BEFORE THE
CALIFORNIA ENERGY COMMISSION

In the Matter of ) Docket No. 12-EPIC-01
Commission Investment Plan )
for the Electric Program ) Staff Workshop Re: Clean
Investment Charge Program ) Innovative Priorities

CALIFORNIA ENERGY COMMISSION
FIRST FLOOR, HEARING ROOM A
1516 NINTH STREET
SACRAMENTO, CALIFORNIA

FRIDAY, AUGUST 3, 2012
10:00 A.M.

Reported by:
Tahsha Sanbrailo
APPEARANCES

Staff Present:

Sherrill Neidich, Renewable Energy Office
Dave Ashuckian, Efficiency and Renewables Division
Erik Stokes, Research and Development Division

Panel 1: (* Via WebEx)

Gary Simon, CleanStart Co-Chair, Sacramento Area Regional Technology Alliance
Erika Kula, Prescience International
Bill Walden, TECHNIKON
*Josh Gould, Department of Energy, ARPA-E
*Cameron Gorguinpour, Office of the Assistant Secretary, U.S. Air Force

Panel 2:

Valerie Winn, State Agency Relations, PG&E
Jennifer Barrett, Permit & Resource Management Dept., Sonoma County
Gary Craft, Craft Consulting
Mike Hart, Sierra Energy
Chris Calfee, Office of Planning & Research
Vernon Hunt, United States Department of the Navy

Panel 3:

Barbara Halsey, California Workforce Association
Mark Lennon, Department of Veteran Affairs
Jim Caldwell, Workforce Incubator
David McFeely, SolarTech
Kurt Schuparra, California Labor and Workforce Development Agency

Public Comment:

Bob Raymer, California Building Industry Association
Frank Goodman, San Diego Gas & Electric Company
Noah Long, Natural Resources Defense Council
David McFeely, SolarTech
Jessie Halpern-Finnerty, Don Vial Center on Employment in the Green Economy, U.C. Berkeley
Harold Galicer, Technology Director, California Smart Grid Center
Day 2:
Market Deployment and Facilitation Panel Discussions

Introduction and Summary of Day 1

Dave Ashuckian, Deputy Director, Efficiency & Renewables Division, Energy Commission

Panel 1: Energy Innovation Clusters
Moderator: Erik Stokes, Staff, Research & Development Division, Energy Commission

Panelists: (*Via WebEx)

Gary Simon, CleanStart Co-Chair, Sacramento Area Regional Technology Alliance
Bill Walden, President, TECHNIKON
Erika Kula, Director of Business Development, Prescience International
*Josh Gould, DOE ARPA-E
Cameron Gorguinpour, Special Assistant, Office of the Assistant Secretary, U.S. Air Force

Questions to Consider:

1. What are the benefits of innovation clusters in supporting the development and deployment of innovative clean energy technologies?

2. What are the pros/cons of the different models of energy innovation clusters to accelerate a successful path to market? (i.e. Technology Incubators, Innovation Hubs, Centers of Excellence)

3. Do you recommend funding for innovation clusters in the EPIC Program? Provide program specific recommendations.

4. If this is meritorious for funding, how should EPIC measure ratepayer benefits for energy innovation clusters?

Public Comment
Panel 2: Regulatory Assistance and Permit Streamlining to Accelerate Clean Technology Deployment
Moderator: Sherrill Neidich, Staff, Renewables & Efficiency Division, Energy Commission

Panelists:

Valerie Winn, Manager, State Agency Relations, PG&E
Jennifer Barrett, Deputy Director, Permit & Resource Management Dept., Sonoma County
Gary Craft, Principal, Craft Consulting
Mike Hart, President, Sierra Energy
Chris Calfee, Senior Counsel, Office of Planning & Research
Vernon Hunt, Energy Program Manager, United States Department of the Navy

Questions to consider:

1. The Energy Commission anticipates that cities, counties and regional governments will seek grant funding. Are there other entities that should be targeted for regulatory assistance funding?

2. What local planning and permitting challenges do clean energy technologies pose now and in the future?

3. How can EPIC investments leverage current efforts rather than duplicate them (e.g. DOE SunShot Initiative and model frameworks from the California County Planning Directors Association and Governor’s Office of Planning and Research)?

4. What, if any, local planning activities should EPIC invest in? What, if any, local permitting processes should EPIC invest in? What do these initiatives cost and how long do they take?

5. If meritorious, how should EPIC measure ratepayer benefits for local planning and permitting assistance?

Public Comment

Lunch
Panel 3: Workforce Development to Accelerate Clean Technology Deployment
Moderator: Sherrill Neidich, Staff, Renewables & Efficiency Division, Energy Commission

Panelists:
Barbara Halsey, Executive Director, California Workforce Association
Mark Lennon, Deputy Secretary, Department of Veteran Affairs
Jim Caldwell, Executive Director, Workforce Incubator
David McFeely, Director of Grants and Industry Solutions, Workforce Incubator
Kurt Schuparra, Assistant Secretary, California Labor and Workforce Development Agency

Questions to consider:

1. Does the clean energy sector shape employee training programs? What partnerships exist between training programs and employers to promote job placement, apprenticeships, and externships?

2. Significant investments are being made to develop a clean energy workforce. Should EPIC workforce development investments build upon these efforts? If so, how?

3. 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?

4. Distributed PV and wind have industry recognized certifications (i.e., NABCEP). What technologies would benefit from similar certification programs?

5. How should EPIC measure ratepayer benefits for workforce development?

Public Comment
Adjournment
Certificate of Reporter
MR. GOLDSTEIN: Good morning. We're on the second day of our two-day workshop on the EPIC Program. And I want to thank you -- I see many of you are going through two days, the second day, familiar faces here, and we have people joining us online, as well. Today is all panels, I'm going to introduce -- bring up Dave Ashuckian in just a moment, but I wanted to again thank you for coming and participating in this event. I know you're investing a lot of time, but it's going to be worth it.

I will also tell you that nobody got the Dress Down Friday memo, I forgot to do that, myself, it's 100 degrees in Sacramento, and we're not dressed for it, so anyway, without further ado, thanks again for being here and I want to introduce my Deputy Director for the Efficiency and Renewables Division, who will discuss the agenda for today, David Ashuckian.

MR. ASHUCKIAN: Thank you, Rob. And thank you all for coming to Day Two of the EPIC Workshop here at the Commission. As Rob said, I'm the new Deputy Director for the Efficiency and Renewables Division and our division will be responsible for part of the program for...
EPIC funding. We will be working on the Technology Demonstration and Deployment, as well as Market Facilitation elements of the program that the Energy Commission operates. And that's the focus of today's workshop. So market facilitation and technology demonstration include the regulatory assistance and permit streamlining elements of the program, addressing barriers to commercialization, and workforce development.

Yesterday's focus was an overview of the program, as well as there were three breakout sessions on Clean Energy Generation, on Grid Operations, and Energy Efficiency and Demand Side Management.

Today we will have three panels. Those panels will include Energy Innovation Clusters, that is, ways to get organizations together, working together to actually achieve results; Regulatory Assistance and Permit Streamlining; as well as Workforce Development. All of today's panels will be in this room, there's not going to be breakout sessions today. And after the panels are completed, there will be a period for public comment and, again, as you probably all know, this is WebEx'd and so Sarah will be operating the computer on the WebEx. She will mute the people until, if you want to make a comment on WebEx, you either send an email to Sarah, or you can raise your hand on the system. And I wanted to also add
that we are accepting written comments on the program, and those are due August 10th, which is one week from today.

Before we get started, I just have a couple housekeeping issues. Restrooms are across the hall in the atrium here, there's a snack bar on the second floor of the Commission if you're hungry, and if there's an emergency, if the alarm goes off and we need to evacuate the building, follow Commission staff across the street into the park, that's where our gathering area will be. And with that, I'll have Eric come up and start with the first panel, unless anybody has questions, I certainly welcome any questions at this point. Valerie. We have a mic. Again, because -- I also want to mention that this workshop is recorded, so we would like everybody to speak and make sure they get a microphone before they make any comments.

MS. WINN: Good morning, Dave. Sorry, there's nothing like walking in the door with a question. You noticed that the comments are due next Friday, the 10th, and I know that we have the two days of workshops next week in Southern California, as well. Is there a different due date for the comments from the Southern California workshop? Or are their comments also due on the 10th?
MR. ASHUCKIAN: Actually, for Southern California, the comments are due on the 17th, so I guess, in reality, the comments are due on the 17th, not the --

MS. WINN: So for both Northern and Southern, yeah, because we'll be attempting both, so if we could have one set of comments on the 17th, that would be preferable.

MR. ASHUCKIAN: I understand.

MS. WINN: Okay, thank you. Oh, I'm sorry, Valerie Winn with PG&E.

MR. ASHUCKIAN: Okay, can we have the first panel, unless there are any other questions? Oh, yes.

MS. TEN HOPE: So I'm Laurie Ten Hope, I'm the Deputy Director for Research and Development, and I just thought there might be a couple people online or in the room who weren't here yesterday, so just a couple of points that would be useful for you.

We are repeating this workshop in Southern California next Thursday and Friday, so you're welcome to participate in both, but wanted to make sure that people realized that it was basically the same format, providing an opportunity in both locations for participation. And we will have an additional workshop on the Investment Plan for the Electric Program Investment Charge Program in September, and we'll be taking the results from this
two-day workshop and putting out a Draft Investment Plan
and then we'll take public comment on that plan before we
submit it to the Public Utilities Commission November
1st. And as Dave said, we have three panels today and
these panels are an opportunity to explore some
investment opportunities presented by the EPIC Program
that are really closer to commercialization, and we're
really interested in the public feedback on these
concepts, whether you think they are appropriate for the
EPIC Program, and we have some really exciting panelists
that are going to be here in the room, and at least one
on WebEx. So without further ado, I'm going to turn it
over to Erik for Panel One.

MR. ASHUCKIAN: If we could go ahead and have the
panelists come up to the table?

MR. STOKES: 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
today's first panel session on Energy Innovation
Clusters. First off, I'd like to start by thanking all
the panelists for participating in today's discussion.

There's been a great deal of interest in Regional
Innovation Clusters and similar approaches that can
accelerate clean energy technologies into the
marketplace. This includes, but isn't limited to, models
such as technology incubators, energy test beds, and innovation hubs.

We have a great panel today to speak to some of these cluster models and share their thoughts and experiences. Each of the panelists will have up to five minutes to make their opening remarks. After that, we have four questions, that you could see on the agenda, that we'd like each of the panelists to address, and then we'll open up to comments and questions. So with that, let's go ahead and get started, and we'll start off to my right here with Gary, and then we'll go to those that are participating remotely.

MR. SIMON: All right, well, thank you very much, Erik. And I appreciate being here this morning. My name is Gary Simon. I'm one of the Volunteer Board members of the Sacramento Area Regional Technology Alliance. That's a nonprofit organization in the Sacramento nine-county area, whose mission it is to accelerate technology ventures and help them succeed. Among the programs that we have at SARTA is one called CleanStart, specifically focused on clean technologies, which is probably most appropriate for the discussion this morning.

SARTA is an organization, it's a nonprofit, as I said, it's supported by contributions, sponsorships, and memberships, and it has a small professional staff, but
most of its work is done by volunteers.

When we look at the question of energy innovation, our program is based on the insight that many brilliant new clean technologies that would have extraordinary savings for customers, extraordinary benefits to the State, die in somebody's garage because people don't have the know-how to take that into a business, to license it with somebody, to know how to make it into a real product. So what we try to do, as I think so many incubators or technology accelerators do, is focus on three things to help people with those brilliant ideas, one is training and coaching, training how you form a business, what structure should it have, how you protect your intellectual property, how you hire people, how you make sure that you're doing all the things properly and organizing a business, your capital structure, etc., coaching is a part of that, sitting down with somebody who can tutor you, who has been through the ropes before. I myself have been the leader of several technology ventures, currently the Chairman of a publicly traded Clean Technology company here in California, so we do have a lot of experienced people.

The second area is networking and making connections. So much of getting a technology into the marketplace is getting connected to investors, customers,
people that can help, funding sources, etc., that just, you know, there's no simple way for people to find that on their own, they do need help, and so we provide that help.

And the third thing that we do is provide visibility to companies. Over and over again, when we take a company, a small start-up with a new technology out into the marketplace, making those connections, what we hear back is, "I had no idea something like this was available." And that comes from a company that's actively trying to buy green products. You find that over and over again, so getting visibility with customers, visibility with investors, is very important.

So in order to do this, we run a number of programs. VentureStart is our mentoring program, a leadership series, a general training program, we have CleanStart Showcase -- by the way, coming up October 22nd here in Sacramento, Sac State, where you can look up companies here that are doing great things.

We have in this region a cluster of about 100 companies that are doing great things, and we're trying to make them much more successful. In terms of success rate, we have had a number of companies get funded, some of you have heard of SynapSense, a technology that came out of U.C. Davis, now very successful, invested in by
General Electric, RCS Technologies, a company in Energy Efficiency, and several others.

So it does work, I think it does help to get clever ideas and brilliant new technologies out into the marketplace, and produce savings for ratepayers, customers, taxpayers of the state, so we would like to see more of that happen than is going on right now. So that's background on what we do at CleanStart, at SARTA.

MR. STOKES: Thanks, Gary. Bill, you're up.

MR. WALDEN: Yes. My name is Bill Walden. I manage a program. I manage a program out here at McClellan Air Force Base. This is a program called Renewable Energy Testing Center, it's a program that has been a Demonstration Validation Testing Center since about 2000. Since 2008, we converted it into green energy, predominantly biomass and waste to energy, Demonstration testing center.

The Government -- it's a 60,000 square foot building that the Federal Government put over $25 million in on converting it, just to do demonstration and validation technologies, predominantly, though, in high temperature. When we converted it to waste-to-energy in 2008, virtually all of the investment was recaptured to do that.

The approach with this project is different in
many ways than you see in other places. For waste-to-
energy and biomass-to-energy, those technologies
generally are technologies that are integrated
technologies used in a fairly large scale. Out here at
McClellan, we have eight of those component parts, both
the core conversion technologies, as well as upstream and
downstream technologies, to allow for a plug-and-play.
But the majority of that technology, suite of
technologies, are going to either the military, who is
one of the largest buyers, or the electric industry,
which is a large buyer. So the size and scale of these
integrated technologies is fairly large. The smallest
ones we have in tons per day are about eight to 10 tons
per day, but we are set up to scale to 1,000 tons per
day. I saw one of the panelists for one of our
technologies there on Panel 2, Mike Hart with Sierra
Energy.

The approach with this is really an approach
that's driven by the end user's needs, and we have a lot
of integration with end users, the power industry, as
well as the military, because those are the ones that are
actually spending the money on buying those integrated
technologies. We see a lot of the individual stovepipe
technologies and we shaped years ago the whole approach
to how do you help these technologies that come in, they
invented a transmission and, in the beginning they believed they're a car, but they really are just a transmission, and we have the other pieces that will help them to understand how do they integrate, link to upstream and downstream, and then how do they do it safely? How do they get permitted? And the program is really one that leverages government money because we don't buy the technology, we don't choose which ones are good or bad, we simply work with ones that do work at the onset, and then help them become a system that has commercial value by helping them understand how to integrate.

MR. STOKES: Okay. Thanks, Bill. The next panelist is Erika Kula with Prescience International.

MS. KULA: Hi, I'm Erika Kula. I'm the Director of Business Development for Prescience International. We're a firm dedicated to the commercialization of technologies. One of the ways in which we do that is by running Innovation Centers. So in the Bay Area, we run the Environmental Business Cluster in San Jose, as well as the San Jose Bio Center. So between those two facilities, on the Clean Tech side, we support companies through their R&D by providing them with lab space, and about $5 million worth of capital equipment, and a full operations team, so management of chemical inventory
managing the environmental health and safety, managing your facilities, etc., so a very plug and play type of infrastructure for companies.

On the Environmental Business cluster side, we focus a lot on the mentoring support, so similar to CleanStart and what Gary talked about, we provide a network of investors, of corporate strategics, of customers, of angel investors, etc., and pitch practices and coaching in order to ready our companies for connecting with that network.

We also do a series of programs which are open to the public, focused on financing your clean tech company, as well as kinds of the nuts and bolts of starting your company, so what do you have to think about as corporate legal strategy, or IP strategy, etc.

We also provide one-on-one mentors for our clients with folks from industry, so former general counsel of BrightSource Energy, former partner of Siemens Ventures, etc. So a lot of support provided to those companies in order really accelerate the technologies forward.

We're agnostic in the types of technologies in the Clean Tech sector, so we have companies that are working on water purification technologies, battery technologies, wind turbines, transmission companies, etc.
MR. STOKES: Okay. Thanks, Erika. Next, we'll go to our panelists that are participating remotely. First off is Josh Gould with the Department of Energy.

MR. GOULD: Great, thank you. I work for an arm of the Department of Energy called ARPA-E, it stands for Advanced Research Projects Agency - Energies. We were founded under the George W. Bush Administration and then funded under the Obama Administration, with three key initiatives in mind. The first is to reduce energy-related emissions, the second is reducing energy imports, and the third is to improve energy efficiency. So, if you can imagine, those are pretty broad subject areas and a pretty broad mission, so we're agnostic as to the types of technology that we fund.

However, what we look to do is to generate breakthroughs in energy related to technology, so we try to fund things that are truly transformative and, in fact, in our Congressional Authorization, the language is to transform the way we generate for and use energy.

The set of resources we provide are intended to -- because we do not seek to duplicate or replicate what the private sector does, and we seek to fund the project at their earliest, often very technical stage, where it's very very high risk, high reward, our goal is to ensure that ultimately the technologies make it to market in
some shape or form. We're also Agnostic about what shape or form that takes, so we have had Awardees do everything from license the technology, to spin it out in a venture-backed start-up, to entering an agreement of some kind with a strategic investor. And so our goal is to facilitate those transitions to market and we provide a number of resources to do that. Many of those are technical in nature, we have a fleet of highly skilled and highly technical PhDs here to help with many of the technical and product development issues that our performers encounter, particularly in the earlier stages, but my role here, and we have a whole team dedicated to this, is what's called Technology to Market, so again making sure that those technologies that folks are developing, often times in national labs, at universities, but also in the R&D groups of large companies in some cases, actually make it into the market.

So, you know, the set of services we provide are a number of what you might call asynchronous resources that are online at any time and can be accessed, but I think most importantly are those set of resources that we provide in person, which kind of span the lifecycle from legal, to team building, to financial, to sales and marketing, you know, we don't do it directly, but advise
our performers on those set of activities required to
actually get them into the marketplace.

And so we funded almost 280 projects to date, a
couple hundred million dollars; a few names that probably
folks have heard of, everything from General Compression
to Envia which is in the Bay Area, and a number of
projects in California. And so we'd like to think --
it's still too early, given that we fund at the earliest
stages, it's a little bit too early to pat ourselves on
the back too much, or congratulate ourselves, but we
firmly believe there will be a number of successes from
this approach, which is modeled on the DARPA approach out
of the Department of Defense, which funded things like
http networking protocol for the Internet, GPS, LEDs, and
those are exactly the type of breakthrough technology
innovations that we're hoping to generate here in the
Energy industry. Thank you.

MR. STOKES: Okay. Thank, Josh. Our last
panelist is Cameron Gorguinpour with the U.S. Air Force.

Cameron, are you there?

MR. GORGUINPOUR: Yeah, I'm here. Can you hear
me?

MR. STOKES: We can. Thanks.

MR. GORGUINPOUR: Okay, great. Thanks. Well,
thanks for having me. Again, my name is Cameron
Gorguinpour. I am Special Assistant to the Assistant Secretary of the Air Force, though my responsibilities are really the Department of Defense wide. I actually am in charge of developing and implementing DOD's Plug-In Electric Vehicle Program.

So generally I'm responsible for figuring out how to get as many EVs as possible into our fleet, in as short a time frame as possible, without spending more than we otherwise would on conventional vehicles, so it's a small task to undertake here. But we have been able to actually make some good progress towards that. Also, I'll just briefly mention what we're looking at, though, but to keep in mind, though, that our target here is total cost of ownership parity, so considering all elements of an Electric Vehicle system, how do you make that work?

And just to give you a little bit of a sense of what we're dealing with, our non-tactical fleet which is the space I'm working in, we have 200,000 vehicles worldwide, so we've got a lot to play with in terms of affecting different segments of a fleet. And as it turns out, most of the vehicles that we have are trucks and, so, you know, a third of the fleet are medium and heavy-duty trucks, another 20 percent or so are light-duty trucks, and so that's been most of the space that we've
been working in. The thing to realize about our fleet is that, while we have many many vehicles, we don't drive too many miles on those vehicles, they're mostly vehicles that sit on base and they're essential because you need to have them when a military need arises, but they're not constantly being driven.

So the ways that we're approaching this challenge from a financial perspective is looking at principally four things, looking at, okay, so we have 200,000 vehicles, Electric Vehicles cost more than conventional vehicles right now, and so what can we do by way of volume to bring that price point down?

And, again, when we looked out to the market, it was pretty clear that the pricing options for larger trucks and vans, so medium- and heavy-duty trucks and vans, when we could effect that space of industry more effectively than passenger stands, mostly because the overall market size is smaller. The other thing about medium- and heavy-duty trucks, in particular, is that oftentimes you can right-size the batteries, so if we're only driving the vehicle 30 miles a day, we don't really need 100 mile range batteries, so we can cut the battery size in half, potentially, and never know the difference, and that saves us a whole lot of money.

And then we're also looking at carefully planning
out our infrastructure, you know, currently what we're doing in DOD and really throughout the Federal Government, and it's well intentioned, it's just not very cost-effective, is that we're doing sort of onesies and twosies, so we'll put a couple vehicles at this base, we'll put one here, one there, and by the end of it, your infrastructure costs are just astronomically huge. So we're trying to get away from that and it's more coordinated planning, aggregating large numbers of vehicles in the same location, and even within a given facility, making sure that all the vehicles are parked and next to each other so that the charging infrastructure costs come down.

And then probably the catchiest thing that most people get excited about, it gets me the most excited, is sort of the Vehicle-to-Grid element, which is the idea that you can use the battery inside the Electric Vehicle as an energy resource, back to the grid or to the facility, and when you do that -- and it's both financial value and operational value -- and so a lot of folks might be aware of the work we're doing at Los Angeles Air Force Base, where we are actually in the process of turning that base into the first federal facility to turn its entire fleet to Plug-In Electric Vehicles. And to the greatest extent possible, those vehicles will be
Vehicle-to-Grid, or V to G capable. So we are working closely with California ISO, California Public Utility Commission, Southern California Edison, we worked a bit with the California Energy Commission, on sorting out exactly how you do that, not just from a technology standpoint, but from a regulatory standpoint, and process perspective.

So we're pushing real hard on that. And just to give you a sense of what it means to do Vehicle-to-Grid from a financial perspective, in California, in Southern California, if you participate in Frequency Regulation markets with these vehicles, you can offset half to two-thirds of the least cost, the operating costs of the vehicles every year, so it really creates a situation where not only do we have least cost parity, we actually reduce our overall fleet expense by pursuing this type of technology.

And then, more than that, we have exportable power on a mobile device that adds a whole lot of military operational capability that we otherwise wouldn't have. Just a quick example of that: we went to an Air Force Base in Arizona and we're looking at flight line vehicles, so vehicles on the runway, all around the runway. And what we noticed was that there were rows of pick-up trucks next to rows of mobile diesel generators
and the primary functions of those pick-up trucks was to latch those generators onto the back of the truck, take the personnel about 30 yards out to park for several hours while the staff member was operating basic test equipment, their drill, you know, some volt meters, or something like that, things that don't really require a lot of power. And so it's occurred to us that, while we had a pick-up truck with exposable power, we could probably make the whole system much more efficient and eliminate a lot of assets that we don't really need.

So, anyhow, those are the types of things that we're looking at. We're looking at bringing a lot of EVs into our fleet, getting the energy capability up and running, and adding as much financial operational capability as we can.

MR. STOKES: Okay. Thanks, Cameron. Next up, we'll go to the questions and I'll leave it to the panelist to weigh in whenever they feel. The first question: What are the benefits of innovation clusters in supporting the development and deployment of innovative clean energy technologies?

MR. WALDEN: I think one of the things that you have to look at in terms of how you structure the type of cluster depends heavily on the type of industry that you're trying to generate innovation in. If you're
looking to build a cluster for Computer Programmers to
develop Facebook, you really don't need a huge integrated
system to be able to pull multiple technologies together,
you just need smarter people and more computers. If
you're looking to do something and, say, the area that we
are in, you end up needing, because of the scale of the
technology, you need to end up with the kind of -- you
have a large Valley of Death and that Valley of Death
isn't one that necessarily needs really new technology,
cutting edge, what you need to do is to be able to put
those systems together so that you have marketable
products, not just innovative technologies. And so you
end up with a spectrum, depending on how wide your Valley
of Death is, before you have a product that will get the
kind of funding that you need in order to make sales,
where you're trying to sell to a power company, for
example, you have a very wide Valley of Death, and you're
not necessarily looking at the cutting edge technologies,
you need to take some older ones, some newer, and put
them together; where, on some of the ones, you have a
very short narrow Valley of Death that can be done with
helping people who actually do the technology, are the
ones that turn it into the business.

MR. SIMON: I think what I would add to that is
-- and this probably relates to the discussion you had
yesterday -- what is success for EPIC? I don't think success for EPIC is conducting a number of demonstrations, which show how great a new technology is if it never results in the product getting into the marketplace that people can buy and do buy. So I think success for EPIC, whether stated or implicit, is that you're actually converting a clever idea, an invention into an innovation in a product that actually makes it into the marketplace.

So going from a proof of concept demonstration project to selling thousands of units of a product is not an easy process, and it is not something that you can take a lot of courses in college about, it's not something that's been reduced to a handbook that works every time, and I think that's where innovation clusters, technology accelerators, incubators come in. It's very much a process of individualized coaching and training, networking, and so at the end of the day, I think what people want to look back on with the success of the EPIC Program is, you know, here you've managed to take some good ideas, and now they're being sold by General Electric, or some other corporation that doesn't exist right now, and you can go back and say because of this new light bulb, or smart grid device, or something like that, we are saving energy. There is a yield for that
back to the society as a whole.

But the benefits of whatever we call innovation clusters all come, I think, in bridging another Valley of Death, which is not just the funding gap, but it's the commercialization gap, it's the product-to-market gap. So I could rattle off a hundred devices that have really some great potential in this area in the state and beyond, but I would -- I guess I better be careful in how I make this challenge because this room has a lot of people and they're very knowledgeable -- I guess that 90 percent of the people in the room have never heard of and they would be great to have in your home, or your business, and there's the problem, you don't know about them, you don't know any facts about what they will really do to reduce your costs, so you have trouble making a decision, you have trouble even thinking -- writing a check to some company you've never heard of, and you're worried that a year from now they won't exist, and so why should I buy the product? These are all the big barriers, and many more, that prevent a good idea from making an impact on society as a whole, and it's in that gap, I think, that the innovation clusters, incubators, etc., play. And I think from what Jim Robbins did at the Environmental Business Cluster, if you had tried to actually quantify for, I don't know, it was
like two dozen businesses that were in Clean Energy, that you helped to move along the path towards commercialization, how much of that actually got into products and what the impact of that was. And, you know, not everything is successful, but I think it was impressive, with a little bit of money how far you were able to take a company that had a good idea and actually get a product out of it, so I'd like to hear more about that. You've probably got around the table here the most experience in dealing with this whole innovation, commercialization question.

MS. KULA: Yeah. You know, it's interesting, the sector that we're talking about is so broad in terms of the types of technologies that we're discussing, when you have software companies working on an energy efficiency technology, or monitoring technologies, you've got battery technologies, you've got new solar panels, you have micro inverters, I mean, it's really a very broad spectrum. And so each of those different sorts of subsectors, I guess, of the Energy space, or Clean Tech, or whatever we want to call it today, they all have different commercialization cycles, they all have different customers, different ways of entering the market, and so it's not straightforward, it's not a clear path to commercialization, it's not clear on which
permitting to get. I mean, I think 27 different agencies are involved in offshore wind technologies in the State of California, so for an entrepreneur, especially a first time entrepreneur, it's a little daunting to try to figure out how to actually get your technology forward. And so the benefit of these types of innovation clusters is to really try to streamline things, learn from people who have tried to break down barriers before, learn from people who have been on the buying side of technologies, on how to get that technology forward. You know, we certainly -- we've worked with over 180 companies at the EBC -- I'd love to say that every single one of them was successful, but what we really try to do and focus on with the companies is, how do you get to a proof point where you can bring it forward, or you say, "You know what? Right now is not the right time to move the company forward." Or, you know, the United States isn't the right market to go towards, you're better served going to India, or China, or what have you, based upon the technology that you're developing, where the market is here. So there's a lot of different ways that we work with the companies.

With regards to kind of integrating things together, innovation clusters bring together a lot of different technologies, so you could be developing a
solar cell, for example; well, that's great, but that's never going to hit the market standalone, you have to integrate it into a system. So when you're in these types of innovation clusters, the value is also being in a community of other technologies that are being developed where you can integrate something together, or you've got someone else who has done some things similar and can kind of guide you through the process, so you could develop a whole system that could be plugged in with solar panels, and battery technologies, and new tracking devices for solar, for example, all in one package for deployment.

MR. STOKES: Josh and Cameron, do you have any comments on this first question?

MR. GOULD: I do. This is Josh. I think how we started this discussion is the most relevant part of it. And how we started was, you know, what do we want to accomplish? I love and couldn't be more supportive of the idea that none of this stuff matters and is relevant unless it's actually adopted and makes it into the marketplace. Of course, I'm biased because that's what my job is here at ARPA-E, and that's what we do as an agency, well, we fund R&D breakthroughs, it's written in, again, to our Congressional Authorization that, you know, it is our goal that these technologies make it into the
marketplace in one way or the other and, you know, we'd like to think we're doing our small part, but there's a lot more that really needs to be done to ensure that these technologies make it to the market. So let's just -- let's just assume that that's our shared goal at the moment, you know.

What do I see as the key gaps that could potentially be addressed by an innovation cluster? I think there's two. The first is at the earliest stage of R&D, so many of the folks on the call and in the meeting know, you know, large corporations have significantly reduced their R&D budgets, there's been cuts at the Federal, State, local level, you know, in terms of R&D to universities, national labs, and all of that, and so there does seem to be a gap in looking at those technologies that can truly be sort of transformative in our breakthrough, but are more than, say, just a year or two away from the marketplace. So that's one that I feel like a cluster potentially can address that gap in the earliest stage of R&D in some shape or form.

The second is the issue of pilots and the role of pilots in getting a technology to market, and I think there are two key pieces of that pilot issue. The first is the chicken and egg around an initial pilot of a technology and funding for that pilot. Many private
sector investors will not fund a technology until there's a proof of concept which is validated by data from a pilot. The problem is, you know, once there has been some initial R&D, a technology is ready for a pilot, the problem is that there's no funding to get a company or a technology to that initial pilot, so that then you can have the data to go out to a set of investors or strategic to actually get it to market. So it does feel like there is a Valley of Death in the initial kind of pilot element.

There's a second piece of piloting which is a challenge, is what we see kind of "pilotitis," is what we colloquially call it, which is a technology or a company that is stuck in a series of pilots which often aren't profitable, and are intended to show a proof of concept, but there's no path forward in terms of getting that technology, which is usually pretty promising, and moving it from a kind of pilot stage to real commercial deployment at, you know, many thousands of units.

And so those are kind of the three key things that we see time and time again with our performers, that I firmly believe that if an incubator, or even some different form of investment could address; again, that's early stage of R&D, this kind of chicken and egg around getting the technology to an initial pilot, and then the
third step of, once you've done a pilot or two, moving
that technology at some scale into the marketplace.

MS. KULA: Can I just say one thing to follow on
what Josh said?

MR. STOKES: Sure.

MS. KULA: You know, Josh was talking about proof
of concept and turning those into real companies, so the
environmental business clusters have a contract with the
California Energy Commission to provide commercialization
support for companies receiving EISG, or PIER fund -- the
earliest stages of PIER funding. And what we saw often
is that the technologies were great, but there was no
business plan, there was no business model, there was no
actual realization on how to take this great technology
that is having great R&D happen and move that forward on
the technology side, so how you turn that into a company.
And so there's a gap that ends up resulting where you
have a great technology, but you have no way to actually
get that to market. And I see that being a problem with
a lot of SBIR Programs, as well. And certainly there are
initiatives to try to help provide commercialization
support through different agencies like the Department of
Energy and what have you, but without that type of
innovation cluster, or that type of support that's
provided to these technology-based companies, you won't
actually get the results that you're looking for, so
you're not going to actually get those technologies
deployed because there's no business behind the
technology.

MR. WALDEN: One of the things that Josh hit on
when he talked about the pilots is, really, I think, at
the heart of how we define, as we move forward, what a
cluster is because they really need to be narrowly
defined and many of the technologies where you're looking
at, say, a size that would on a military installation for
waste energy, or biomass to energy, what the pilot is and
how you define the pilot really is at the heart of being
able to get funding. If a pilot that makes electricity,
for example, is a minimum unit that has any economic
value in the commercial market, which means that it
probably is the minimum they would fund at the venture
capital market area, then you have to end up defining a
way that you can take a small integrated single
technology and build it in and help it become a larger
integrated pilot, so that it reaches that commercial
level, so that it does have value and can get funding.

MR. GOULD: If I can sort of chime in here, I'm
running a pilot now, or trying to run a pilot, so you
know, that's in my lens, and just to echo some of the
other things that have been said, I really think that, at
least within DOD right now, especially given our current budget environment, that having a sound business case is almost certainly the key way to get anything done, move from an R&D phase up to a pilot phase. You know, the project I'm running, we do have a good business case to move forward, but frankly we have a good business case because we went out and did all the research ourselves and decided we were going to do it, that wasn't something that necessarily presented to us any real way from industry. And so, if commercial enterprises are going to be working on these types of things, to focus on, okay, well, what scale does this need to be at before it becomes economically viable? Is it 100 units, 1,000 units? Is there some other service that needs to be provided, and really hone in on those things. And the other thing on pilots that I've observed, not just from my projects here, but from others sort of in the energy and environmental space around DOD, is that when we do pilots, we do them -- we tend to do them in very small ways that, you know, we'll drive five vehicles around for a year and we'll pat ourselves on the back that we drove five advanced vehicles around, but there's really nothing more to it than that. And so I think that there's something to be said if you really want to bring things to commercial scale, then the pilot should be large
enough and significant enough that it really makes a
difference. We'll have pilots on renewable energy
technologies that may have been great, I mean, you know,
for the year that they were funded, but beyond that year,
there was just no real plan for how to sustain the
project, and then everybody ended up getting mad because
the project funding had stopped, it's not a viable
business case on its own, and there was no real follow-up
plan for how do you take that pilot and then just evolve
it into something that is real and operational, so really
focusing, I think, on how to make good ideas real things
is important.

MR. STOKES: Okay, we'll move on to the next
question: What are the pros and cons of different models
of energy innovation clusters to accelerate a successful
path to market? And we kind of touched upon it in this
first question, so if anyone has any additional comments?

MR. SIMON: I would just add to it, I don't think
there's any silver bullet and, if you look at now what's
available to companies in the way of help to accelerate a
successful path to market, there's all sorts of things
out there, there's for profit accelerators, there's
nonprofits, there's course work, academies of
entrepreneurship, I don't think it's about choosing a
model. If I were to identify where I think the gaps are
and where EPIC would help, I would say it's in communication. There's a lot out there that people are not taking advantage of because they don't know about it. And one size doesn't fit all, and a company that may find its best path to success is with the Center of Excellence -- and I'll leave that undefined -- you know, should go that way. And one who finds that its best path is done in a technology accelerator being physically co-located with others, then that should be their path. The diagnostic of trying to figure out where they belong and sorting that through, I think there's a communication problem. And I think we could get much more benefit out of the individual efforts that already exist in the state if there's a way of putting information together on what do they offer, who are they looking for, what are some of their models for success, what fits best with them, and we can get that to the people who are struggling to advance a technology into commerce, and can somehow bring it together. So, you know, I'm mixing this with a little bit of the next question, but if EPIC could fund just a lot of us in the environmental cluster technology incubation business, or industry, getting together like once or twice a year to share experiences, and create some kind of online community where we knew what others were doing, I think we could amplify tremendously
resources that are already being devoted to this. We have companies that have ideas here in this region, but their best customers may be down in Orange County. And so we need to work -- for example, an organization down there called Octane -- but we don't because we don't know exactly what they're doing. San Diego Connect, or the Environmental Business Cluster, or there are other things in the Bay Area, and there are commercial operations, there's one called Greenstart, and they will only accept a handful of companies, but once you're in, you get some amount of funding and, if you're the best company that comes out of their program, you know, you basically get a half a million dollars to go forward. They don't need to be dealing with companies that are already pretty well organized and know what they want to do -- how do we feed them? So I think the communication would help create a structured ecosystem of going from things like CleanStart, which are the very earliest companies that are just beginning, and how to feed that all the way up the line until you get to something like Greenstart that will fund companies, or actual VCs, or entry into the Clean Tech Open. But there's a lot that's going around there already, I don't think it's a matter of choosing one model, I think it's more a matter of how do we organize and leverage what we're already doing.
MR. WALDEN: Gary is right, there won't be one model. I mean, every technology space has its own needs from the early part of the pre-commercial gap to the latter part, but I think that one of the things that stands out in my mind is that these clusters need to be narrowly defined, their focus needs to be a narrowly defined focus because, in many of the technical spaces, the infrastructure requirements to help those technologies is very large. I mean, the bio center has a very large investment in infrastructure, the Renewable Energy Testing Center has a very large investment in infrastructure, and they're focused on specific technical space. But, you know, they're not very applicable to other technical spaces but for that one area, or those two areas, or a dozen areas they are very good.

MS. KULA: Yeah, I think -- I would argue with you a little bit though in that, with the bio side, I think it's what type of infrastructure you have in place, so at the Bio Center, we have companies that are working on cures for cancers, and cures for Hepatitis C, and diagnostics, and what have you, working side by side with companies working on battery technologies and solar cells, actually both of those companies are funded by the CEC. And so you can be very broad, and I think it depends on what stage you're working at. So those
companies are very early, they were funded under the EISG Program, whereas the companies that you're working with tend to be a little bit sort of later.

MR. WALDEN: Yeah, later. They are later.

MS. KULA: And Bill has got a great facility if you have an opportunity to go see it, it's amazing what they have there. So there so -- I think it depends on the stage that you're working with, and so from an infrastructure perspective you can be pretty broad and so support the earliest stages of R&D.

MR. WALDEN: Right.

MS. KULA: And then you also have the kind of mentoring support and what have you, which is consistent across most of the incubators. I think the con side of incubators are where they are too broadly focused in terms of the types of companies that they'll work with. I think there's a very specific network that's needed in the clean tech space, or the energy space, and if you're an Innovation Center, or an incubator that's focused on every type of company, you're not going to have as much depth in terms of the network for folks, or the community, even. And so you can be working with the mom and pop trying to start a coffee shop, or the social media app, or what have you, very different sort of resources for the companies. And so, on the con side, I
think you really have to look at the ability of the
Innovation Center. There's so many out there and they
are not --

MR. WALDEN: And as I said, it depends on which
part of the value you're talking about, if you're earlier
stage, and we do tend to work on later stage pre-
commercial.

MS. KULA: Uh-huh.

MR. STOKES: Okay, Cameron, Josh --

MR. GOULD: This is Josh from ARPA-E, and just to
tack on to that discussion, I think stepping away from
the exact outline of the organization and thinking about
-- of the potential innovation cluster -- and saying, you
know, regardless of the exact mission of that cluster,
what's incredibly important, I think, is clarity of
objectives. So I think that's been one thing that's been
pretty helpful here at ARPA-E in terms of, you know, how
we look at funding things, and the set of activities that
we do, because we're only -- we just had our third
birthday here and so, you know, how we look at what we
fund, it's got to be transformative, it's got to be
early, it's got to be something that the private sector
wouldn't do, and then we measure our outcomes in terms of
the number of projects that in some shape or form make it
to market. And I think, you know, that provides a really
good clarity across the organization about -- think of it like a textbook, or a notebook, to say, "Yeah, if this company, if this technology goes not do X, Y and Z, then that's not what we should be doing." And so I think making sure that those objectives and that purpose for this cluster is really well defined is critical because I think, without that, what you'll find is you'll spread yourself far too thin, and that the bang for your buck, that dollar, will just not go very far because you're trying to do simply too many things, whereas if you have a clearly defined set of objectives, everyone marches in the same direction and everyone knows what that cluster does, but even more importantly, what it does not do. I think no matter what the exact outlines of that cluster are, those objectives need to be clear and well communicated from the very start.

MR. STOKES: Cameron, do you have any comments?

MR. GORGUIPOUR: No, I mean, I think folks have pretty much said everything that I would say. I've got to say that RB has a spectacular model for how to work this type of thing, so I'd defer to Josh.

MR. STOKES: Okay, the next question: Do you recommend funding for innovative clusters in the EPIC Program? Provide program specific recommendations.

MR. SIMON: Well, yeah. I think I put one idea
out there is that, in this state, I think it would be good to have a network of innovation clusters working together. The second thing that I see as a gap in this whole enterprise of bringing technologies to market is connecting these businesses with customers. And over and over again, we see a lot of businesses searching now for clean energy, clean technologies, in order to meet some of their own corporate goals of being good citizens, or reducing carbon footprint, or something like that, and they don't even know what's available in their own backyard. And similarly, from the companies, when you sit down and talk with them about what it is they see as being a product coming out of their innovation, they have some fairly unsophisticated ideas of what people will pay for. I can give you a specific example without naming the company, but it's a company that wanted to optimize the charging of electric vehicles in the utility network and optimize use of energy in the home through the Smart Grid. Great idea, we probably would agree there's great potential there, but how many electric cars are there really out there that you can control right now? That's not a good place to start. When they changed, after some coaching, their business plan to saying, "Well, maybe what we should do is try to optimize the charging of golf carts at resorts," then they had a business. Somebody
would pay for that. Reducing the amount of money that people were paying for electricity to charge golf carts because you don't necessarily need to charge them all at the same rate, they don't always need to be running after they're fully charged, that made a difference. And, you know, now that that business is running and it's got some real customers, and it's got a value proposition, etc., but some of it is just understanding what customers are out there. So if there is a way that EPIC could help us put together a catalogue of what customers are looking for, or sponsor events where customers are talking about what they're looking for, and they can hear from companies that have the technologies to meet their needs, there's a matchmaking service that we're missing right now and it's requiring a lot of time and effort for those of us in the incubation business to try to think through who are the customers that might be the good ones, and a lot of that is based on limited experience and anecdotal evidence, and we're not necessarily hitting the right customer.

Here in the Sacramento area, it's interesting, one of the biggest customers for green technologies, clean energy in this region, would you guess, is the health industry. They're looking for ways to reduce waste, they're looking for ways to cut down their cost of
electricity because running a hospital is a pretty expensive and energy intensive business, etc. There's a lot of companies we have that should be presenting information to the health industry on how to sell their products. But I'll tell you, there's a big problem there because a lot of people say, "Oh, I don't want to sell to the health industry, what if my product fails and I incur all the liability? What if something really bad happens?" Well, it all depends on what it is you're actually doing, I mean, yeah, if you're a medical device in the surgical operating theater, that's one thing, but if you're just somebody that's trying to reduce air-conditioning load, you know, you don't really have that liability. So, help the people through that, or thinking through some other big customers, and a great customer is here in the form of the Air Force this morning, and what Cameron has been saying, you know, there are companies here that could probably help the Air Force do a lot better job in setting up the infrastructure at a lower cost and we need to connect them. But I think it all gets back to, if there is something to be done, I don't know that we need to create more innovation clusters. I think, a) we need to network them together, and b) we need to have some effort go into identifying customer needs and specific customers. If you have a well defined...
product which comes from working with customers and you have some contracts in hand to sell your product to customers, funding and organizing the business and getting staff to move the business forward is so much easier. Funding a business and trying to hire staff when you have no product and you have no customers, really hard.

MR. WALDEN: I think that this opportunity for Energy Commission to pull this network together is going to be that next great thing that keeps California out in front for the world. Right now in the technical area that we're in, we see innovation coming from Europe and Russia, there's a lot of it in the Pacific Rim, but the bulk of it in terms of both technical innovation and visibility is California. There's stuff going on in the rest of this country, but people look to California from Europe, Russia, from the Pacific Rim, as that leader. And I think that this putting money into this, into a defined program that has life even after the Energy Commission quits funding it, or public money goes away, which it would at some point, I think is another way that California is not only going to keep the reputation that California has had in the past, but also to be able to bring jobs into California. Companies want to move to California, they want to be in a nurturing environment,
they want to be someplace where people are trying to help
them cross that Valley of Death, and no matter what part
in there they are, they still want to be here and they
will go out of their way, put money into bringing their
technologies here if they get the right kind of help.
And I think defining this is just a tremendous
opportunity for the State of California to build this
infrastructure that does help companies and that is self-
sustaining when it's over.

MS. KULA: There are other regions in the United
States that are doing something very similar in terms of
binding together, so New England, for example, has a New
England Energy --

MR. SIMON: Clean Energy Council.

MS. KULA: Yeah, thank you. And you know, those
organizations have kind of bound together under the Clean
Energy Alliance, which is the -- the EVC was a founding
member of -- I'm currently the Chairman of the Board of
-- but it goes all over the United States, bringing
together Innovation Centers from around the country, and
it's great to have that sort of exchange of ideas, the
access to the resources, and connecting the clients
together that are part of all of these clusters. So I
think California doesn't have that type of approach to
kind of binding everyone together, and I think there
could be great benefits of that, you know, connecting -- obviously, CleanStart is part of Clean Energy Alliance, as well, but having something that we can regionally do together would be beneficial.

Going back to my earlier comment, though, about providing the support to the companies, especially the earliest stages of companies focused on R&D and turning those into companies, or even demonstration level companies and turning them into companies, I do think that, you know, given the ultimate goals of the EPIC Program as I read about them, and the ultimate goals of the California Energy Commission, I do think that providing support to the companies in the form of commercialization assistance, be it if you fund the innovation clusters, or if you provide additional funds to the companies for that type of support, to seek that type of support, will be valuable in terms of the ultimate benefits, so actually getting the technologies to market, or even moving them from R&D to demonstration, demonstration levels. I think leaving it to the devices of the companies on their own can make that path to market much longer. So, providing that type of funding through the EPIC Program would be valuable.

MR. GOULD: This is Josh here at ARPA-E. You know, I think innovation clusters can and have been
successful in a number of different instances, many of which are right there in California, you know, both inside and outside the Energy industry. You know, at the risk of repeating myself, I think what is most important is not only clarity of objectives for if and when you launch an innovation cluster, but where we started this conversation, which was clarity of objectives for, you know, what we're seeking to achieve with that funding. And it seems like we're starting to have some of that, but again, I would argue that we want to start from not only the clarity of objective, but these problems that we're trying to solve and, you know, that's where we started this conversation with things like, you know, a gap in the early stage R&D funding, a challenge in getting companies to an initial pilot, getting them out of pilot stage into real commercial deployment and having a business plan around that. These are the problems we need to solve and I think we need to have an open mind as to the best approach for solving them. That may mean an integration cluster, it might not. You know, I'm frankly not sure and at this stage don't know enough to take a position. But I just want to make sure that, you know, we were looking at the idea of a cluster, that we're not losing sight of the problems and issues that we're trying to solve and the goals we're trying to achieve. And
then, I think once you have some clarity and you have all stakeholders on board on that, I think it becomes a more tactical discussion about what you actually do to address that, but I think making sure that we fully have a clear understanding of what those issues are and what the problems we're trying to solve, I think that's probably the most important thing and the place to start.

MR. GORGUIPOUR: Yeah, sort of following on what Josh and others have said, you know, I think definitely having a sort of clarity of purpose is the first spot, but I was going to take a little different direction. First of all, I always like the idea of innovation clusters and getting people together to talk through complex ideas because I find those great for getting different connections you otherwise wouldn't get, so I think in general it's a good idea; whether or not it's worth funding, that's obviously for you all to decide. But I would offer up just a couple of just thoughts on this.

First is that what I think probably the State can provide, and what's been really helpful to us in moving forward on our project in California hasn't much to do with the regulatory and policy issues as the technology issue, so with Vehicle-to-Grid, as an example, so something that the technology hasn't been actualized or
brought to scale, but it's been demonstrated, so we're comfortable that the technology is there. But the biggest part that we need help on getting the technology into use on our installation is, again, working with the Public Utilities Commission, working with the California ISO, working with the Utilities, making sure that the policy and regulatory environment is suitable to move these technologies forward, I think, is key. And that's something that I think a State funded program working with integrative companies that are working together, I think, could really help move things in the right direction.

You know, the other thing that's helpful, and I think a program like this could be helpful for, is identifying not necessarily investor funding, but identifying avenues where some sort of market or funds are already available. You know, the reason why Vehicle-to-Grid works is because there's this existing marketplace for energy services, that it's already in place in California, people have already been into, and really what we're doing is we're linking the transportation sector with the energy sector, and leveraging the resources, financial resources available in the energy sector to offset an advanced transportation technology. And that's an example, I know there are
other examples I could give to you, but the whole point is that finding those connections, I think, really helps support innovation and that seems to me to be something fundamentally the role of State and Federal Governments to help industry identify those opportunities. And then I think the last thing that I would just sort of throw out there that's been successful, that I think is along the same lines as identifying clear purpose, the Obama Administration has been really good about this, in pushing through challenges, you know, setting a benchmark and saying, "Hey, the first company to get to Point A gets some sort of award and cash bonus," and something like that, but at least it gives you clear objectives, it's good PR, and it tends to work, I mean, there's a whole strategy around that which I think could be helpful for an innovation cluster like this.

MR. STOKES: Okay. Thanks, Cameron. It looks like we're at the end of our time. We're going to go ahead and open it up to public comments.

MR. BROWN: Merwin Brown with the California Institute for Energy and Environment at the University of California. The subject that you touched upon has to do with what I would call answering the question, will the system of systems work? You mentioned, for example, a photovoltaic cell is part of a system and it can't become
a product until you develop the system for that. But
there's also another question is will that system work
with the broader system, and to give you some example, is
for example you may have a smart charging system for an
electric vehicle that would interact with the grid, you
would have a photovoltaic system that would interact with
the grid, you've also got demand response kinds of
things, and plus the fact you've got the dispatch of
generation out on the system, that all have to integrate.

I hear from the utilities and the industry over
and over again is, will the system of systems work? And
I see that as a barrier that really hasn't reared its
head yet. And so I guess my question is, will these
integration clusters or incubator, do they have a role in
this? Or are we pretty much stuck with the utilities and
the regulatory industry and the standards going through
the usual plodding process to get this all worked out to
the point they're comfortable to buy these products, or
not? So I hope that question is clear, but is there a
role for that sort of big question of systems
integration?

MR. WALDEN: I think that ultimately
commercialization only happens when someone buys the
product and, if you're buying a product that's table top
product, that's one thing, but when you're doing
something that is an industry-wide issue like in the
utility industry, then I think you do have -- you have to
look at getting input from that base because they're the
ones with the money that are going to be creating the
demand for that technology. So I don't think as you get
toward the latter stage commercialization and you're
working on innovation cluster, or you're working on
incubator, I don't think you can avoid bringing in that
input because, at the end of the day, their demand is
what drives the VCs or the others to do investment in the
technology so that it integrates in what they're needing.
And we see that all the time from both the military who
is a big buyer, as well as the power industry, which is,
again, a big buyer.

MS. KULA: I do think there is a role for
innovation clusters in educating, and it's educating on a
lot of different levels, it's educating the
entrepreneurs, but it's also educating the utilities,
if it's educating the regulatory agencies. When we go and
talk to people, we're representing 75 different
companies, all of which are going to have their own sort
of barriers to entry, and all of which may be impacted by
the CPUC, or the CEC, or state regulatory -- other state
regulatory issues. And so when we go, we have a little
bit more say than when an entrepreneur goes and talks to
people -- we carry a bigger stick, I guess, is a good metaphor. And so I do think there is a role for the clusters to educate on what the ultimate barriers to entry are going to be, and if it's going to Sacramento, or coming here, I guess I should say, or going to Washington, D.C. and having the same conversation with people, and we've done that on both the light science, as well as the clean tech side. And so I don't think it's up to just the utilities, or just us to try to do it, I think it's all of us kind of trying to figure out how do you ultimately integrate the technologies into the market.

MR. SIMON: I think part of the role of an innovative cluster or incubator is helping companies see where there's a problem crying out for a solution, and then coming up with a solution that solves the problem. So understanding some of these interface issues, of systems of systems, as Erika said, important, and I think if you can just make more visible to people that are very clear, that here's a problem waiting to be solved, that people will come up with good ideas, and then it's the role of the innovation cluster to help them connect with the customers and get that into a good business.

An example that I think of right away is Professor Raju Pandey at U.C. Davis in the Engineering
School, he's in the computer part of it, but he's very much into understanding the system of system problems, monitoring where the problems are, providing some intelligence as to how he came up with the devices that are now being promoted by Synapsense, which are in fact controlling systems of systems; what Merwin Brown was talking about is much bigger scale, but it's the same question. So there are people out there thinking about that, but I think what our job is as incubators is to help them define what they can offer to solve the problem and make the value proposition of that solution very clear, so that things can go forward. And education, I think both ways is important to that.

MR. GOULD: This is Josh from ARP-E. I just have to second the importance of, you know, particularly for innovations that are a component, or even a system, you know, again that's part of a larger system, almost all these innovations exist in a larger context, particularly when you're talking about things that are integrated onto the grid. And so what we do at ARPA-E is, when we fund performers, oftentimes we will write it into their milestones, i.e., one of the things that's necessary for them to continue getting funding, that they model not only the costs and performance of their own innovation, but how that cost and performance factors into the
performance of a system as a whole, and so whether that's
done by an innovation cluster, or whether that's done
with the assistance of someone else, you know, that's
another decision. But I just want to emphasize that I
can't think of too many other important things in terms
of getting technologies to market, is to understand the
system level impacts of a particular technology, even if
that technology is a component. I mean, it's a really
good point and something we need to address and keep in
mind.

MS. TEN HOPE: I have a question for the panel.  

This is Laurie Ten Hope with the Energy Commission. And
yesterday we talked about connecting good companies and
good products to the market, either through
communication, networking, etc.; implicit in that is that
there are good companies with good products. And my
question is, how do you kind of filter? Do you provide
your services equally to all the companies within your
cluster, you know, filter the companies or products that
you really think have the most promise? What's your role
in sort of making that distinction?

MR. SIMON: Well, on the part of SARTA, we have a
process of people applying for help and there is a filter
as to whether or not we think, a) they're far enough
along to be thinking about building a business, and b)
whether they have put enough thought into a good business plan to address the problems of building a business. But we see our role at SARTA as working at the very early stages of this long process, so, you know, I think our filters are pretty low. But on the other hand, at the end of our process, it's probably not about $25 million Series A funding. It's probably going into somebody else's process to take the next step up, so I think the degree of discrimination on the filter depends on what it is you're trying to do and what companies you're dealing with, but we have screened out quite a few companies that we just say it's too early. Now, several of them have come back, taken the initial feedback, put more thought into it, got some training and come back, and they're in the program. In a venture start program, I think we've probably had about three dozen companies come into it, probably a third of them are Clean Tech companies. And then they go on to another process, or they decide, hey, this is not for me, and they end.

But I would also say, while I've got the microphone here, in terms of funding by a State agency, and how you measure benefits to this, that one of the things you have to understand is you're not going to see benefits after a year, two years, three years, maybe not even five years, this is a long process of getting
companies to put products into market and see that they succeed. So if you start down this path, appropriately set your expectations that you're not going to be doing this for something you could measure as a short term gain, it's a longer term process. If you enter it with those sorts of expectations, then I think it's a lot easier to see when it will be appropriate to measure benefits. Now, fortunately, because the Commission has been funding things like the Environmental Business Cluster, there's already more than five years of experience of how this works and I think that would give some foundation for expanding that type of program, as we've suggested. But in measuring the benefits, they aren't going to short-term.

MR. GOULD: You know, in general there tends to be a trade-off between -- you can have a more -- you can have a bigger impact with a smaller number of people if you have a finite set of resources, like say you've got X number of people, Y amount of dollars, and that is all set; typically, what filtering does is it allows you to kind of maximize your benefit with a given set of people, and so I think it's another important issue to touch on, which is you can fund, let's say, 100 during the year, now, what that will result in is essentially, you know, sprinkling the same amount of dollars and impact over a
much larger group and the incremental benefit each awardee is going to receive is going to be far less from a cluster. But you could argue that that's part of your public mission, is kind of to fund as many people as you like. What we do at ARPA-E is we try to filter pretty stringently for a smaller group because we feel like, you know, given a group of five that's appropriate for the resources that we have, we can have a real tangible impact on those people. So I think the filtering mechanism has got to come from having clarity of objectives and clarity of purpose, and then there's got to be some critical thought around, okay, what are the tradeoffs between funding a larger group, but having less impact on each one, versus funding the smaller group and being able to influence and have a bigger impact on each of them because there's a smaller number. So I think it's an important tradeoff to talk about before forging forward.

MR. WALDEN: When you're dealing with -- as we're dealing with -- the latter stage technical equipment that generally is larger scale, the vetting or the filtering is not necessarily easier, but it's certainly different. We get input from the military, from the Army specifically, we're just now starting to get input from the power industry. But in the larger technical
equipment, you're dealing with fewer companies that actually come in. We don't pay for, nor does the government pay for any of their equipment, but it's more of a technical vetting than it is a business vetting because most of these people have to pass safety checks and they mostly have $2 million to $3 million invested already. So it's really a straighter forward vetting, I think, but still has to be done.

MS. KULA: Though, with companies coming into the EBC, we go through an application process, as well, like Gary and Bill. And from there, we really determine what the company is looking for, what are the objectives of the company, to go back to what Josh has been saying numerous times, or what is the reason that the company is coming to the EBC, is it something that we can help with? Or is it not something that we have the capabilities of providing? We also look at whether or not the company is ready for constructive criticism. A lot of what we're doing is providing insights and mentoring and constructive criticism in order to get someone ready to access those investors, or what have you, or customers, or what have you. So, if someone is not ready for that, or doesn't want that, they're not invited to join. So with regards to connecting people, you know, we will, as our client base, we'll go through the application
process, we'll mentor them, we'll get them ready to go out. We also do, through our open to the public sessions, we'll do meet with series, we'll bring in investors like Dow Chemical, which was in town last week, we had 10 folks from Dow, from Michigan and all over, out here. And so companies can apply to have a one-on-one meeting, and some of them are companies and some of them are entrepreneurs from all over California, and actually all over the United States. And Dow selects, in this case, who they want to meet with. So it's not just us vetting the companies, it's up to the investor to vet the companies, as well. So there's a few different things that we do.

I just want to make a comment on Gary's comment about measuring ROI. I think you have to look at the companies as a portfolio, and so if you look at a venture portfolio as an analogy, you have companies that are in the portfolio that are going to be quicker ROI, and you have companies that are going to be a longer term ROI. And I think, as you're gauging the success of the EPIC Program, you have to have a mixture of those because every year you're going to have to be showing some return on the investment, and so if you have companies that are moving to investment, or whatever your measurement of success is, those quicker ROIs need to also be part of...
the longer term, so you have an overall strategy.

MR. GRAVELY: Mike Gravely from the Commission R&D Division. I'm just curious, under EPIC your vision of incubation, or incubator cluster, or type of a project, there's two areas I guess I was just curious to see where you think the right focus is. So one area would be, you mentioned helping people develop business plans, marketing plans, helping them make their product to market, and then we've also talked about areas where there are barriers and restrictions, and when we've talked about energy storage and CHP and distributed renewables, there are areas. So would you see for EPIC the purpose or goal of a cluster to be working mostly with companies to allow them to work within -- I'll say -- the system that exists? Or would you see the cluster identifying significant barriers that would open up the system or market for new technologies? I see those as pretty substantially different objectives. We talked before about the purpose and objectives, so I would say the cluster would have a different structure, a different objective, if you were working at one to work within the system, and to help break down barriers so those companies could be successful. So I would be interested in your thoughts about what you would say the purpose of the cluster would be in those two comparisons.
MS. KULA: Well, I don't think that -- I think it would be both. I know you see them as different, but I think also the technologies that are being developed, you can't necessarily be developing a technology to be integrated today when you're at the R&D phase. You have to be looking five years out or even, in some cases, 10 years out, depending on the technology. So it's a matter of helping the companies understand where the market is going to be in five years, you know, what the grid is going to look like in five years, or what have you. And so I think from the role of the cluster is to really provide access across the board. So talking with you guys and the CPUC, and the utilities about the goals, but then also educating the entrepreneurs. I think it's a broader -- it's a whole ecosystem basically that is our primary role.

MR. WALDEN: I mean, if the objective is to get companies of all sorts of technology space across that Valley of Death and the right-hand side becomes -- they are now part of a commercial industry, I think you end up with a multi-dimensional problem to solve and, like Erika says, the objective is to get them across there, and the width of that depends on the type of industry that they're in and who and what they're going into as a commercial venture, so that's the third dimension of it,
is that one of the programs isn't going to fit everything because you can't just focus -- we have tended as a country to focus on the front end of helping them, which is absolutely critically important to get them to the back end, but we have to look at both the type of industry, or type of space that they're going into, and this is very relevant here since we're talking about the electric power industry, and that's a very different space than some other spaces. So the third dimension of it is get them across there, but you have to have clusters that are sized or designed for the type of industry that you're in.

MR. SIMON: And, Mike, what I would add to that is, if the Commission is interested in attacking a large system-type problem where there may need to be some new technologies, and there are some other barriers, that's probably the Center of Excellence model, where you're really trying to devote some time to the drilling of a very hard board. If you're in the business incubation part of the spectrum, the basic problem is getting -- shrinking the time to get to that first check from a customer. And that sometimes means carving down the problem that you're trying to solve in order to get to a sustainable business. But the name of the game in business incubation is getting to profitability, and the
key to profitability and the success of a business there
is you have to be present to win, you can't run out of
money before you get the revenue coming in. So sometimes
it means not addressing the big problem, but addressing a
smaller problem -- controlling golf carts, waiting later
to control electric cars, that sort of thing. So it
depends on really what it is you're trying to do, build
businesses, or address big problems and innovating
specific technologies.

Now, there's obviously a relationship between the
two -- you can innovate the technologies over here, and
then, as ideas come up that can inform businesses, for
which people will pay money for products, then it comes
over to the other side. So I think you have to look at
both parts of that equation.

MR. STOKES: Anymore public comments? Okay, I'd
like to thank the panelists again for their participation
and some really great comments. Our next panel is on
Regulatory Assistance and Permit Streamlining. And the
Moderator is Sherrill Neidich.

MS. NEIDICH: Okay, let's go ahead and get
started. This is Panel 2, we're going to be talking
about Regulatory Assistance and Permit Streamlining. I
want to welcome everyone who is attending today here in
person and on WebEx. I want to thank my panelists for
attending today. We've assembled a great group of
panelists with a wide range of expertise.

The purpose of this panel is to discuss planning
and permitting challenges that have been identified by
stakeholders and the CPUC in the EPIC Proceeding. The
Energy Commission will be developing its first triennial
Investment Plan per the EPIC Phase 2 Final Decision, of
which Regulatory Assistance and Permit Streamlining is a
component of.

The EPIC Phase 2 Final Decision, a total of $15
million, is allocated annually, and a portion of that
budget will go towards grant-funded investments in the
following local government activities: the comprehensive
land use planning that includes clean energy development,
develop planning platforms that complement planning
activities and facilitate clean energy development, and
develop information materials and technical systems to
help build local capacity for clean energy development.
These are broad activities we generally agree with, some
of which are already occurring at the local level.
However, local governments remain resource constrained,
and providing public investment into the local
development process will help overcome some of these
resource constraints. We are looking forward to
receiving insight from our panelists today and solicit
public input to develop specific investment initiatives.

And my instructions to the panelists today is to go ahead, and we're going to start with Valerie. And we'll take about two or three minutes, go ahead and just, you know, your name, organization, and your role in the Clean Energy sector.

MS. WINN: Great. Well, I'm Valerie Winn and I'm with PG&E, and currently I'm the Manager of our State Agency Relations Team, so I spend a lot of time here at the CEC. But before that, I was also a Manager in our Renewable Energy Policy and Strategy area, and in that role, you know, we spent a lot of time looking at contracts, hearing from developers about their challenges and getting their facilities on-line, and I'm talking about, you know, general utility scale projects, some below 20 MW range, but most of them much larger than that.

You know, some of the challenges with permitting, I mean, when you try to build a project, you've got so many different agencies and jurisdictions, sometimes with conflicting and competing timelines, and you don't know where you go first, and I think we've actually made a lot of progress in the last few years with the Governor's Office, was taking a very active role in trying to work with the existing processes to streamline things.
We've also, here at the CEC, been working on the Desert Renewable Energy Conservation Plan, and that was really taking a very science-based approach to looking at what are the issues out in the Colorado and the Mojave Desert, and some of those are the sorts of things, you know, what are we dealing with, what are the preferred areas for development, that if we did some of this work upfront before we started setting our very aggressive policy initiatives, we'd probably be better placed to be able to achieve those goals, so I think a lot of the effort, you know, taking a DRECP-like initiative and looking at other areas of the state to learn what are the environmental issues, what are the cultural issues, and then taking that information and putting it into some sort of a system that we can leverage going forward would be really helpful and help streamline things. I think what we have right now is someone files a permit and you're starting essentially at Ground Zero every time you file a permit, and we're always reinventing the wheel; so, how can we get that wheel constructed a bit more quickly?


MS. BARRETT: Yes, hi. I'm Jennifer Barrett and I am the Deputy Director for Planning for the County of Sonoma. I actually have a degree in Energy Studies, as
As in Planning, unfortunately a lot of my initial efforts to do energy planning early on were delayed for 20 years, so I really feel like we're behind the times here in California, but Sonoma County is a very progressive county in actually trying to deploy various energy technologies, renewable energy technologies. I worked as a project leader with the California County Planning Director's Association on a team that was developing a model Solar Permit Streamlining Guide, and through that process we learned quite a bit about the challenges that Valerie was just speaking about, we do feel like we're at Ground Zero every time we look at a permit for a major facility. And I think that the process that we learned through that Solar Permitting Guide also applies to other emerging and renewable technologies, an example of which is, you know, looking at trying to develop a model ordinance for the State of California is quite challenging. We found that there's many issues that are really common to every community, but the approaches that you might want to take, or the amount of resource that you have, or the other issues, the constraints of the landscape, really play into how you might go about addressing that.

So one of the things that we found with solar, for example, just using that as one technology, is that...
that is a very land extensive technology, meaning it requires large areas of land, and so the issue there is the cumulative impact on agriculture, the loss of Ag lands and the impact that might have on our food systems in the long term, as well as the biotic resources, you know, how is that going to impact cumulatively.

One project, the first one that walks in, kind of had to deal with it, then the second one that walks in not only had to deal with it on that side, but they have to deal with the fact that they're now plus two, and then it gets worse and worse and worse down the line. So that the County Planning Directors came up with a concept that we would like to recommend for counties and that is a Renewable Energy Combining Zone, and that is an effort to really adjust the cumulative effects which become more difficult each time you do a project to address, they really need to be addressed on a county-wide scale, or a community-wide scale, or a region-wide scale. So the idea there is Renewable Energy Combining Zones would go out, look at the resources on the land, look at the infrastructure and the capacity of that infrastructure, and that's one of the issues you talked about earlier, and identify areas that could be appropriately sited for rapid deployment, and then allow those to be permitted by right, rather than going through an extensive Use Permit
process. What that would require, though, is that counties do the upfront heavy lifting on the environmental review, and documenting that, and looking at ways to mitigate that, and that is a challenge. So we are right now going through the process of amending our Zoning Code, not only to add in the Renewable Energy Combining Zones, but just really to amend our Code to allow a wide range of emerging technologies, clean technologies in all our zoning districts. I mean, just even small scale technologies can often not be permitted because there is really no definition of it, or allowance for it, in your Zoning Codes. So that's been a very difficult process. So I would say some of the things that we really do need at the local level is we need technical assistance in just understanding what these emerging and renewable technologies require, what they look like, what kind of impacts do they have, what kind of interconnections they need, and just how do they work. You know, you really need some understanding of the proposal. So we need technical assistance. You know, we went through that on trying to develop the Solar Ordinance, this Model Ordinance, and we had a bunch of solar providers in the room and a bunch of regulators, and the regulators didn't really understand what the solar providers were trying to do, what was required, and
the solar providers didn't understand the regulatory process. So it was really quite interesting, but the technical assistance would help the locals, that the more you know about it, the more you understand it, the quicker it goes, the easier it is to write about it, to do the permitting, and deal with the issues.

Secondly, we do need to amend our Codes. Our Codes are old fashioned, they're out of date, they take a long time to update and it's money we don't have, the staffing that we don't have often. So we need funding to update our Codes, and that isn't just zoning, I mean, our Building Codes, our Fire Codes, that we have a lot of conflict between one jurisdiction to the next, as to how do you even interconnect a solar panel on a roof, you know, each jurisdiction is different. Having Standards across the board would often help and streamline that process, and just having the local inspectors understand what they're looking at. And solar is probably ahead of the game, other emerging technologies are going to have to go through that learning and growing experience, and then, in addition to being able to do that, we need assistance with the environmental process to really streamline the permitting.

Environmental review is important if you want to know the impacts of these technologies before you start
opening the floodgate and you need methodologies and understanding of how to mitigate those, so developing or having some funding to do the environmental and do the heavy lifting in advance, so that the innovative clusters can develop, so that they can do the permitting and that we all have an understanding of working together. And as part of that process, I think one other thing of integrating with business is really understanding the critical path, what do you do first? What is the fatal flaw is the hard thing sometimes to figure out, it's not just the environmental impacts, and sometimes it's just there's no capacity on the transmission system. Or, what we found out, which was a surprise to each of the Planning Directors is that the CPUC, when they look at a connection, if it's a private transmission facility, they're looking at the locals to address the environmental impacts of that transmission line and the connection. So, I mean, we wouldn't have known that, we wouldn't have looked at that, you could go through the whole permit process, get a use permit, go to the CPUC and they'll say, "Well, you've got to do more environmental work." So working together with all the permitting agencies involved, in lockstep with the development community, in lockstep with, you know, environmental constraints, I think, is really important.
So I think communication and working teams that have all of those representatives on them is critical to moving them forward.

MS. NEIDICH: Thanks, Jennifer. Gary.

MR. CRAFT: My name is Gary Craft. I'm the principal of Craft Consulting Group. We're actually relatively newcomers to the Clean Energy, Alternative Energy space. But we've only been around, focused on that area for about the last five years. And our focus in on promoting innovation clusters in the Clean Energy space and helping to remove market and regulatory barriers.

Last year, we prepared with the Contra Costa County Partnership and filed a grant application with the Department of Energy, and we're a successful Awardee for their Rooftop Solar Challenge, which was looking at removing barriers and streamlining the permit process for rooftop solar on residential and small commercial buildings. Since then, we've been involved in putting together a group of building officials from nine jurisdictions within Contra Costa County, along with the contractors and installers, working together to identify where those regulatory barriers and constraints were. We've also looked at and are working with some other organizations, including joint venture Silicon Valley and
the Alameda County General Services Administration, on a
four-county aggregated procurement program for Clean
Energy, including solar, for a four-county region in
Santa Clara, San Mateo, Alameda, and Contra Costa
Counties in the Bay Area.

We've also gotten started to get involved in the
CPUC Rule 21 as it affects net metering and the
interconnection process. We're also getting involved
with -- Contra Costa County is in the process of updating
their General Plan and Zoning and Williamson Act to
address the planning and siting of clean energy,
including solar and wind facilities in Contra Costa
County. So we're currently, like I said, pretty actively
involved in looking at permit streamlining issues and
planning issues in order to help accelerate market
adoption.

MS. NEIDICH: Thanks, Gary. Mike.

MR. HART: Good morning. I'm Mike Hart with
Sierra Energy. I'm also the President of Sierra Railroad
and Company, that's sort of how I got started in this
space. We're the oldest private railroad in California.
And back in 2001, we became the largest consumer of
biodiesel in the country. We became the first railroad
in the country to run on biodiesel, wonderful fuel. And
U.S. EPA gave us Environmental Hero Awards, also the
stuff for doing it. But the problem with biodiesel, as
with many other biofuels, is that it comes from food
crops, and there's a lot of environmental pushback on
this issue. We decided it wasn't a sustainable source
and we looked for another solution. What we came up with
was a way of taking trash, any form of waste, and turning
it into clean biofuels through a process called
gasification. The problem is there's been a lot of
efforts to make gasification work, and it's been said you
can make anything with gasification except money, and we
found a way, we hope, that's going to work. We have been
working with U.C. Davis, we've come up with, we think, a
fairly brilliant technology that comes out of the steel
industry, it's blast furnaces and blast furnaces, I'll
give you the secret how they work, a big metal tube lined
with refractory, you blast at the bottom, you put stuff
in the top, it comes out as liquid metal, really a very
simple process. The advantage of this very simple
process is you can take complex waste, you can take any
form of waste, operating at 4,000 degrees, it all breaks
down, you recover liquid metal, liquid stone, and syn
gas, a very clean syn gas, and what you can do with that
syn gas is you can either make electricity, or biofuels.
And so, working with the Energy Commission, in fact, we
were the recent recipient of a $5 million grant from the

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Energy Commission, we're demonstrating this technology, in fact, we're demonstrating it here in West Sacramento. But we'll be demonstrating one of the very first biofuel projects using this technology at a very small scale. Why a small scale? We believe that one of the problems that we've seen in the biofuels industry, nationally, is that for many of these technologies to work, it has to be really really big, and that means that you have to aggregate waste from as far as 100 miles away -- biomass, trash, whatever their feedstock of choice is, it's a big circle, which means you're trucking this biomass 100 miles to a central massive facility that costs hundreds of millions of dollars, requires a huge DOE grant to actually put up -- DOE or loan guarantee -- to put in place so there is massive commitment, and that's the reason why it's taken so long for us to wean ourselves off foreign oil. So we believe the right solution is putting the technology in the community where the waste is created and where the fuel is consumed. We want to build at a very small scale, at a small community, where 5,000 to 10,000 person communities could have one modular system delivered to it. And this gets to your point about, if you're going to be dealing with cities and counties and such, they're the ones with the responsibility, cities and counties, not waste.
management, not the big trash companies, they're not the people who are responsible for trash, we are. It's the communities that are responsible for dealing with it, and they're our customer. Those are the communities that we're targeting and we want to give them a solution where they can put one of these systems on property the community already owns, every community owns a waste treatment plant, a sewage treatment facility or something, all the utilities are in place, put our modular system in place, it takes 5,000 square feet for 25 tons a day. You turn that into over 1,000 gallons of clean diesel a day. What that means is the community can avoid the cost of disposing of that waste, the avoided cost of the fuel which they would have consumed, and the inorganic solids in our system turn into a clean non-leachable inorganic solid called Slag, and our Slag can be used as road base, which again is an avoided cost for the community. So the idea is that any community could use this system as a way to eliminate waste. As you know, trash put in a landfill creates methane going into the atmosphere. Eliminating that source of pollution, eliminating that risk of contamination to their groundwater from throwing trash into a hole in the ground in an unsustainable way, and turning it into very clean fuels. FT Diesel created with our process 20 times
cleaner than the California Fuel Standard, so a very very
clean process. So that's what we're trying to do. We're
trying to solve this not in some huge way, but instead on
a community by community basis across the state. What
does that mean from a permitting perspective? Well,
California, the agencies and the Cities, and all the
other folks, when you talk to agency in the State of
California, they're wonderful people. When you get them
altogether all at once, a little intimidating. We've had
the very good success of working well in advance with all
the various agencies and we've had great success with
each of the agencies in helping us put together our plan,
providing funding and advice, and helping us get this
first project built. But I think that coming up with a
master plan or a template, as Jennifer was talking about,
I think is a tremendous idea.

The Obama Administration was kind enough to
select us as a Champion of Change and asked us to give
speeches throughout the rural south as a way to take
trash and turn it into clean jobs, that's what they were
hoping to see us do, so we've been giving speeches
throughout the Southeast, and what they've done is really
innovative. The eight Governors of the eight most
impoverished counties in the country representing 252
counties have put together a grant and what they're doing
is they're having us make a template. And it's not the permits that are the problem, in my opinion. It's the planning, it's the soft costs. When you build a project, the hardware is the easy part. The gadget, there's lots of financing for gadgets. The problem is, it's all the squishy tuff upfront, it's figuring out where's your feedstock going to come from, which piece of land? Who is going to negotiate for this? How do you pay for the consultant? In some projects like for our project, it's a relatively small amount of money, it's a quarter of a million bucks. That's a rounding error in most of the large energy kind of projects, but who is going to pay for that initial chunk? And for a community, particularly an impoverished small town, or a place that right now is struggling, to come up with a source of capital, where are they going to come up with that quarter of a million dollars? Grants like that are the key for success because not only could they take that, use it to develop the project, the project financing can easily step in once you have a developed project, and that initial amount doesn't even have to be necessarily money gone from the state forever. Communities are going to make a lot of money running this process. It actually is very profitable. So have them pay it back. But it's pay it back if they're able. In other words, if the
project doesn't work out, if they get to the end and they go, "Wow, we can't do this," okay, it was a grant. But if the project does succeed, expect them to pay it back.

But that's where I see a program like EPIC could be tremendously successful for hundreds of communities where they could get a grant that's at a small enough level, that it's not painful to the State if this particular thing didn't work out. But if it did work, a community, then, creates 10, 12 jobs with each one of these modules, they create 10 or 12 jobs, they create a steady income stream for the community in avoided costs, they clean up the environment where it happens, and they create a renewable source of fuel. And so from our perspective, at least, that's the direction to go.

Now, we've been demonstrating -- one of the last speakers, Bill Walden, I don't know if he's still here or not, but we actually came out of one of those Innovation Centers, we've done all of our testing with the Department of Defense at the Renewable Energy Testing Center. It's been very successful. That's not an opportunity available to many other technologies, and so I would like to sort of just speak out in favor of that. I think that was a tremendous opportunity for us and was the key in our success, taking that and being able to work here in Sacramento with all the agencies and through
the permitting process was tremendous. I hope that, by putting together a program like EPIC, where grants can be given to these communities so they can do the soft costs of getting these first projects done, we could see the entire waste problem in California diverted into a clean fuels and jobs solution.

MS. NEDICH: Thanks, Mike. Chris.

MR. CALFEE: Good morning. I am Chris Calfee, I'm Senior Counsel with the Governor's Office of Planning and Research. OPR is designated by statute, for those who don't know, as the statewide land use planning agency. Our function is to coordinate the land use planning policy efforts of various State agencies and also to interact with local governments and to provide technical assistance and planning guidance to local governments.

We've been involved in the renewable energy and streamlining efforts in a number of different ways, so statutorily last year we worked with different stakeholder groups and legislative leaders to secure an exemption from the California Environmental Quality Act for rooftop solar and solar on parking lots. But the bulk of our effort really has been in providing some technical assistance and guidance, so for example recently OPR worked with a team of folks to put together
the California Solar Permitting Handbook -- and I believe Gary has got a copy of that right there -- if you haven't seen this document, it is on OPR's website and the intent is to gather into one place all of the different requirements that might apply to putting rooftop -- to implementing rooftop solar, and it provides templates and other good information like that.

Also, my colleague, Sandy Goldberg, worked with the California Planning Directors Association to put together the Model Ordinances and Guidebook, that is also available on our website, as are a number of local examples of ordinances that have been adopted since then. And in general, we do interact with different local governments and businesses as they're working through this process.

Some upcoming work that will be relevant in this area, we're about to commence an update to our General Plan Guidelines in which we will be looking at what information do locals need in order to do that upfront planning for deployment of renewable energy. So we're looking at are templates useful, what information and resources do local governments need. So that will be coming up in the near future.


MR. HUNT: My name is Vernon Hunt. Good morning,
everyone. Glad to be here. I'm here on behalf of Navy Region Southwest. Our region covers the 10 Navy installations in the Southwest Region, nine of which are in California. Most of you probably know the Department of the Navy has some fairly aggressive energy goals, both on the demand side management and consumption reduction, and also on the renewable energy deployment and integration on our installations, specifically those focused on reduction and consumption of 50 percent from our baselines, increasing the amount of renewable energy production to cover 50 percent of the shore requirement, and also to work to have half of the installations campus-wide CONOPS -- campus CONOPS or no campus CONOPS, I think -- wide, at net zero energy consumers. So pretty aggressive goals, both on the short side, and then also on the fleet side. I think most people have seen the headlines over the last bit that the Great Green Fleet demonstration in Hawaii these past few weeks, so utilizing those biofuels and moving forward in a lot of different sectors as far as energy is concerned.

I think it's already been alluded to, as we're moving forward in deploying these new technologies and working to adapt them into our culture and our every day operational ethos, and there are some barriers, both regulatory and I guess to a lesser extent permit-wise for
the Department of the Navy in pursuing these goals, I think Rule 21 was mentioned, and interconnection agreements. I think one of the themes that we've kind of heard in the first panel, and a little bit in our panel already, is this idea of where are the cumulative effects of things. And I think the opportunity within EPIC is to really look down the road of, as we deploy more electric vehicles, as we work with Vehicle-to-Grid type technologies, as we work with new communication protocols and energy management technologies, what's the cumulative effect on what our regulatory picture looks like today? And how can we get ahead of some of those effects so that, as we move forward, as we have in the past with a lot of these technologies, how do we get ahead of those and allow for those technologies to have that smooth transition into the marketplace over the next five years?

So there may be opportunities now to look at some of those regulations that these new technologies, the integration of the cumulative technologies, are now going to have an impact on how we've been doing business in the past, and maybe I think EPIC and funding, this type of work, is a good opportunity to move towards those kind of forward leaning solutions. So happy to be here, glad to be a part of the panel, and looking forward to the discussion.
MS. NEIDICH: Thanks, Vernon. We have the questions posted on the screen, I guess in front of us and behind us, and they're also on the agenda. I'm going to go through these questions, or start going through them, and whoever feels like jumping in, I don't want to put pressure on anybody if they don't feel like answering, but whoever wants to jump in.

Question 1 is: The Energy Commission anticipates that cities, counties and regional governments will seek grant funding. Are there entities that should be targeted for regulatory assistance funding? And we're thinking like of trade groups, maybe what other local governments like Special Districts.

MS. BARRETT: Special Districts, for sure. Jennifer Barrett. We have a water agency that has, you know, a lot of water facilities, water is a high energy demand, it's heavy, you've got to move it around, and they're very active in looking at deploying various types of emerging technologies as demonstration projects, and they've been very active in that area. But they're always looking for funding for their programs, so I would say Special Districts. Also, we have water districts, sewer districts, there's also opportunities now that redevelopment is gone, to create other types of districts, so I think that we can use that as maybe a
model and a template for looking at ways to finance projects and programs. So I would say Special Districts, for sure.

**MS. WINN:** And just one of my thoughts was, is we look just not at cities and counties or regional governments, but then how do we look across the state. And so is there perhaps some funding for someone, or some organization that would be taking that more statewide view and pulling all of that information together so that we could create -- I know other states have somewhat of a one-stop-shop so people can go and get information about how do I do this in this jurisdiction, or that, but looking more holistically, rather than just at specific cities and counties could be helpful.

**MS. NEIDICH:** Thank you. Anyone else?

**MR. CRAFT:** I was going to add a couple of other areas. Jennifer mentioned education and training when she was talking, and what we're finding is that not only building officials may not be current on some of the technologies, or even some of the Code requirements, but also contractors have the same issue. And so training is a big issue out there and organizations such as CALBO, California Building Officials Association, CALSEIA, other professional organizations, community colleges, all could put together training programs to help bring the level of
knowledge more current.

         MS. NEIDICH: Perfect. Anyone else?

         MR. HART: I hate saying this is a private company, but I really prefer the money goes to public agencies as opposed to private.

         MS. NEIDICH: Okay.

         MR. CALFEE: I would echo what Jennifer said about Special Districts. I mean, there are so many different types of Special Districts out there with a whole lot of property that can be put to use for deployment of solar, and definitely consider Special Districts, School Districts, for example. You mentioned trade associations, there are a number of associations that interface with local governments routinely like the Institute for Local Government, the Local Government Commission, the Planning Directors Association, all of those have developed relationships with local governments and so can disseminate information, so it might be worth looking into those, as well.

         MR. HUNT: And I would just echo everything that's been said. Gary brought up a great point in rolling in the construction contractors, and there's folks that will actually ultimately be installing a lot of this technology and equipment sometimes, you know, it sounds great, I mean, to throw a bunch of solar on top of
your roof, but if you don't know how it actually has to happen, then it presents a lot more challenges, a lot more costs.

MS. NEIDICH: Question 2: What local planning and permitting challenges do clean energy technologies pose now and in the future? Because currently we have plenty -- well, not plenty -- but we have some Solar Model Ordinances for solar and wind, if there is a new technology out there that's coming, you know, how do we educate the planning folks and everything to get on board?

MS. BARRETT: I think that education is key and it does start maybe with working with the private sector businesses and through some of the trade associations to really sort of learn what those technologies needs are, what kind of scale we're talking about. I think the distributed energy generation is a little bit easier to deal with because it's smaller in scale than the large massive facilities that either have high transportation, or transmission costs. I think those are easier to deal with from the permitting side. But, you know, Codes again is what we follow, we have to regulate based on our Codes; if it's not in our Code, we can't really do it, and so the Codes are old-fashioned and need updating. We're updating ours now to open it up to a wide range of

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emerging technologies; you know, we don't really know what they all are, what their scale is, but if you can just at least add in anything -- a renewable energy technology, emerging technologies, with the Use Permit, you can still at least look at allowing it and still deal with the CEQA later. So I would say that is a real challenge is the Codes, themselves, at this point.

MR. CRAFT: I wanted to make a plug for both the Energy Commission and OPR. A lot of these emerging technologies, somebody needs to vet them to decide what the issues are, whether they work, how they're going to be applied, and then there's another need to determine what Building Codes restrictions there are, or permitting issues there are, that restrict the ability to put those new technologies in place. And so Wade Crowfoot with the Office of Planning and Research, who has really headed up this planning effort here, did an incredible job in pulling together the various state agencies, the Fire Marshall, the Housing agencies, the Building Standards Commission, Utilities, Building Officials from around the state, and Solar Contractors, all looking at Code issues that were barriers to adopting some of these new technologies. And so that's a role that OPR could play. The Energy Commission can play the role of looking at and vetting some of these new technologies that then need to
be looked at in terms of their Standards and their Code
requirements.

MS. NEIDICH: Great. Thank you, Gary.

MR. HART: I certainly agree with the previous
comments. But watching our Governor when he tries to get
a project done, and he comes back frustrated sometimes as
far as the various permits and the processes involved in
the state, I think that experience is sometimes echoed by
other people in other industries, particularly in the
green energy space, because sometimes you're dealing with
new technologies. A suggestion that I'd like to offer,
if Governor Brown isn't available for all projects, you
know, personally, is to create a single point of contact,
and that is the idea of an Ombudsman, or just a single
point of contact from either the Governor's Office, but
it's like -- I hate to creation of another agency -- but
actually a developer-funded point of contact who would be
responsible dealing with all other agencies, Air, Water,
Fire, local planning, local permits, everything, and they
have the ability to squash down to make them all play
nice because, again, individually all these agencies do
tremendous jobs, but the problem is that their schedules
aren't necessarily the same as a person trying to put
together a project, and so, while we haven't had these
issues, I know a number of companies that have, and so my
suggestion would be a single point of contact and, from a
developer's perspective, paying for this one point of
contact's time would actually be relatively small, but it
would be tremendously beneficial to the State because
projects could be integrated, and people would stop
complaining about California. You hear people saying bad
things about the state, it's that we're more thoughtful
than other states. I mean, I'm doing projects in other
states and they don't think about it as much as we do.
But trying to coordinate all of these efforts under just
one person. You want a face. Talk to one person, they
say, "You know what? I'm going to go talk to the
following agencies and I'm going to go talk to the
following people in your county, or your city, and it's a
person, not a program, not a platform, it's a face, and
that face would cost the public nothing. The developer
would be 100 percent responsible for funding, heck, we'd
probably pay extra. But the idea is that the state would
have this single point of contact that would make dealing
with all these other agencies and such more efficient.
And it's not hiring a contractor or consultant, it's
actually hiring a government -- a person representing the
State of California, whose objective is to make sure the
right thing happens, whether that's building the project
or not building it, but at least making sure all those
agencies are heard and reflected.

MS. WINN: Yeah, Mike has a really good point and I think at PG&E, we've thought about it really from a different perspective. We are, of course, looking at a wave energy project and, you know, we've kind of refocused our attentions these days on looking at safe and reliable and affordable service, and haven't been working so much in some of the emerging technology arenas, but so on the wave connect projects, in particular, that is -- there's a lot of risk for any one company to try to permit a new technology of that size; it's never been done, there are so many unknowns. And it becomes really like the big money pit, and you don't know how much you're going to need to be able to get that technology through to be permitting -- if you could ever actually get it permitted. And so, you know, our perspective has been that maybe, you know, the State can step in on some of these areas where it is such, you know, that would be a really game changing technology, and explore those issues and perhaps permit a site that the State could permit that, and then auction off the development rights, but then it wouldn't be any one company bearing that financial burden to try to get that new technology out there.

MS. NEIDICH: Vernon.
MR. CALFEE: So I'll definitely underscore the value of coordination amongst different State agencies and the private sector, etc., and we've worked to do that on a number of different issues and will continue to work at it. One thing I do want to emphasize is, a number of panelists have talked about the planning process and how it all starts with the General Plan; over half of the jurisdictions in the State of California, over 500 local governments, their General Plans are over 10 years old. And a lot has happened in the last 10 years, including the decimation of their Planning Departments, which I'm sure Jennifer can speak to. There are a number of jurisdictions that may be down to one or less than one person in their planning steps, so how do we as a state encourage local governments under those conditions to update their General Plans to reflect both the need to implement and roll out renewable energy, but also to identify what are priority protection areas, what are the different resource areas that need to be avoided, or exploited? That will all take a lot of funding. And there aren't sources of funding for Planning.

MS. BARRETT: Yeah, Planning probably is more difficult, not only planning for local government, but, as Mike mentioned, the soft costs even for a housing project, it's really hard to get started to do the
preliminary planning that you need to get a project off
the ground. I just wanted to mention that Mike's idea
about the ombudsman is something we're trying in Sonoma
County, we've just hired an Ombudsman just for our County
agency to facilitate not just renewables, but all sorts
of development permits, and then we're also hiring one at
the Economic Development Board, so that we can have those
working in partnership to bring emerging businesses, new
businesses, to Sonoma County, and then work with our
Permitting Department to sort of facilitate that process,
just to get started.

MR. CRAFT: I wanted to pick up on sort of the
pre-planning. Recently here in the last month or so, the
Federal Government had done some pre-planning and
environmental review in Nevada, Arizona, Southern
California desert areas, and they were able to then
identify six areas where they then were able to lease out
those four energy projects. And so they avoid having a
company come in, having to go through those hurdles, and
multiple agencies' long lengthy review periods, not
knowing what the outcome is going to be, and by having
some pre-determined areas where you know that it's going
to be suitable to install your systems, and you've gone
through some preliminary level of environmental review,
you know that the hurdle is not going to be that high for
them.

MS. BARRETT: Renewable Energy Combining Zone.

MR. HART: I just gave a speech down in Puerto Rico and DOE had actually gone in there and they identified specific locations throughout the island where there were government facilities, closed facilities that were suitable for solar. They did all the calculations, did all the pre-permit work, and the crowd of solar developers that were in that meeting, it was almost comical there were so many of them there, all ready to go, and so Puerto Rico, as a result of a relatively small government initial investment, is going to reap an enormous benefit as far as solar on the ground.

MS. NEIDICH: Vernon, did you have any --

MR. HUNT: I don’t have any big comment, to keep going, but I think continuing to coordinate the various planning agencies, the idea of the ombudsman is a good concept, and also keeping in mind, I mean, looking at the Navy from -- our installations are like, you know, 10 different little municipalities, really, with very unique missions, but anyway -- in either case, looking for those mission compatibilities and ensuring that we're being good neighbors in how we're deploying technologies, but also as municipalities and local agencies are working, we're all working together to make sure we're
moving in the right direction, and identifying those
synergies where there's opportunities for both, for all
parties to kind of have a win win.

MS. NEIDICH: Okay, Question 3: How can EPIC
investments leverage current efforts rather than
duplicate them? In our current efforts, we have some
examples of the DOE SunShot Initiative and, once again,
the Model Ordinances, and then the Governor's Office of
Planning and Research, since we already have that
planning guide.

MR. CRAFT: Let me just give you an example.
As I mentioned, the Contra Costa Economic Partnership was
one of the Grantees for the SunShot Rooftop Solar
Challenge Project and that whole effort was to look at
permitting or streamlining the permit process for
residential and small commercial, and within a month of
being notified that we were one of the Awardees, we get a
call from OPR and OPR is off -- no offense here because I
think you guys have done a very good job and have
actually participated in this -- but OPR was involved in
doing basically the same thing. Then we also got a call
a little later from somebody at San Francisco City
College who had a DOE grant to start to train Building
Officials, and yet that was part of this DOE grant, so
you had different organizations with different funding
sources, doing different things, and yet they all need to be working together. So not only do you need an Ombudsman to help the contractors interface with planning agencies, but you need somebody to help coordinate these grants. And so I can see where OPR, Energy Commission, DOE, could all be working together and maybe with diverse sources of funding to help put together some -- whether they're training programs, or funding the Ombudsman, helping to fund the planning studies, but instead of looking at separate sources and working in silos, that we need to start working together.

MS. WINN: Yeah, Gary makes a good point there. I think we're seeing that even within the EPIC Program, itself, where the Utilities are doing Investment Plans and the CEC is doing an Investment Plan, and we've been having a lot of conversations, we've been having those conversations already about, you know, who is doing what, and then even among the three IOUs not wanted to duplicate efforts, so trying to talk about who might do what within the scope of that plan. So having some sort of -- kind of a central clearinghouse of who is doing what would be really helpful. I think that's part of the challenge, is we have so much information, it's so disbursed that having some centralized collection of it so that, again, it's kind of like with the permitting
information, so that you're not always starting at Ground Zero every time out, you have somewhere you can go to access what's already in play.

MR. HUNT: It's amazing how periodic communications amongst a variety of stakeholders can make all the difference in the world of moving things forward.

MR. HART: I would say go where the money is and I think that really summarizes what I think the EPIC Program could do. Again, there's a lot of money from building stuff, that's not really the problem; there's no money for planning stuff, not really, not at the early stage where you're sitting around scratching your head, going "we need some jobs here in this town." I mean, that's literally you've got one planner left, you've got a few City Councilmen saying, "We really need some jobs, what can we do?" Well, the first thing is you go out and you try to hire a consultant -- there's no money to hire a consultant, it costs a lot of money. You know, what are the planning hurdles that we're going to incur because, even a community one, or however you do it, has serious state issues and many many times in our experience so far, and talking to a lot of communities now, they turn away. When they reach that point, it's like, you know, this could be a couple hundred thousand dollars -- way beyond their resources. So I would
suggest what I had mentioned earlier, if you just figured on a quarter of a million dollars, that's just a number, $50 million, I saw that in the budget forecast such as an area that you guys could potentially invent, $50 million to 200 communities in California that could do the planning work on projects, rather than dumping it all into some great big projects or something like that -- 200 communities a year could actually have the planning done to the point where, if a community -- and, again, not a private developer, but a community -- working with the State, perhaps working with an Ombudsman, could reach the point of saying, "Okay, we know exactly what the planning pathway is, we know what the resource is, we have the location, we have everything put together, now put it out to bid." That means that the developer can move with confidence. They're coming in -- all the soft stuff has been done, it comes down to a financing question. There's a lot of money out there, it's ridiculous how much money is out there at zero percent interest, two percent interest. They can't get any use, they can't deploy their capital, but it's this quarter of a million dollar hurdle is what's blocking massive multi-billion dollar investments in our state, and I believe that money should not be a grant, I believe it should come back to the State. I believe every dollar should
come back to the state on these projects who are successful, even if a successful project only kicked back $1,000 a month, in 20 years, it's repaid, obviously I'd add interest. But the point is that whoever ends up building these projects is going to make money, and so have them pay it back, same with the Ombudsman, the developer can afford this, it's an avoided cost, have them pay for it. The State shouldn't be out of pocket for any of these programs.

MR. CRAFT: I wanted to pick up on a point that Mike made that I think is critical, and I've heard this comment over and over again from contractors, and it's the uncertainty of whether the project is going to get built. And they're willing to invest the money if there's some certainty to the process, so your points are well made.

MR. HART: Am I allowed to say an Amen about this? That's it right there.

MS. WINN: No, I mean, we saw the same thing in the early stages of renewables development, you know, we've set some really aggressive mandates and yet we hadn't really thought through the processes, and I think taking some of those lessons learned and how do we look at it going forward. I mean, when we think of interconnections, not just through the transmission
system, but to the distribution system, we used to have
like one 550 MW plant hooking up every six months, and
now suddenly, to get the same amount of energy and
capacity on the system, you've got 30 or 40 plants making
up that 50 MWs. So how do we take some of those lessons
learned and think about how we staff these initiatives,
how do we have the right people doing the right thing,
and not just think of those as an afterthought, that's
really important.

MS. BARRETT: Yeah, and both ends of the
process, I think you're talking about beginning planning
on the ground, various sites, and you're a System
Operator, and one of the things that we don't know when
you go through the process is if there's going to be any
capacity left by the time they get to the end of the line
and want to do the Connection Agreement. Figuring out
the capacity of the transmission system if you're going
to be feeding into the grid is a challenge that I've
heard over and over, and trying to identify where that
capacity is available. We know where it might be
available because we know where the transmission lines
are, but do we know where the gas lines are? Not really.
You know, there's issues with that, I know that the
Homeland Security and all that, but being able to plan
for where you could connect, to the gas system, too, for
we haven't been able to finance some of the permitted projects that we've done -- we've permitted a biofuels facility five years ago, never got financed, never got built, we just recently permitted a chicken manure digester plant that would produce a clean fuel, natural gas to power, our wastewater treatment plants would have a revenue source already tied to it, it has not yet been built, no financing, nobody willing to step in -- permitted and titled, ready to go. And so I'm not so sure that there's always funding available for some of these new emerging technologies, or for some reason they just aren't moving forward, you know, with the construction. Maybe there's a better technology, or maybe they have problems with other sites and their cash flow isn't working.

MR. HART: If you don't mind, I'll just jump in again. With our technology, we have conservatively 100 communities that want to buy Serial No. 2, and so the communities, as they should be, are very conservative and cautious with investing in new technologies, and so a lot of times the problem is that the innovative technology coming in doesn't necessarily have enough fielded experience, time out in the field, and so, while the technology looks beautiful, the pilot scale, or it makes tremendous sense on paper, the development community, the
people who actually pay for things, they want to see more
than one -- you know, at least one that they've got at
least a year of really solid record of how, at this
scale, has it worked. And the fact that it has permits
is nice and helpful, but they want to see something
that's been out there and done. And that's why I said we
have a huge backlog of people who want Serial No. 2, so
building this first one with the help of the Energy
Commission is going to be very very helpful next year.

MS. BARRETT: The demonstration projects would
be really a good thing.

MR. HART: That's what Bill was walking about
earlier as far as the Valley of Death, and that is,
between having -- I'll tell you something, this country
wastes so much money on research when what it should be
putting money into is development, because you come up
with all these great ideas that get shelved, and it's
like, "Oh, that's nice," but it's building the first
commercial system is the hardest thing in the world, you
get that first one proven, and you get the bugs knocked
out of it, and it's working, there is an endless list of
communities that could use the technology, could get the
permitting as you're saying, and there is an absolute
ocean of money sitting on the sidelines right now -- show
me a proven technology, show me a permit so you've
eliminated the governmental risk, then you could build
them all day long.

MS. WINN: Mike, I'm expecting we'll see you at
our workshop on August 16th, talking about the importance
of deployment projects.

MR. HART: I'm looking forward to it.

MR. HUNT: Real quick, I just wanted to echo
what Valerie had said about some of the lessons learned
we've had with distributed generation. I think that
there's a great opportunity. I don't know if this is an
EPIC investment or not, but an opportunity to capture
some of those lessons learned and help for the next wave
of technology deployment, the next wave of energy
investments, so that we're not as caught -- well, I guess
"unaware" is probably not the right word -- but we're not
playing as much catch up on the regulatory and permitting
side when the next round of technologies come. And as
folks start to focus more on things like micro grids and,
in the case of the Department of Defense starting to look
more at energy security and those opportunities, really
forward looking and using some of the lessons learned
from distributed generation deployment to really affect
how we do business.

MR. CALFEE: One quick point I'd make, on
leveraging the current efforts, there are a lot of great
programs out there that aren't being promoted to the extent that they could be. That's one point. The second point is, even with the great efforts of the Planning Directors Association, for example, there's a Model Ordinance out there, what do we do to make sure that it gets implemented in each of these different jurisdictions? And so -- for each jurisdiction, it's going to have to be customized to that local jurisdiction's needs, and that takes a bit of money to do.

MS. NEIDICH: All right, let's go ahead and move to Question 4: 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? I know in a previous hearing I overheard that, for just like a renewable energy overlay and associated environmental reviews, they may cost between $100,000 to $300,000, and take 18 to 24 months to complete. And I also heard permitting costs for developing of an online permitting portal could cost approximately $100,000, and can be developed in six to 12 months, so what --

MR. HUNT: Mike, you want to take this one?

MR. HART: I have obviously said a lot about this already, but I think one of the things to keep in
mind is that what I was talking about, about the 100
communities all wanting Serial No. 2, the cost of doing
permitting when you do Serial No. 3, 4, and 12, comes
down because a lot of the unknowns -- when you're doing
planning and permitting and such, it's not government
just wasting money, a lot of times they're very seriously
looking to make sure that there are no unknowns that are
going to come and bite us in the tail after you build
something, where there's some -- they're trying to make
sure that the public is protected. Well, you only have
to do that really one time on a lot of these issues. If
you know what the emissions profile is going to be, you
don't have to go figure it out again. And so, I believe
that the cost of permitting will go down as you come up
with sort of established technologies, you get them past
the Valley of Death, and particularly if you have --
again, I'm going to push for the Ombudsman -- where the
particular Ombudsman that's done this -- "yeah, I've done
six of this exact technology before, the next 10
communities, it's not going to cost that much money."
And so I believe the state can drive down the cost of
permitting tremendously by seeing the same technologies
repeated over and over again like they've done with
solar. Solar was a complete hash for years, every
community, their own crazy regulations, and with the
standardization and handbooks and such that have been
done, the state from a regulatory standpoint has made the
state attractive to solar. And I know a lot more can be
done, but that can happen with the waste energy
technologies, the things that we're talking about. So I
believe that's where you're going to see the opportunity
driving down the cost of permitting, so it won't cost as
much. And when I'm talking about the EPIC Program,
again, don't blow a whole lot of money, millions of
dollars, to one community with some giant project. A
quarter of a million bucks, what can you do for it? Come
up with a great project, make us smile.

         MR. HUNT: I think one area that's an

opportunity is along the lines of the transmission
planning and transmission constraints, a piece of that
looking at specific corridors could do those studies in
advance of developers coming in and looking at providing
those services. I think that I guess a combined approach
for those -- for the communities in the area, and the
other stakeholders that may be around and really looking
at the CAISO transmission plan and, say, all the
different planning studies, the "soft" work, to borrow
from Mike, a lot of the soft work and investing in that
upfront will help speed the deployment of these

         technologies.
MS. WINN: But I think, along with that, and I think sometimes we look at -- we're focusing really on little silos of the business, like we're talking about transmission planning and corridors there, we talk about electric generation, and that's when I go back to some of the more -- the science-based efforts that are in the Desert Renewable Energy Conservation Plan, where they're looking at what are the environmental issues across the area, and those findings can be used, then, in any infrastructure project, not just for energy, and so I think that getting a better understanding of what is in our state, and just generally talking about not just for energy, but for other big infrastructure projects, high speed rail, you know, how can we leverage that information and develop that base, that we can then take that information and apply it in different areas is really important.

MS. BARRETT: Yeah, I agree with that. I think, you know, back in the day one of my first energy projects was to try to do an energy element for Sonoma County back in 1981, and one of the things that you have to look at is how -- where are the resources that you really have available to you? You know, we were fortunate in Sonoma County, we were very rich in resources, we had one of the largest geothermal power
generating areas in the world, we have a coastline where wave energy is something of a possibility, we have some low grade wind, you know, not high enough to be a major electric power generator, but on a smaller scale, if we could find those technologies that can fit in the resource that we have, we can develop that. And one of the things that's really sort of under-utilized is the biofuels. Bioenergy is everywhere and it's not utilized enough, the transportation is the problem, but the distributed small scale modular idea is one of the things that, you know, we identified in '81 and we still haven't brought it to scale, or even had enough demonstration projects to look at that, and not just biofuels, but biochar, I mean, there's a lot of different bioenergy resources that you have to really go into your General Plan, study what the resources you have in your area, identify those, protect those, I mean, you don't want them to be paved over with buildings or whatever, you want to protect your resources, and then facilitate the policy initiatives, the zoning initiatives, the permitting, in advance.

I would say, for an overlay zone, $300,000 is probably a minimum. We spent $200,000 on our zoning update just to get energy facilities permitted in our zones, and we will spend $200,000 -- that was our
estimate, and we're on target. But to actually go out and look at sites, to do the heavy lifting and update, because it's an unknown, you know, we really don't know what we're looking at yet, it's going to cost more to start with. And it depends on the area that you're looking at, how diverse it is, or how many issues you have to deal with, and how large of an area and how many different technologies you really want to evaluate because each one has its own distinct footprint, is impacts that you have to evaluate. So I would say at the General Plan level is a good place to start, know what your resources are, know what are your constraints, what are your capabilities. Then do the more site-specific pre-planning effort, and then streamline your permitting. We're looking at permits by right up to 20 MW, for our renewable energy zone, you know, so strategically it's saying you could just do it here because we already know what the impacts are and we have a long list of standards.

MR. HART: That would be just -- in biomass terms, that's 200 tons of trash a day is 20 MW of electricity. So if you've got 200 tons of trash, you've got 20 MW you're throwing in a hole in the ground every day -- of clean energy.

MR. CALFEE: I would agree that the mapping is
critical, the mapping of the resource areas, the resources to protect, but also, then, once the mapping is done, get that data into a form that it can be shared, then with the local government who is doing their General Plan update. And data sharing is a real hurdle right now.

MS. NEIDICH: Let's go ahead and go to Question 5: If meritorious, how should EPIC measure ratepayer benefits for local planning and permitting assistance?

MS. WINN: Well, Mike might say "did they pay their grant back?"

MR. HART: I actually think that the repayment of a grant, I think, is something that, in this case that is important and that is a good measure, and that is the likelihood of it being paid back. I mean, if it's just a hail Mary, maybe not. But if a community is coming and saying, we have a resource, you know, of either a feedstock that could be converted to clean energy, whether that's fuels or electricity, it really doesn't make a difference, but that it's a benefit to the community, or a solar resource, or a wind resource, whatever it is that they want to pursue, there should be some reasonable likelihood it will succeed. But the threshold should be relatively low. The objective is to sail many ship, you know, launch many ships, let's see a
couple of hundred communities a year receive these awards and at least get them moving, and then there should be a likelihood that that money will come back to the state. I don't think this should be a gift.

MS. WINN: I think the other way that you can measure some of the benefits, we know something now about how long it takes to get through these processes, you know, the other metric is always did we shorten the time to get the permit, and then also, you know, for me the question is -- "and then did customer costs decline because of these streamlining processes?" Right now, what we see is, if the developers aren't sure about the longevity of the process, that they may just keep some of those early financial benefits of that streamlined process for themselves, and it won't result in reduced cost to customers, so there needs to be not only the time dimension, but also do the customers get the actual financial benefit.

MS. BARRETT: Competition, I think, is key in that arena. I hate to say that, but when you're talking about utilities or energy or anything, the price that they'll sell it for is the price they can get, you know, and if you don't have a lot of people competing for that, so maybe many ships is a good idea, they're not going to drop the price, you know, you're going to pay what the
MR. HART: I don't want to risk the wrath of PG&E in saying this, but lower price of energy isn't necessarily a good thing. I think that one of the good things about power prices going up the way they have has enabled a lot of alternative energies like solar to even have a chance. If you were based in, let's say, the rural southeast where your price per KW is about three cents, this doesn't have a chance, it's just not practical. And so I think having a relatively high price that is out there in the marketplace, but if you come up with a lot of alternative sources of energy, the community that creates it, again, that's why I would like to see the community creating that power source, the profit -- the margin that potentially is created there could go into the community's pockets. Every city and county I know in the State of California is hurting; this is a new source of revenue they could create and perhaps provide grid stability because it's distributed generation out on the edges. You know, a couple of megawatts here and there, I know it's a pain to put together, they'll pay for the interconnect studies, but again, when you put the power out there where the people are, it's better for the grid, generally.

MS. WINN: Yeah, and we're not going to get
into a DG discussion here because we've got a whole host of -- you know, we spent two days, I think, last summer down in L.A. talking about DG, but, yeah, there are a lot of safety issues and reliability issues, and voltage issues, that we're still learning a lot about as we add more DG to our system. And just generally, you know, as a buyer of energy, we're really more technology neutral. We're really looking for what's the lowest cost of energy for our customers. You know, there have been some initiatives the state has fostered like the 33 percent renewables where certainly we've seen declines in prices, you know, as that mandate has gotten rolled out. Some of that is not just because of the -- initially, it was much more of a seller's market and we were having to buy and pay tremendously high costs, but when you've seen the global downturn in the Solar market, I think that's certainly brought prices down a lot as the manufacturing capacity caught up, as well. So, I mean, when you factor in general supply and demand with some of these things, it's -- we're always looking at how can we get energy to our customers, the type of energy that they want at a reasonable cost.

       MR. HART: Please don't turn off my lights.

       (Laughing)

       MS. WINN: I don't have that switch, Mike, so...
MS. NEIDICH: Anyone else? Okay, I think right now it's actually a little early, but we'll go ahead and open up for public comment. We'll open it up for public comment for those who are in attendance, and please come up and state your name and organization.

MR. RAYMER: Thank you. I'm Bob Raymer, Technical Director with the California Building Industry Association. And I served on OPR's task force that just put together the Permitting Streamlining Guidebook. I guess as far as EPIC goes, I'd like to make the case to keep the momentum going, particularly with the OPR effort and with the Building Standards Commission's Building Code process.

Right now, you know, Chris mentioned the document is done, but the State has very little funding; right now, the private sector is passing the hat so that the League of Cities can make copies of this, both in hard copy and in CD form, and put a copy of this in the hands of each Chief Building Official in the 500 plus jurisdictions throughout the state. This is something that's going to have to go on for the long haul. With the downturn in the economy, we lost about 80 percent of our workforce in the Building Industry, we were devastated, from those levels that we saw in 2004 to 2005, but the exact same thing has happened to the City
and County Building Departments across the state. Just as the industry goes down, usually about a year to two years later, so follows the local government. And to give you an example, in a jurisdiction close to Chula Vista, down in the San Diego area, what used to be a 22-person Building Department is now a two-person Building Department. And one of those people is a transfer from Planning and Land Use, very knowledgeable in Planning and Land Use, has never worked with Building Codes before. So it's a problem. And to the extent that the State can help keep this information out there, keep it updated, and keep it in the hands of the people who can make greatest use of it, would be very helpful. And this is a very low cost item to do. This is not millions of dollars, this is not hundreds of thousands of dollars, we're talking about.

As Gary mentioned, the California Building Officials, the County Building Officials Association, and the Regional Council of Rural Counties are all three organizations all made up of members of the local jurisdiction who work and use this every day, who could effectively, if they got the resources for them, and we're talking thousands of dollars, not millions, they could make good use of this.

And moving on to the same thing, we don't want
to lose momentum with the Building Code process either. As Chris mentioned, as we went through this OPR effort, we've identified several dozen items that need to be tweaked with our State Building Code. The State is already moving on that, I believe there's about six of these items that we identified that will go before the Building Standards Commission's Building and Fire Advisory Committee on August 14th. Right now, there doesn't seem to be any opposition to this at all. I suspect it will probably be handily approved at the Building Standards Commission Adoption Hearing in December. Certainly the private sector and public sector are strong supporters, but there are still a couple dozen left. For example, if you're doing solar on top of a large commercial building, putting that solar array up there, on stilts of course, so you've got access to the underneath, is not creating a new floor, but unfortunately the Code wasn't ready for this and all of a sudden you've got soundproofing requirements, fireproofing requirements, and in a few odd cases, put a sprinkler system underneath the PV panel. The Code never envisioned all of this. And so California is moving a little bit faster than our National Codes, but to the extent that EPIC -- once again, at very low cost -- could keep this effort moving and get the job done, we'll have
another Code adoption cycle over the next 18 months period. I suspect after we get past the 45-day language in the fall, we'll start working on the next round of these, but they need resources. So, thank you.

MS. NEIDICH: Anyone else?

MR. GOODMAN: Hi, I'm Frank Goodman with San Diego Gas & Electric Company. I did want to support a couple thoughts that I heard up there, which I thought were good -- Ombudsman was one of them, and as an example, we had a wind turbine just installed on Harbor Island by a third party, they own it, we do not, but we're helping pay for a test program, and they had hired a consultant to claim to know all the ins and outs of working with the City of San Diego to get it permitted, and our test program, which we had budgeted for in 2010 is happening in 2012 because of a long litany of issues that I'll spare you the details on, but getting all the way down through electrical things, and then into weldments in the structure that the poor installer had to do, but safety first. So the Ombudsman could have maybe helped this company and pointed them, and be giving them an awareness of what to expect ahead of time, and how much time it might take, so generalize the point, that's just an example around a wind turbine, but I think in terms of a number of new technologies, that would be very
helpful, is knowing where to go. And it might even make
you decide to relocate the site or something like that.

And then the last related point is, in terms of
the utility side of the meter, EPRI has been an effective
ombudsman role for a number of things, like a recent
element, pulse reclosers, helping utilities understand
what a new product is about and sharing information among
the utilities to where new entry into the marketplace on
the utility side, a new buyer of the project can learn
from what the other utilities have already done.

MS. NEIDICH: Thanks, Frank. Anyone else?

MR. LONG: Noah Long from NRDC. Thanks for the
opportunity to give a little public comment. I found
this panel really useful and really appreciated all of
the comments, and I just wanted to add a couple of things
on a couple of the questions here. With regard to the
first question, I think universities are potential grant
seekers, particularly with regard to the DRECP process
that Valerie mentioned, I think there's definitely a dire
and immediate need for some new wildlife and
environmental resource data that could be used and,
certainly, if there is an interest in doing similar
projects in other parts of the state, building up that
data, doing the primary research in the first place of,
you know, where are the Golden Eagles, where are the
Condors going to fly, is there habitat at expense, and
also similarly with bats and their habitat and how they
use the aerial habitat, I think all of that will be
really important, so universities are likely on that
list.

I think State agencies, Department of Fish &
Game potentially is a potential applicant for grants and
should be considered, and nonprofits, as well. I work
for a nonprofit and we're probably not going to be a
grant seeker, but there are others that have done really
quite impressive studies of wildlife and natural
resources for the purposes of renewable energy siting
that I think would be good potential grantees.

I guess just a couple other thoughts in terms
of questions 2 and 3, and that is, you know there have
been pretty impressive efforts, both by OPR, DRECP, that
just recently finalized Solar Programmatic Environmental
Impact Statement on large scale planning, and I think the
effort going forward should really be focused on
continuing to rationalize planning efforts and
systematize planning efforts across counties so that the
counties are working together and not duplicating, so
developing a system of maintaining information from
previous applicants and the cumulative impacts, as was
mentioned by Jennifer and, I think Valerie, as well. So,
again, universities might be good storing places for that
information, and I can imagine that the Commission itself
could also play a role in that.

And I think in the same vein, I guess I would
just question a little bit whether the word
"streamlining" is the best word for this program, it's
not that there isn't sometime a need for changing
regulatory process to smooth them, but I think the role
of the EPIC Program is really developing information,
making sure that there is adequate data, and so the
siting and permitting can be done based on adequate
information of the needs of the infrastructure, the needs
of the resources, rather than focus on changing permit
structure, rather than a focus on, for example, CEQA
exemptions, and so forth. I think, as sometimes
permitting processes can seem overwhelming or unnecessary
to permit applicants, but often that's because there's
simply not enough information yet about a new technology,
or about a resource area, and if we have that information
available and we can share it across permit applicants,
then the existing permit structure may not be so onerous,
and I think that's really a great role for this program.
I'm trying to think if there were other questions I
wanted to respond to. I think that gets to the main
points, so thanks very much.
MS. NEIDICH: Thanks, Noah. Anyone else?

MS. WINN: So, Sherrill, I just -- I did want to remind people about the two Utility Investment Plan workshops that will be coming up, one that PG&E will be hosting is August 16th, and there's one in Southern California on August 17th. There was a notice that was sent out to people in the CPUC Service List, I'm not sure if people actually got that notice, so if you didn't and you need information, you can send me an email at Valerie.Winn@pge.com, but the workshop will be at the Pacific Energy Center, it's 851 Howard Street, and you can get driving directions there at www.pge.com/pec. So if you need anything else, just shoot an email. Thanks.

MS. NEIDICH: Thanks, Valerie. I think we did have another person with a comment.

MR. MCFEELY: David McFeely with SolarTech. We're a nonprofit trade association working on these kinds of issues, streamlining permitting, air connection, financing, insulation, workforce, which I'll be on the next panel in a bit. I wanted to speak to the first point there as far as other grants and agencies, and I too am running a Rooftop Solar Challenge Program along with Gary, and unfortunately these grant programs, and especially Federal grant programs, you know, they're usually a little bit on the underfunded side. We develop
a lot of really good things and working with Solar Sonoma County and San Francisco to develop permitting model, best practices, I just shipped off my first one from San Francisco -- City and County of San Francisco to the DOE last night. But then it's the outreach part, you know, once we've developed something like this, how do we get it out to the other communities that weren't individually involved in that particular project, and get it adopted statewide. And I think that's an area where EPIC might be able to help organizations such as Gary's or mine, that have been working on these DOE projects to be able to spend the next year more on the marketing and outreach, to get the word out that, you know, there are these kinds of programs, there are all these kinds of model best practices, and take a look at them, try them out in your community, as opposed to what this gentleman was saying, or maybe it was in the earlier panel, you know, a lot of this stuff gets developed and it goes on the shelf and collects dust, and I hate to see that happen. Thank you.

MS. NEIDICH: Thanks, David. Anyone else?

MR. HART: May I make one last plug?

MS. NEIDICH: Yes.

MR. HART: We're building our demonstration project at the Port of West Sacramento. We have 19 acres
there and we're building a 50,000 foot facility, room for lots of other projects and such that are going to go in there. But we're putting an 87,000 foot roof on it specifically to develop solar. We're going to have thousands of people a year coming in to see the technology that we're demonstrating in our waste energy technology, and we're looking for people that have got an innovative solar technology that they would like to demonstrate here in the Sacramento region, to go in with us on this roof, and we also have qualified for 1603 financing for the project, so there's a 30 percent kicker that the developer would be able to see in this. But we don't know, because the solar industry is something I see all the time, but I don't know a lot about it, and we'd like to find the right people that can suggest some innovative technology they'd like to show off here at the right place, there at the Port of West Sacramento, this innovative facility. So if somebody has got a great idea, we'd love to hear it.

MS. NEIDICH: Thanks, Mike. Is there anyone online? And then if you can go to the next slide, there's information on how to submit written comments coming up -- soon. Written comments are due by August 10th and I know Valerie brought up about when comments would be due for the Southern California workshop and
those will be due August 17th. And they would go to the same address. Anymore questions? No? Comments? Going, okay, I guess we're going to go ahead and adjourn. We do have another panel, Panel 3, on Workforce Development, and that will start at 1:30 in Hearing Room A, in this room right here. Thank you, everybody. And thanks to our panelists.

(Off the record at 12:00 p.m.)

(Back on the record at 1:30 p.m.)

MS. NEIDICH: We're going to go ahead and get started. This is Panel 3 of the Workforce Development to Accelerate Clean Technology Deployment. My name is Sherrill Neidich. I work here at the Energy Commission in the Renewable Energy Office. I want to welcome everyone here who is attending in person and by WebEx, and I also want to thank my panelists. We have assembled an excellent group of panelists with a wide range of knowledge in our workforce sector.

I'm going to have some opening comments. The purpose of this panel is to discuss workforce challenges that have been identified by stakeholders and the CPUC in the EPIC Proceeding. The Energy Commission will be developing its first triennial Investment Plan for the EPIC Phase 2 Final Decision, of which workforce development is a component of.
The EPIC Phase 2 Final Decision, a total of $15 million, is allocated annually, for market facilitation activities. And a portion of that funding will go towards assisting workforce efforts occurring across the state. Workforce development is a broad activity with a lot of investments taking place at the Federal, State and local level, and providing public investment into workforce development will complement these efforts. We are looking forward to receiving insight from our panelists today and solicit public input to develop specific investment initiatives.

Now we're going to go ahead with our panelists. If you can go ahead and take two to three minutes, or however long, just provide us your name and who you're affiliated with, and your role in the Clean Energy sector. And we'll start here with Barbara.

MS. HALSEY: Good afternoon. My name is Barbara Halsey, I'm with the California Workforce Association. The Association represents Workforce Investment Boards across the state, and we connect them to opportunities for work within sectors that are critical to California's economy.

My work in clean energy really was spurred when I had the pleasure of serving as the Executive Director of the California Workforce Investment Board, in the
Schwarzenegger Administration. At that point in time, we were looking into sector strategies and how we could spur connection to the Clean Energy sector. We were able, with the assistance of the Energy Commission, to develop a leveraged pool of investment that funded regional industry Clusters of Opportunity studies across the state. We had 10 funded teams at that point and all of them were working in some way or another, connected to the Clean Energy sector. So I'll stop there.

MR. LENNON: Good afternoon. I'm Mark Lennon, Deputy Secretary from the Department of Veterans Affairs. California has $1.93 million Veterans, that's far more than any other state in the nation. We're running at about 11 percent unemployment with our Veterans for ages 20 to 24, that's 42 percent unemployment for Veterans, that's a fairly startling number, I found it startling, as well. These are men and women that, in many instances, have fought for our country and they're coming out after four, five, six years in the Military, trained, disciplined, ready to go to work, and so the mission of our department is many, connecting Veterans to benefits and services is probably the best way to summarize that. When I say benefits and services, everything from compensation and disability claims, to helping them find employment, to obtaining healthcare, to obtaining
On the matter of employment, as far as the Clean Energy industry is concerned, I look at it more generally. It's an emerging industry and, with an emerging industry, you need to tap a disciplined, skilled workforce. Now, in many cases, Veterans will not come out of the Military specifically with those skills, but what they come out with is some course skills, whether it's Clean Energy or any other industry, are very attractive to employers, and that is discipline, experience leading teams, particularly at a very young age and level of experience, ability to problem solve in dynamic environments, so if you're Clean Energy or any other industry, those are some core skills sets that you want to hire. And California has a large pool of veterans that are coming back and ready to go to work, so that is one of the core focuses of our department.


MR. CALDWELL: I'm Jim Caldwell, Executive Director of Workforce Incubator. We're a nonprofit focused on bringing together industry, education and government agencies to develop the 21st Century workforce. A lot of experience with energy efficiency and the energy sector, Workforce Incubator is a consultant to the Smart Grid Center at Sacramento State.
We're working with Pacific Gas & Electric on their Energy Workforce Sector Strategy, which is an initiative that is, pursuant to the Workforce Education and Training Needs Assessment that was done by U.C. Berkeley and the CPUC, we've done a number of programs with SolarTech, which is my friend to the right here, we'll tell you about. Basically what we do is we look for areas where we think we can elevate the trajectory toward AB 32 goals, toward meeting AB 32 goals. So that's both a technical and economic approach to workforce development. We're very committed to linking workforce development to economic development and making sure we have that impact in whatever we do, and we're also committed to employability by design, so we work with industry to identify their high priority jobs. We reflect the skills requirement back into the student learning outcomes of the different programs that we work on, so that there can be pretty much a direct hit on what these employees are able to qualify for when it comes to the jobs that the Employers are looking for.

MS. NEIDICH: Thanks. Thanks, Jim. David?

MR. MCFEELY: Thank you very much. My name is David McFeely. I'm a Director with an organization called SolarTech, I'm Director of Grants and Industry Solutions. SolarTech is a nonprofit industry association
focused on solar PV. We're a membership driven organization, we have a number of companies such as PG&E, Southern California Edison, Sun Edison, Sun Power, whether you're a manufacturer, or a utility, or a City such as San Jose, we also have Workforce Investment Boards on our Board of Directors, and as member companies, so we have a pretty broad base of people interested in removing the hidden costs, or market barriers to the growth of the solar industry such as permitting, which was in the previous panel, utility interconnection, and installation best practices. We've worked on a lot of finance methods and methodologies in coming up with templates and processes that streamline financing.

And that brings me into workforce, being also an impediment to the growth of the solar industry; you can have the greatest technology on the loading dock, and if you don't have the right people to deploy it and get it out to the customer, sell the customer, install it, project management, whatever it takes, then the technology is just going to sit on the loading docks. So that's how also workforce is probably one of our six core initiatives.

I personally am finishing up a couple of grants, one that is actually related to the Energy Commission on
some other best practices, and then also a workforce
devlopment grant that I'll get into in a minute, but I'm
also the director of a Rooftop Challenge grant through
the DOE, along with the four other Rooftop Challenge
Awardees in the State of California, looking at
permitting an interconnection best practices.

So on the workforce side, we just finished up a
grant with the Secretary of Labor, State of California,
that we received in 2010 to look at some innovative
tings to develop a workforce in the renewable energy
sector. And fortunately, I was able to take a step back
and leverage some experience I have with HP and Agilent,
as a project manager, and say, "Well, how should we
approach workforce?" What if we approached it from the
employer's perspective, similar to what Jim was just
talking about, because training doesn't create jobs,
employers create jobs. And innovation creates what
employers do and, so, with the economic development
policies, the right policies, then innovation, that
creates businesses which then create jobs.

So let's go find out what the employers need and
what the employers are actually looking for in skill
sets. We've seen this mistake made before, we've been
involved in other grants and projects where it was really
fashionable to go out and develop a certain kind of
program, say, you know "Rooftop Installers," and you're training hoards and hoards of rooftop installers, and the jobs don't materialize as fast. So our goal is to align the right jobs with the right people at the right time, and not create such an oversupply in some areas, or an undersupply in other areas because we missed opportunities. So that came about as a program that we called the Solar Workforce Acceleration Method under our grant, which we called the SolarTech Innovation Workforce Collaborative. Too many acronyms, I even trip over them.

And probably the hallmark of this, again, what I said, was to look at the employer side, which I'll get into a little bit more later, but moreover, it was to constantly sample the employers, not to just do a once every annual or biannual survey of employers, but to create a strong constant dialogue with the employment community such that we also create buy-in for future employment, as well as the information that we need to guide Workforce Investment Boards, as well as Community Colleges, on what their training programs -- what would be best successful for them. So that's a little bit about me and SolarTech, and I'll turn it over to --

MS. NEIDICH: Thanks, David. Kurt?

MR. SCHUPARRA: Yeah, Kurt Schuparra with the Labor and Workforce Development Agency. Just very
briefly, the agency is kind of the parent of the Employment Development Department the Department of Industrial Relations, those are the big ones, and when I say big ones, just a lot of PYs and, obviously, we at the agency level look at all our entities equally, and that includes the Workforce Investment Board, and the Employment Training Panel, which I think are the two entities that are the most germane to what we're talking about today. And, you know, I can't help but just cite what David said a moment ago about training and just kind of "let's start a program," "let's get a bunch of people in there," and try to prepare them, give them a skill set, without really being mindful of just what is the demand for this skill out there.

Now, having said that, it's not always easy to predict what the demand is going to be, especially when you're in an economy as volatile as what we've seen in the last three, four years. But we need to do better, there's no doubt about it. And hopefully we're going to have the WIB reestablished in terms of new membership by, well, I'm not going to put a specific timeframe on this. And then we will also, I mean, the Green Collar Jobs Council, which was established in 2008 by -- it was through a bill that then speaker Fabian Nunez ran -- that is essentially like a subcommittee of the WIB, and we're
going to get that active again. But I think it is going
to be for the purpose of really trying to do smart
training, if you will, and really look at where the job
needs are because, frankly, we don't have the luxury of
doing -- of herding cattle and putting people into these
programs that may or may not end up with jobs. And let's
be honest about it, I mean, as David said, I mean, there
were some instances where this sort of thing happened,
understandable to a point because I think there was an
expectation at the time when the Green Collar Jobs
Council was established, for example, that there would be
a big wave of jobs, but that was of course right before
the Great Recession began and other factors that have
contributed to the volatility.

So I guess I would say that one of the things
we're doing at the agency, and one of the things that
we're going to do with the Workforce Investment Board is
look at this so-called middle skills job gap, so to
speak, it's not actually -- that's probably
inappropriately worded -- it's the projected lack of
workers to meet the middle skilled jobs over the next
decade, and there's been a fair amount of news recently
and it's not a new topic, I mean, back in 2008, 2009,
there were some projections of this shortage, but
ironically the bad economy may have kept some of the
older workers on a little longer than what they would have preferred otherwise. But we definitely have a shortage that we're going to be facing and so we have to figure out how we can best meet that and, you know, I think that that's going to be the primary task for the labor agency and the WIB, as well as the Employment Training Panel and the Green Collar Jobs Council, as we move forward.

MS. NEIDICH: Great. Thank you, Kurt. We're going to go ahead and go through some questions. The questions should be posted on the screen, they're also on the agenda. And I'm going to go ahead and just pose these questions. If anyone wants to jump in and answer them on the panel, that's fine, I'm not going to put any pressure on you to answer them.

The first question: Does the clean energy sector shape employee training programs? What partnerships exist between training programs and employers to promote job placement, apprenticeships, and externships?

MS. HALSEY: Okay, I'm sure you want some of us to respond so we're not just sitting up here (laughing). So let me take a stab at it from the workforce perspective. So when we're out there talking with local businesses about how they impact training programs, we do
know that they have impact both from the incumbent worker side and new entrants training side. The employers that we talk to are committed to ensuring that their workforce is prepared to support new technology, to use new equipment, to deal with customer perceptions, and businesses are working consistently to train people so that they're able to manage all of those three areas. We also know that they're reaching out to educational institutions to provide input on academic content and workplace expectations associated with the sector.

Another promising practice that we're seeing is business providing externships, or sabbatical opportunities for instructors at the high school and junior high level, as a way to get teachers familiar with industry standards within the industry, and then bring those skill sets back to the classroom. Given the fact that most high school counselors are busy trying to manage classroom discipline issues, or class schedule changes, what we're seeing is the teacher take a primary role in guiding students into career fields. So the more that we can connect with teachers and provide them with exposure to the industry, and then have them take that lens back to the classroom as they're looking at students and giving them advice on career pathways that they should be considering, and applying that same lens to
their existing curriculum, and making sure that their curriculum is contextualized to the standards of industry, it's another really great technique that industry is adopting and deploying.

In terms of partnership that exist between training programs and employers, we're seeing employers partnering with local colleges on training programs, and trying to influence the shape of those programs. They're sharing information about internships and jobs, as well as attending career events and information sessions that are held at the junior high, high school, and college level. They're participating in resume reviews and mock interviews in some instances, providing feedback to potential job candidates on the applicability of their skills sets and how their resume reads for entrance into the occupations or the job opportunities. And they're also offering tools and job shadowing opportunities to students so that they can understand day to day activities of someone who is engaged in Clean Energy, or the Energy field.

And then the last point that I wanted to make is that businesses are engaging with student groups on special projects, so if you have junior high or high school students that are preparing to do science for a project, we're often seeing businesses now reaching out
and saying, "Gosh, we'd love to be able to partner with you on that and add our expertise to the project team so that your project will be more representative of what's going on in current practice today, and it also gives the students the opportunity to engage with professionals within the career field.

MS. NEIDICH: Thanks, Barbara. Anyone else?

David.

MR. MCFEELY: Yeah, I've seen something similar with, I think, the larger companies, but my limited experience working on this program with more the new emerging companies, they don't have the bandwidth to really get out there, so they know they should, and they appreciate it when somebody like us shows up and talks to them about these kinds of things, and in some cases like with SMA America, which has an office just north of here, now they're partnering more closely with the local community colleges and Sac State because we went out and met with them and visited, and held a workshop in their area. But in general, you know, new emerging companies in this field don't have the bandwidth, they're trying to figure out if they're going to stay in business tomorrow, and they just really don't -- you know, intellectually they know they should do it, but they don't. And so I think it's going to take a lot of energy by certain
organizations working together, you know, we work very closely with the WIBs in Santa Clara County, and the community colleges in the Santa Clara County, and we also work with the Workforce Incubator to do that kind of outreach and sort of fill that role for them, but I think it's going to take a lot more effort around the state on the more emerging side of these different new industries.

MR. CALDWELL: I'd like to echo the energy required to build some of these employer relationships. I think, if you just look at it from a community college point of view, great employee relationships in terms of what's needed for the area served by that community college. What seems to be happening, though, is that there's a trend toward bigger pathways, regional pathways that might be, for example, the East Bay, you know, east of San Francisco, where a number of employers come together, for example, in the Regional Industry Cluster of Opportunity that Barbara's team initiated several years back, that's really important because most community colleges don't really have all of the tools to complete a pathway for a group of employers. And also, the CSU system, the U.C. system needs to be in that dialogue, as well. More recently, we're looking at statewide sectors like trying to organize -- it's not quite statewide, but Pacific, Gas & Electric, PGE, is
developing a strategy, convened some 40 employers along
with a number of other stakeholders, and are building a
sector strategy for energy efficiency in non-residential
buildings, and that sector is from Bakersfield to the
Oregon border. And so it's a very broad alliance of
stakeholders. We're getting good input from interviews
and so forth on some of the opportunities and some of the
barriers to growing that sector, and where workforce
development can fit in to address those barriers.

So I think that's the trend we're looking for,
is more of a statewide approach, looking at regions where
there are common interests, for example, in the regional
industry clusters, and applying that. And then, of
course, I think we're going to get this later, but having
some standard credentials that are based on industry
requirements reflected in student learning outcomes
within these pathways, and then some sort of a
credential, which could be a degree, it may be a
certificate, it could be something actually a little more
granular than that, that employers recognize and say,
"Oh, they now have this credential," no matter which
college it comes from, and the employers say, "That's
valuable to me, I'd like to consider that person for
employment."

MS. NEIDICH: Any other comments? Okay, we'll
Mr. McFeely: I was going to give the other two gentlemen a chance. I really support what Jim was just saying and maybe add a little bit different twist to it by having other third parties like, say, Workforce Incubator or myself, SolarTech, involved in the process. Sometimes we can add a different set of eyes to the problem, to get maybe a more complete picture as an advisory organization to both the workforce organizations and the community colleges. And so to kind of just give you an example from my own experience with my grant, you probably heard of this little company called Solyndra, and they were originally going to be a part of our grant, and something -- you know, from being in the industry, something about the whole thing told me that this was not a good idea, this was in 2010, and so I advised my other two partners, you know, they really shouldn't be involved in this grant. We went ahead, we got the grant, and we kept revisiting that issue throughout the remainder of 2010, and something just didn't seem right. They were telling us they were going to be able to employ 600 people, 600 people doing manufacturing -- being manufacturing techs? I don't see it, and I don't care how big your building is. As you know, by the end of 2010, the stories really starting hitting the paper, that
they were, you know, in deep yogurt. But by having somebody from the industry in that conversation with no other -- with kind of a neutral axe to grind, I think it helped advise the overall program not to go down a certain path that was going to be a disaster, and so I think organizations like Jim's or mine bring that kind of visibility into the conversation.

MS. NEIDICH: All right.

MR. SCHUPARRA: I'll just say very quickly that we have entities within the agency such as, well, the WIB, the Employment Training Panel, and the VA Apprenticeship Program that work quite well with the private sector. Could there be improvements in that? Well, I think there's always room for improvement, but we've had a good relationship, we've had some good results, we'd hoped to get better results as we move forward.

MS. NEIDICH: Jim.

MR. CALDWELL: Did you want to say something before I jump in? Because I want to talk about Veterans a little bit. The utilities in California had a meeting recently and talked about veterans as a source of employees, and so now I'm aware that there's some operations going on to translate the Enlisted Classified Manuals into occupational descriptions for some of the
utilities and a focus on actually enhancing that program and being a lot more focused on bringing veterans into jobs and developing training that can bridge the gap between whatever that military occupational classification said, and what the job requirements are for the utilities. So I think, you know, thinking about this 42 percent unemployment rate, and the kind of skills that the military imparts, it's a huge source of talent that and I think employers are starting to understand we need to tap into.

MR. LENNON: I'd just quickly add on to that, exactly right, you know, the 42 percent, that's a very willing workforce, and the biggest challenge that veterans face, or active duty service members as they're transitioning to become a veteran, is how to find that job, or how to get into that training pipeline. That's not something that comes intuitively to you when you're on active duty. And you mentioned translating essentially skills that you gain in the military and gaining certifications, or licensure, on the civilian side. I was just having a conversation with the military department about an hour and a half ago about this, and this is something that the Governor's Interagency Council on Veterans is going to be tackling, you know, agency by agency, board by board, what are those skill sets gained
in the military that can translate over into the civilian sector? If you are an electrician in the military and you've been an electrician in a combat zone, you should be that much further advanced towards gaining that license on the civilian side, and so that's something that we're going to be focusing on. And, again, I look at the Clean Energy industry as it's an industry where it can really benefit from having a ready workforce that's ready to get to work.

MS. NEIDICH: Great, thank you. We'll go ahead and go to Question 2. Significant investments are being made to develop a clean energy workforce. How can EPIC workforce development investments build upon these efforts? Does anyone want to jump in?

MS. HALSEY: Sure. So I think one of the things that we've long acknowledged in the workforce community is that there is no one entity that is so richly resourced that they can do all the work that needs to be done by themselves, so it is about the collective impact that we have together. It's one thing to collaborate on projects, but I think we're really beginning to see that there is a clear need for us to align our investment strategies for a higher level of impact.

So I would strongly encourage -- that is, if
you look at your investment portfolio over the course of the next three years, that you look for where has work already been done that you can build upon, where are gaps within that work that your funding could be used to, you know, put mortar in the chinks to shore up the structure that's already there, and then how do you take it to the next level? Where do you connect with organizations that may already be doing work that could be leveraged in order to accelerate the speed with which your investment can have effect?

So I want to talk just for a second about the Center for Energy Workforce Development. It's an organization that's been around since 2006, it was formed by the -- it was a utility initiated entity, it's a virtual entity that does real work. It has a membership of four of the major trade associations, energy related trade associations, and they've done a lot of good digging into all of the topics that we're talking about today -- Troops into Energy, they're very concerned about it, they know that, for our returning men and women, they need to understand how the skill sets that they've developed while they've been in the military can be applied to civilian occupations. They also, because they're working at the national level, have some gravitas when their voice is raised and can lend their voice to
the conversation around getting troops credit for prior work experience so that, if they do have to go into training programs, they can accelerate in those training programs rather than having to start at, you know, Electricity 101 if they've already been through it, they can start them at the 201 series.

But that means that we have to change some things about the way that colleges recognize prior learning. They're dealing with how you get the minority populations and underrepresented populations into these careers, they're looking at women in Energy, they have already done a lot of work around career pathways and stackable credentials.

They're already looking at ways to support companies and the industry-at-large in understanding the demand and the supply equation and keeping that equation in balance. And they've uncovered a lot of the stumbling blocks that, if we're not carefully aligning with people who have done some of this research ahead, we're going to stumble over again. So they're developing methodologies for measuring what you're demand is like and projecting out demand.

They're also developing toolkits for folks within the energy industry to take to their leadership because it has to be recognized first if you want to
understand what the impacts of your -- what the
demographic is of your current workforce, and how that
plays out over time, you have to have management support
to do that. And a lot of times when they're looking at
-- when a management eye is looking at workforce, they're
saying, "Gosh, we don't have a problem now," but what
they may not be paying attention to is what the scenario
looks like in five years or 10 years, so sometimes that
takes some support. So the Center for Energy Workforce
is also looking at that -- stackable credentials, how do
we identify those Tier 1, Tier 2 through Tier 6 skill
sets that can be built upon? What are the base level
skill sets that people need to come into Energy and then
how do we build on those skill sets that are required
within the Energy field and the clean energy field? So I
think they've done a lot of work. And we have good
examples of work that's gone on in California as a result
of previous investments that you've made, so taking all
of that learning and really laying it out on a table and
saying, "This is where we've made good progress, here is
another entity that we need to bring to the table so we
can understand and fine tune the investments that we're
making, here is work that's already been done." We don't
need to fund re-doing this work, what we need to fund is
what builds upon this work and takes us up to the next
level, so I would encourage you to look at the Center for Energy Workforce Development.  MS. NEIDICH: Thank you.

MR. SCHUPARRA: Well, Barbara covered a lot of ground there, so I'm going to try not to be redundant. But when Barbara was head of the WIB, the State WIB, she was, for lack of a better word, fortunate enough to have Stimulus funds to work with and that provided a good deal of money for a good deal of projects. And we know that there were some headaches with some of that money and so forth, that we need not get into, but that money for all practical purposes is gone, and so that's why I think, you know, in terms of should EPIC build upon earlier efforts? Yeah, I think that they should -- prudently. And I look at the landscape ahead and perhaps there are other ways that we need to go about it because we're not going to have the same resources.

And I guess, you know, one thing I would just want to bring to light here in terms of workforce needs, they could be -- actually, I don't want to couch this in a way that sounds like advocacy one way or the other -- but it's Prop. 39, otherwise known as the Sire Initiative that would make a change in state tax policy, which could yield as much as a billion dollars to the State's General Fund. The way the Initiative is written is, for the
first five years, half of that money, so let's just say it's probably a billion, and so it would be $500 million would go to green projects and a lot of it would be like retrofitting schools and things like that. I mean, $500 million is a lot of money, even in California, and for five years in a row, you know, that's $2.5 billion, that's going to create a major workforce demand, too, and that, I think you would argue, is a positive thing, but we could have a surge of demand that is quite pronounced, that will be upon us fairly soon. Now, as we know, large amounts of money take a fair amount of time to administer in a wise fashion, and I have no idea of there are timelines involved in terms of the dispensation of these funds, but I guess I would say that we welcome workforce development dollars from EPIC and we at the Labor and Workforce Development Agency are very willing partners, as we have been in the past with the Energy Commission and, to a lesser extent, the PUC, but we'd like to nurture that relationship, as well. Thanks.

MS. NEIDICH: Thank you, Kurt.

MR. CALDWELL: So just building on Barbara and Kurt's comments, I think the Stimulus dollars did an excellent job in kind of an R&D mode as to what kinds of courses can be developed and what sort of graduates come out of those, and what does employment look like, and so
forth, and I have some very specific thoughts about
investment that relate to continuing those and building
on them.

First of all, yes, we should do that.

Secondly, it turns out that a lot of these courses and
programs aren't sustainable over the long term, they
haven't been brought into the mainstream of the community
college, or other educational facility, and part of that
is because they don't have faculty. I mean, these are
new areas that are advancing very fast in emerging
technologies, and so there aren't a lot of faculty out
there that are prepared to teach these kinds of courses,
so I think an investment in, a) taking these courses
mainstream, b) professional development so that we can
have faculty who are capable of maintaining these courses
in the mainstream, and I think there's another factor
here is that we ought to look as SolarTech has done at
the full spectrum of jobs required for a particular
segment, or sector, such as renewables, or energy
efficiency in residential, or in energy efficiency in
non-residential, and so forth, and really look at the
jobs that are going to make a difference in terms of
growing that economy, and creating more jobs because we
find that you don't necessarily create jobs, depending on
the workers that you train, right? And so the idea is to
say, where is the best use of our resources from an
economic development point of view? And in terms of
raising that trajectory toward the AB 32 goals, and say,
what jobs are most affected and we're most able to
leverage to those ends? So those are three investment
areas I was thinking about, one is professional
development, another is mainstreaming these ARRA or
Stimulus funded programs, and the third is of course
really looking at the entire labor spectrum and
identifying those jobs where the training investment
ought to be made first, not that it should be limited,
but it should be made first.

MS. NEIDICH: Thank you very much, Jim. David.

MR. MCFEELY: Yeah, I wholeheartedly agree with
both Barbara and Jim, and you kind of stole some of my
thunder, so let me see if I can add something on top of
that, that's not repeating everything that they just
said. I guess, taking a step back and just kind of
looking at this from a neophyte point of view, because
I'm fairly new to this whole workforce area, what I've
observed over the last couple of years is different
entities put out grants, invest a lot of money, something
gets invented, looks really cool, the grant money runs
out, it goes on the shelf and collects dust. And
effectively, that's what's happening right now with our
SWIC Program. I suspect the same thing might happen with the panel previously where we're talking about the Rooftop grant from the DOE for permitting, I kind of have the feeling in the back of my mind that, come February, that's going to sunset, and so all these efforts that have been developed as far as that particular grant program will go on the shelf someplace and not get disseminated. So there's a lot of really good ideas out there already.

We felt so strongly about this SWIC Program and what we did with our Workforce Acceleration Method that, on a lot of our own time, we wrote several different white papers, and I've actually got one right here if you're interested, on the process, how it can be deployed, and also, more importantly, future funding proposals. And we're taking the position that this should also be kind of a public/private type of partnership that we need to get industry to get a little bit more skin into the game, but it also takes money upfront to do this and education and workforce development isn't something that necessarily most companies want to make an investment in, they'd rather go out and build a new factory. But we've got some ideas in a white paper that we just released that could involve the use of an endowment fund from some source, a
revolving line of credit, and I'm thinking along the lines of something similar to what the gentleman from Sierra was talking about earlier where this might be something that the Energy Commission could create a fund for, that could actually become a self-funding fund, like an endowment, or a revolving line of credit, to where it's not just you give it away and it's gone, but it could be something where the program, either through some kind of other industry participation, pays back into it as they build success with the workers that they're hiring. So we've got some white papers on that, I'd love to share them with you, with anybody else on the panel, to take a -- I recommend taking a strong look at that and see how we can move forward in that direction.

MS. NEIDICH: Thanks, David. We'll go ahead and move to Question 3: 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?

MR. MCFEELY: I'm going to be a nay sayer on part of this. It's sort of a qualified yes, I mean, information centers are always useful and helpful, and I think there are ways to do it right where it can be an information center. I think there was a comment made earlier today about communication, so I think the Energy
Commission can best help build infrastructure and build communication across different entities along the lines of what Barbara was saying earlier, as far as helping organizations collaborate together better, because none of us are going to have all the resources, all the tools, all the smarts. But if you're expecting employers to then go to this resource center and somehow connect themselves to employees, uh-uh, we tried that, it doesn't work, and we finally figured out that we had to build a very proactive outreach, basically I had to invent a recruiting organization within my organization, which I never ever want to have to do again. That's why recruiters are recruiters, they know what they're doing. I'd rather partner with them in the future. They love calling on the phone every day and banging on HR Manager to look at a resume. I don't think -- HR Managers don't have the time and the bandwidth to go to yet one more website outside of Craigslist and Monster and everything else. So I think, with some qualified yes's it's a good idea if you look at it more from an infrastructure perspective.

MR. LENNON: I tend to be a very big advocate of technology. I think the days of your brick and mortar information center are fairly well dusted. An interesting statistic, and I think it probably reflects
the general population, but 73 percent of veterans, they want to get online, not in line, to access benefits and services, among which are obviously employment. What better way, I think, for the Clean Energy industry, which is fairly leading edge, to provide perhaps information than virtually, using social media, using existing technology that's out there via the Web? So I imagine that this nascent workforce is going to want to get information via those means, and I think that's probably the more effective way to reach out to them.

MR. CALDWELL: I tend to -- I like aspects of this center. I think that, if I were designing it, I would make it a lot more proactive, it wouldn't be just an information repository and place where you can search and find things and get connected. I think that one of the things I would look at is how can the Energy Commission help structure the stakeholders in energy efficiency in this state because right now there are some attempts being made at structuring it, and those are working to one degree or another, but I think there's a big role to play for the Energy Commission to help facilitate the structuring of the energy efficiency ecosystem within California.

And one of the things I would include in this is actually the manufacturing and vendor community that
are associated with energy efficiency products and services because one of the things that you look at with an emerging market is that they're public subsidies that help the investment decision get easier for building owners, let's say, that want to deploy an energy efficiency solution. But over time, you want that subsidy to go away because you want the cost to be able to be borne, and without that, and for the business case to prove in.

In terms of people in California who manufacture energy efficiency products and services, and provide consulting, it's a huge -- I had the number at one point in time, I don't know how many companies there are like that anymore, how many employees they have, but I do know that the global market for energy efficiency products and services is $7 trillion by the year 2017, and I think California ought to be getting its unfair share of that market; in other words, earning income from the rest of the world to help bring prices down so that subsidies here in California can go away.

MR. SCHUPARRA: I would say, I mean, I think that would be okay for some funds to go for this purpose, I would want to make sure that we don't have redundant functions elsewhere. I mean, because everybody can go on Google and plug in California Green Economy and how many

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hits will you get? Over a million, I'd just betcha -- I kind of sound like Sarah Palin, and I don't want to say that. But, you know, I mean, for example the Green Collar Jobs Council I was looking at the Master Plan, which was approved last May; now, yes, that was in the first four months of the Brown Administration, but it's sort of a vestige now of the biggest incarnation, what is soon to be the biggest incarnation. And you had a lot of good things in there. But you know, we're thinking now about trying to make the focus a little sharper on job training, and less on nurturing the green economy, or whatever, because, boy, there's a lot of that going on out there, and you know, let's think of the one thing we can do best and focus on that, which is not to say we should be myopic and not be aware of what other entities are doing that could affect what the Council is doing, and likewise for other entities. But you know, we are in some leaner times here and so there is the how do you use your resources best factor, and so I would just say, you know, we need some element of this, but we just want to make sure it's not duplicative of something else that's out there because that obviously diminishes its value.

MS. HALSEY: My only comment would be, again, because the Center for Energy Workforce Development has done some of this work, I would really encourage you to
explore that interface and it may be that it's appropriate for investment and it may be that there's an appropriate California arm, but to the extent that you can leverage work that's already been done, and infrastructure that already exists, that's been acknowledged by industry trade associations, and industry partners already, if you can grab onto that and lift yourselves off of that momentum for whatever you decide to do with this investment prong, that would be where I would offer my guidance. I think there's already a good body of work that's been done and I think the decision on whether or not EPIC invests in that way is tied to the next -- the following questions about what kind of certification for a particular -- I mean, you build momentum if you tie into a nationally recognized, or nationally organized effort, and how does that then influence your conversations around certification for a particular careers, and how do you move information out about that and does it give -- again, does it give you a level of gravitas because you're connected to a national effort, as opposed to being a regional or a state effort? So I think that decision may be influenced by some of the other conversations.

MS. NEIDICH: Go ahead, David.

MR. MCFEELY: Something Barbara just said
caused me to think of something I wanted to say earlier, which maybe is another twist to look at this Center, sure, yeah, that's my fear, too, is you can go on Google and you can Google and you can come up with a million or a billion different green energy, clean energy, energy efficiency sites from XYZ types of organizations, public, private, you name it. Maybe one thing that EPIC could look at is how to aggregate that on a local level because, at the end of the day, I don't care, if I'm looking for a job, I don't care what's going on in Modoc County, I don't care what's going on in San Diego -- unless I want to move, you know, then that's a whole different story, but if I'm living in Santa Clara County, I want to know what's going on in Santa Clara County, and there's not very good aggregation or mapping systems that map this stuff out so that somebody, say like a veteran coming back and he wants to move back into the Bay Area, and he wants to see what are the job opportunities, or what are the educational opportunities in that geography versus Googling and getting the whole -- boom. So I think that would be an area where you might be able to partner with some of these other organizations and maybe take it down to very local connecting, that all jobs are local, everything is local, so if you could work with them to try to take it down to a local level, that would
be very useful.

MS. HALSEY: Great, and I would support that comment, David. I think that there are some existing structures, so if I'm a veteran and upon release I'm being told you can go to a one-stop career center and get help with job placement, then the connection you want to make is with the one-stop career center, so that the Energy Commission and EPIC aren't responsible for replicating the network that's already available, but there is a responsibility to inform that network so they're behaving appropriately when someone comes in and says, "I'd like to get into clean energy." So it is about sourcing that with the information they need, so that they can be informed advisors to consumers coming in seeking assistance.

MR. MCFEELY: And in the local colleges, to also know what's available, what isn't available, so they're not creating training for what two colleges next to them already provide, they can create training for something that is a missing element.

MS. HALSEY: Uh-huh.

MS. NEIDICH: We've already kind of went over question 4, but I'll just read it: Distributed PV and wind have industry recognized certifications, like NABCEP. What technologies would benefit from similar
MR. SCHUPARRA: There was a study that I think the -- I think it was done by the PUC, that was conducted by a U.C. Berkeley group of professors on the benefits potentially of certifying energy efficiency program work, and I met with the lead author of that study and she, I think, has met with Commissioner McAllister, too, and I think there's a good case to be made. At the same time, we want to make sure that whatever we do in the certification realm, that we don't create any unintended market barriers where you have a couple people come in to do something and I need two nails put into the wall, "Well, that's a different crew, I'm not certified for that," or something. I mean, obviously I'm using a somewhat absurd example, except it's happening in real life, I can attest to that. So, yeah, I think that energy efficiency would be one where right now I don't think there really are any certification standards, perhaps on some more sophisticated levels there are, but because as someone who is a Veteran of the electricity crisis, and I see a couple other people out in the audience who were veterans with me in the trenches, you know, we always said that the cheapest megawatt was the one that we never used, and I think there's some evidence that, despite the obvious value of efficiency efforts,
that some of them have not been executed real well and
that we could be getting a better bang for the buck.

MS. NEIDICH: Thanks. David.

MR. MCFEELY: Yeah, this is David speaking.

I'm also a little bit kind of on the fence and leery of
certifications, I mean, I'm also -- I've participated in
a lot of NABCEP activities, I helped design their
certification standard for sales and technical marketing,
but you know, certifications are also something that
could be a double-edged sword and be used as a gatekeeper
to get people from -- to keep people from entering the
market, as well as helping people to get into the market,
so I think we need to be careful along those lines.
Having said that, even in the PV world, I think there's
still an opportunity for some certifications, so I'll
just speak from within that world because I'm more
familiar with that, and one of the things that we've been
kicking around for a while is a certification for power
engineers, and this would kind of go along with the
career ladder thing, which I'm also a big fan and
supporter of, you know, having small steps to where
people can have onramps to get into a particular industry
and then move up with that industry by taking additional
programs, curricular classes. But one of the classes
that we did put together, and then had to kind of back
off from doing additional cohorts was a solar PV design class, an engineering class for a commercial scale building. And the roadblock that we ran into was that most of the people, you know, we could teach them how to design a high power solar system, but they're probably not going to get a job because they're missing one important element in their resume, and that's a PE license. So I don't want to get into the legal ramifications of all of that, but if there was a way that they could have gotten some other kind of certification, some other kind of testing that would have been legally as equivalent for that particular niche industry, we could have put another 25 people to work in the larger commercial solar companies. As it was, we had to close that program, that particular class down, because here's a barrier to entry. And I've talked with actually the director of NABCEP about that kind of thing and he's, you know, running around the country with a proposal and all he needs is a cool little $200,000 to get started and he can put together a certification program for Power Engineering for solar specific, but you know, it's a hard thing for him to get manufacturers to pony up for that right now because of the way the economy is, and we have to keep in mind that we are in a pretty sick economy.

MR. CALDWELL: Yeah, I'm kind of mixed a little
bit, too. The Workforce Incubator helped create a
Master's level certificate program at one of the CSU
campuses and it was based on employer input and we had
lots and lots of certifications to choose from, and this
is an engineering curriculum, so it's the more
sophisticated, Kurt, that you're talking about, we could
have chosen LEED or ASHRAE, or any AEE Standards, and the
employers didn't really want that. They said, "We're
willing to hire people who don't have that level of
credential, but what we do want," and I'm going to go
back to this same theme, "...is that we have things that we
want these employees to be able to do when we hire them
and we want you to teach them to do those, and so we'd
like those to be your student learning outcomes, and if
those are the student learning outcomes, then we will
recognize this certificate." And so the Advisory Council
for that program, it was a four course, one-year program,
agreed and so now that's recognized by about 30
employers, which is a good start, but it's not everything
that it needs to be, it needs to be recognized statewide,
implemented in other universities, because the demand is
not just, you know, within the service area of that
university.

The other thing that we learned was that many
of the people who came into that class -- this was for
dislocated workers, to help them repurpose their careers
to get into energy efficiency -- so the prerequisites
were that they had to have either a Bachelor's Degree or
higher in either engineering or physical sciences because
we found that they would have probably 90+ percent of the
skills that were already needed to complete this
workforce program, and we were surprised at the talent
that was out there. We went to Work to Future and the
Workforce Investment Board in San Jose, and we found that
there were 3,500 applicants in their database that met
those criteria, which was completely shocking to me,
completely shocking to me. But the thing that I took
away from that was you can get a certificate that's
recognized by industry, but that's a great tool for
employability.

The other is that, what we also learned, is
that some of the requirements didn't really need a one-
year certificate program, you could be a lot more
granular, and I know from Center for Energy Workforce
Development, you've heard this term "badges" or micro-
credentials," where a student learning outcomes becomes a
credential that's recognized by industry, and it could be
a course, it could be a module, or a group of modules,
that are specific to the employer's needs. So I think
that there needs to be investment in pursuing those kinds
of employer credentialing programs, that put people back to work right away. I mean, 3,500 people could have gotten into that class and you put 16 in the class, you know, 16. Another example of needing to sustain, that was ARRA funded, well, it was actually your Green Innovation Challenge Grant, and you know, we're starting another cohort of that, but I mean, 16 at a time, it takes a long time to get to 3,500.

MS. NEIDICH: Thank you very much. Let's go ahead and go to Question 5: How should EPIC measure ratepayer benefits for workforce development?

MR. CALDWELL: Well, this is hard. I mean, I would like for the measurements to be things like, you know, how much did you impact the trajectory and progress toward AB 32 goals? And what is the economic impact? I don't know that those are realistic, but if there's some representative metrics that could be used that kind of help us align with that, that would be good.

MR. MCFEELY: Yeah, when I was noodling on this earlier, I wrote down economic development in the local region, you know, how did the investment lead to job placement, which led to a paycheck, which led to cutting consumer spending, which leads to the growth in the local GDP and tax revenue. And that should be pretty easy to quantify.
MS. HALSEY: Yeah, I looked at it and I thought it was an algebraic equation, so I just stayed away. It involved higher math. (Laughing) No, actually, I did talk with some folks in industry and their comments were around speed of adoption, so how are -- how are the customers -- how are businesses actively engaging to drive customer demand? What's happening, and how are these investments actually driving customer demand? Which I think goes back to, you know, do you see your return on investment? Where is that return on investment being identified in the local economy? So --

MR. MCFEELY: I think you're adding a time element to it, you see, I think that's very important too, so it's not, okay, did we increase the GDP this year, or five years from now? I think we need it this year, so I think a time element would be very important, so how did you say -- the speed of adoption or acceleration of the market, you know, how fast can these companies grow with your assistance?

MS. HARLEY: Uh-huh.

MR. SCHUPARRA: Yeah, I would just say that there's -- I generally agree with everything that's been said here and, first of all, there's a direct nexus, these are ratepayer funds that are being used for energy purposes, so it's not like somebody is using them to fund
something totally unrelated. There's also, I mean, we
certainly have precedent for the fact that these are in
many ways going to be indirect benefits, but we already
have a major program with the solar on rooftops where
obviously the direct beneficiary is the homeowner, or
such that puts a system on his or her roof, and says,
"Okay, I'm going to reduce my -- I'm going to get my
money back and reduce my bills," and so forth. And of
course, the corollary to that is that, even though I
don't have solar on my rooftop, because this is going to
help shave the cost of energy at peak overall, I'm going
to be an indirect beneficiary of that. And I think,
generally speaking, the same thing applies here. There
are going to be some ratepayer beneficiaries who are
going to be primary and some who will be secondary, but I
just think people want to know how their money is spent
and that's well accounted for. And I would -- I don't
think we need to labor over coming up with the algebraic
equation that Barbara so fears, along with me, and
perhaps others at this table.

MS. NEIDICH: Well, thank you very much for
answering our questions. We're going to open this up for
public comment, so anyone who wants to come up to the
podium and speak, please do so, and if you do, please
state your name and your company you're associated with.
MS. HALPERN-FINNERTY: Hi. I'm Jessie Halpern-Finnerty and I'm with the Don Vial Center on Employment in the Green Economy at U.C. Berkeley. So we completed the Needs Assessment Report for the Public Utilities Commission on Workforce Education and Training that Kurt and Jim mentioned earlier. And, you know, one of the key findings of it was the implementation of California's energy agenda, and deploying these new technologies successfully is going to really require supporting a market that has demand for a skilled and professionalized labor force, so that's a lot of what we've been talking about today. And I'm happy to be here, to be part of this discussion, and we want to encourage a really dedicated focus on strategic workforce planning and innovation, and labor market analysis for this.

So one way that we might -- that we suggest doing this, specifically thinking about alignment and a lot of things we talked about today, would be to have a panel of workforce experts to advise EPIC on a dedicated portion of the portfolio for workforce analysis and planning, and this panel could advise -- sort of direct the portfolio and issue RFPs on workforce topic, which could include research or demonstration projects, so we think that the California Labor and Workforce Development Agency, Division of Apprenticeship Standards, ETP, the
California Workforce Investment Board, could be involved in this and it would draw on their expertise in workforce planning and address some of the problems that have been raised today in terms of aligning workforce efforts in this area, and really building off of the existing resources that we have.

And the focus of this group specifically within EPIC should really be tackling strategic problems that impede market growth for innovative technologies, and the green economy generally such as poor installation, you know, lack of this -- lack of specific skills for technicians who are otherwise trained in the broad array, so a great example of this is apprenticeship and one of the key recommendations of the Needs Assessment was to make use of the State Certified Apprenticeship System, and build off of that infrastructure to supplement and sort of fill the gaps needed and really expand the Clean Energy Economy. So, thank you.

MS. NEIDICH: Thank you, Jessie. Anyone else want to make any comments?

MR. GALICER: I'm Harold Galicer, the Technology Director of the California Smart Grid Center. We're a PIER Program and also the coordinator of an initiative funded by the California Energy Commission and the Department of Energy and Workforce Development in

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Smart Grid. I'd like to sort of add a little different perspective than what we've heard this afternoon. I've been working with the California Utilities and trying to figure out how Smart Grid and workforce development fit hand in hand together. What we've realized is that there's not a linear traditional relationship in terms of jobs created and the needs for those jobs. The other non-linear relationship that we've seen is there's not a direct connect between our existing both community college and educational system and the specific skills that are going to be needed for the workforce of the future. The last piece that we've seen is a sort of challenge, I think, for our traditional workforce development system is the nature of the workforce that's coming in right now, and the nature of the workforce that we're seeing in terms of having a major wave of retirement is entirely different. The skills that are going to be required, the kinds of people that are coming into the workforce, the people that are going out, are very discouraged and disconnected.

Given this context and our initial findings, and we are releasing a strategy document to get together with the utilities on an effort that we think will answer some of these disparate needs and would really encourage the formation of an EPIC approach that's radically
different than what's happened in the past, and just to
give you a hint of the vision that we have for this,
traditionally I think we've seen historically as we've
moved forward in our PIER Program that there have been
various silos and approaches for energy in terms of
energy efficiency, in terms of building demand side
management, in terms of transmission and distribution,
the challenges of Smart Grid and the deployment plans
that are being enacted by the Utilities now really
require a crosscutting approach. A crosscutting approach
is not in terms of analyzing specific skill sets, but
realizing that the workforce of the future is going to
need integrated skills sets that are not going to be able
to be delivered with traditional curriculum in classroom
type of approach. Given that, what our approach is
looking at is more online and embedded curriculum that
people can access, and also much more of a modular
Department of Energy and Department of Education, call
this a badge approach, where workforce enables human
resources people, or utilities can basically take small
pieces of information, convey them to people online, and
basically supplement people's existing skills sets going
forward. And I would really encourage EPIC to take a
look at an alternative approach to the traditional silos
that have happened in the past, and get on board to what
we can say is going to be enabling a workforce
development approach that targets specific pieces of
information, uses more technologies, and works hand in
hand with the utilities and utility supply chain that are
going to have to deploy technology in the future. And
it's going to take a radically different approach, that's
about the least I can say, in terms of what's happened in
the past and we're very interested to be part of the team
working forward with the CEC on our grant, and to
continue to support you in adopting a different approach.
Thank you.

MS. NEIDICH: Thank you very much. Anyone else
who would like to make a comment? Is there anyone on the
WebEx? No? I'm sorry, David?

MR. MCFEELY: I have a follow-on comment to
that if that's appropriate.

MS. NEIDICH: Sure, yes, go ahead.

MR. MCFEELY: The gentleman reminded me of
three anecdotal experiences that we had doing our SWIC
program which I think illustrates the workforce
development conundrum that we all face. So, for example,
we would go out and we would interview different
companies and we'd spend half a day with them trying to
understand what makes them tick, what are they looking
for, they would host us and so forth. So, for example,
the first one that he reminded me of was our experience
with eMeter, which is working in the Smart Grid sector,
they've been acquired by Siemens, so we went out and
figured, well, okay, these guys are going to tell us, you
know, some kind of interesting curriculum in the Smart
Meter world that we can develop in the local community
college, Foothill, De Anza, you name it. Their number
one issue, the thing that they were looking for and
needed most urgently, that they could not find on the
open market, was Java Programmers. They didn't need any
specialized energy training, they didn't need anything
specialized related to that whole eMeter -- I mean, we
could have put together a whole eMeter, Smart Meter
curriculum, that wasn't their interest. They could not
get Java programmers, which every community college in
the nation probably has at least three Java classes, but
they couldn't get people through that, so it's a
completely different problem that we would have been
solving.

The other one was Sungevity, they're also a
member of SolarTech, they hosted us up there for, again,
half a day, we had actually a lot of people from EDD also
join us on these visits. The one thing that they said
they really needed more than anything else were people
who could do the financial calculations, who understand
the underlying finance, so maybe just a Finance 101 in solar or energy efficiency, or anything along those lines, would have been sufficient to get somebody over the hump, at least to the next interview, and that's all you can hope to achieve. And one of the others, oddly enough, that we had the most success with on the solar side, was AutoCAD. We had people who, if they knew AutoCAD, which is a drawing program that they all use to draw different solar layouts, they'd get sucked up in a heartbeat. But you didn't have to teach them about solar, we didn't have to teach them anything else, so these are like basic skills repositioned into a new market in the right way, that are already off the shelf curricula, that that particular employer is looking for, that they can't find. And so it's somehow making those kinds of connections might be a better use of money than coming up with a lot of different -- now, we also did very specialized programs and I'm surprised you didn't talk about the one that we were -- you know, that we were very successful. But it isn't always some specialized program that needs to be developed, sometimes it's just repositioning existing basic stuff that's already being taught.

MR. SCHUPARRA: Yeah, and I guess I'd just add to that by saying that, you know, we work closely with
the community colleges because, I mean, as much as we are
the workforce agency for the State of California, you
know, the middle skill jobs that I mentioned before are
really more in our wheelhouse than the programming
ingineers and things of that sort, which are in the realm
of higher education and generally our involvement with
that sector of the workforce is a little more tangential
than critical. But I would just say that, in the
community colleges, I mean, one of the problems is that
what David is talking about, these are -- I probably
won't call them general skills, but there's nothing
extraordinary about them, but we've got to do better in
terms of the amount of time it's taking students who
enroll in community colleges to get a certificate for a
two-year degree because the numbers are abysmal. And,
you know, that's a little tangential to what we're
talking about here, but it's an issue, so it's -- you
know, it's something that -- and to the credit of the
community colleges, too, I just saw where they did
something, the governing board, serious students will get
greater preference in terms of getting courses, and I
applaud that because I think, in part, what David is
talking about here is, despite the three Java courses
that may be offered by any given school, they're not
producing that many people who are well versed enough to
meet our workforce needs.

MS. NEIDICH: Thank you. If there's no further comments, we have the next screen that has the information on if anyone wants to submit some written comments, and those are due for Friday, I'm sorry, August 10th, which is next Friday, and there's information, the address, and the Docket number. And if there's nothing else, I want to thank the panelists, you were wonderful, and thank everybody for coming, and we'll go ahead and -- oh, I'm sorry, Laurie.

MS. TEN HOPE: I want to make sure we open the floor for any public comments related to the two days of workshops, so I join Sherrill in thanking this panel and the previous two panels were fabulous. Just make sure that if there is anyone here on the room or on the phone that has a question or a comment regarding the two-day workshop, raise your hand, step forward. Come on up. Do we have anyone online while we're waiting. Okay.

MR. GALICER: I'm Harold Galicer, the Technology Director for the California Smart Grid Center. One aspect, and I think I hinted at it before, but I just want to be a little more clear in terms of as EPIC moves forward. One of the lessons learned from working on Smart Grid for, I think it's about five years now, is that Smart Grid is a challenge and an opportunity, and I
think it's going to be a great boom for the economy, but
one of the things we've learned in working with the
regulatory agencies is it's very much of a crosscutting
type of approach, and you'll see that across the
deployment plans that the utilities are putting forward.
And the concern that I have is that, as EPIC moves
forward that it's able to deploy and basically empower
research projects that are crosscutting also, that span
the different realms and silos, and topics that EPIC is
trying to deal with, in that certain embedded topics like
workforce development and cyber security are able to be
housed within EPIC, that don't fit into the traditional
paths or patterns that have been laid out in the
workshop, and so I think that's going to be the challenge
going forward in this. Thank you.

MS. TEN HOPE: Thank you. Other comments? As
Sherrill said, we welcome your written comments by August
10th, but I would also realistically until August 17th
because we have a similar workshop in Southern
California, and their timeframe is the 17th. What are
you signaling me, Tony? Did we have a comment? I'm
sorry, I didn't see your hand.

MR. MCFEELY: I would just suggest that -- I
doubt if there's many employers in the room here, at
least especially for this panel, so to the extent that I
think you can get more employers in this dialogue, I think it would benefit you tremendously.

MS. TEN HOPE: So let me just summarize, in terms of written comments, you know, general comments are welcome, but what is particularly helpful is to return to the questions that were asked. They're in the agenda, they're online. Yesterday we focused on research initiatives broadly across an entire research continuum, and those included particular buckets, as well as crosscutting initiatives. If you have specific ideas on what initiatives should be included in this program, what the funding levels should be, what the benefits of those are, those will be most welcome. If you reflect on the questions that were asked today in terms of innovation clusters, permitting, and workforce development, we would welcome your submitted comments, as well. They'll be posted for other people's thought and consideration, as well, so thank you very much and really appreciate everyone taking their time today to participate. We are adjourned.

(Adjourned at 2:51 p.m.)