that they knew my -- my -- the organization and our region. And it was an absolute shot in the arm, the recognition to permeate beyond our little bubble here.

And -- and to that point it's -- it's the type of recognition that takes companies like Soyatech who is a French based company, and they were looking to enter the U.S. markets. And they came to the U.S., and they came here with a very aggressive business model and said I'm going to come here and promise you so many jobs. You, whatever market it is, whether it's Colorado or Arizona or Southern California or whomever, so in exchange for a customer, their solar manufacturing of PV solar -- CPV solar

manufacturer.

And anyway, when they came to San Diego they said, well, we have a demonstration partner at UC San Diego. We came here in 2009. We have a small project. We -- it's a new technology, and we needed to test it. And we knew that UC San Diego was a place where people can come in and get the red carpet. But UC San Diego had a phenomenal engineering department that would actually work with these demonstration projects to help them mature their -- their unproven technologies. And a real reputation beyond just our -- our borders, that this is a place that will welcome guinea pigs, if you will. So it's those type of assets that really, really make our cluster really fortunate.

And the bigger story, I think going forward, is that two years later Soyatech came to town. They selected San Diego over all the other markets. And they are now in the process of going to be hiring, I think it's 1,000 indirect jobs and 300 high-pay -- high-paying manufacturing jobs. And they signed a PPA for 300 megawatts. So it's just a huge story for San Diego to be welcoming in a manufacturing facility. It's a huge slap I those face to those naysayers that say clean tech is going to kill the

economy, because that's just not the case in San Diego.

And so I would -- I would promote the -- the model, the cluster model of being a hub for demonstration projects as something that's a real differentiator for us and has just been a boom to our local economy.

MR. STOKES: So a test bed?

MS. SMITHSON: So a test bed. Yes, that would be my take.

MR. GORGUINPOUR: This -- this is Ilan. I'll try to keep an answer short here. I think, you know, when you talk about the different models of clusters, I mean, you mentioned incubators, hubs, test beds, I think we have examples of very successful versions of each of those and unsuccessful versions of each of those. And I think the key differentiator in my mind is, you know, again, how do you really look at what are the problems we're trying to solve, and is this the right mechanism to solve those problems or that problem; right?

And so, you know, when you think about idea lab or technology incubators in that sense we may be thinking, you know, there's just not enough really early kind of out there innovation coming out of the -- out of this region.

How do we -- how do we encourage that? And that might be an interesting model to look for. If the issue you're trying to solve for is how do we take innovation in a specific area, you know, like electric vehicles, and connect a lot of the new technologies and ideas to -- to the industry and think about it holistically and really make a big push in one area then, you know, the types of innovation hubs the DOE is supporting might be, you know, a good model.

Certainly test beds might be something that's -- that's more appropriate for closing the gap of, okay, we have a lot of innovation, and we might even have people demonstrating things in the lab. But how do we get, you know, how do we get the industry to really believe that this is real and -- and go to that next level of commercialization scale. And I think you could come up with -- with many others, you know, around workforce gaps, around just community gaps. And I think there just needs to be an intentional kind of matching of -- of here's what we're after and -- and here's something that -- that can help -- help close the gap.

MR. GORGUINPOUR: And this is Cameron too. And,

you know, I think that probably ARPA-E is on one of the -- the better organizations to pay attention to in terms of how to make this type of thing work, and to the extent that they're modeled off of DARPA. Obviously, take -- take a look there to -- to see how those organizations on a national level really focus and develop those technologies. Because there -- there's been some really great work and continues to be some really great work going on.

The only thing that I would add here, and I think this relates probably equally to questions three and four, is that whatever the structure is it really needs to be specific. They need to be specific targets and what you actually want to accomplish and how you're going to get there. And I like a model, and I know that DARPA has done this, I'm not sure if ARPA-E has, and it's certainly a focus of good administration. And, actually, you guys and California have a really good history of this, of using technology competitions.

So government aside, the X prize that focused n -- on private space flight -- flight, that's a really great example of that. The prize itself wasn't a particularly large amount of money. But it was enough to get some

really innovative folks together focusing on -- on moving out to this new -- new technology. It was done, and now it's pretty much NASA's primary objective is to -- to ensure that that private space flight, you know, takes the lead on lower earth orbit so that NASA itself can focus on -- on longer duration missions.

So -- so -- so focusing on specific targets. And I would really encourage you all to consider how competitions and, you know, setting specific objectives over a short -- a short period of time might help spur people along a little bit.

MR. STOKES: Okay. Are there any follow-up comments? Okay.

Question three: Do you recommend funding for innovation clusters in the EPIC program? If so, please provide the specific recommendations.

MR. GOODSTEIN: So I really appreciate Ilan's question about what -- what are we solving for. So I'll -- I'll tell you what I think we are trying to solve for. I think in many respects, with respect to clean tech especially, but maybe even more in general, the venture capital model is -- is kind of broken. And tech transfer

from universities is kind of broken. And so to be specific, I think that most or we think that most start-ups fail for reasons that unfathomable to the quality of the technology. So how is it that we can get stuff from bench to market more effectively? That is the central question.

And so we have designed a program that, in fact, is in many respects a regional ARPA-E. And so echoing what Cameron said, ARPA-E is spectacular. But very specifically what we'd like to replicate in the L.A. region is they funded, as of the last summit they had funded 181 different projects. And I believe the number -- you know, you can confirm this -- more than $600 million in private capital had -- had streamed to those awarded ARPA-E projects, and even some that hadn't been awarded but were fabulous.

So -- and what happened is, and many venture capitalists are on record as having said this, they do not have the -- the resources to perform the type of due diligence that was performed on these projects. So they took a proxy the ARPE-E due diligence on those projects and funded them.

So I know from having walked around L.A., talking to all these people over the last six months, that there

are -- there is an enormous amount of capital sitting on the sidelines, not just venture capital, but angel investment capital. And there is a latent desire to invest in clean tech. But there is also a strong desire not to be a chump. And they -- the people who are angels in the Southern California area and didn't make their money from technology don't have the expertise to judge whether a water technology or energy technology or anything else is -- is a good investment. Designing a structure that effectively puts a seal, if not as good as ARPA-E, almost as good, I think would do a lot to creating a virtual cycle, which is what we're trying to do. So the idea is to go out to industry and ask them for specific contributions into a grant pool.

And then specifically, again, speaking to some of the things that Ilan and Cameron have both said, to flip the model on its head and offer the ability of industry, those participating, to come into the innovation community and make a needs statement about something that they need to solve. Every company that has clean tech interest has an R&D agenda. And they are trying to solve problems for profit-motivated reasons. And this is -- you know, this

type of commercial relevance is the type of thing that we think we -- we need to instil to -- to, if not replace what venture capital was over the last ten years, then at least create a structure in which industry can play a more sustained and predictable and consistent role in early stage upstream clean tech development.

So, you know, the -- the tech staff from a big company would -- would declare their intention of coming to town to make a needs statement. We would put the word out to all the regional universities, garages, start-ups and so forth who have an interest in material technology that this company is interested in. They could veto members of the -- of the list based on competitive pressures, come in, give the needs statement, doors closed, Chatham House Rules, no recording. Out of that conversation they might decide to sponsor one of the innovators from the community. And that would initiate the grant-making process. And we'd have a list of local venture capitalists who have agreed to be on the investment committee.

So we would have a fairly rigorous model of due diligence performed by local Ph.D., science Ph.D. students and -- and MBA students to do market and technical

analysis, and they would make decisions. And the idea here is that if industry has allowed their money to be invested in projects they are semi-directing, that EPIC at the early stage, a $55 million portion of EPIC annual, some portion of that could be used to match the industry money, and thereby giving increased leverage and in many ways increase the likelihood that industry would participate in this program.

I think that's it.

MR. HONRATH: It's hard to follow Mark without being repetitive, but I'll try my best to be original.

I think that one area that EPIC could be very effective in disbursing these funds and essentially investing in some of these companies, is to -- to partner with a lot of the universities here in California. And I think the Energy Commission has done a great job of that already. I look to UC Irvine. Of course, it's in our back yard. And UCI is home to the Advanced Power and Energy Program, the national fuel cell research center, and the largest smart grid demonstration project west of the Mississippi.

And UCI has been very good about partnering with local clean tech companies and just tech companies more broadly to essentially provide the sort of, you know, institutional knowledge and support that, you know, a world-class research institution can provide to a budding clean tech company. But UCI has done a really bad job of telling that story, and so very few people know what they're doing.

But I think that, you know, therein is an opportunity for the Energy Commission and EPIC, I guess more specifically, to -- to play a pivotal role and partner with these universities to identify companies that are still for the most part in the garage, certainly in very early stages, to provide that, you know, initial seed amount of capital to get them on their feet. Because if EPIC just chases the investments made by those on Sand Hill Road, you know, that's fine. You've already got some due diligences to perform. But at the end of the day let them invest in those companies. Let them go back to their LPs and dig up more money to get that company to market, either IPO or -- or, you know, acquired.

If -- if we're trying to make a really big mark

and spur and continue innovation and clean tech, the way to do it, I think, is to go to those truly early stage companies that haven't even seen seed day yet, or a pre-seed, and funding them at that level.

MS. SMITHSON: So I'm not interested in being creative, like my partner to the north and to the right. I think your -- your comment about funding to the universities can not be overstated and bears repeating over and over and over. I think if you look at any cluster, and not in the U.S., any cluster around the world that's going to be successful is going to be because there's -- it's going to be because they have very, very robust and world-class research institutes and universities. With out that ingredient you will not have a cluster, and you will not enjoy the benefits that stem from that cluster. So I echo that and reinforce that and can't -- can't beat that drum loud enough.

We obviously have a very special university story that houses the micro-grid that makes my job so easy. And it is my day job to promote our region. And when they are constantly taking and fielding invitations to come and tour

the micro-grid, they then want to know the technologies and the companies that are enabling their micro-grid. And it's just a phenomenal opportunity for us to showcase the technologies and to really promote the companies that have invested in San Diego and have found the universities to be such an attractive target for them to deploy their technology and protect their technology.

We have some start-up companies that are enabling the micro-grid, like Viridity Energy. We have some very big global companies like LS ISOP (phonetic). So it's a very interesting marriage that comes to benefit from what's happening on the micro-grid.

In addition to that, you know, we -- we talk about technology and we talk about venture capitalists and private equities, but at the end of the day these guys aren't investing in technology; right? They're -- they're investing in people. And what is a university, what's their day job? They develop human capital. Their day job is to develop intellectual capital. So I can't think of any better recipient than -- than the -- the ratepayers and the public benefit than to invest in the universities.

MR. GUR: I think my -- my thoughts on this

probably mirror -- mirror some of the other panellists. I appreciate the nice comments on our RPE work. We're working hard to try and live up -- live up to the standards and the expectations.

I think, you know, one thing I'd start with is, you know, there's no question in our mind at RPE that there is still a very strong need for support of -- of new technology innovation for -- for this phase. I think when I think of the big -- the big issues that California is tackling, you know, I'd probably say first and foremost renewable integration. But also looking at -- at the transportation infrastructure and just power generation generally I think my optimistic comment would be we are seeing still just a phenomenal set of -- of innovative ideas coming out of research groups in California and across the county. We can't -- we don't have enough money to fund as much of the research as we would want to fund. And -- and there -- we have not saturated kind of the -- the level of innovation that's happening.

I've saved -- there -- the importance -- I do not expect the importance for -- for focusing on that stage of -- of technology support is going to go away. If you

look at the -- the recent numbers on private sector investing in energy technology, what you'll find is that the numbers on an absolute scale are dropping, but the -- the amount of investment going into really very early high-risk projects is dropping pretty precipitously.

And I think the reason probably brings me to the next point, and the reason why I think it's working for us at the federal level and at the state level to be supporting these things, is I think investors are seeing that -- that it's -- it's hard to get these things to make the impact and make the returns that some of the investors are looking for, partially because, you know, in some cases there are so many steps to the process to get a technology.

If we think of the grid, right, obviously they get a technology from a lab into a large-scale market on the grid, you know, we've got not just the technology and very standards around reliability, around costs, but we've also got the regulatory side of the policy mechanisms. And then -- then just the basic business success. So there's a lot of risk there. There are a lot tight horizons.

But also, you know, sometimes the -- the -- our -

- our goals at the federal or state level may not be aligned with -- with a specific company's goals. And so I think there's -- there's going to be the strong need for the early stage of investment.

What we see in RPE, and I think this is my answer to the -- to the recommended funding for the initiative clusters, what we've seen at RPE is that no matter how much money, if we could put all the money in the world into developing technologies, it's certainly necessary but not all sufficient. And so our view is putting the money just into the technology and being focused on the technology without also investing, not just from money from the standpoint of just an intentional approach, is vesting in what are the pieces that need to come together to get this from -- from an interesting technology idea to an impact is critical.

And, you know, the -- the mechanism in terms of program-specific recommendations, I think the mechanisms vary. I think one thing that's at the core of all of them is, you know, making the connection and narrowing the gaps between -- between the technology and the various other parties, the various other communities, and the various

other barriers that stand between getting this out to the applicable market.

MR. GORGUINPOUR: And this is Cameron. I think the -- the main thing that I would add to the discussion is -- is not just -- it's not just about funding the labs and the companies to do the research and develop products, but at a state initiative, at a government initiative I really feel that you have an opportunity to also be a customer of the products. And I think that that needs to be something that is well ingrained in -- in the overall model.

The fact is, again, taking our fleet perspective, but the State of California has a pretty large fleet. The -- the municipal governments that would presumably interact with these innovation clusters also have fleets. And it's not say that -- that government agencies need to -- to make bad financial decisions but certainly identifying the parameters by which it would be a good financial decision for -- for -- for government agencies. And, again, using vehicles as the example. But it could just as easily apply to renewable energy projects or energy efficiency projects or anything like that. Your ability to

leverage your own position as a consumer, I think is pretty key and is often times overlooked.

So that's basically it. But I would just, again, encourage sort of incorporating that perspective.

MR. STOKES: Okay, last question. How should EPIC measure ratepayer benefits for energy innovation clusters? Does anyone want to take that? Mark?

MR. GOODSTEIN: I can see the pattern. So I've got a short answer. This is fairly straight forward. From out perspective, and for the type of program that we're talking about, it's numbers of companies with more than one person employed, and numbers of technologies out -- you know, spun out of labs and transfer offices, incorporating a number of -- the number of organizations that are actively participating in this, the number of companies that have submitted that are -- that are participating in the grant pool, things like that are very -- are quantitative measures of success.

MR. HONRATH: I guess, you know, in answering that question it's important to recognize who the audience is for such stats. I mean, if we're trying to convince the public at large that this is something that is -- is worthy

of -- of their tax dollars or, you know, the public dollars, more broadly, everyone is talking about job creation right now, and it's almost become a buzz word thanks to the silly season of the presidential election. But that really is, I think a very real way, on a fundamental level, of just measuring the success of this EPIC investment in local California companies.

If you can say that, you know, when these dollars were disbursed at, you know, date X, X numbers of, you know, employees were with these -- these companies that we invested in. And after two, four, six years we saw them increased by 600 percent in terms of their employees, that's a very measurable and demonstratable way to say that these companies are succeeding enough to hire bodies and grow. So I would think, if nothing else, measuring job creation is probably a great way to start.

MS. SMITHSON: So back in 2007 the Economic Development Corporation, along with Global CONNECT commissioned a white paper and wanted to really see what kind of assets we have in the region that would either merit us going after this cluster theme, and really wanted to quantify how close or how far away we were from that --

that lofty goal.

And in 2007, in June of 2007 those folks had identified over -- just over 200 clean tech companies. And we -- the -- the visionaries and the founders thought that that -- that merited a significant critical mass and enough to start to create a platform to help -- help that number climb north.

Now, five years later, we have a database that we manage and report out regularly. And we house about 850 companies, clean tech companies that call San Diego home. And that is a really big metric for us to determine whether or not we are attracting the type of companies, whether or not we can attract, and whether or not we have a skilled workforce that can help these companies grow and dispatch the technology and the innovation that we need.

So I would -- I would echo the -- the metrics here to sort of help the story about EPIC funding is how many companies are coming into these clusters? What are the type of projects that are being deployed? What's the -- the -- the emissions reductions that are being realized because of the number of companies and the number of projects that are coming to market? And obviously the

overarching goal is, you know, being able to comply with AB 32 and the loading order. These are huge-huge indicators as to whether or not the investment that EPIC is making is -- is delivering the goals that we're all striving to accomplish.

So that would be my -- my recommendation.

MR. GUR: So without being too predictable here or sounding like a broken record, the first -- yeah, my first reaction here is, you know, if -- if you are going to come up with some -- some clear metrics as to these programs, you know, it has to be coherent with -- with what you're trying to accomplish. And so, you know, lining those up is important.

For us at RPE, generally speaking, you know, as I mentioned, the gap that we go after is -- is technology, the idea, to does the private sector, does the market care. And we measure do they care in the form of investments. And so, you know, as already stated, you know, we do track, of
the -- of the money that we've provided, taxpayer money to support the kind of new innovative sparks in these projects, how -- how often and to what extent is the

private sector getting involved after we've done that initial support and given that initial support. So that's kind of one of the metrics that we grabbed onto because it's really connected to what we're trying to solve.

I think a second part of it is when we think of that metric and -- and tracking those steps, you know, I mentioned we have what we call this technology-to-market program within RPE. We don't think of that metric as a metric of success for the technology-to-market program. I mean, it's really a metric of success for RPE as a whole. And so I think -- I think you need to be a little careful about trying to -- to measure, you know, measure the success of this piece independent of everything else. I think -- I think CEC, you know, and EPIC will have a set of goals. And I think this is a coherent set of approaches that are trying to accomplish those goals.

So the -- the important question is, you know, is the program, in our case is RPE, accomplishing what it set out to day? We have a technology-to-market program. We've seen evidence informally and through -- and, you know, through specific and explicit examples that that's helping us accomplish these goals. But, you know, the technology

teams are also influential in -- in making sure; right? It all fits together. It all has to fit together, is -- is, I think, the point I'm trying to make here.

The other piece that I would just comment on, I caught a couple days ago an article which I thought was -- was pertinent. There was a guest post by Jared Konczal of -- of the Kauffman Foundation in Forbes just on Wednesday. And the title here is "Evaluating Affects of Accelerators? Not So Fast." And basically what -- what the column goes into is it's saying, you know, a lot of -- there are a lot of different models for accelerators. A lot of folks have -- have made claims in trying to evaluate the actual impacts. It's not so easy. And often times the evaluations you come up with, you know, are pretty disparate.

And -- and so I think it's just a matter of -- of being careful and trying to figure out how do you -- how do you track the benefits to -- to the degree that you can feel confident in -- in maybe not getting too overburdened in -- in the specific detail of tracking, which is what sometimes we do, kind of get into that trap of saying, okay, we're going to track every -- every little piece

here. But -- but sometimes it doesn't quite work. So just drawing attention to that piece, that -- that sometimes the data is not -- not very well founded.

MR. GORGUINPOUR: And this is Cameron again. You know, I -- I'm sort of a hippie at heart. I went to Berkeley. So I like all the, you know, reduction of emissions and all that sort of thing. But really do like and appreciate the comments of trying to pin down the -- the impact on jobs in particular, because that -- that directly relates to communities. And I think that's -- that's key.

But related to the technologies themselves, you know, with my project here, understanding sort of economic reality, which is that DOD is not going to do anything unless it is cost effective to do so. And so I really think that one of the -- the key metrics to success is that the technologies are the processes that come out of these innovation clusters, or are proposed to come out of these innovation clusters, have a strong financial case to it that this -- if successful this will save X amount of dollars for whoever is going to use it. If it's going to be adopted by the -- the state or local governments this

will reduce our budget, or as research suggests anyhow, by such and such million dollars. I really think that that -- that is -- that's pretty key. Maybe not as important as tying it jobs because jobs are move visceral.

But I -- but I think in terms of actually getting technologies adopted in both public and private sector, I think folks really want to see that the outputs coming out of these clusters are financially viable.

MR. STOKES: Okay. Now we'll open it up to public comments. Anyone in the audience, could you come up front here and speak into the microphone?

MR. WASHOM: Byron Washom from UC San Diego. I would encourage EPIC as they move forward to rewind back to what I think was one of the most successful funding programs we had under PEER in 2009, and that is when the ARRA RFPs came out you pre-emptively and a priori gave a letter of endorsement to projects that basically said if you get funded under ARRA we are strongly considering giving you so much co-funding. And that match element was pivotal in many ways. One, it provided the small start-ups with access to the match. And two, it showed a California interest to the Department of Energy in these program

areas.

And with ARPA-E matching, it's a requirement, so now required, as well it's an indicator. So if there is -- and a Mark and Taylor have said, the brand name of, if you're an ARPA-E finalist or a winner, that's like an Oscar nominee. You know you've got quality there.

So I would suggest, if you set aside some money for the APRA-E program objectives are, and a particular request, are funding opportunity notices, and yours are similar, is that for California firms if you say -- if you're in the top, let's say five rankings, or are if you are within the first five-millionths of requests we will provide your ten percent match. And I think that will go a long way to inspire ARPA-E applicants. And I think it will go a long way to help them get that critical match at the most difficult stage. So it was a great program.

And I -- and I -- and I think you folks are about to do an evaluation of your 2009 ARPA -- I mean ARRA match-funding programs. And I think that that evidence will be there, that that was money well spent, and it leveraged the California ratepayer money. Thank you.

MR. HOLMES: John Holmes from San Diego Gas and

Electric. I greatly appreciate the panellists inputs. Fantastic presentation. I have -- the CEC has heard the messages that they've made. Each of them has terrific points, as well as our visiting collaborators from D.C. and abroad on the phone.

SDG&E operates a ratepayer-funded research and development program. And we've had a lot of success in advancing technology development locally and through partners outside of our service territory. And we were fortunate to be involved in projects that were really funded through ARPA-E, and participated in a number of seminars for concept development this year to proceed in that area.

We have active projects involving technologies that were developed with funding from ARPA-E in a number of different locations throughout the service area in San Diego. And we're eagerly anticipating seeing that advance.

That said, the ability for systems that are developed by clean tech participants in the -- in the California area are often not completely informed as to the complexity of utility operations. As a recovering entrepreneur who has joined the utility sector after

developing a number of different technologies that really influenced the evolution of electrified transportation, as well as energy utilization by customers, I'm learning how complex the process is.

And I want to especially enforce the impression that I have now individual as one thing that's very important as the clean tech sector continues to grow and prosper in California, that the utilities must have a stakeholder role in the engagement with these perspective start-up entities who are endeavouring to advance their technologies.

MR. STOKES: Helen, do you want to --

MS. SMITHSON: I just want to add on, if can just offer a hearty congratulations to SDG&E. Just last week they were voted the smartest utility by Power Magazine because of their very advanced smart-reader program. It is cutting edge. It is so progressive. And my hats off to you and the entire team that earned that ranking. Obviously, there's a lot of people in the country that have various assets.

I can't -- I can't overstate the significance of working with SDG&E. They're an incredibly, incredibly

progressive utility. Our partnership, they are one of the founding members of CleanTech San Diego. And we have worked hand-in-hand to facilitate the market and educate and make people aware that all of this is going to be for the better with their recent smart meter deployment of 1.8 million smart meters. It's just been a wonderful education outreach program with our community that they want to be a part of this, that they have buy-in, and that this is going to be a terrific opportunity for us as the basic infrastructure for developing of smart city in San Diego.

So congratulations to you. I'm very excited. Sorry for that little commercial plug.

MS. SPIVY-WEBER: I probably would have a little bit more to say on the second panel. But I want to thank you. This is -- I had to step out a couple of times. But it's been --

MR. STOKES: You've got to say your name first.

MS. SPIVY-WEBER: It's Frances Spivy-Weber of State Water Resources Control Board. And Rob Oglesby and I are co-chairs of the Water Energy Team and the Climate Action Team. And I just want to make a strong point that as you're developing these clusters and are focused on the

energy efforts -- SDG&E is a perfect example -- the -- the water utilities that you mentioned are also going to be strong partners because water is often -- energy is often the second largest expense for a water utility. And so they are very, very strong partners.

And I just talked to Burbank Water and Power, and they did their smart meter programs starting with some water technology that -- some metering technology where they could establish 15 units in an area that would -- would display the information on the water meters. And then the -- the power side of the utility hooked into that and was able to use it for -- for power as well. And it became -- it -- it went to being not cost effective for that small, basically, very small service area to being cost effective. So it's working with these other agencies can -- can be -- can be helpful.

MR. STOKES: Okay. Thank you. Do I have any more comments from the public or any of the panellists?

MR. MCLAUGHLIN: Hi. Larry McLaughlin, College of the Desert. I couldn't help but note yesterday that the question was asked over and over again, how should we prioritize projects, and no one really had any -- any

response to that.

I'd like to make a response to that now. For me it would be job creation. I think that's one of the most important things that we end up with as an outcome of these -- these projects. And on that point, I'd like to ask the question. A couple of panel members referred to projects that were -- that were incubated here in California. Perhaps they received public funds. They got their start, left the state, or perhaps even left the country, to actually set up and conduct their business and create the jobs that we were all hoping for, you know, as a result.

So I'd like to ask you, do you have any recommendations for how we could set this program up in a way that would ensure that those jobs stay here once the intellectual property gets fully developed and perhaps the products get out and become commercialized and -- and adopted and jobs get created?

MR. GOODSTEIN: I actually don't have --

MR. GUR: Yeah. This is --

MR. GOODSTEIN: Oh, I'm sorry. Go. Go. Go.

MR. GUR: You know -- you know, I'll give a

perspective, you know, my -- my take is that, you know, it's hard to imagine that through this program you'll be able to dramatically modify, and maybe not just in certain areas
but -- but across the board the fundamental sort of economic advantages of offsetting of companies manufacturing, etcetera, in California, you know, if that becomes one of the goals of EPIC and it's crucial then maybe even think about targeting it. Otherwise, I think, you know, you've got to -- you've got to think about the -- the kind of competitive landscape that you guys are in versus what California's in versus other states versus other countries.

And, you know, maybe there's a way to target through the program certain ways to make it more competitive. It would probably make sense to think specifically about the specific sectors where California thinks they -- they do have a competitive advantage to be able to keep things in -- in the state and do what you can to support those.

I think for me there's -- there's a tie-in here to some extent of the -- of the other comment. You know, I

appreciate the other comment about what the CEC did in the Recovery Act. I think it was not just with ARPA-E, but another branch for CEC said that -- that early staged teams in California, you know, we will provide you with a letter and potentially even additional funding if you're awarded a federal grant. I

And, you know, we put a lot of time and effort, at least in RPE, in terms of thinking about our programs and our program targets and the types of technologies we want to support. We generally feel like, you know, we leverage that by giving away our grants. It's not clear that that's being leveraged; the amount of diligence, that came up earlier, that we're putting is being leveraged elsewhere, and that might be a way to leverage it.

What you don't want to do, though -- we have a cautionary requirement at RPE -- I think what you don't want to do is displace, you know, a precautionary requirement is really meant to -- at least one -- one reason we have it there is so that we can see that the private sector or someone who has a vested interest in seeing this technology succeed actually has specific, quote unquote, some skin in the game. I wouldn't want CEC to

displace that -- that function of the folks. Although the CEC should have skin in the game if -- if the technology really does go to an objectives of CEC.

A question I would ask, and I think this relates to both of those comments, is are there -- are there specific things that the CEC could be providing beyond funding that is a value added to these projects that can help them succeed in moving the technologies forward, and maybe specifically that could help them succeed in California in moving the technologies forward and keeping them in California.

And, you know, for me the most glaring barrier to that might be, that might be relevant, is anything relate to the grid where, you know, the state and the regulatory process is such -- is a such a key part of that, that making those connections and providing some support in terms of test bedding evaluations, the regulatory process, etcetera, could be an extremely, extremely big deal in terms of helping these technologies succeed and helping California.

MR. GORGUINPOUR: This is Cameron.

MR. GOODSTEIN: I'm -- I'm.

MR. GORGUINPOUR: I -- oh, go ahead.

MR. GOODSTEIN: No. Go ahead. You're good.

MR. GORGUINPOUR: Okay. Well, I was -- I was just going to sort of add on to that last point about supporting regulation. I mean, that can happen both at the state level and the local level for regions or communities that -- that would be receiving funding. Simply supporting an expedited permitting process can help move these businesses along and keep them in place, I think as effective or as effective as anything and, then again, to -- to highlight a previous point, if the state and local entities, local governments are willing and able to participate as consumers, and certainly you can control who you are consuming from. So just two -- two minor points there.

MR. GOODSTEIN: So if the question is about what can EPIC do to keep jobs, I tend to view these things as statistical, not individual. So in the case of Frances Arnold (phonetic), she perceived that she couldn't find the right people. It's not the job of EPIC to train people or to make sure that the right people are in the right -- in this area.

But programs like -- I love the comment from our colleague from UCSD. I like it because it sounded sort of like the grant pool idea as well. But matching money and showing commitment, other ideas like that I think can help create the foundation for things like that. Incentives, test beds, incentives for people to do something in a specific place builds on momentum. And then smart people are saying, ah, something interesting is happening there. I'm going to go there. And that's what I think will keep jobs in the same place.

Of course, that sets -- this question sets up a competition between the folks at this table and the north and, right, it's not -- so the stuff that we're developing, if it spins out and goes to Boulder, you know, on one hand that's great for all of us because the technology is actually getting to market. So ARPA-E people are happy, not L.A. people. So what we're trying to do is sort of a parochial, let's keep the jobs here, let's grow these things here. The mission of the university is not just to license technology but up and to the more risky thing of actually fostering start-ups in their immediate environment, which is part of the Bayh-Dole initiative that

started tech transfer.

So I think that's -- we think a lot about that. But we also don't want to -- it's not about preventing things from getting to market or elsewhere. It's about taking advantage of what's in your competitive.

MR. HONRATH: Yeah. I mean, the question is ultimately how can EPIC do it's part to ensure that the money that's invested in these companies ultimately ties these companies to California so they can't send jobs oversees. I think that -- that was the question.

There's probably very little that EPIC can do ultimately, I would think, in that regard. I mean, I guess a great case study in this, is there was a solar company in San Diego that got stimulus money back in 2009, I believe. And they developed the IP in San Diego. They hired some local folks. But when it came to manufacturing they moved manufacturing south of the border in Mexico.

And I think that, you know, the challenge is twofold in that regard. One, again coming back to the -- the regulatory climate in California, it is burdensome on the private sector. It's important, but there are ways to retool it, I think, and make business a bit more welcome in

California than it currently is. Texas, unfortunately, is doing a pretty good job with this.

But also some -- some even larger, you know, forces at play, you know, NAFTA. I mean, not to get too political here, but our trade law was originally designed to help the United States suck, you know, global wealth into our country. And unfortunately it's come back to bite us because now we're seeing our -- our jobs go south of the border, and companies can leverage these trade laws to their benefit and save a lot of money in the process by moving their workforce overseas. Ultimately, a big bulk of the hiring is going to come from that assembly line, creating these products, you know, the actual tangible product.

So I don't know what EPIC can do. I would like to think there's something. But I think that this something that's beyond EPIC and beyond the California Energy Commission. But it's certainly something to keep in mind as we move forward, so --

MR. MCLAUGHLIN: Could I just follow up to that.

MR. HONRATH: Sure.

MS. TEN HOPE: Can you come up?

MR. MCLAUGHLIN: Just briefly. I think this goes to the question of ratepayer benefits. If you were to poll the ratepayers, probably at the very -- well, maybe not at the top of the list, it would be among the first items on their list, they would -- they would say jobs.

MR. STOKES: Okay. It looks like we're about out of time. I just wanted to thank all the panellists for their -- their great comments and their participation today.

MR. ASHUCKIAN: Let's have just a five minute break while we have the next panel come up. And Sherrill Neidich will be our next panellist -- panel leader.

(Off the Record From 10:54 A.M., Until 10:59 A.M.)

MS. NEIDICH: We're going to go ahead -- we're going to go ahead and get started. My name is Sherrill Neidich. I work at the Energy Commission in the Renewable Energy office. And right now we're going to be going into panel two, which we'll be discussing regulatory assistance and permit streamlining.

And what I'm -- first I'd like to welcome everybody here today, and who is on WebEx, and, of course, thank my panellists who have taken the time out today to

join us and to provide us with some expertise.

We're going to go ahead and have all the panellists speak for about five minutes. And we also have two panellists online. We have Josh Hart and David McFeely. Josh is with the Inyo County, and David McFeely is with SolarTech. And so they'll be joining us via WebEx.

So I think we'll start. And maybe we'll start with Vernon.

MR. HUNT: I'll try not to -- try not to take everything out here. My name is Vernon Hunt. I work with the Department of the Navy in Navy Region Southwest. The Navy is very interested in developing and utilizing clean technologies, both renewable energy integration, and also energy efficiency and demand-side management. We have some very aggressive goals, laid down by the secretary and congress for energy reduction and alternative energy generation.

As I'm sure we'll get into more on the panel, one of the key aspects of developing those renewables in particular, and I think as we move forward new demand-side management technologies is really the regulatory environment, especially in California as far as the

interconnection requirements, the permitting requirements, the environmental requirements, there's -- there's a myriad of regulatory issues that go into planning, permitting, installing, and ultimately operating various equipment on installations.

Our predominant focus is making sure that the mission is always met. So we are interested in developing these technologies and utilizing these technologies. And I think my colleague from the Air Force mentioned there's always going to need to be an economic return on those technologies for the Department of Defense. So -- but we are mission focused first. So where the right technology exists with the right opportunity that minimizes impact emission and also can help us save dollars and improve energy security, that's what we're going after.

So excited to be a part of the panel, again, and looking forward to the conversations.

MR. GIFFEN: Good morning. My name is Jason Giffen. I'm the Planning and Building Director for the County of San Luis Obispo. Prior to that -- I've been there for a couple years. Prior to that I was with San Diego County for over 11 years. So I'm very familiar with

county government and sometimes the regulatory barriers that exist, especially for emerging and new industries.

In San Luis Obispo County we have a high-level framework set in our general plan, as well as a climate action plan that's essentially laying the groundwork for where we would like to be going with renewable energy. In addition to that, we have done an extremely extensive amount of work with moving forward utility scale solar. Right now we have 800 megawatts under construction on the Carrizo Plain. We're looking to have one of those targets being energized in October, and the other one shortly after that. We have put into place many incentives for rooftop solar, as well, a far a waiving certain fees and moving things along.

Where I see the next challenge is for small scale solar and what can be done from a regulatory standpoint to essentially level the playing field for all aspects of solar development across the industry.

MS. GISHRI: Good morning. My name is Tamara Gishri. I'm from the California Center for Sustainable Energy, also known as CCSE. And we're a nonprofit based in San Diego. I'm actually based in Los Angeles at the

CleanTech incubator, talking about collaboration and synergies. But we focus on renewable energy, energy efficiency, and transportation. We're a little bit unique in that we focus on how energy policy and -- and the market transformation interacts. Rather than a very siloed view we try to have a comprehensive view of all these different technologies.

But I am the program manager for the rooftop solar challenge. And that's a Department of Energy initiative, part of the SunShot initiative that basically partners with jurisdictions and utilities to focus on permitting, streamlining, interconnection issues and standards, finance, and planning and zoning. And we have -- the CCSE has partnered with 11 jurisdictions and 5 utilities in the Southern California region. We actually represent about 20 percent of the state's population to try to streamline these processes, which we think is a very important part of market facilitation and adoption. And I'll try to talk about EVs and DG if -- if I can.

MS. NEIDICH: Josh or David, whoever wants to go first.

MR. HART: All right. This is Josh Hart. I can

go first. I'm the Inyo County Planning Director. Thank you for having me and allowing me to participate.

We have a long history of clean energy production in Inyo County, beginning with construction of the Los Angeles Aqueduct. A lot of the work for that project was done with hydropower. And a lot of those hydropower plant are still in operation today. We have a pretty large geothermal power plant in Inyo County in the Coso geothermal field. And it's been operating since the 1980s.

We also have several large-scale solar projects in permitting process now, and we are participating in those. And we've done quite a bit of planning over the last several years for renewable energy development, particularly for wind and solar renewable energy. And we adopted a renewable energy ordinance which regulates renewable energy and encourages its development, but it also encourages benefits for our county and our citizens. So that's kind of an overview of what we've been doing here in Inyo County.

There are a couple of things today that I thought would be relevant to our discussion. One is our experience in updating our plans and policies for renewable energy.

We've also had an interesting issue come up recently with spot-zoning issues for distributed generation, and I thought that would be an interesting discussion topic later. And we've also been participating in a number of clean energy initiatives, including the Southwest Solar Transformation Initiative. And we're also preparing what's basically an energy action plan under contract with Southern California Edison.

So those are my opening remarks, and I'm looking forward to the discussion. Thank you.

MS. NEIDICH: David?

MR. MCFEELY: This is David McFeely. I trust you can hear me.

MS. NEIDICH: Yes, we can.

MR. MCFEELY: Okay. Welcome, and thank you for letting me join the panel today. I'm the Director of Industry Solutions and Grants with SolarTech. SolarTech is a nonprofit solar PV industry association. We are both a 501(c)(3) and a 501(c)(6). We are a membership driven organization with members ranging from City of San Francisco, City of San Jose, Clean Power Finance, SMA America, PG&E, Southern California Edison, Tioga Energy,

(inaudible) Community College, Nobel (phonetic) Workforce Investment Board, (inaudible), SunPower. So you can see we have quite a wide range of stakeholders in the solar industry.

Our mission is to streamline industries best practices and remove the hidden costs impeding the growth of the solar industry and market adoption, such as performance metrics and better performance data, financing methods, and lowering transaction -- transaction costs, installation best practices. I spoke last week on this panel for workforce development, which has been a high priority for us at SolarTech. And putting it to today is streamlining, permitting, and interconnection, while still ensuring safe solar installations and environmental protection.

SolarTech has been working in these areas since 2008, thanks in part to a PEER grant from the Energy Commission in 2008. In 2010 we released the first region-wide permitting guideline model in conjunction with the Association of Bay Area Governments and the Tri County Code Council (phonetic). We are current engaged in two DOE funded grants through SunShot, all with through a

significant focus on streamline permitting and interconnection.

Our solar 3.0 platform grant in a national program working with SEPA, Bickley, IAI, UL, and many others to share best practices nationally. I am also the director of our own Rooftop Challenge Grant. As Tamara described earlier for Southern California, I manage a similar grant focused on Northern California, which includes our partners, Alameda Municipal Power, PG&E, Sonoma County, the City and County of San Francisco, East Bay Green Corridor, as well as Clean Coalition.

We just recently released a comprehensive report on San Francisco's approach to streamlining as a model for other jurisdictions to consider, along with our other California Rooftop Challenge partners in Costa Contra -- Costa -- you get what I mean -- Costa Contra County presented to this committee last week the team for central valley and Tamara's Southern California team. We'll compete, collaborate, and strive to enable the adoption of best practices in the areas of permitting and interconnection.

That said, let me point out that this isn't

rocket science to use that old cliché. There are many good ideas that have already been explored, implemented, and put into practice. And I'll save my further remarks on that or later with the questions. That's my introduction. And I'll turn it back to the moderator.

MS. NEIDICH: Thanks, David.

I'm going to go ahead and go through the questions. And I'm going to open it up. If the panellists wish to speak to the questions if you could go one by one, or if you don't feel like speaking, that's fine. And before you speak, please just mention your name.

The first question is: The Energy Commission anticipates that cities, counties, and regional governments will seek grant funding. Are there any other entities that should be targeted for regulatory assistance funding? And we've thought of some different trade groups, social districts, also universities. That kind of came out of our last workshop.

So, Vernon?

MR. HUNT: This Vernon Hunt with the Navy. The only -- I think we talked about it last -- last workshop. But -- and even the last panel mentioned the idea of

utilizing universities as -- as a spot. And I think that that's another good place to -- to target investments.

There may also be some opportunities to target organizations -- and I'm just kind of spit-balling off the top of my head -- organizations such as the -- the Associations of General Contractors, those folks that are actually going to deploy these technologies down the road. I know that that's not as focused on the regulatory side. And I think maybe we can get more into that in the next panel. But that may be another area to explore and -- and look at, in addition to the universities, or also the -- the folks that are employing these tradesmen as they -- as they come out into the -- into the market. So --

MR. GIFFEN: This is Jason Giffen, San Luis Obispo.

MR. MCFEELY: Hi -- this --

MR. GIFFEN: Oh, go ahead.

MR. MCFEELY: No. Go ahead, Jason.

MR. GIFFEN: Okay. This is Jason Giffen, San Luis Obispo County. We started talking about regulatory assistance. I think it's important to decide what type of regulatory assistance. At least on the local level, from a

county perspective, working with large-scale utility proposals you have a purchase agreement, you have inter-tie agreements, and then you've got the land use permitting side. So we need to really decide, well, of those priorities where should it be spent? My expertise is obviously on the land use side. The suggestions related to having universities have money, special districts, and in that community service districts is a good place to start, especially if they're doing their own proposals and they have some type of regulatory authority.

I think partnerships, for example, in San Luis Obispo County we have the San Luis Obispo Economic Vitality Corporation that has a green energy cluster, which is one of the six clusters identified that have the most growth and opportunity in our county, would be someone would be a good partner, as well as community colleges.

MR. MCFEELY: This is David McFeely. I would also echo the -- the comment that was made earlier about trade groups, NGOs. You know, these organizations are basically your feet on the ground. They're working at the grassroots level to make the market happen. So I think there's a considerable partnership that can be engaged

there between EPIC and the trade groups and the NGOs to help move this agenda along, as well as I would look at the Rooftop Challenge model and how that one showed up and how you can engage furthering that along after it's somewhat microed in February of next year, to take that model and further it along.

Because, you know, organizations like mine or like Tamara's are, as she described earlier, are engaged with local jurisdictions that we have funding through the DOE, you know, which will not last forever, to encourage the local jurisdictions and integrators to participate. As you know, cities are strapped for cash, yet we need to have them at the table. So this helps, you know, compensate part of their time. It's usually a matching-type situation, so it's not 100 percent reimbursement. But it helps encourage them to send their building officials and fire officials to the meetings and engage in the conversation when they might otherwise prefer not to. So we need to be looking at how we can use grants and funding in that respect.

Also the comment -- the comment about the universities, we've had a lot of success with working with

different local universities; San Jose State University, to name one. They brought their business school in, and their engineering school, to look at some of these different issues and help us work through different problems and come up with examples. And what it -- it helps organizations like ours because it's low-cost smart labor. And it helps the students in that it gives them something that they can hang on their resume, and it further develops and their students for future work in this industry. So that's my thoughts and comments on that question.

MS. NEIDICH: Josh, did you want to say something?

MR. HART: Yeah. There were -- there were two ideas that I had that haven't been discussed so far. And the first is in the Owen's Valley here we have a number of tribal reservations that, you know, would make -- they're excellent opportunities for renewable energy development. And I believe that there is funding that can be leveraged through the Bureau of Indian Affairs. And so I think that's a great idea here, and probably in other locations.

And then the second one I want to mention is we have a pretty large resort in Death Valley at Furnace

Creek. And they have installed a solar ray there, and it has actually turned into quite an attraction at that resort. And so I think, you know, private property owners are another way we can go to encourage especially the distributed generation on that kind of small scale. So those were two -- those were the two ideas that I had in addition.

MS. NEIDICH: All right. Thanks, Josh.

MS. GISHRI: This is Tamara again.

MR. MCFEELY: And --

MS. NEIDICH: David, Tamara is going to speak.

MR. MCFEELY: Go ahead.

MS. GISHRI: Okay. Thank you. So not to like be -- I just want to echo David's point. I think with the rooftop challenge teams, there's four currently in the -- in California, there's a wealth of knowledge and best practices that -- and most importantly I think relationships with the existing jurisdictions and utilities where we can -- you have a channel of communication already. That can be -- the model can just be expanded even further.

The other note that I have, and I don't know how

this would work, but financial partners. We've heard that financial mechanisms are extremely important to getting more adoption of these technologies. And so as like the PACE program rolls out or some sort of community solar program, that could be another opportunity for partnership.

MS. NEIDICH: I just want to let David and Josh know, we have one microphone that we're passing around. So what we'll do, for any other question, we're going to let the panellists here in person speak first, and then we'll go to you.

David, did you have another comment?

MR. MCFEELY: Yeah, I'd like to just go ahead and speak right now, just to kind of follow up on what Tamara just said. You know, my current grant only covers 19 jurisdictions, and I don't know how many others, there's hundreds of jurisdictions in Northern California, I don't know off the top of my head. But I think these are great programs, model ideas that could be extended with support from EPIC.

Also I would like to also echo the comments that were made by Mike Hart, I believe it was, of Sierra Energy in this same panel last week, along these same lines. So I

really should quote some of his ideas and thoughts that he proposed on the panel as far as grants and things of that nature.

MS. NEIDICH: All right. Thanks, David.

We're going to go ahead and go to question number -- can you hear me? Sorry about that.

We're going to go ahead and go to question number two. What local planning and permitting challenges do clean energy technologies pose now and in the future?

MR. GIFFEN: Sure, I'll start. Jason Giffen again, San Luis Obispo County. Well, there's not a shortage of challenges when it comes to local land use. I'll try to keep it brief and focus on some topics, the first of which we've hit on a couple times is the local funding gap. When we look at where San Luis Obispo County, as well as other cities and counties, existing general plan and zoning codes are, they're at a point where they need to be modernized. There's general categories in many of them for electric generation, but it's not necessarily specific to any type of renewable energy, for example. In our case, more specifically, we're interested in modernizing rules and regulations related to solar energy.

Right now when someone comes in to file an application there's a lot of uncertainty associated with that. There is a discretionary action which makes it subject to CEQA. And so we're essentially coming up with customized solutions on a case-by-case basis. And there's a lot of hesitancy to want to walk through that CEQA portal, so to speak, and not necessarily knowing what the outcome on the other side is going to look like.

So one thing that we would like to be doing, and we're doing this independently by also moving forward with a bill that our board of supervisors sponsored, AB 2161, to try to build on the Perez bill which would provide funding to qualified counties. But I think the EPIC program, which is much more inclusive and, in fact, would have open competition, so to speak, for local agencies to compete and modernize their own general plan and zoning ordinances, is a better step in the right direction.

To add on to what are some of the other challenges, whenever it comes to some type of discretionary decision with land use, community and neighbor opinions really matter. So if we were to move forward with, which I hope we can, some type of programmatic approach, balancing

how much you can get done in a programmatic approach and making it as predictable as possible to begin with and kind of focusing -- and focusing on frontloading the process would be much better, as opposed to essentially just modernizing rules and regulations which would then require, you know, subsequent discretionary actions.

Some other challenges, of course, is the resource competition. When you look at location of where, in San Luis Obispo County's case, solar energy should be -- is desirably placed. It's desirably placed on flat sunny places. That's typically our valleys. And that's also where we have most of our agriculture, which is the pride and joy of San Luis Obispo County. So you've got that competition between balancing primarily renewable energy, in this case solar, with agriculture.

The only other thing that I would like to throw up there, as well, is what's missing is a strategic approach. And a big piece of that would be completing a constraints and opportunities analysis locally so we can best match where the existing infrastructure related to transmission is in association with the best opportunities for solar generation.

So that's kind of a high-level summary of some of the challenges.

MS. GISHRI: This is Tamara again. And I could talk about this for hours. So I'm just going to hit the very top level points. And I'm sure David will -- I'll punt to him, as well, because I'm sure he has a lot of similar thoughts that we've talked about throughout the Rooftops Challenge Team.

I think number one, inconsistencies in processes across jurisdictions, helping. There's a big push to coordinate between jurisdictions and utilities, which doesn't always happen in terms of the permitting, and interconnection processes. And most of these comments can relate to both solar and electric vehicles. I think, and I'm going a little ahead of myself, but I think one approach that hasn't been -- that hasn't been done before is that integrated approach looking at solar and other new technologies and how they would go through -- because they are essentially all a very similar process that have a lot of the same issues, and so -- and challenges. So kind of looking at everything holistically rather than coming up and, you know, we're focusing on solar now but we're going

to have to look at these EV processes later as well.

Another big topic is transparency of information from the jurisdictions and the utilities, just getting as much information to contractors and customers as possible, which is pretty difficult considering rapidly -- you know, they have rapidly changing environments as well.

Another major challenge is larger scale commercial and multi-family installations. You know, there's all these issues around virtual-net metering and, you know, just the complexity of commercial projects and nonprofit projects, getting those through the pipeline.

Let's see, training and education. We hear this a lot that, you know, the contractors, as well as the jurisdictions and the utilities, could benefit from better communication and -- and training if you have some sort of best practices or guidelines to -- to teach them. And the governor's office just released a permitting guidebook for solar installations. If anyone can check that out, it's a great resource that we're starting to promote as a tool.

And then financing and incentives, there's another big challenge. But I'll leave it at that for now.

MR. HUNT: This is Vernon. I think in addition

to what Tamara and Jason have already said, I think the uncertainty piece of it that Jason alluded to, and I think Tamara just kind of touched on the financing piece, both of those two play heavily, especially in the Navy looking at pursuing these types of technologies. The more uncertainty there is the -- the more risk there is and the less -- the less comfortable the financiers get about providing the funding for these projects. So, I mean, that becomes a large obstacle or barrier to developing some of these new technologies as we move forward.

I think another thing that I think is worth mentioning is really starting to look at all of the technologies holistically. As we start to develop these different technologies we start to deploy more electric vehicles on the grid, more distributed generation on the grid, more demand-side management, more integrated networks. How -- how collectively does that affect our current regulations and policies? Because at some point in time the collective impact of those -- of those technologies may begin to trigger things that we haven't thought about quite yet. So if there's an opportunity to start to look maybe a little more forward into the future -

- I think this is kind of where the industry looks like it's going -- what might the impacts and current regulations, and how can we maybe remove some of those barriers, even -- even today?

MS. NEIDICH: David or Josh?

MR. MCFEELY: I'll let Josh go first, if he wants.

MR. HART: Sure. Thanks, David. First I want to basically say I would repeat most of what Jason said. So I won't actually repeat it. There are a couple of additions, additional issues that are particularly challenging for us.

The first is for large-scale development. Mitigation for -- the biology mitigation is so enormous that it is -- has the potential to eat up all of our county's private lands. And I know that that is also an issue for a number of the other counties in the desert. So that's one of the challenges that we're facing.

Also, in particular for solar development due to the -- the tax incentives for solar, we have real concerns about providing services and infrastructure for these large solar plants, given that the property tax revenue we're going to receive is limited.

And the -- the third issue that we have is the boom-and-bust cycle of development, and especially how that impacts our housing supply.

I thought that this would probably be a good point to bring up, this spot zoning issue that we've been -- been faced with. And hypothetically we -- we had an issue where we have a parcel that's zoned for single-family but is ideal for distributed generation. It's right next to an industrial zoned property, but it's -- it's too small to re-zone. And so that has brought up a variety of issues. And one of the solutions we're thinking about is re-zoning adjacent property. But that, of course, brings in problems with getting the adjacent property owner to -- to agree to the re-zone. And so I don't know if any of the other panellists had any experience with that issue in particular. But if -- if you did I'd certainly be -- it would certainly be great to hear your perspective on that.

MS. NEIDICH: Go ahead, David.

MR. MCFEELY: This is David McFeely. I was thinking that for this question that I wanted to illustrate a couple of problems to really sort of illustrate what the problem is in that question. Then I've got some other

solution ideas that I'll save for the next question.

But the first thing I wanted to mention is that with regards to the -- the financing issue that Cameron brought up earlier, we have a working group in partnership with (inaudible) that a solar collective is running to look at better financing and better liquidity in the solar market. And currently on that working group there's a lot of different financial community leaders, along with San Diego and NREL. So there might be an opportunity here for EPIC to play a role as, you know, another voice in that committee to help move the ball down the court, so to speak. So that's an issue -- an opportunity that I'll put out there for EPIC to follow up on later.

But I have three examples that I wanted to -- that I wanted to use to illustrate what the problems are that we are facing with permitting and interconnection too. One of our member companies, Skyline, is our first pilot project for their technology, which is a concentrated solar technology which was to be here in Nipton, California, a 50 KW pilot project. In the interconnection of that system, once it was installed, it took them over six months to finish the interconnection before that system was online.

For early stage start-ups, this can be a killer. This can put them out of business. And I don't know the reason behind. You can follow up with Skyline Solar directly. But these kinds of things just don't make any sense to me.

Skyline was also involved in our PEER grant, which as you know with almost all of these grants there's some kind of a demonstration project that needs to go along with the grant. In order to do a 50 KW demonstration of their technology for us as part of the PEER grant they initially targeted for an installation at Edwards Air Force Base. They ran into so many regulatory and permitting hurdles that they eventually, in order to be able to meet the deadline of the contract for the deployment and the report writing for the grant, eventually deployed the -- the project in Durango, Mexico. Now why we can get a 500 KW [sic] project deployed in Durango, Mexico faster than we can in California is beyond me.

In that same grant we also had another partner, SunPods, that was demonstration some very innovative technology to get solar systems to the ground faster. And initially they had targeted a 200 KW project in Palomar, California and ran into some scenic easement issues. And

after four months of battling with the local building department they could -- they could not get those easement issues wavered, which if you looked at the site it made actually no sense, and wound up doing three small 25 KW projects in Fresno in order to be able to build and meet the requirements of the grant.

So these are the kinds of things that our developers are running into on a regular basis. But again, we don't want to impact public safety. We don't want to impact the environment. But we need to find a way to streamline these processes and get to a conclusion much faster than four to six months.

So I think that will conclude my comments for question two.

MS. NEIDICH: Thanks, David.

Let's go ahead and go to question number three. How can EPIC investments leverage current efforts rather than duplicate them? And the examples are the DOE's SunShot Initiative, and the model frameworks from the California County Planning Directors Association and the Governor's Office of Planning and Research.

MR. GIFFEN: Okay. This is Jason Giffen again,

San Luis Obispo County. So I was very involved with California County Planning Director Association's model framework. What we saw as lacking was a coordinated approach as to how to deal with primarily solar energy facilities. Counties and cities were essentially going it alone, coming up with customized solutions.

So what -- the approach to do was to come up with a model ordinance that then could be adopted and used and customized on a local level. And at least from our perspective we thought that that was our goodwill going forward. And essentially that would be our matching funds, so to speak, because that brought together at least over 80, maybe even over 100 people from different aspects and involvement with the industry. So continuing to build off of that, I think that it would be great if EPIC could encourage building off of models such as that.

Included, as well, we had a list of examples of conditions, of ways we were tackling -- like Josh pointed out, trying to balance the loss in services since local counties were not collecting the traditional amount of tax revenue that they could because of the -- because of the tax breaks. So we included, as well, point of sale

agreements.

Also some stumbling blocks we're got right now is on decommissioning. So when you're going forward -- in the previous question we talked about, what do we -- what do we need to do now to get solar moving and to remove regulatory barriers. But the second part of that is, well, what do we have to do with regulatory agencies and jurisdictions to ensure that we're taking care of the public good in the future.

And one stumbling block, frankly, that we have is on decommissioning and how to deal with it. I know a lot of different jurisdictions dealing with it individually. But some type of shared collaborative effort, not just on the front end of how to make permitting easier to begin with and removing those barriers, but also to make it make sense on the -- on the back end. Because from county government's perspective we understand the balancing of benefits for ratepayers, as well as taxpayers. And we want to make sure that both are equally benefitting and that we're not short-changing one over the other.

MS. GISHRI: This is Tamara again. So I just wanted to reiterate, SunShot, the Rooftop Solar Challenge,

in the Southern California region we have 11 jurisdictions participating. And I think in L.A. County alone there's 89 other cities. So although we have L.A. County in our -- in our partnership, I think there's a lot more work to be done.

And as David mentioned, the Rooftop Solar Challenge currently sunsets next -- in February of next year. And at that point we should have done a little bit of implementation and -- and -- and implemented change. But I think -- and we'll have an implementation plan in place for all of these jurisdictions. But a great way that EPIC could use their -- their funding, I think is to fund some of those implementation programs beyond that year, regardless of whether there is DOE funding.

And then also reaching out to all of those other jurisdictions, a lot of them who are smaller jurisdictions who, you know, are resource constrained and maybe need some help on this and -- and really teach them what we've learned in this first year, and try to get them to implement some of our best practices.

The other comment I would make is that I think there has been some great collaboration between the four

Rooftop Challenge teams. But I think there could be, taking it a step further, even more statewide initiatives that builds on economies of scale. I'll just give you one example.

I think all of us are struggling in trying to get jurisdictions to adopt an online application system. But I think if we did a statewide, if you could do that, application system that's flexible enough for each jurisdictions needs, that something that everyone would benefit from.

Mentioning the OPR, permitting guidebook, it's been completed, but there is a lot more education and outreach and -- that -- that needs to be done. And there are model ordinances and -- and a standard plan in there that could be pushed to the jurisdictions.

And then just lastly, the gentleman before mentioned this, leveraging EPIC funding for match dollars, showing to the DOE that there is support in California to continue these initiatives would be extremely beneficial.

MR. HUNT: This is Vernon again. I think some of the efforts that have -- EPIC could potentially benefit from some of the lessons learned from the DRECP process and

leveraging that in other areas -- the Desert Renewable Energy Conservation Plan -- so the idea being that that effort has brought together a lot of different stakeholder on the -- on the environmental and natural and cultural resources side -- side of the house to plan out these various areas of consideration for -- for solar development.

I think that type of effort could also transfer into the regular -- other regulatory areas and into the permitting process, if there are either statewide or maybe more targeted areas where there's good potential for solar development or other major renewable development and utilizing that type of model as we're planning out what these -- these different areas may look like, whether it's, you know, looking at local municipalities or -- or whomever, but really using that kind of model and really bringing all the stakeholder to the -- to the table.

MS. NEIDICH: Okay. David or Josh?

MR. MCFEELY: This is David.

MS. NEIDICH: Go ahead.

MR. MCFEELY: This is David McFeely. You know, I totally concur with Tamara's previous comments. In fact,

she stated them so eloquently that I don't even know if I can possibly expand on them too much. So I fully -- just to say, I fully concur. I think her and I are on the same page with what she articulated. So let me try to articulate two other additional things that I think that EPIC could -- could help in.

And the first one would be, you know, outreach and training. You know, as Tamara said, you know, this -- our rooftop examples will be, you know, concluding in February. You know, but it's an ongoing battle to get the word out and, you know, sort of rise above the noise level in the every day world of code officials and integrators. And training for all is an ongoing need. And, you know, training can't just be a one-time event. You know, people have to be, you know, brought in over and over again before they really start to -- to get it and -- and really start to put it into practice in their own local day-to-day activities. You just can't do something once and walk away from it. Humans just don't work that way.

So I would, you know, highly support looking at, you know, some kind of continuous program for online -- or ongoing, as well as online training for code officials and

integrators in this field, as well as, you know, in our SolarTree.org workshops which we do nationally, we're also offering continuation -- continuing education credits to code officials through the IEI, as well, to encourage their participation. So, you know, there has to be some little carrots out there to get people to -- to come and participate.

I also want to go back in and touch on the -- the internet online issue that Tamara brought up earlier. You know, we need to move into the internet world. It is really appalling that so very few jurisdictions and utilities offer a really true online application, as well as a tracking process for both interconnection and permitting to interconnect across multiple enterprises. I'm not just talking about downloading an application and .pdf, some simple little thing like that. I'm talking about Amazon.com like experience for permitting and interconnection. And if EPIC could assist in the development of online software interconnection standards and requirements it would enable third-party software developers to better participate in this field, along with funding to support adoption in the local jurisdictions.

Utilities also need to be encouraged to take a leadership role in employing more streamlined practices with online tools that integrate into the jurisdictions. And then leveraging organizations such as SolarTech or the California Center for Sustainable Energy to assist in the training of integrators to utilize these processes once they've been developed and deployed so you get -- all parties are, you know, basically playing by the same rule book, on the same sheet of music.

So I really would encourage EPIC to take a strong look at how they can help industry get off the pencil and paper track and get online, and get online in a very integrated fashion across multiple enterprises and jurisdictions. Thank you for your time there.

MS. NEIDICH: Josh, did you have anything to day?

MR. HART: Yeah. I wanted to maybe follow up on that point a little bit. We have been participating in the Southwest Solar Transformation Initiative, which is a component of the SunShot Initiative. And one of the main facets of that work is to try to standardize permitting throughout the deserts, the Southwest, for solar permitting, especially at a small-scale level. And,

frankly, you know, our permitting process compared to a lot of the urban areas I've worked in is pretty simple. But we have had an audit. And so it will be very interesting to see how that -- how the results come back and what they had to tell us, especially about standardizing our permitting system.

So I think that that's something that EPIC can certainly participate in. And if there is a way that EPIC could expand that participation in California, I think that would be truly excellent.

MS. NEIDICH: I'm having a good time here with the microphone.

MS. NEIDICH: Question number four: What local planning activities should EPIC invest in? What local permitting processes should EPIC invest in? And what do these initiatives cost, and how long do they take?

Who wants to jump on this question?

MR. GIFFEN: Sure. This is Jason Giffen again, San Luis Obispo County. There's not a shortage of work to be done. As far a what could EPIC support, I touched briefly on before feasibility analyses. That would be purely a planning exercise where local jurisdictions, I

would think, would partner with the utilities where we could actually, essentially, do a constraints analysis. That would be a prerequisite to identify where are the best opportunities and what areas are constrained to actually plan for load -- specifically locating renewable energy. That could either be done independently or as phase one.

Ultimately, then changing regulations, updating general plans, changing zoning ordinances. I think if that was to be done, an emphasis should be placed on the tiered system, a we explained in the model ordinance that was put together by the Planning Directors Association. The reason I think that where the money should be spent is when you look at return on investment from an industry standpoint you preferably want to do this once.

Right now we're stuck with a situation where individual applicants have to go through both the permitting, as well as the CEQA process, on their own. So any opportunity to make small, and especially if we can get there medium-size renewable energy projects analyzed from a programmatic approach and switch from the discretionary review on a local level to a ministerial review is an end game that I would think would be well received by the

industry if they only had to come in with a building permit and meet a prescribed set of performance standards as opposed to going through a CEQA process now which can take, well, frankly, it can take years and cost hundreds of thousands of dollars. So instead, why not spend -- do it once and spend hundreds of thousands of dollars once as opposed to multiple times.

I did like the point that David brought up related to support for e-permitting. That does speed things up, especially on the building permit side. And our county, along with a lot of others, our software is aging. And that would be a specific pilot program that could be very successful if EPIC wanted to provide some funding for that as well.

MS. GISHRI: This is Tamara. I'm going to take a stab at this. And it's reiterating a lot of the points I already made, again, the online permitting and interconnection. I think supporting continued implementation of the Rooftop Solar Challenge in whatever -- whatever that looks like, whether it's a statewide or -- or a more regional approach. Again, with training and education, I think that's a critical component of getting

all of this information out there.

Kind of moving away from the Rooftop Solar Challenge topics, I think one -- one thing that comes up a lot is grid planning, knowing where the resources are and where the distribution system is, having that be more electronic and available is something that would be very useful, especially for some of the nonprofit and commercial installations.

And then, also, in regards to electric vehicle infrastructure planning, you know, kind of scoping out more of public and workforce, charging, what that looks like, I think there have been a lot of pilots out there that we could -- we could draw from. And then also time of just charging for -- for electric vehicles.

And then I guess -- I guess that's all my points. I'll probably think of more.

MS. NEIDICH: Okay.

MR. GIFFEN: Ditto.

MS. NEIDICH: David or Josh?

MR. MCFEELY: Yeah. This is David McFeely. I'd like to follow up on the -- the planning side of that, of what Tamara was talking about. One of the things that we

resolved this last year as NREL was doing a national survey to look at the different soft costs that were involved in the deployment of solar PV.

And one of the real surprising numbers that came out was that over 65 cents per watt is just customer acquisition cost, which is a huge number relative to everything else. If you're going to try to drive hardware costs down below $1.00 a watt, that would mean that installation and permitting issues and customer acquisitions are still going to be significantly over $1.00 a watt. So you'll never get below $1.00 a watt in total installation costs.

So one of the things that I am toying with in my head is that we have DSIRE.com website that's funded by the DOE and the North Carolina Energy Center that, you know, does a nice mapping of different solar resources and policy issues and permitting issues at a very high level of, you know, the national landscape.

You know, if EPIC could work with, you know, some smart, you know, programmers to be able to take that down to a more state level so that developers who are looking at projects can look at a particular area and really be able

to drill down into not -- not only what is the solar resource for that area, but what are the local zoning and permitting land use issues involved, all the way down to the local jurisdiction, and be able to graphically look very quickly across a large landscape and figure out, where do they want to do business? You know, do they want to go beat their head against the wall in some jurisdiction that may not really be that solar friendly? Or is there a jurisdiction over here that's become solar friendly but the world hasn't gotten out, and you could just find it very quickly by looking at some kind of online mapping function?

But I think that kind of tool capability and keeping it fresh and up to date would both help the industry, as well as maybe, you know, politely encourage those who are not necessarily as solar friendly to get on the bandwagon. So I think that would really help streamline some of the up-front planning costs that are real deal killers to a lot of solar projects.

MS. NEIDICH: All right. Thanks, David. Josh?

MR. HART: Yeah. I just want to reiterate Jason's comments. I don't know if -- if the panel or the

audience knows that we did attempt to update our general plan to address renewable energy, solar and wind, at a programmatic scale, and we ran into an issue on the CEQA front. And our main problem is we just don't have the resources to prepare a programmatic EIR that costs hundreds of thousands of dollars.

And so I think that if EPIC can provide assistance to jurisdictions for those types of documents, that would be really great. I know the Energy Commission has other programs that do assist, but I think they have a lot of strings attached. And so I think a program that was centered around assistance would be really helpful.

MS. NEIDICH: All right. Thanks, Josh.

We're going to go ahead and go to question number five. How should EPIC measure ratepayer benefits for local planning and permitting assistance?

MS. GISHRI: This is Tamara. So I think first and foremost you can measure in cost savings to the customer or the installer. You could measure in jobs or reliability to the grid. But I think one comment I would make is that through the Rooftop Solar Challenge, NREL actually created a market assessment of each of the Rooftop

Solar Challenge jurisdictions regarding how effective they -- they are currently in terms of permitting, interconnection, financing, and what types of programs are out there, and -- and actually gave scores out.

But -- so I think that -- that could be a model or a framework. It's not perfect but -- by any means, but it could -- you know, it -- it would be something to look at

to -- to benchmark where some of these jurisdictions are.

MR. GIFFEN: This is Jason with San Luis Obispo County. I kind of like what David was saying in the previous question when he had a measurement of soft costs. One thing that we don't know and from the government perspective that we need to rely on industry is, okay, what are your hard costs and what are your soft costs. And if planning and permitting is built into that soft costs, the better understanding of what the cost is today, and then on an individual basis, what can jurisdictions do to lower that cost, would -- would be really helpful. That would require, obviously, the industry to be forthcoming with those -- with those costs. And I would perceive, at least at the high levels, that would be possible.

Some other ways you could measure it, which are probably more qualitative, is looking at how many local jurisdictions actually changed what was once a discretionary action to a ministerial action. If we're really talking about speeding things up and getting to the green light quicker, that's -- that's one way to do it, as opposed to spending one, two, three years in permitting prerequisites, which is essentially going through the planning and CEQA process before you can even start moving forward with construction. That's one way to -- probably one way to measure it. It's almost like a CEQA ratio, if you will. The fewer CEQA documents, probably the better.

MR. HUNT: Hi. This is --

MR. MCFEELY: This is David McFeely.

MS. NEIDICH: David? David, Vernon is going to talk real quick.

MR. HUNT: Real quick. This is Vernon.

MR. MCFEELY: Go ahead.

MR. HUNT: This is Vernon with the Navy. I, you know, echo what's been said already with the standpoint of time and money. I think identifying those soft costs in advance and then at the end of the program seeing, hey,

have we reduced the soft costs overall would be a good metric.

The interesting thing with this particular area of focus, as far as EPIC is concerned, in its benefit for the ratepayer is it's kind of a second order affect. It's -- there's not as much, hey, direct, hey, we do this and streamline the regulatory, that's going to give the, you know, the ratepayer a monetary benefit or some other benefit directly. So there's certainly a second-order affect to it.

But the idea of identifying what those soft costs are, how much they are, and then whether or not the efforts that we've put forward as far as EPIC is concerned have reduced those overall soft costs, I think is a great one. And then also the time. Have we gone from, you know, a one, two, three-year process to something that's, you know, more manageable, more reasonable, allows for the different business entities to have less risk, less uncertainty, and more viability as far as investing in these technologies.

MS. NEIDICH: Okay. David?

MR. MCFEELY: Yeah. Going back to the NREL study I mentioned earlier that captured soft costs for 2010, I

mean, there were two problems there that I think maybe EPIC could work with NREL in their next round. I think they're going to try to do this again after the first of the year. But, you know, one is that, you know, we were not able to actually publish any result until 2012 based on data in 2010. So there's almost a two-year lag there to getting information out to the industry to make decision. And I think that's really unacceptable. And there's a lot of problems in trying to collect this kind of soft cost, very granular data, you know, calling up CFOs at different companies and asking them to take two hours to fill out a survey is not going to fly every time.

So we ran into a lot of problems, a lot of issues on the data collections side that maybe there's some way EPIC in working with NREL can figure out how to streamline, turn it in to some kind of automated approach, make it easier for CFOs and people at some of the industry companies to be able to participate and give us a richer database.

So that's one thought I'll throw out there for you to consider.

And I think the other thing is just, you know,

overall just looking at what is the overall local economic growth as a result of EPIC's investments. And there are models out there like, again, not to overly toot NREL's home for them, but they have another tool called JEDI which is a very nice online calculator for calculating -- estimating economic improvements. And maybe there's some things that EPIC can do there to make that a little bit more friendly and usable for those of us working in the field to be able to, you know, quantify these gains, as well as for EPIC themselves to be able to quantify the gains that are made and communicate those back to ratepayers that their money is being well spent. And there are some opportunities there, I think, that we could explore, just being able to more quantify the local economic development.

MS. NEIDICH: Thanks, David. Josh?

MR. HART: Yes. I just -- I just wanted to add that one of the -- the big issues for renewable energy is transmission. And, you know, local agencies don't have a lot to do with transmission, but we are involved. And we -- we do -- the people who live in areas where the transmission is going to occur have -- have to live with

the visual effects of that transmission. And so if -- if -- if there was some way that EPIC could measure the local agencies' contribution to getting transmission built, to get the renewable energies market, I think that would be really good.

One of the things that we have looked at is trying to encourage co-location and upgrading of existing transmission to limit visual impacts. So if there was a way that EPIC could attempt to at least measure transmission improvements at a local level, I think that would be great.

MS. NEIDICH: All right. Thanks, Josh.

We're going to go ahead and open it up here or in the building here for any comments. Does anyone want to make any comments? Okay. When you come up, please state your name.

MR. HOLMES: John Holmes, San Diego Gas and Electric. We have an extensive program in our sustainable communities division of SDG&E's customer relations that's actively engaged in siting solar systems in -- in public domain on rooftops that customers otherwise occupy. And the ability for those systems to be supported by new

intelligent forms of solar invertors is stifled to some extent by the registration process for CEC's approved solar invertors. We are getting ready to advance technology development to the case with increasing intelligence is prevailing in grid operations.

And so we suggest that this permitting process contemplate a provisional approval process for advance technology systems that enable us to really look at the forthcoming versions of these invertors which will potentiate intelligent operation, as well the what Frank had discussed yesterday, about the 1547.8, performance systems. So these are -- these are important issues that face solar developers today when they contemplate putting systems in that have the increasing intelligence that we're looking at. So a provisional approval processes for intelligent invertors.

MR. COLBURN: Mike Colburn, also from SDG&E. We have an online application for customers that want to participate in net-energy metering below 30 KW, and that was implemented approximately a year-and-a-half ago. We find that it helps to reduce the frustration that folks would otherwise have, and maybe reduce frustration for

their contractors often times. Those are the entities applying for these systems.

We also have for the developer community an online map application where individuals can look and see what can the system, what can the distribution system accept in terms of output from solar facilities.

MS. NEIDICH: Any other comments? All right. It looks like that it's. We're going to go ahead and adjourn this session, this panel. And we're going to go ahead and break for lunch, and then be back at 1:30 for panel number three.

And also, Cody, can you put up the next slide?

There's a slide up on the screen of -- of information about submitting written comments. Those comments are due on August 17th. Thank you.

(Off the Record From 12:03 P.M., Until 1:38 P.M.)

MS. NEIDICH: Okay. We're going to go ahead and get started. We're here for the -- this is the EPIC workshop. We're in panel three. And this panel is workforce development to accelerate clean technology deployment. I want to thank everyone for attending today, both in person and on WebEx. And I want to thank our

panellists for taking the time to join us today.

We're going to -- I'm going to give some instructions to the panellists. We're just going to go ahead and go around the table, and for each one of you to take about five minutes. So let's -- give us your name and who you're affiliated with, and tell us a little bit about what's going on. And then after that we'll go through the questions. And I'm going to leave that kind of fluid. I'll read the questions. But if you feel like responding, just let me know.

And also real quick, if anyone is wondering, we have two panellists that are -- could not make it at the last minute. So Carlos Hernandez and Jessica Goodheart could not make it, so in case your wondering where they are.

So where should we start? Let's see, let's make -- it looks like Daniel. Do you mind starting?

MR. VILLAO: Oh, sure. My name is Daniel Villao.

MS. NEIDICH: Oh, here, the microphone.

MR. VILLAO: Sure. Not a problem. My name is Daniel Villao. I'm the Statewide Director for the California Construction Academy, which is a project of the

UCLA Labor Center. We specialize in the evolving construction industry. We typically focus on academic research, the creation of popular education tools, and facilitation, bringing stakeholders together to discuss policy and programming as it moves in this current evolution of the construction industry. We recently authored a publication called Beyond Green Jobs about the opportunity of the energy efficiency retrofit space in the construction industry, and how to scale work opportunity while we're reducing environmental impact and capturing savings.

MS. CERVAS: Good afternoon. My name is Strela Cervas with the California Environmental Justice Alliance. I do -- I focus on statewide policy advocacy, and particularly on energy and climate issues in our alliance. CEJA is a six member organization alliance. We work with community organizations that are primarily low income and communities of color. We have about -- we represent about 15,000 community members across the state. Our member organizations are the Asian-Pacific Environmental Network that are based in Oakland and Richmond. Communities for a Better Environment; they also are based in Oakland,

Richmond, and then have offices in Southeast L.A. where I'm based, and then in Bloomington. The Center of Race on Race, Poverty and the Environment, based out of the Environment based out of the San Joaquin Valley. PODER, People Organizing to Demand Environmental and Economic Rights; that work is in the missions district in San Francisco. Environmental Health Coalition; that works in San Diego and the Tijuana border region. And then the -- the Center for Community Action and Environmental Justice in Riverside and San Bernardino.

So together what we really try and do is bring together all of these community members that have been voiceless at the statewide policy level and really get them to be at the forefront of advocating for their own policy change at the grassroots level.

MS. NEIDICH: Can I just -- actually, I forgot to introduce myself as your moderator. I'm Sherrill Neidich and I work at the Energy Commission in the Renewable Energy office.

MR. ELLIS: Good afternoon. I'm Aaron Ellis. I'm from Kern County Workforce Investment Board for Kern, Inyo and Mono County. I am a one-stop operator. I'm a

deputy director. And I manage the client services division for the one-stop in Bakersfield. And the covers the intake eligibility, one-stop services, partnering with our EDD partners in Kern County. And we have two comprehensive one-stops in -- in Kern County, one in Delano, one in Bakersfield. And we have a lot of affiliate sites within Kern County. And further on I'm going to talk a little bit about what we're doing with the green training programs with the solar tech training, the wind tech training, and power tech training.

MS. WILSON: I'm Genine Wilson. I am the Region Vice President for Kelly Services here in Southern California, and also the Co-Chair for Workforce Development Committee for the Los Angeles Economic Development Corporation.

In the committee really what we're focused on is bringing industry and education together in one room to really try to dissect where are the workforce gaps. And we've been able to discovery many. With this we've been able to have some aggressive conversations with industry coming in and talking about, you know, here are all the job openings they have and why they can't fill them, and really

trying to unite with education to figure out how we get this training to employees or potential employees to have a better developed workforce to fill these needs.

As you know, in -- especially in California with the unemployment rate, you know, it brings great frustration when there are so many jobs that go unfilled and our unemployment rates are so high. So I think that, you know, if we can continue to focus and work with the funding to bridge that gap today, as well as, you know, three, four, five years from now, so that's really what we're focused on in the committee.

MS. NEIDICH: We're going to go ahead and go through the questions. Question number one: Does the clean energy sector shape employee training programs? What partnerships exist between training programs and employers to promote job placement, apprenticeships, and externships? And also, what came out of our last workshop is -- just something that came up, is how do we get the employer involved? I mean, how do they really speak to the employer and communicate with them?

This -- who wants to go first? David?

MR. VILLAO: Sure. Sure, why not?

MS. NEIDICH: Okay.

MR. VILLAO: So I -- you know, there's multiple opportunities and examples of really good programming that's happening. One of the things that we were directly involved in is the L.A. City Green Retrofit ordinance where the city created an ordinance to retrofit 1,000 of their municipal buildings. And they created -- they're creating or they created programming to transition employees that were being laid off in other parts of the organization and created some skill workshops and partnerships that allowed them to participate in pre-apprenticeship training that will eventually lead to them moving into a registered apprenticeship program which is being created in partnership with the -- with the local building trades' councils.

So -- and they're currently retrofitting the -- I think they've moved through the first 36 buildings now. But there's 1,000 of them that are available. And so they're creating some really innovative funding mechanisms in order to help deepen the work.

You know, and our -- and our approach is always

comprehensive, deep-place based retrofit programming, energy efficiency programming that is rooted. And auditing is what really creates the scalable job opportunity.

And the question really should be, what kind of jobs do we want to create; right? Are we are going to create task-related peel-off pieces of work that already exists where we're creating task specific jobs that are short term and low paying? Or are we going to create mechanisms that are real access to family-transforming careers that are access to -- to work that is not just -- you know, what happens to the guy after he installs this solar panel? Can he -- can he actually, or she, pull the wire, bend the pipe, you know, connect the -- the mechanisms that -- that generate that entire system. And that actually, you know, would be a role that an electrician can play.

So -- so do -- you know, what kind of -- is it let's create as many jobs as possible, you know, for a shorter period of time, or let's create a smaller number of jobs but really create quality work. And I think that the idea of measurement becomes really important, especially as a policy organization, right, where you're governing this

system. I think that one of the -- one of the gaps that needs to be addressed is the quality versus quantity question. And that's included in contracting. It's included in the way that certification processes get standardized. It's included in the measurement of how organizations interact with your utilities.

And I think that there's a lot of things that can be addressed to help ensure that we're creating a quality workforce, that we're generating access for small and disenfranchised minority contractors to participate in the fold, but not lowering the bar, raising the bar to a level where these sensitive systems -- because the other component -- and I'll stop here because I don't want to get off the soapbox now -- but the other component of this is that there is -- there's this idea that we -- we have to rapidly deploy as many contractors as possible and open the floodgates. And it doesn't matter what the market will dictate, what the standard is.

The danger in that in my mind, and you know, you can disagree with me and many people do, the danger in that is that the systems that you're now overseeing are becoming much more interwoven. They're much more sensitive, much --

a much greater amount of technical skill sets that are going to be needed. You know, your systems are no longer just controlling the lights. They're controlling, you know, water systems. They're -- they're integrating with computer systems.

And so the small problem that is generated by an unskilled worker could definitely at some point interact with the grid and cause a much bigger problem. And if we don't train a workforce in a way -- and create standards and certifications that really allow for the proper execution of that work, and the maintenance and operation of that work, we're going to find ourselves with a lot of undiagnosed issues that could be very problematic.

MS. NEIDICH: All right.

MR. VILLAO: And that's all I have to say about that.

MS. CERVAS: For us, for CEJA, so we work in communities that are -- are probably the most impacted communities across the state in terms of the highest polluted, have really high levels of unemployment. And, you know, our kids are -- our kids are really sick because, you know, they live next to dirty power plants or oil

refineries. You know, we -- we work in communities like -- like Chevron where there was just this big, you know, fire.

And so unfortunately, I mean, although there are a lot of green jobs training programs out there -- I mean, I've heard that there's an estimated 300 green jobs training programs across the state; I don't know what the accurate number is -- a lot of our community members don't have access to these training programs. It's either they don't have access to them for many different reasons, you know, the -- the more authentic partnerships haven't yet been created, and we're trying to work on creating those partnerships, or for community members, there's a lot of community members that do go through them that are mostly low income, and people of color communities, and they go through a whole green jobs training program and then they never see a job at the end of it.

And that's the big, you know, sad part about, you know, this whole green economy is that there's this promise of the green economy and that, you know, it's going to come and lift up our communities and provide all these jobs. But really the sad reality is that there -- there really isn't. And, you know, there's this term that a lot of, you

know, youth and adults that go through these programs, they're all dressed up and nowhere to go.

So in terms of the -- the training programs, I think that, you know, we really have to look at the communities first that are most impacted because those really should be the ones that should benefit from -- from the green economy. We actually work with some researchers from UC Berkeley, USC, and Occidental College that -- and we've created some maps that have some indicators. And I talked about that at another CEC panel where, you know, we really hone in on which communities. And if you map them across the state there are particular communities that light up as red that have the highest unemployment and that are the most polluted. And we should really look at these communities and prioritize them.

And -- and then -- and then the second is that, you know, we're -- we're trying to do policy advocacy as the statewide level, as well, pushing for local renewable energy. And what we're really like to see, I think the dialogue has been, yes, we want a new green economy, yes, we want renewable energy. The dialogue has been let's -- let's build a lot of infrastructure out in the desert.

That's something that we need and something that's going to, you know, benefit California overall.

We would also like to see, and something lifted up, is looking at the local communities. So distributed generation is a huge part of what we're trying to promote in that, you know, we want these systems to be localized in the local communities so that the local infrastructure and economic benefits actually reach these communities. And then to actually get the health benefits of it as well.

MR. ELLIS: Now as far as Kern County, our partnerships are one with the community, the local community college district. They have a clean energy center where we actually do the eligibility, the -- the assessment testing to get people qualified to go through the power tech utility worker training. And also the solar; they get to actually pick and choose whether they want to go the solar route or the wind tech route.

We've been doing this program probably since '09 in expectations of a lot of jobs opening up in east Kern County with the solar farms and the wind energy farms. Right now I believe there are 21 projects in north Kern that are still in process. And it looks like some of them,

the reasons why they're not opening up right now range from environmental impact issues, land use issues, and a lot of other things. But there are so many jobs that are going to be coming in east Kern County. So we're preparing our Kern County workforce to be prepared for this. That's one partnership that we have.

We also have green employer forums where we invite employers. And we have economic development there. The training agency is there. Besides the community college district, we also have local private schools that also do the same type of training or a similar type of training. And we all get together. We find out what the employers' needs are to make sure that the training is matching the employer needs, like one of the panellists talked about as far as the gaps are concerned. So that's what we're doing right now in Kern County.

MS. WILSON: Just to touch on what Daniel and Strela touched on as well, I think that, you know, is the energy sector contributing? Yeah. I think the large organizations have the monetary, you know, resources to be able to do that. It's the smaller niche companies which really is up-and-coming technology. How are we getting

that information to really figure out, you know, what research and development is needed, you know, where are things going to be two to three years from now?

I think, you know, when you speak to people that have either taught these courses or owners of solar companies that are trying to recruit out of these organizations, to -- to touch on what Daniel and Strela talked about, there is an impression that they're really not that qualified. They've gone through these certification programs but it hasn't really met the need of what they need from a quality standpoint.

So I think, you know, it's really setting clear expectations of what these certification programs can get you. I think today you're probably looking at 80 percent of the need being in the degree category versus just the certification for installation and assembly.

I think that, you know, if there, you know, is a variety of different focuses from research and development, but also, what do we do with folks that are either seasoned folks that need retraining now or folks that are in high school that we want to position for the proper degree? How are we doing the recruiting advertising? Because I think

that's a big miss.

If somebody, you know, graduated high school and they're going through a certification and that's it, I think that to your point they are all dressed up with nowhere to go because they're not qualified enough. They've got the certification, they've got sort of introductory information, but it's not enough to really get them a family transforming career. I think that if there is more focus on that high school age to really inform them, here are the career opportunities that are out there, if that's part of college orientation so people know what their options are, then you can catch them early enough where they go and they get that four-year education to be able to get them where they need to then get the specialized certification. But I think if they're only looking at, you know, a 9 to 12 month course it's only going to get them so far, and they're going to be competing against everyone else at that level.

So I think the -- the problem is larger. And we have to think now, but we also have to think long term and how to mitigate this moving forward.

MS. NEIDICH: We're going to go ahead and go to

question two. Significant investments are being made to develop a clean energy workforce. What can EPIC workforce development investments build upon these efforts? And some of these efforts are, I have ARRA investments, clean energy workforce training, and the train-the-trainers programs.

So how can we build on these? Daniel?

MR. VILLAO: Sure. Well, whenever we're talking about workforce development we really need to marry that conversation with demand generation and really talk about program, in this case construction program investment. As you invest in programming that's actually going to be deployed, whether there are buildings that are going to get retrofitted, or solar arrays that are going to get attached, or wind farms that are going to be invested in and brought online, that's what really generates the demand for the training, the demand for the workers. When you have an existing workforce that, in some cases, is up to 40 percent unemployed, that's already fully trained in a lot of these trades, you know, the HVAC and the sheet metal workers, and the electricians, and the plumbers, and the like are sitting at home waiting for work too.

And so we're talking about, first of all,

employing workers who are waiting for work projects, and then training the next generation. And this happens to be a workforce that, I think according to the last check, is the -- the second oldest workforce in the country, right, construction workers. And so they're -- they're ready to move out. They just haven't been able to because of the slow down in the -- in the work process.

And so -- so when we're thinking about what investments EPIC could be making, I think that supporting the efforts -- there's a couple of ways to do that. Supporting the efforts that utilities are making in terms of helping to facilitate projects, large-scale projects to move, right, so as they deploy programming, not just in terms of creating refund programming but in terms of facilitating large square foot ownership to revamp and -- and move into energy efficiency and all of the other things that we're interested in, that -- those types of support investments are going to be really helpful.

Also, understanding what needs to be done; right? We asked the question earlier in the year, what -- how much will it cost to figure out, you know, what certification standards would cost and what some of these

other programmings would cost. Well, we need to really do scalable pilot programming in order to figure these things out and to address the, you know, the play-space needs that some of the folks around the table have mentioned already in terms of access and deployment priorities.

So -- so as you're about to spend a dollar, the real value, whenever that dollar can touch programming that actually deploys work, that is what stimulates the demand for the workers and stimulates the demand for the training component. And that's enough.

MS. CERVAS: So I, you know, just to add to that, I think this speaks again to what I was talking about earlier in terms of the various community members that we work with. I was at an energy -- conducted a whole series of trainings with community members, because we actually lack a lot of curriculum around, you know, ways that need to be -- what does a green economy mean and what does renewable energy mean. And so we had to go in and create our own curriculum. I think that would be, you know, a huge, you know, big investment, at least for the community members that are most impacted to really understand -- understand and see what's available out there.

But in this training there was a representative from the MAAC -- MAAC Project in San Diego that came and spoke with us. And he said that he -- they have a whole partnership with green jobs. They have a whole green jobs training program, work with CVOs, and then partner. And have really advocated to fight for some of the -- the green jobs training monies. And they had four different contracts. They had trained about 91 people in a span of time; 70 -- of those 91 people 70 percent were working, but only 10 percent were actually in a green job. And so, again, this speaks to the -- the -- the first question.

I think that there's a disconnect. I think, you know, the -- in terms of, you know, where the -- the funding should be going, in terms of the -- the training programs, there's just a disconnect on the need of what community members actually need and the actual particular types of training programs that they -- that they would need.

And then, again, speaking to Daniel's point, I think that we are really looking or long-term sustainable jobs here. We're not looking for, you know, minimum wage jobs. What we're really trying to fight for are long-term

sustainable jobs and looking at not just the installation of solar, because that's a question that we get asked a lot in terms of our policy advocacies, you know, why are you fighting for this? You're just going to install the solar and that will be that. But we are looking at it, you know, there's many job opportunities out there that we could really conceptualize and create and we, you know, we need to look at that.

MR. ELLIS: As far as the funding, I think they ought to -- EPIC ought to take a regional approach to this, especially in Kern. Regionally in the Central Valley we have partners with our local WIBs in the Central Valley where we apply for grants to make sure that common themes in the Central Valley are being met. And I think the disconnect as far as the timing of all this, especially when you're -- when you're -- you know, you want to train people in the green technologies, solar and so forth, but the jobs aren't there yet, they're coming, and so forth.

So I think there has to be some type of regional approach where, you know, employers have to buy in, the local workforce investment boards have to buy in, the training vendors, the -- the community colleges --

community colleges also have to buy in, and do it regionally. And I think hat might be more effective than just doing it statewide.

MS. WILSON: I would agree. I think that doing it regionally does make better sense than just sort of a generic program that blankets everything, I think, from my perspective in what I do every do, you know, whether it's, you know, by, you know, trying to find work for employees or speaking to industry and education about the -- the gaps that exist. I think identifying the proper segments and what is relevant -- we can't just have training to have training, to say that we're trying to meet the need if it's really not meeting the need, if the graduates are not really getting green jobs.

So we've got to figure out really what is relevant today, and what's going to be relevant in the future; right? Where is the research and development at today? And -- and what do we anticipate that need being, so that that course work is being created today, you know? So if there's funding specifically for that, with that in mind I think that that would be very helpful.

I think that as employees are being -- or

candidates are being identified for these training programs, that the -- the criteria is not so low that it, you know, it becomes very generic. I think that, you know, whether it's a four-year degree or a certification program the standards of who is enrolled in those programs still has to be somewhat high so that you are getting the quality workers. So I think some development of what that criteria should be. What is the metrics? What are the standards? You know, should they have, you know, this grade point average in math or science or whatever it is that shows some ability to digest this type of -- of industry.

I think beyond that, also, with trying to meet the -- the candidates that exist in areas that are underprivileged and often don't have access to this information, I think that something needs to go into some recruitment campaigns and some education of what the opportunities are and what that looks like. You know, what is the timeline? If I want to be this, what does that I mean I have to do today, so they know what that mapping looks like and they can think long term, as opposed to just not knowing what their options are.

So I think that's -- there's probably not enough

focused on just educating people about the process versus just, you know, putting all of the money in the actual training.

MS. NEIDICH: We're going to go ahead and go to question three. Should EPIC fund the collection, storage and dissemination of a clean energy workforce information center? Would a clean energy workforce center connect the workforce to the employer? Also, I'm going to expand on this a little bit. Are there specific areas throughout the state that deserve special attention in developing an information center? And is there a clean energy labor data that the clean energy sector needs that is unavailable from the EDD?

And also I want to add from last week's workshop, some of our panellists were saying that a center, you know, could help if executed effectively, but that employers may not use such a center or find it effective. Obviously, we need to conduct research through social media, internet, and other web-based technologies. And that WIBs had already completed some of the work towards the center, and if we could just leverage or improve upon that, that would be beneficial. So I know I just kind of went over that,

but if you would respond.

MR. VILLAO: Yeah. That was a long list.

MS. NEIDICH: Sorry. And that's all I have to say.

MR. VILLAO: Yeah. That's all I have to say about that.

MS. NEIDICH: Yeah.

MR. VILLAO: So should you fund a clean energy hub, or whatever it is that you want to call it --

MS. NEIDICH: Information center.

MR. VILLAO: -- information center? Absolutely. And the reason I say that is because we need, as I'll piggyback on what Genine was saying, we need to educate, not only participants on the workforce side, but also property owners, people who lease property, people who rent homes, people who -- you know, they need to be educated on what this. What is the -- the green economy? There's a lack of information, and therefore a slow trickle in the demand generation; right? So we have to educate the marketplace. Have to educate purchasers. We have to educate participants who could potentially benefit from the training programs that are -- that are out there.

Full disclosure? I sit as the chair of the advisory committee on apprenticeship for the secretary of labor. And so I have a pension for registered apprenticeship. But it's a model that really has, over the last 100 years, displayed how to do demand-based training programming. They don't take apprentices until work projects are online and projected over a certain amount of time, and -- and that's how they take the influx. And -- and people outside of the -- of that system don't -- don't understand it because they -- they just need to get bodies into the apprenticeship system. But it's always based on what work is coming, what work is available, and that's how people are moved into that program.

And now we're -- we're, on the national level, working on articulation agreements with the Department of Ed modeling, you know, pre-apprenticeship programming with -- with national nonprofits like YouthBuild, etcetera, in order to create this systemic career track between pre-apprenticeship, apprenticeship, university programming. The -- the technology is moving so fast.

And Genine hits on something that's really critical. The technology is being adapted rapidly.

Employers, people who are out there in the field trying to get -- capture projects are trying to offer the state of the art technology, and we're going to make your building so smart it will not cost you anything to run and make you money at the same time; right? And so they're -- they're trying to figure out the right mix of technologies. So you can't allow that process as it evolves to create the standards around a workforce. You're going to go crazy. You're going to have all this patchwork of training and certifications and things.

So, yes, I agree, regionalized deployment is the right model. But there has to be an umbrella in terms of certification and ensuring that these programs are beginning to get standardized and that we're -- we're displaying for the rest of the country an effective methodology in terms of training high-quality workers that can interact with these sensitive systems on a regular basis.

And so -- so when -- the final point that I'll make, that I'll get back to is when we're taking pieces, components of these trades and peeling them off and calling them, quote unquote, green jobs and saying that we're now

going to create this technician, you're going to create an army of workers for jobs that don't exist. And I would just caution you to really begin to look at the much broader market. As -- as Genine pointed out, a small percentage -- or I'm sorry, maybe it was Strela -- a small percentage of workers are actually being deployed in the green space, and other workers are filling up the -- the regular construction ranks.

So why don't we train very smart, very well equipped technicians that can interact with these systems, that can expand what registered apprenticeship is, expand what the university programming criteria is, and really capture what employers need to have available to them so that they can interact with these systems and provide work for their clients. And that's all I got to say about that.

MS. CERVAS: I think the only thing that I would, you know, say on this is that I think, yes, I definitely think that EPIC should fund, you know, workforce information centers for sure. I think that there should also be focus on, you know, strong partnerships with CVOs, especially environmental justice organizations that, you know, I spoke about that lack that type of partnership

currently.

We do have a couple of organizations within our alliance that, you know, have some partnerships. So, for example, the MAAC Center, MAAC project that I mentioned earlier is not part of our coalition. But again our Mental Health Coalition (phonetic) in San Diego has a strong partnership with them.

I think the reason that I say that there should be strong partnership and there should be actually resources dedicated towards, you know, also transferring that information over to community-based organizations is because these organizations actually have long-term relationships with he communities and actually will see them, you know, again and again.

We were looking for stories of community members that had gone through a training -- gone through green jobs training programs and that are having difficulty finding work. And we know that there are many countless stories out there. You know, the problem was that we were having difficulty tracking down these -- these graduates. Because, for example, in these -- some of the workforce centers -- worksource centers they, you know, graduate and

then they go on their way. After they can't find a job anywhere, then they go on their way, whereas, you know, community-based organizations might have a longer term kind of relationship and -- and keep track with them.

So that's the only thing that I'll add to that.

MR. ELLIS: Well, I definitely agree with funding the workforce information centers. And as a local WIB in Kern County, we already have those relationships established with the employer community, with the community college district, with local training providers.

I do agree with Strela as far as having some of the community-based organizations more involved. Because through the Workforce Investment Act we have performance standards that we have to meet to make sure folks get employed, stay on the job, and so forth. But she's right, a lot of times customers come through our program and they kind of hit a wall when they can't find a job. And we're constantly talking to them about, you know, sending them out on referrals and constantly getting -- keeping in touch with them, but they tend to fall off. But I definitely like that point.

Now as far as looking at other local WIBs,

especially here in L.A. County, the relationships are already there with employers, with the local WIBs, with the community college districts, with the unions. So if funding is going to be available I think that's a good resource to do that. And also looking at it, like I said before, on a regional approach and making sure there's a tie-in with the employer.

If the employer -- in Kern County our job development staff talk with employers constantly. That relationship, if you do one thing wrong as far as sending them the wrong candidate that doesn't have the skills that they need, they won't use you again. You just have to do it one time. I mean, I'm sure Genine can tell you that, as well, too. So I think that needs to happen regionally and the funding definitely needs to go in these type of information centers.

MS. WILSON: And, yes, I absolutely understand that. You're -- you're exactly right. And I think that, you know, the obvious answer becomes yes. I think it's how. I think, you know, we certainly don't need another brick and mortar. You know, I think that if, you know, if it's virtual, how do people know about it versus if we have

the funding there's so many of these organizations that could do more if they had more funding. Why not go enhance those standing programs? Have some sort of criteria to figure out which programs you want to enhance, but I think by pushing what's already there, as opposed to just adding to the list, is going to be key.

You know, I think that, you know, just some notes, you know, around it, again, from my perspective, because I have to be knowledgeable about so many things. It's like, you know, you know about everything, expert of little; right? You know, but it's how do you get this -- this information?

And I think that, you know, from -- from my standpoint, I'll continue to harp on, you know, how are we campaigning and advertising the help that's out there? And you know, that's part of what's considered throughout EPIC. I think that that, again, is going to be very useful. How do these community organizations assist? How do we, you know, set up programs with the WIBs? If these folks were once in their database and they've lost touch, if we're tracking that information properly in the database that's another advertisement that can be pushed to those folks

through whatever contact information we have. Maybe we get 75 percent that still have the same contact information.

But I think as technology changes, as program opportunities change that's the key, is ensuring that we're getting that information out. And I think that that's where the -- the funds would be best used.

MS. NEIDICH: Okay. We're going to go to question four. Distributed PV and wind have industry recognized certifications of the NABCEP. What technologies would benefit from similar certification programs?

MR. ELLIS: Pick one.

MS. NEIDICH: Well, it was also mentioned in this last workshop on PV certification.

MR. VILLAO: Yeah, well, again, I would -- we're -- I don't feel, and this is my personal opinion, and in the work that I've been doing, I don't see that we need to reinvent the wheel here; right?

We have a body of work that's been created over an extended period of time that has the technical capacity that is tied to this type of work, whether it's air conditioning control, energy efficiency, solar deployment, you know, the mechanical components, whatever it is,

speeding elevators, right, that are programmable and you can just touch the floor number on the outside of the wall and you don't see anything on the inside of the wall, you just end up on the floor you're supposed to be on. There's so many different technologies that if you begin to create certifications for every single new thing that pops up we're going to create a lot of time creating certification and no time creating work.

So my caution or my -- my hesitation in saying, yeah, create, you know, a gazillion different technology-based certifications is because I think that there's already players in this area that have created certifications that you could just recognize, you know? The IBEW has lighting control systems certifications. The -- the UA has, you know, the UA and Sheet Metal Workers, they -- they all have HVAC certifications. They -- they enhance the certifications that you've already set in play.

But often times we really need to look at what -- what are we getting for the certifications that we have out there; right? I mean, if you can -- if any -- any contractor, any guy with a pickup truck and a ladder can walk in and be qualified simply because he has a pickup

truck and a ladder, again, these systems are becoming so intricate that I'm just afraid of the quality of the output of work that we're going to be getting.

And so the push-back has been, well, you're going to just block out everybody, you know, a bunch of small contractors. You're going to block out people that don't have access to, you know, historical whatever, programming. And the reality is that we -- that that's where your dollar becomes valuable. If we can then partner with these systems, the WIBs, the -- the community colleges, the apprenticeship programs that are out there and enhance training models that allow contractors to get the certifications that you are requiring to deploy in the utilities, that then makes it a manageable process. And you're controlling the quality of the workforce.

And so we have there -- you know, we -- I could go through a whole list of technology certifications, but I think that that's not really -- that's not really where our focus should be. Our focus should be on the quality of the -- of the workforce that we want carrying around your badges, right, and -- and interacting on your behalf, and the contractors that we're giving access to -- you know,

one of the things that we discovered in some of our work is, you know, that contractors cheat. Surprise, right, that -- that they use, you know, refund programs to, you know, to manipulate the system and drive other business to their companies.

Well, how do we control that? You can't control it just by issuing more refunds or a different variety of refunds. You have to do it by setting standards that make them accountable. There has to be accountability in the system. And that -- and that's what I'm really focused on, you know?

And we -- and we'd like to see -- I mean, there's stuff that we'd like to see funded. We've been, you know, very interested in creating an electronic resource around apprenticeship and all the different criterias and things like that, so we could create these libraries that people can have access to, to get an understanding of that, that they know who the partners are that are really -- the -- the Utility Commission, the CEC and others are really partnered with and can -- can provide the appropriate certifications and have the right standards that these IOUs can interact with and partner with to develop regionalized

criteria that is specific to building types and environments in their -- in their local areas, and create access for the disenfranchised communities that we're all interested in serving. So I think that's going on enough.

MR. ELLIS: I'll say something short.

MR. VILLAO: Sorry. So sorry.

MR. ELLIS: That's okay, Dan.

MS. NEIDICH: That's okay.

MR. ELLIS: As far as the certifications, since we partnered with the community college district and training schools we've had some issues where some employers would tell us, especially for the SolarTech, one of my staff sent me an email about electrical training and ET card, that one employer wanted some of our students that we sent from a solar class to have.

And so, again, the communication from the employer community to find out what their needs are, if they have certain certifications that they must have for their contracts and so forth, that communication has to be there. So I think we still need to look at that to make sure that the employer needs are met with the type of certifications that they need. So any type of industry

certification specifics that may not be in our current training programs, we have to make sure that communication is there.

MS. WILSON: Not a lot to add, I think just a few points. Daniel is right. How many certifications can we have; right? How many specialists can we have? The point is if you're specialized in one thing what happens when the job is not available?

So, you know, maybe it's not that we need more certifications, but we need to broaden the certifications that are in place so that people can do a variety of things. It's at least foundational as opposed to so laser focused from the start. If you get this certification you, you know, can do this or that or you're, you know, more easily to pass another certification or take on another specialty.

You know, the -- the feedback that I get from some of our employees that come through is, well, you know, I went to school for this, this is what I can do, and now there is nothing there for that and I have to start all over again. We have to stop the -- the all-over-again process.

I think also with certifications, you know, taking a look at what's there today, and then taking a look at what is up and coming, I think you really can't create sound, very high-standard quality certifications until the new technology has -- has reached a certain, you know, maturation. Otherwise, again, you're -- you're constantly adding to it, you're patch-working, you're going back. So, you know, I think that there needs to be criteria around when you certify and for what.

MS. NEIDICH: And we'll move to question five. How should EPIC measure ratepayer benefits for workforce development?

Do you want to go with this one?

MR. VILLAO: I'll let her go first.

MS. NEIDICH: Oh, okay.

MR. VILLAO: I spoke too much already.

MS. NEIDICH: That's fine.

MS. CERVAS: Yeah. I want to hear it. I think this is an interesting question. You know, right now we are, you know, pushing for a goal to -- to create local renewable energy in low-income communities and communities of color. And the question that we get the most is, you

know, what's -- what's the ratepayer impact or what -- you know, how -- how are ratepayers going to benefit from this, or, you know, there's going to be a ratepayer revolt some day soon if this bill passes, or something like that.

And I think that, you know, often what's -- what's overlooked in terms of I think that there is this concept of, you know, who the ratepayers are and what ratepayers will -- will do and are willing to do if, you know, renewable energy -- renewable energy infrastructure actually develops and -- you know, fully develops in California. And that will be, you know, we'll all be angry and we'll all take -- you know, be up in arms about our -- our bills increasing by a few cents per month.

But what's often overlooked is that, you know, low-income communities are also -- are ratepayers too. And it's interesting how policy makers really view -- segment out the communities that have been most impacted by -- by -- by dirty energy. And -- and it's -- it's really a shame that, you know, that often times they think, well, it's, you know, it's the ratepayers that we need to benefit, and low-income communities are just kind of a segment and aren't kind of paying into this.

But the -- the fact is, is that, you know, we're -- we, again, have been going through lots and lots of training with our community members. We look at our energy bills. A lot of community members have been looking at their energy bills and have been realizing that they actually pay into public purpose programs that are supposed to build renewable energy in low-income communities. But they often never see that renewable energy or green jobs coming out of those programs, even though they pay into them every single month.

And so, you know, I guess my main message is that low-income communities are ratepayers, as well, and they should really be -- benefit somehow, someway, if not be prioritized in this green economy.

The -- the other point I think is in terms of ratepayer benefits, I think it's -- it's -- it's very highly focused on what is the financial incentive to ratepayers, and not look at, you know, what's the health impact or what are the economic investments into these most impacted communities. You know, we -- again, I can't -- I can't express enough, you know, the -- the extreme health issues that -- that the communities face.

And bringing up again the things that happened in Richmond and Chevron, I mean, that fire was just a recent incident that, you know, brought media attention to that particular -- that particular oil refinery. But the truth is, is that Chevron has been spewing a lot of, you know, pollution day in and day out, and that doesn't get covered.

And so our community members have been suffering the health, you know, impacts of that. And we should really think about the green clean technologies that need to built in these communities first and that have been impacted the worst.

And then -- and then -- and again, we really want to promote local distributed generation. That's, you know, what we're trying to do.

MR. VILLAO: You know, I think I would like to make just a brief comment. One -- one of the things that kind of sticks with me is that if we were to respect the stacking order that, you know, everybody really worked hard to create, this idea of energy efficiency, before with figure out what -- what new technology is going to be adopted is really what generates the savings that create -- that won't impact the ratepayer in the negative way, even

if you do create these funding mechanisms that allows for new dollars to be put into the system because they're capturing savings first; right?

So -- so just -- I think that measurement has to start with auditing. I think people forget that we have to figure out what these facilities actually -- wherever you're deploying, whatever technology or energy efficiency, what do you actually need there? You know, sometimes we do these cursory audits and just want to come in and get the low hanging fruit and change the light bulbs. But if we do a whole system evaluation where we're doing a place-based audit that really sees what a facility needs, what a campus needs, what an organization needs, then you're capturing the savings. And -- and that ratepayer issue becomes much less of an impact if you're generating savings and educating people about how that savings is really translating in their day-to-day engagement with your organizations; right?

So that, I mean, you know, that's what I think.

MS. NEIDICH: Thank you.

MR. VILLAO: Back in order.

MS. NEIDICH: Anything?

MR. ELLIS: No.

MS. NEIDICH: We're done with our questions. Is there anything any of you want to add before we open up to comments? No? Okay.

Whoever wants to come up who is in the building here who would like to make a comment, if you do so come on up and just let us know your name before you speak.

Cody, anyone? Oh.

MR. SERRATO: I'm curious about --

MS. NEIDICH: State your name.

MR. SERRATO: My name is --

MS. NEIDICH: Yes. Yes.

MR. SERRATO: -- Erick Serrato with Pacific Gateway Workforce Investment Board. I'm curious about the idea of a workforce information center for green jobs and how that then doesn't become the redundant with all of the work that the WIBs are already doing and how we don't simply siphon off resources to do something that's completely independent and how we make sure that that system is efficient and effective, particularly now that we know that, quote unquote, green jobs can be labelled many other things.

So who is decide what becomes a green job, how it becomes part of this information center, and how we make sure the folks that are outside of that who may not know that they have access to those green jobs are left out of that process?

MR. VILLAO: Well --

MS. NEIDICH: You want to get that?

MR. VILLAO: Yes. In my mind the idea of an information center means that we're aggregating information, making it available; right? So I don't -- I don't see the threat to WIBs programming in terms of, you know, pulling resources out of the WIBs. I see it more as creating a communication structure, not only in the WIB system but in all of the other programming that exists that's -- there's all this disparate information out there that's -- it's really good stuff, and if you Google the right term you can find it, but there's no place where this stuff is housed. And that's one of the concerns that we've been raising for the last several years and trying to figure out how to fund it really.

But -- but this information center could

potentially be an umbrella that -- that is created that really aggregates all of this information, all of these resources, and begins to help people communicate with each other, including the WIBs. That's the way I view it.

MR. ELLIS: And just to add on to that, making sure that if this does happen to include all the partners involved in this information center and do it, like I said before, on a regional approach. So the WIBs are there, the community colleges are there, the local labor unions are there, community-based organizations have an input, to know the design of it and so forth. But it's got to be partnership level that way. So like the gentleman said from Pacific Gateway, you have to have that, so people don't want -- feel left out. And then all the information that every -- all the partners have are included in this.

Because I know in Kern County our community college district partner, they're a clean energy center. That's the first source of information that anyone in Kern County can get. We go to them. They -- they provide that on their website, and so forth, so --

MS. NEIDICH: Any other comments?

MR. COLBURN: Yes. Mike Colburn from San Diego Gas and Electric. Listening to the conversations here have been near and dear to my heart -- my heart. I've been involved with the apprenticeship night school at local junior college for electrical workers. And you're probably aware, Daniel, the state minimum is two years for apprenticeship. Our program at SDG&E is actually three years.

I'd like to step back and take a lesson from the cellular industry. Some of you may have seen a PBS documentary, Cell Tower Deaths, fellows or ladies, I think it's mostly fellows, delivering pizzas one week are climbing 200-hundred-foot towers the next week with predictable results. Very tragic. It's very important to keep the eye on safety, as well as competency.

What we're looking for is -- are people that are high-voltage qualified, and also have a background in controls and communications and digital technology. There's not a lot of clean technology that's going to get on the -- on the grid without smart grid features. This is -- this is the kind of technology we're looking for. It's -- it's going to be close to, I think, a four-year degree

without the general ed by the time you're done with it, and a healthy dose of practical training.

There's -- there's a need to combine what were previously separate, largely union classifications; in our case IBEW. And I would ask the question of the panel, what role do you see for the unions in this regard?

MR. VILLAO: Sure. Well, I think that organized labor has clearly laid out a pattern of how work classifications in the -- in the construction industry can be separated by expertise. I think that they're building on this -- this program and we're seeing technology advance really rapidly. And it's being introduced to registered apprenticeship programming by the manufacturers directly in these labor management apprenticeship programs, really rapidly. I mean, all over the country they're creating pilot programs with new advanced technology, and the systems are already in place.

And so I think that articulation agreements are probably the right mechanism at the moment. The question then becomes, and this is a conversation we've been having with the Department of Ed, is how do you -- how do you incentivize community college programs to -- to partner

with registered apprenticeship programs that are labor management unionized programs; right? And that's what we're talking about. How do you -- how do you create that collaborative effort so you don't disincentivize the community college by taking resources away, but you create a partnership that -- that allows for the technical educational component to be managed by the community college, and the practical on-the-job training to be managed by registered apprenticeship, and create this new hybrid partnership.

So those are some of the conversations that we're actively involved in. And I think that there is an opportunity to do that. Obviously, labor has been very concerned about melding job classifications. I think that technology is moving beyond that and that -- that they are recognizing that some of the work is beginning to cross over. And I think you've seen what that's created in some cases. So we'll -- we'll see how to manage that process.

MS. CERVAS: For us, for CEJA and the environmental justice community, I think that the relationship with the environmental justice community and labor has -- you know, we've had a history of not always

agreeing necessarily. I think one of the big opportunities and challenges that we face right now is that, you know, as I was mentioning earlier, the -- the green economy is looking at building large-scale renewables or solar and wind farms in the desert, which we agree that we need.

And then -- but we also think that what's really going to put people to work and really make health impacts in our communities is the local distributed generation. And so I know that there's been some critiques on the part of labor of DG, local DG, because they can be smaller, quote unquote, mom-and-pop shops that are non-unionized. So -- but the opportunities for us is it means -- we are trying to, right now, really work with labor and figure out, you know, a partnership where we want the union jobs as well. We don't want you know, small minimum wage jobs that are not sustaining. We want union jobs as well.

MS. NEIDICH: Okay. Is there any other questions or comments?

MR. MCLAUGHLIN: Thank you. My name is Larry McLaughlin, College of the Desert. And I just had a comment. I believe it's beyond the step of the EPIC program to address the big issues of the workforce. And it

really shouldn't set out to do that. I don't think there will be resources enough to -- to take on that -- that task and accomplish it. It's focus is the -- the development, deployment, commercialization of new clean energy technologies. So I think the focus of the education and training, its support should be to support, facilitate the deployment and commercialization of clean energy technologies.

So I think that implies that the -- the effort should be focused, you know, that -- that it should be a matter of putting out there the -- the training, the information that's needed to support, say a new innovation, something that has just been developed, something that has -- has been -- has done demonstration and have taken the steps towards commercialization that requires training to take that next step.

I believe it's important that -- well, let me give you an example, and I think this relates to something you were saying, Daniel.

Electric vehicles. They're coming. The electric charging infrastructure is coming. And we need to have technicians that know how to service those vehicles, that

know how to install the charging systems that are being developed and put out there. The technology is improving all the time. So you don't start by training an automotive technician under the program. You start by taking automotive technicians who have skills to build on and add what they need to know about EVs to service them or to -- to work around them safely, or first responders who have to -- to -- to respond to an accident, or something to that affect. That puts infrastructure in place in an incremental fashion, you know? It's the next step.

With respect to charging stations and that infrastructure, electricians will probably be the people who do that installation work, you know, and then they are doing that work. So what do they need to know about the systems that are out there now? What do they need to know about the next generation, and so on, as they get smarter? What do they need to know after that, you know, to deal with the smart systems?

So I think it has to be a little more focused.

Another example: Distributed generation. You've got a lot of great new technologies being developed and deployed out there, some great models that need to be

adopted. Who needs to know what? Really, the stakeholders. I think this -- you know, in some instances you're going to have infield people and their needs, and you have outfield people and their needs.

With distributed generation, I think someone said, well, you know, the landowners need to know something about this. The developers need to know something about it. Planners, as we heard from our last panel, they need to know something about this because they're going to be involved in taking that step of implementation of the technology. Infield, the people who are generating or developing these -- these new distributed generation systems, well, as new technologies get deployed even as they're working in the field they need to learn a little bit something more. I dare say that not even the best educated engineers working in the field would say that they know everything there is to know. You can't learn it all.

So there's -- there's, I think a variety of steps that need to be put into place that are more focused and targeted to the technology as the EPIC program rolls them out. Thank you.

MS. NEIDICH: Thanks. Any more comments? Anything from the panellists? Okay.

Well, I -- let me -- thanks -- thank our panellists again for your help with this discussion today. The next -- go that next slide, Cody -- has information for the written comments. And we really encourage everyone to submit written comments. It's very important to us. Those are due on August 17th. And if there's nothing else, then --

MS. TEN HOPE: Can you just open it and see if there are any comments --

MS. NEIDICH: Oh.

MS. TEN HOPE: -- from the whole two-day session?

MS. NEIDICH: Sure. For the whole two-day session, would anyone online or anyone here like to make a comment, from yesterday's workshop to today's, anything?

MR. SCHINDLER: Do you want me to un-mute everyone?

MS. TEN HOPE: Tell them to raise their hand.

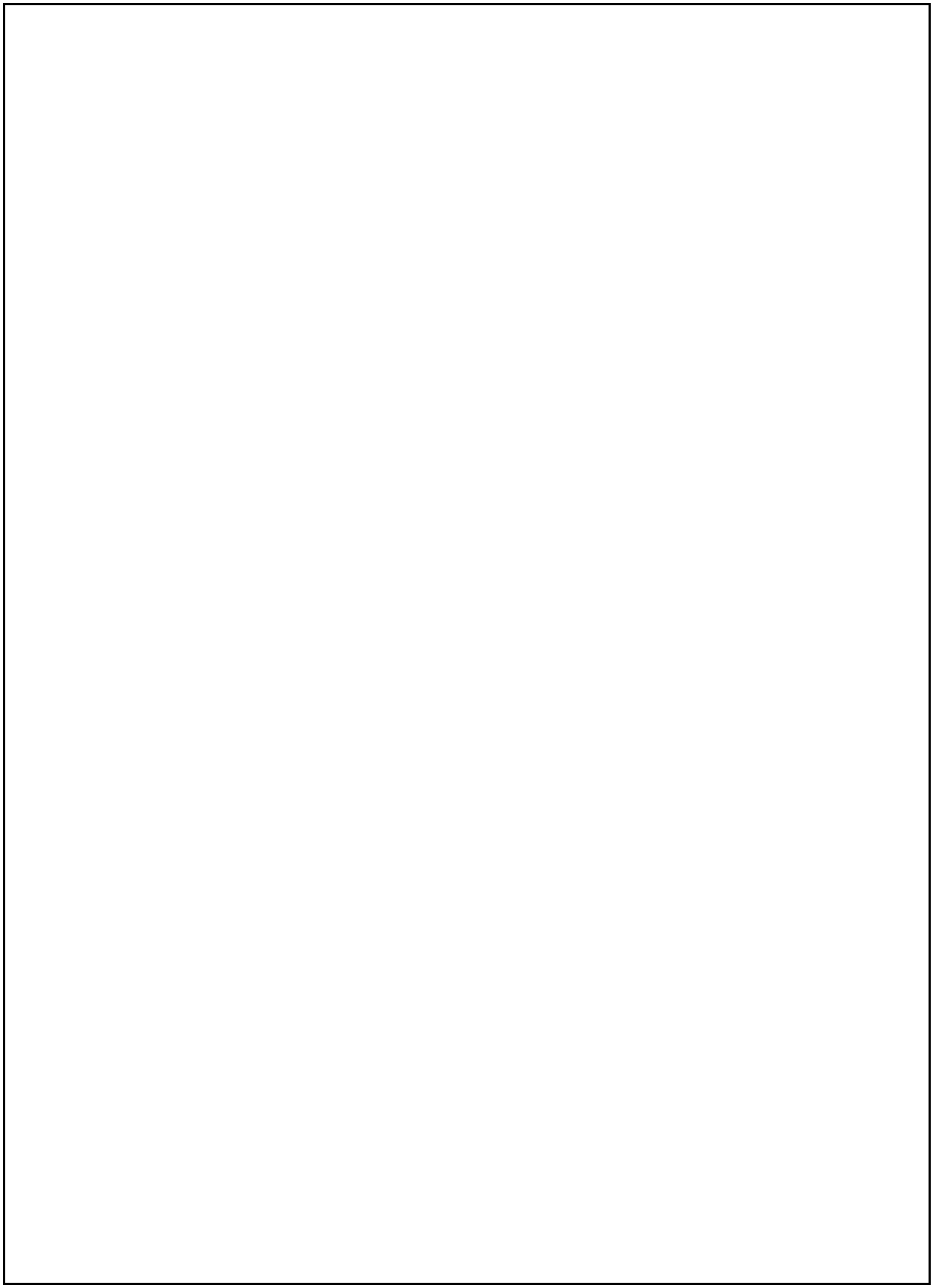
MS. NEIDICH: If you'll raise your hand, if you're on WebEx and you want to make a comment from yesterday.

MS. TEN HOPE: I'm Laurie ten Hope. I'm the Director of Research for -- at the Energy Commission. And for some of you have not participated for the last two days, we wanted to let people know what the next steps were in the development of the investment plan overall. So we -- we appreciate the panellists providing us input on some topic areas that may be included in the investment plan. The Energy Commission is now going to be developing an investment plan. And the three IOUs are also developing complimentary investment plans. These are due to the CPUC, California Public Utilities Commission, November 1st.

So we will be releasing our draft the end of August or early September, out for public comment. And -- excuse me. And then we'll have a public workshop mid-September and take comments on the actual suggested elements of that investment plan. So this is all good input for that process. Then the CPUC opens their own proceedings -- excuse me -- to accept the plan or make modifications. And then funding is available for this program in July 2013. Thank you.

So are we -- any questions? If not, we are adjourned.

(The California Energy Commission, Staff Workshop on the Electric Program Investment Charge Program, Adjourned at 2:43 P.M.)



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