

BEFORE THE  
CALIFORNIA ENERGY COMMISSION

<b>DOCKET</b>	
<b>11-IEP-1A</b>	
DATE	March 14 2011
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In the Matter of: )  
)  
National Center for the Clean ) Docket No. 11-IEP-1A  
Energy Workforce )  
\_\_\_\_\_ )

**Staff Workshop**

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

MONDAY, MARCH 14, 2011

10:06 A.M.

Reported by:  
Peter Petty

Commissioners (and their advisors) Present (\*Via Phone)

Robert Weisenmiller PhD, Chair and Presiding Member, IEPR  
Committee  
Eileen Allen, Advisor to Robert Weisenmiller  
Karen Douglas, Associate Member, IEPR Committee  
Paul Feist, Advisor to Karen Douglas

Staff Present:

Suzanne Korosec, IEPR Lead  
Panama Bartholomy  
Chris Graillat  
Michael Gravely

**Also Present (\* Via WebEx)**

Presenters

Carol Zabin, PhD, UC Berkeley Labor Center  
Benjamin Goldstein, US Department of Energy  
Edward Londergan, Northeast Energy Efficiency  
Kevin Doyle, New England Clean Energy Council  
Phillip Jordan, Green LMI  
Tim Rainey, California Labor Federation  
Van Ton-Quinlivan, Pacific Gas &E, Energy and Utility  
Workforce Consortium  
Diarmuid O'Connell, Tesla Motors  
Kia Walker, SolarCity  
Tiger Adolf, Building Performance Institute  
Elizabeth Ambos, CSU System  
Dr. Emir Macari, California State University, Sacramento  
Leticia Barajas, Los Angeles Trade Technical College  
Karen Shores, CA Dept. of Education  
Chris Benner, UC Berkeley

Public

\*Mark Kindelberger  
Edward Stockton, Hydrogen Technologies, Inc.  
Eric Emblem, Western States Council, SMWIA  
Peter Cooper, CA Labor Federation  
Jeremy Smith, State Building and Construction Trades Council  
of California  
Brian Ehlers, CA Environmental Protection Agency  
Emily Gordon, Green for All  
Louise Auerhahn  
Harold Galicer, CSUS  
Jim McNamee, Carpenters Training Committee for Northern

California  
Kelly Lynch-McMahon, Green Science Academy

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P R O C E E D I N G S

MARCH 14, 2011

10:06 a.m.

CHAIRMAN WEISENMILLER: Good morning. We'd like to begin the IEPR workshop. It's a committee workshop on the National Center for Clean Energy Workforce. Welcome. We're looking forward to a very productive day on this issue. Obviously, I think the Clean Energy Workforce Issues are issues that are important to this Commission and we're glad to have the opportunity for IEPR to take up this issue.

CHAIRMAN DOUGLAS: I'll keep my opening comments brief as well. I'd like to welcome everybody here to the Energy Commission to this workshop. It's a very important topic to us and we'll look forward to hearing from our panelists and from stakeholders on this issue. Thank you.

MS. KOROSEC: Alright, Good morning everyone. I'm Suzanne Korosec. I manage the Energy Commissions Integrated Energy Policy Report Unit. Before we get started, I just wanted to cover some housekeeping items and also give a very brief overview of how this effort fits into the 2011 IEPR proceeding. For those of you who may not have been here before, restrooms are out the double doors and to your left. We do have a snack room on the second floor at the top of the

1 stairs under the white awning. And, if there's an  
2 emergency and we need to evacuate the building, please  
3 follow the staff out of the building to the park,  
4 kitty corner to the building and wait there for the  
5 all-clear signal.

6 Today's workshop is being broadcast through  
7 our WebEx conferencing system and parties need to be  
8 aware that you are being recorded. We'll make a  
9 recording available on our website within a couple of  
10 days of the workshop and we'll also have a written  
11 transcript available within about two weeks. The  
12 energy commission 2010's IEPR update, which was  
13 adopted in December of last year, focused on the  
14 contribution of federal stimulus funding to  
15 California's clean energy economy. The first of the  
16 Energy Commission's ARRA, or American Reinvestment  
17 Act, of 2009 funded programs to be rolled out was the  
18 clean energy workforce training program, which was  
19 established to help meet the workforce needs of the  
20 clean energy economy.

21 California has very aggressive goals  
22 for energy efficiency, for renewable energy, for clean  
23 transportation fuels and vehicles and with the  
24 addition of ARRA funding to the mix, it's crucial that  
25 we develop a skilled workforce that's going to be

1 needed to fill the new jobs being created by ARRA-  
2 funded energy projects, and, to implement California's  
3 energy programs at the skill needed to achieve our  
4 ambitious energy goals.

5           The 2010 IEPR update referenced  
6 researched sponsored by the public interest energy  
7 research program, working with California Workforce  
8 Development agencies to determine what companies need  
9 to do to ensure that they have the qualified workers  
10 for clean tech and clean energy jobs. That researched  
11 indicated the need for 4-6 regional, national centers  
12 for the clean energy workforce and California  
13 workforce agencies indicated a desire for California  
14 to take a leadership role and form the first such  
15 center. In the 2011 IEPR, one of the energy  
16 commission's priorities is developing strategies to  
17 support the achievement of the goals in Governor  
18 Brown's clean energy jobs plan, which among other  
19 things includes establishing a plan and timeline to  
20 make new homes and buildings zero net energy, along  
21 with adding 20,000 megawatts of new renewable  
22 generating capacity in California. Because having a  
23 well trained workforce will be crucial to achieve  
24 these goals.

25           Today's discussions will feed into

1 development of the strategies needed to support  
2 California's workforce development needs. Our agenda  
3 today will begin with a presentation by Panama  
4 Bartholomy, who's the Deputy Director of our Energy  
5 Efficiency and Renewable Energy Division. They'll  
6 provide some context for the workshop, followed by a  
7 presentation on the feasibility study for the National  
8 Workforce Center that was prepared for the energy  
9 commission by the regents of the University of  
10 California. We'll then move to our first panel, which  
11 is on current issues in clean energy workforce  
12 training; followed by a second panel on industry and  
13 education perspectives. To make sure we have time for  
14 both panels before lunch, we will take questions only  
15 from Commissioners during and after each panel and ask  
16 that other parties save your questions for the public  
17 comment period of the workshop, which is later on in  
18 the day. We'll then take an hour break for lunch and  
19 return to discuss an action plan for building the  
20 national center. And then we'll open it up for  
21 questions on the issues that were raised during the  
22 morning panels, as well as any more general public  
23 comments that anyone would care to make. We'll take  
24 questions and comments first from those of you here in  
25 the room. We ask that you come up to the center podium

1 and use the microphone to make sure we capture your  
2 question and comments on the record. And, it's helpful  
3 if you can give our transcriber your business card so  
4 we make sure that your name and affiliation are  
5 correct in the record, as well. For those of you on  
6 WebEx, at any time during the day you can use the chat  
7 function to let our WebEx coordinator you have a  
8 question or comment, and we'll either relay your  
9 question or open your line during the appropriate  
10 time. We are also accepting written comments until  
11 close of business on March 31<sup>st</sup>. And the notice for  
12 today's workshop, which is available on the table in  
13 the foyer and also on our website outlines the  
14 procedure for submitting comments to the IEPR  
15 document. And, with that I will turn it over to Mr.  
16 Bartholomy to provide some opening comment.

17 MR. BARTHOLOMY: Thank you, Suzanne. Good morning  
18 Commissioners and treasured guests, thanks for joining  
19 us today. If I can say it, Happy Daylight Savings. We  
20 are here today to talk about some of the ideas and the  
21 need in the creation of a National Center for the  
22 Clean Energy Workforce. Suzanne went over some of the  
23 ambitious goals the state has around clean energy  
24 economic development, the Governor's goals around  
25 20,000 megawatts of new, renewable energy generation

1 and transmission lines to bring that to Californians.  
2 And, when you look at the kind of workforce that will  
3 be needed to bring that about, we did a study in 2002  
4 with EPRI that talked about the amount of jobs created  
5 from different forms of renewable energy and looking  
6 at solar thermal it's about just under 6 construction  
7 jobs for every megawatt of new solar thermal that's  
8 brought online of about three new jobs for every  
9 megawatt of wind generation brought online. And, if  
10 you look at the Governor's ambitious goals around  
11 12,000 megawatts of distributed generation and  
12 probably much of it coming from the photovoltaic  
13 industry and our IEPR report is showing that about  
14 seven new jobs created for every megawatt of solar  
15 photovoltaic installed, you can see that there is a  
16 significant opportunity for new jobs creation coming  
17 out of the Governor's goals around clean energy  
18 economic development.

19 Suzanne also mentioned the Governor's goals  
20 around building retrofits and making sure that new and  
21 existing buildings are brought to the highest level of  
22 energy efficiency possible. And, work done with us and  
23 trade associations like Efficiency First over the last  
24 few years, that just retrofitting 1 percent of the  
25 state's existing homes would bring about 28,000 new

1 jobs and we have a goal with the public utilities  
2 commission to retrofit 75 percent of Californian's  
3 homes in just the next nine years. And so, with those  
4 goals, along with our goals to start to reduce our  
5 dependency on imported fossil fuels for our  
6 transportation sector, and start to build a  
7 Californian based transportation energy sector here,  
8 you can see that we have an amazing opportunity for  
9 job creation in the clean energy economy. But the odd  
10 dichotomy of the clean energy economy and workforce  
11 development is that we have an incredibly immature  
12 industry combined with an industry where many folks  
13 think they already have the skills to be providing the  
14 work that's taking place within that industry. And so  
15 what you have there is you have an odd collection of  
16 folks when they come to the Clean Energy Economy  
17 Workforce Training they either think it's so foreign  
18 and odd and immature that they don't want to make the  
19 investments in it upfront just yet or that it's  
20 something that they already do retrofitting homes,  
21 retrofitting buildings, producing fuel—that they don't  
22 see a need for all this talk about this new green  
23 energy changes in the workforce. When the energy  
24 commission started to wade more deeply into workforce  
25 development over the last couple of years, we started

1 to find that it was a challenge when efforts to bring  
2 together the education community, the workforce  
3 development community in industry, it was a challenge  
4 to be able to rely on any best practices, research,  
5 curriculums or other things we could use to help work  
6 with the different industries. To bring about the  
7 workforce we were going to need to accomplish our  
8 goals. While there are many disparate organizations  
9 working on bits and pieces of this, there is no one  
10 organization, no one centralized resource for all  
11 research, best practices and entity creating a forum  
12 for a conversation for how to bring together industry  
13 educational workforce to collaborate on exactly what  
14 the needs of the industry's growth are. So, after  
15 seeing that and working with our public interest  
16 energy research group, we were able to bring on UC  
17 Berkeley to be able to do some research into exactly  
18 what it would look like, to put together an  
19 organization that could be that center. That could  
20 really bring together the forum to be able to create  
21 that conversation and carry forward—and bring about  
22 best practices and the dissemination of them. The  
23 report involved interviews with well over 100  
24 individuals from across the country, talking about the  
25 need, or in some's opinion, the lack of a need, for a

1 National Center for the Clean Energy Workforce and  
2 what the most useful and valuable efforts that a  
3 center could undertake in being able to bring about a  
4 qualified workforce for the clean energy economy.

5 Today you're going to hear in the very first panel  
6 from Carol Zabin, the Director of Research at the UC  
7 Berkeley Labor Center, talking in detail about that  
8 study and the findings within it.

9           We all call this a National Center for the  
10 Clean Energy Workforce because while the Governor's  
11 goals will bring about significant economic  
12 development here in California, the goals of the State  
13 of California are also much broader as well. If you  
14 look at AB32, we absolutely have goals of bringing  
15 Californian's greenhouse gas emissions back to a level  
16 of 1990 emissions by 2020. But it's also implicit  
17 within that legislation that our goal be to avoid  
18 catastrophic climate change.

19           And, here in California we are going to do  
20 everything we can in our own economy to be able to  
21 reduce greenhouse gas emissions. But if we're going to  
22 avoid catastrophic climate change we need economies  
23 and work forces outside of our borders as well to be  
24 taking on some of these challenges. We have much to  
25 learn from others and others have much to learn from

1 us. And a National Center represents a wonderful  
2 opportunity for us to create that forum to be able to  
3 learn and to share best practices around how to build  
4 up the economies and the workforce we need to be able  
5 to meet our goals. We have folks that have flown in  
6 from across the country. Thank you from those of you  
7 have come out from the East coast today to join us.  
8 And we're very excited. And we have a wonderful  
9 collection of bureaucrats, non-profits and industry  
10 folks to illuminate us on what the activities are  
11 outside of the halls of the Energy Commission in this  
12 area, what are some of the best practices and what are  
13 some of the needs for a center like the National  
14 Center for Clean Energy Workforce.

15           The first part of the day we'll be talking  
16 about what's working, what's not working and what  
17 those needs are. And then the second half of the day,  
18 after the lunch break, is really going to be talking  
19 about how do we take what we found out about in the  
20 studies by Carol's group as well as this morning's  
21 session and looking for what we would do to build a  
22 National Center for the Clean Energy Workforce. So, we  
23 look forward to a wonderful morning with all of you  
24 and an even more exciting and engaging afternoon.

25           And with that, I'm going to welcome the very

1 first panel, a panel of one. Carol Zabin, again is  
2 the director of research in the UC Berkeley Labor  
3 Center, talking about the feasibility study for a  
4 National Center for the Clean Energy Workforce.

5           And, before—as Carol is moving up to the  
6 dais, I would like to very much thank some of the  
7 staff that put this together. In particular, Chris  
8 Graillat with the Energy Commission as an absolute  
9 fantastic job about bringing this all together and a  
10 short round of applause for Chris and her efforts on  
11 that. [Applause] And, in particular, also Lynette  
12 Esterson Green from our IEPR team did a wonderful  
13 effort in bringing us all together, as well. So thank  
14 you very much Lynette. [Applause]

15           And with that, Carol if would come up and  
16 please talk to us about the feasibility study for the  
17 National Center for Clean Energy Workforce. Thank you.

18           MS. ZABIN: Good morning, everybody. Thank  
19 you very much for inviting us to present today. It was  
20 really a wonderful opportunity to be able to talk to  
21 many, many people from around the country, some of the  
22 best minds and best work going on in this area. And,  
23 I'd like to acknowledge my colleagues here, Chris  
24 Benner from UC Davis, who worked on the study. And  
25 also Chris Tilley, from UCLA, who can't be here today.

1 And our research teams.

2           So what I'm going to do today is say what we  
3 did for the feasibility study, talk about the felt  
4 needs of why we might need a National Center for the  
5 Clean Energy Workforce, talk about the goals and the  
6 vision we developed for it and the strategy and what  
7 we would really do on the ground. And then, this  
8 afternoon, Chris is going to talk about our proposal  
9 for structure and governance, along with Mike Gravely,  
10 from the CEC, and lead us jointly, I think, about how  
11 we would actually go about building this here in  
12 California and the nation.

13           So, just in terms of what we did. The  
14 boundary we were working with under the direction of  
15 the Energy Commission, in terms of sectors was energy  
16 efficiency, renewable generation and transmission and  
17 alternative vehicles. So, not all green but the big  
18 chunk of clean energy. We did interviews with over 100  
19 folks concerned about these issues and working in  
20 these issues and looked at their organizational  
21 websites and did some review of the literature. And  
22 really we talked to what we ended up thinking about as  
23 two communities - the energy community: that is policy  
24 makers and folks in state agencies who are promoting  
25 clean energy as well as the private sector employers,

1 businesses, trade associations involved in doing  
2 clean energy work. On the one hand, and on the other  
3 hand the workforce development community - educators,  
4 trainers, funders, policy makers around workforce as  
5 well as labor, community based organizations, low  
6 income advocacy groups that are concerned with  
7 workforce issues. And one of the notable things, right  
8 off the bat was kinda the small overlap in those two  
9 sets. In terms of people who have really deep  
10 grounding in both the workforce side and the energy  
11 side. And we found, in general, that the energy  
12 community thinks about workforce issues or their key  
13 policy concern is in terms of what is needed to make  
14 sure we have an adequate workforce to meet our clean  
15 energy goals. And the workforce community thinks of  
16 clean energy as a—in terms of preparing workers for  
17 good careers in clean energy or other sectors. Their  
18 concern being what happens to their students and  
19 workers as they move into the job market and into  
20 their careers. So, we actually took both those policy  
21 goals as a starting point and took them, weighed them  
22 equally in terms of the need for such a center. And  
23 really looked at the overlap, and I'll talk a little  
24 more about this later but looked at some business  
25 letter too that talks about the highroad, that is

1 building an economy that is based on innovation and  
2 quality and on a skilled labor force that is also  
3 rewarded for those skills and that, so that you, you  
4 drive economic development in a direction that is both  
5 achieving your clean energy goals and your workforce  
6 goals.

7           And certainly the energy community  
8 recognizes the importance of, of when environmental  
9 policy is seen as a way to create good jobs political  
10 support for the policies is maintained. And as, as  
11 Ezra Averback NABCEP credentialing agencies for solar  
12 said, "There's no way the Energy Commission will get  
13 where it wants to go without equity being the  
14 pathway."

15           So in digging a little deeper in terms of  
16 what are the workforce issues for achieving our clean  
17 energy goals. Well, at this moment in time there's not  
18 really concerns of worker shortages, right. With 12  
19 percent and more unemployment in California but there  
20 is concern about a mismatch as Panama said in terms of  
21 the skills and the workers available. As Mark Troppe  
22 of NIST, the National Institute for Standards and  
23 Technologies in the Department of Commerce, said, a  
24 lot of the conversion to clean energy is adapting  
25 existing jobs. So 80 percent of the job stays the same

1 but there's 20 percent that needs to be retrained  
2 because they're using different equipment, different  
3 technologies or different processes. And, what emerged  
4 in the interviews is a very common recognition of the  
5 importance of the metal skilled jobs. Not to deny the  
6 importance of professionals of engineers and  
7 architects who actually write the plans but then the  
8 trades people and people on the ground need to follow  
9 but the concern about metal skills, and by that I mean  
10 greater than high school but less than a 4-year  
11 degree, it's—they're both the most numerous jobs and  
12 they're the jobs that our training system really  
13 doesn't function terribly well. So, that middle  
14 skills, a lot of—in the professionals a student or  
15 even an employer invests in training, in serious  
16 occupational training and there's a return, there's  
17 usually a job, much lower unemployment for college  
18 grads and there's certainly a wage premium that makes  
19 that investment worth it. But the lack of  
20 credentialing and certification in the middle skilled  
21 jobs in general, in our country, except in certain  
22 industries like healthcare really means a generalized  
23 problem of training in the middle skilled areas,  
24 except in exceptional cases like apprenticeship.

25 And the second thing is concerns about

1 quality, safety, energy savings in generation and  
2 sort of market growth. And Mark Sinclair of the Clean  
3 Energy State's Alliance said that right now a lot of  
4 public dollars are going into solar and small- and  
5 mid-scale wind but the status and quality of  
6 installation is all over the map. The American public  
7 by and large doesn't believe that these technologies  
8 work and that they're ready at an industrial scale.  
9 And to win that confidence, he says, we really have to  
10 emphasize skills certifications, quality assurance and  
11 standards.

12           And, in terms of training you really need a  
13 stable and professionalized workforce before training  
14 investments can lead to change in practice and  
15 improvements of quality. And, again, kinda this high  
16 road, low road thing, that when business conditions  
17 favor businesses cutting costs rather than competing  
18 on quality, you don't have a stable and professional  
19 workforce and you can't get the work quality that you  
20 need to really grow these industries. So lack of  
21 enforcement of building codes, standards on  
22 contractors and on worker skills as well are  
23 important.

24           So, turning to the policy goal of good jobs  
25 and opportunities for Californians, again we see good

1 careers existing in the professions and in some parts  
2 of the construction trades and, not in all the sectors  
3 that we're talking about and training in low wage jobs  
4 is a problem. It's a problem for the workers who are  
5 investing their time in the training; it's certainly a  
6 problem for educators, and for using public dollars  
7 when workers are going to turn over because these are  
8 not careers they can stay in. So concerns about real  
9 career ladders are key here and real opportunities for  
10 people from disadvantaged communities.

11           In terms of what people told us from the  
12 training and education side is there really still  
13 isn't clear information about the number of jobs, and  
14 we know there's a lot of hype about the number of jobs  
15 that this will save us from any recession and be  
16 enough to really pull us out of our, all of our  
17 unemployment problems, there's not clarity about what  
18 skills and certifications matter. There's a lot of  
19 muddle out there and what real career paths exist, and  
20 really what current training programs can be tweaked  
21 and incorp-used to incorporate new skills and  
22 knowledge. And there's also still not strong enough  
23 links to employers on the training and education side  
24 that every training program now has employers on  
25 advisory committees for curriculum, etc. but that

1 doesn't—folks said that isn't turning out to be  
2 enough in terms of the actual commitment by employers  
3 to hire or to consider or upgrade their workforce. And  
4 successful programs have much stronger commitments.

5           So again, our— the strategy that we  
6 looked at was to build, to build this higher road and  
7 to try to merge the two sets of problems I just  
8 described into one strategy that emphasizes quality  
9 and emphasizes building these industries on the basis  
10 of appropriate skills and skills-acquisition type to  
11 rewarding workers through wages and career ladders.

12           We thought the really key focus was to encourage  
13 the adoption of skill standards and certifications,  
14 sort of as these industries grow and on the workforce  
15 side, to align training programs so that they're, they  
16 can produce stackable and portable credentials that  
17 meet those standards of skills on the investment side.  
18 And really, to do that, you really need industry  
19 partnerships and sector strategies, which is a wonky  
20 workforce term. I had to learn a lot of wonky energy  
21 terms so I'm ok with saying a wonky workforce term.  
22 But just out of curiosity, who's heard of that term -  
23 sector strategies in this room? Oh, oh ok. We're home.

24           Ok. So, in terms of what would we actually do on  
25 the ground, research clearing house communications and

1 technical assistance, all with a really very  
2 pragmatic focus. I think they got scared when they  
3 hired UC Berkeley, that we would be way up in the  
4 airy, ivory tower and not, um, be practical, but we  
5 pride ourselves on being pragmatic at, um, our  
6 centers. Um, so in terms of research very applied to  
7 real problems and solutions, better mapping and  
8 forecasting of labor demand and not just quantity but  
9 also skills and job quality. Mapping real employer  
10 needs and practices in terms of skills and staffing  
11 patterns cause you can, you know there are a lot of  
12 different ways you can choose to staff a business  
13 looking at turnover rates, cause again stability and  
14 professionalization is key and really looking at  
15 market segments and where the higher quality segments  
16 are and can be supported. And where the lower quality  
17 needs to be— where there needs to be enforcement of  
18 regulations and standards so that the higher quality  
19 people, businesses aren't undercut by a market that  
20 favors low quality.

21           So, certainly, mapping and assessing skill  
22 standards as I talked about and certification  
23 possibilities in some occupations, there's 50 for  
24 boilermakers for examples and in others there's more  
25 clarity. We need to choose; we need to have a process

1 for choosing and doing the fighting out of the  
2 choosing and then once they're chosen, then training  
3 organizations can then respond. But they can't respond  
4 when there's 20 million different certifications.

5 Really looking at the leverage points that  
6 economic drivers and government have over these clean  
7 energy sectors, in terms of who do they contract with,  
8 what— how are the RFPs written to determine what is  
9 the standard on contractors or on participation and  
10 incentive programs. And then, when that's clear,  
11 training programs and curricula can follow. In terms  
12 of clearing house and communication, certainly a  
13 dissemination of best practices on web and online  
14 webinars and that kind of thing. In addition seed and  
15 broker broad discussions, both within the energy  
16 community itself in terms of what are your leverage  
17 points and what do you need to understand about  
18 workforce to make this work, and within the workforce  
19 development community to have better coordination and  
20 better response but also, between them. How can we  
21 link up a process of creating standards and developing  
22 workforce to go along with it. And one of my favorite  
23 examples is the, um, utility IBEW-NECA advanced  
24 lighting the CALCTP training program, cause they did  
25 workforce planning and standard setting at the same

1 time.

2                   And then, you could, technical  
3 assistance really follows from the clearinghouse and  
4 the discussions because immediately when folks hear  
5 about a best practice they want to know a little bit  
6 more - How do we do it in our situation. So I think,  
7 the support of real sector strategies and building our  
8 capacity to assist and have local folks assist in  
9 those sector strategies as well as other strategies;  
10 so the technical assistance, the research, the  
11 communications follows from the research and the  
12 technical assistance follows from the communications  
13 and clearinghouse.

14                   So, I think that's it for my presentation.  
15 So am I taking questions, or not? I couldn't even see  
16 the Commissioners, excuse me. And I didn't thank you  
17 guys for inviting me. The screen hid me. So thank you  
18 very much, Commissioners.

19                   COMMISSIONER WEISENMILLER: Thank you for  
20 coming. I do note that you're from the Don Vial Center  
21 and obviously, those of us who had the joy of working  
22 with Don sort of recognize his long-term commitment  
23 and interest in these issue. So it's good to see the  
24 center established in his honor.

25                   I think the one question we have is

1 certainly, one you know, one of the issues I'd at  
2 least asked in legislature is "Why a National Center  
3 in California?" And what I've tried to explain is, I  
4 think, the Department of Energy will only fund a  
5 center in California if it is national in scope. Is  
6 that correct?

7 MS. ZABIN: That seems to be correct. I think  
8 that your staff was involved in some of those  
9 discussions so Panama may be better able to answer  
10 that but certainly, um, the federal government would  
11 not be interested in funding a center that would only  
12 be, um, serving California. And they also recognize  
13 the tremendous networking and cross learning that is  
14 needed for as we grow these industries. And finally, I  
15 do think that they're used to developing networks and  
16 trying things, supporting efforts to try things in  
17 different states and really then using that to build a  
18 national policy.

19 COMMISSIONER WEISENMILLER: And how unique  
20 are California's labor needs in looking at the types  
21 technologies that are being installed in California in  
22 quantities as compared to other states?

23 MS. ZABIN: Well, our goals are still more  
24 ambitious. So, since they're more ambitious than many  
25 states, our workforce needs are going to be greater.

1 But, I think in general, and obviously there are some  
2 technological things that are different region  
3 specializations- that and regional assets. You know  
4 the Midwest with its strong manufacturing base- that  
5 kind of thing, where our emphasis has been more on  
6 energy efficiency- obviously our climates are  
7 different. So those are differences, but the basic  
8 principles and the basic strategies, I think are very  
9 similar.

10 COMMISSIONER WEISENMILLER: Thank you.

11 COMMISSIONER DOUGLAS: No questions. Thank  
12 you for being here.

13 MS. ZABIN: Thank you.

14 MS. KOROSSEC: Next we'll move to our panel  
15 and Chris will you go ahead and take us through that?

16 MS. GRAILLAT: Our first panel is Current  
17 Issues in Clean Workforce Training. We have here,  
18 actually via WebEx, Benjamin Goldstein who's the  
19 project lead for Workforce Guidelines for Home Energy  
20 Upgrades at the U.S. Department of Energy. We've got  
21 Ed Londergan, who's the Workforce Development Project  
22 Manager at Northeast Energy Efficiency Partnerships.  
23 Kevin Doyle, who is the principle at Green Economy,  
24 which is a consultant firm, and is also the Workforce  
25 Development Co-chair for the New England Clean Energy

1 Council. Phil Jordan who's a managing partner for  
2 Green LMI and Tim Rainey who's the Director of  
3 Workforce Economic Development for the California  
4 Labor Federation. And we're going to begin with  
5 Benjamin, via WebEx.

6 MR. GOLDSTEIN: Great. Can everybody hear me  
7 OK?

8 [UNIDENTIFIED SPEAKER]: Yes, you're clear.

9 MR. GOLDSTEIN: I'm clear, wonderful. Well, I  
10 just want thank the California Energy Commission for  
11 the invitation to participate today. I thank Panama  
12 and his fantastic team, Chris, and Lynette for  
13 organizing. And then Carol Zabin and her team for the  
14 fantastic feasibility study, which I participated in a  
15 few months ago producing and, I think, led to some  
16 really insightful outcomes.

17 I'm going to spend a few minutes today,  
18 knowing we're all pressed on time, I'm going to fly  
19 through these slides and you know there's a larger  
20 presentation available on the Department of Energy  
21 website for those of you who are interested getting an  
22 overview of our effort in the workforce space  
23 pertaining to energy efficiency in the residential  
24 sector. This is by no means a comprehensive overview  
25 of all the different workforce activities that the

1 Department of Energy has undertaken, particularly as  
2 there's activities in the renewable side, solar, small  
3 wind and we've just begun the more commercial  
4 workforce development effort. But I have been  
5 responsible for the residential side of things and  
6 it's what I'm most familiar with and it's what I'd  
7 like to present today; just to give a little bit of a  
8 taste. And ultimately, the message back to the  
9 California Energy Commission is that this kind of  
10 activity and all the other kind of activities you're  
11 going to hear about from the panel are of no good if  
12 they're not communicated to the public. And if there's  
13 not a clear clearinghouse and a dependable place to  
14 host all this information to make it accessible to the  
15 public. For as much publicity as we try do to at the  
16 Department of Energy website, it's never enough. And  
17 so, the notion of a National Center for the Clean  
18 Energy Workforce is able to catalogue, host and  
19 distribute this kind of information to the public is  
20 very appealing. It's something we'll be discussing  
21 with your staff over time if there's a way we can help  
22 support this effort. So, next slide.

23 Just quickly on key messages. We're  
24 transitioning from a period where home energy upgrades  
25 have been heavily subsidized by recovering act funds,

1 whether through the weatherization assistance  
2 program, which is the federally-funded subsidy program  
3 for low income homes, or through the state energy  
4 program, or through residential energy efficiency tax  
5 credits. But moving from an industry that has been  
6 subsidized to an industry that's going to stand up on  
7 its own two feet requires a couple of things: high  
8 quality and low price. And in order to have a high  
9 quality service at a low price standards, you need  
10 strong professional certification and the workforce  
11 guidelines will help with all of these. Next slide.

12           The workforce guidelines is in its crudest  
13 form is a document that contains a couple key  
14 components. But overall, the vision is to support both  
15 quality work and a skilled workforce for both the  
16 weatherization assistance program and the private  
17 energy efficiency retrofitting industry with our  
18 understanding that the weatherization assistance  
19 program has provided a huge opportunity in ramping up  
20 this industry and now we need to grow the private  
21 sector to absorb the workforce and continue to grow.  
22 Next slide.

23           There are four components on the work side  
24 of things, what we've done is created a catalogue of  
25 all the relevant technical standards. Many of these

1 are highly technical in nature, not often referred  
2 to, not often even known about and we went along and  
3 catalogued and summarized and made accessible the kind  
4 of host of technical standards applicable to  
5 residential energy efficiency retrofits. The other key  
6 element—next slide, please.

7           Are what are known as standard work  
8 specifications, work quality specs. They define the  
9 minimum requirements for high quality work in the  
10 conditions that are needed to achieve certain desired  
11 outcomes. The key—the thing—fundamentally there's  
12 usually a good way to do something and a not so good  
13 way to do something. And, identifying the quality  
14 threshold, the minimum requirements for high quality  
15 work then sets up, sets a floor on the quality piece  
16 so work can get done at a higher quality level and  
17 that there's some sort of objective measure of that  
18 quality. Then you can have protocols and best  
19 practices that build on top of your standard work  
20 specifications, so hence this pyramid explains how you  
21 kinda move from technical standards which are created  
22 by industry, sometimes government, for example the EPA  
23 or OSHAA, and then the work specifications have been  
24 the key missing component in this overall equation.  
25 There's plenty of folks out there who have developed

1 best practices, individual companies produce their  
2 own work protocols or manuals for their contractor  
3 crews. But nobody's gone and catalogued the full set  
4 of standard work specifications so we have an  
5 objective measure of quality for this industry, and  
6 that's what we've done working with industry think  
7 thanks. This is what a standard work specification  
8 looks like. It's technical but it's intuitive. Next  
9 slide.

10           It's prescriptive. It's descriptive, excuse  
11 me, rather than being prescriptive. A best practice  
12 tells you exactly how to do something step-by-step. A  
13 standard work specification just describes the minimum  
14 quality that must get met. Why do we need this? Well,  
15 other industries have standards and specifications  
16 themselves, like electronics, wind power, even the  
17 National Golf Cart Manufacturers Association has their  
18 safety and performance specs for the design and  
19 performance of golf carts. If you figure, if you can  
20 build a golf cart at certain performance specs, you  
21 should be able to retrofit a home to those same types  
22 of performance specs. Next slide.

23           On the workforce side, those of you - and  
24 Carol- I identified when you talked about learning or  
25 geeking out, or working out with some of this

1 technical and workforce stuff, I too was relatively  
2 new to this field a year ago and have now thrown  
3 around terms like psychometrician pretty fluidly here.  
4 But on the workforce side, there are what are known as  
5 job task analysis in the sense of say, ok, it's  
6 basically the core competencies, right. Next slide.

7           Once you have core competencies developed  
8 sometimes these are known as skill standards. We try  
9 not to use the term standards too loosely in the  
10 federal government because it has a certain kind of  
11 meaning when it comes out of our mouths. Core  
12 competencies, once you have those identified then you  
13 can develop training programs and certifications or  
14 other kinds of credentials that actually measure -  
15 that teach to a certain set of competencies and then  
16 do them on the measurement evaluation side, either  
17 certify or credential an individual to have obtained  
18 those competencies through some sort of a training  
19 program. What Carol mentioned is if you've got 40  
20 different certifications then training programs have  
21 no idea what kind of materials they should be  
22 developing and what they should be teaching to. So, we  
23 wanted to kinda catalogue in a transparent and  
24 inclusiveness way what the core competencies are for  
25 the four major job classifications in this industry.

1 Next slide.

2           Why do we need more standardized training  
3 and nationally recognized credentials? Well, look at  
4 the two industries. Look at the robustness of their  
5 credentialing and training requirements for a massage  
6 therapist and hairstylist. Minimum 500 hours of  
7 education under credit in schools, certification  
8 exams, place insured, all the rest in mostly all the  
9 states. Next slide.

10           And on the other hand, you look at things  
11 like tattoo artists and auto mechanics and their  
12 requirements are much less robust. And the lesson for-  
13 coming out of these slides is what professions do you  
14 trust. Your hairstylist and your—the salon—are much  
15 more trustworthy people or businesses to frequent than  
16 walking into a tattoo parlor or auto mechanics with no  
17 certification once so ever. Next slide.

18           So, on the training slide of challenges are  
19 that we've got this proliferation of training and  
20 certificate programs, both within weatherization and  
21 home performance industries. We've got a ton of  
22 federal and state training dollars. Clean Department  
23 of Energy and Department of Labor. No quote, unquote  
24 standards. No quote, unquote core competencies  
25 associated with them. We've got no objective measure

1 of training program effectiveness. And we've got no  
2 uniform way for workers to assess the quality of the  
3 program or provider. Next slide.

4           So the solution here is accreditation. This  
5 is not an unfamiliar topic for those of you in the  
6 academic world. You've got accredited nursing schools,  
7 accredited medical schools, accredited law schools,  
8 accredited engineering schools. All accredited by an  
9 industry - a recognized industry credentialing body.  
10 There has not until now existed a dedicated entity  
11 capable of crediting energy efficiency training  
12 programs. And I say until now because, because now we  
13 have the Interstate Renewable Energy Council, IREC,  
14 which currently accredits solar training programs. I  
15 believe Carol mentioned NABCEP, which is kinda the  
16 sister organization that certifies the workforce. IREC  
17 is an accrediting agent body for training programs and  
18 they've got an international standards that they use.  
19 And they'll use our competencies to go around and  
20 provide a voluntary, but encouraged, accreditation  
21 service to training programs who'd like to  
22 differentiate themselves in the marketplace and  
23 actually show that they're teaching something that's  
24 relevant and useful in the marketplace. So that'll be  
25 ready end of this month or early April. Next slide.

1           On the credentialing side, we've got a lot  
2 of different credentials out there in the residential  
3 space. The competencies have all been kinda vague and  
4 opaque. The exams often times are not strong enough on  
5 the field side, and then, ultimately the cost for  
6 these credentials may be too expensive and therefore  
7 prohibitive to lower income folks and/or  
8 geographically focused in certain high impact areas  
9 not available for placement. Next slide.

10           So solutions, we need stronger and better  
11 certifications. We need certifications that are built  
12 on our - on the Fed. And when I say our, I just want  
13 to emphasize what this was an effort that the  
14 Department of Energy and the National Renewable Energy  
15 Laboratory facilitated bringing industry folks  
16 together. There was no government bureaucrats or white  
17 lab coats in the back room that we facilitated that  
18 was industry-led. We're not creating a new DOE  
19 certification, what we're trying to do is help support  
20 the private industry to deliver more effective and  
21 more robust, stronger, more relevant certifications.  
22 There'll be more information available shortly but we  
23 will be supporting the private voluntary credentialing  
24 marketplace. Next slide.

25           You guys know the benefits of everything

1 I've just described. There's been [inaudible]  
2 homeowners for retrofit program administrators and for  
3 trainer providers. The standard work specifications  
4 have been very excited about there finally being  
5 something you guys, for instance, that are running  
6 retrofitting programs, state energy programs, utility  
7 rate pair funded programs like the PG&E or San Diego  
8 Gas & Electric run, finally have a document that they  
9 can use for quality assurance on their contractors and  
10 then on the competency side I think we're going to  
11 have a much more robust training and credentialing  
12 marketplace. Next slide.

13           You can just keep tapping through them.  
14 These are just some nice graphics I like to end on,  
15 showing how America has been here before, in a similar  
16 place where we're confronting an energy crisis,  
17 brought on by a slightly different effect or a  
18 slightly different, larger global context which was  
19 faster than rather global warming and energy  
20 insecurity but at a time where the country rallied  
21 together and to confront a common challenge.

22           Last slide is my contact information. I'm  
23 happy to take questions from the Commissioners. Once  
24 again, I really want to thank you for letting me be  
25 here today, remotely.

1 MS. GRAILLAT: Thank you, Benjamin.

2 Commissioners - do you have any questions?

3 COMMISSIONER WEISENMILLER: Thanks for the  
4 presentation.

5 COMMISSIONER DOUGLAS: I have one question,  
6 this is Commissioner Douglas. Could you talk a little  
7 bit more about how a National Center could help  
8 provide more clarity in terms of the multiple types of  
9 training and certifications?

10 MR. GOLDSTEIN: Absolutely. So, you know what  
11 I envision is a National Center that has different  
12 components focused at different audiences, right. So,  
13 there's a whole training community out there that has  
14 been trying to coordinate its activities and try to  
15 exchange different sets of curriculum and best  
16 practices, and there's a whole community of colleges  
17 out there that aren't even aware that this Department  
18 of Energy has developed free and publicly downloadable  
19 standardized curriculums for residential energy  
20 retrofits, home energy audits, technicians, crew  
21 leaders, sectors. It's hidden on our website. You  
22 know, this is a problem with government is that it's  
23 not always easy to find information. And a National  
24 Center that had a section on training could provide a  
25 streamlined and much more kinda easy-to-access

1 database for this kind of information.

2           If you're a retrofit program administrator,  
3 similarly, you could have a dedicated section on the  
4 website that provided links to the standard works  
5 specifications, to DOE supporting the development of  
6 some best practices on administrating a retrofit  
7 program, from the financing to the marketing and the  
8 like. Again, you know, there's limitations to how  
9 effective we are at communicating via government  
10 websites and I think having a National Center that  
11 consolidated this information and be a go-to place for  
12 anybody being a homeowner or a retrofit program  
13 administrator or a training provider or a worker  
14 seeking to get certified, seems to figure out what's  
15 current, what's more relevant in the moment and kinda  
16 what the best information is out there. And that's one  
17 of the visions I see for the national center.

18           COMMISSIONER DOUGLAS: Thank you. And one of  
19 our interests, in addition to the types of training  
20 we've talked about, also K-12 and trying to understand  
21 how K-12 programs can feed into clean energy jobs at  
22 different levels and prepare kids to enter these jobs.  
23 I was—I wanted to ask if you have looked at that or if  
24 you see ways a National Center could facilitate the  
25 creation of K-12 programs and career tech education

1 that is consistent and feeds into these types of  
2 jobs.

3 MR. GOLDSTEIN: Absolutely, and again I come  
4 back to this notion of a kinda clearinghouse that  
5 avoids duplicating efforts. You know the President has  
6 a very strong focus on STEM education right now and  
7 the Department of Energy, you know in response, has  
8 been ramping up our efforts to the Office of Science  
9 to provide more free materials available to K-12  
10 educators, you know, coursework, lesson plans. And  
11 again, you know, the availability of these materials  
12 is free and public but is hard to find often times. I  
13 think a clearinghouse that is populated with this  
14 information on a website that was a little more  
15 navigable, a little bit more jazzy, a little bit more  
16 splashy, as you do out in California very well,  
17 particularly with web-based applications which is the,  
18 you know, I think a much more effective means of  
19 communicating. And then you don't have school  
20 districts around the country that are spending more  
21 and more very scarce resources just trying to develop  
22 materials that may already be in existence and would  
23 be happy to be shared even by the federal government  
24 or by other districts around the country.

25 COMMISSIONER DOUGLAS: Thank you. I think

1 that's all my questions.

2 MR. GOLDSTEIN: Thank you, Commissioner.

3 MS. GRAILLAT: Mr. Goldstein will not be able  
4 to participate in the rest of the workshop. So, we  
5 will open to a couple other questions if people have  
6 them. We have time for one or two questions.

7 MR. GOLDESTIN: And I'm also happy to accept  
8 questions via public comment and I'll follow up with  
9 the Commission Staff so the computer folks get their  
10 question answered.

11 COMMISSIONER DOUGLAS: We're up here trying  
12 to determine if we have any additional questions. I'll  
13 just ask one more. We've got a new state of  
14 environmental curriculum and I think in the public  
15 comment area, we'll probably hear a little more about  
16 that and it's got a number of chapters, of which  
17 energy is just one. But, one of the things we're  
18 thinking about is how to build off of that as we think  
19 about our K-12 and career tech and feed that into  
20 post-secondary levels of training. I'll just say that.  
21 I don't think that's a question. We can go on. But,  
22 thank you very much for being able to talk to us  
23 today.

24 MR. GOLDSTEIN: Absolutely. Thank you all and  
25 have a great rest of the panel. I look forward to

1 being in-touch. Cheers.

2 MS. GRAILLAT: Thank you. Our next speaker is  
3 Ed Londergan, from the Northeast Energy Efficiency  
4 Partnerships.

5 MR. LONDERGAN: Great. Thank you, Chris. I'm  
6 sure that we can all agree that training and education  
7 is vital to moving clean energy ---

8 MS. GRAILLAT: Ed? Ed? -

9 MR. LONDERGAN: Yes?

10 MS. GRAILLAT: We're having difficulty  
11 hearing you.

12 MR. LONDERGAN: Can you hear me now?

13 MS. GRAILLAT: A little better. If you could  
14 speak a little louder?

15 MR. LONDERGAN: Is that better?

16 MS. GRAILLAT: That's better.

17 MR. LONDERGAN: As I was saying, the training  
18 and education is vital to moving the clean energy  
19 industry forward. Medium and aggressive job creation  
20 goals in California, the Gulf and the rest of the  
21 country. And a well-trained, well-educated workforce  
22 is a competitive advantage, not only to the individual  
23 but to the employer and to the city and town in which  
24 the individual resides, the state, the end ultimately  
25 the country. There is an abundance of training and

1 resources-

2 MS. GRAILLAT: I'm sorry to interrupt again.

3 We're still having difficulty.

4 MR. LONDERGAN: Ok, well ---

5 MS. GRAILLAT: Are you on a speaker phone,

6 ED?

7 MR. LONDERGAN: No, I'm using a headset.

8 MS. GRAILLAT: Oh. That's a little better.

9 MR. LONDERGAN: Ok. I'm sorry for the problem  
10 here, must be a technical difficulty.

11 MS. GRAILLAT: If you could speak as loudly  
12 as you can, that would be appreciated. Thank you.

13 MR. LONDERGAN: I certainly will. I'll do all  
14 that I possibly can. As I was saying, there was an  
15 abundance of training and education resources out  
16 there; however, they're scattered and fragmented. And  
17 there is no one organization coordinating those. And  
18 to advance the industry to new level, there's a strong  
19 need to begin the process of organizing,  
20 consolidating, creating education resources. And what  
21 we did in Massachusetts by creating the Massachusetts  
22 Clean Energy Training and Education in the Workforce  
23 Directory, is representative of the need elsewhere and  
24 how it can be addressed. Massachusetts is a world  
25 leader in education so we're expected to have a clean

1 energy directory for training and education, and  
2 today here in Massachusetts is a leader in clean  
3 energy. We're first in the nation, east of California.  
4 Next slide, please.

5 There are three organizations that are  
6 involved in this particular effort. Northeast Energy  
7 Efficiency Partnership and the New England Clean  
8 Energy Council put together the training and education  
9 database for the Massachusetts Clean Energy Center.  
10 Next slide, please. Slide after that, please.

11 There we go. What we had found out is we  
12 were being contacted by various individuals asking for  
13 information on where to find training resources and we  
14 found out they were all asking the same question. They  
15 were looking for information that was complete and  
16 comprehensive, that was searchable and that was  
17 continually updated. So they would end up having the  
18 latest and greatest information. All the energy  
19 training and courses and programs. Next slide, please.

20 The solution is a database we came up with.  
21 It is a lifting of all the energy efficiency and  
22 renewable training and energy training resources in  
23 Massachusetts. And the goal is to help connect the job  
24 seekers, renewable energy industries and education and  
25 training providers. Next slide, please.

1           We ended up getting information from all  
2 levels of education and training from public and  
3 private colleges and universities including community  
4 colleges to private sector training programs,  
5 community-based organizations, vocational schools,  
6 union and training and apprenticeship programs as well  
7 as trade associations. So it is a very complete and  
8 comprehensive source of information. Next slide,  
9 please.

10           This is just a representative sample of  
11 those organizations that were providing information to  
12 us. Everything from Boston University to community  
13 colleges here in Massachusetts, to private  
14 organizations like the Conservations Services Group  
15 and Construction Institute as well The Center for  
16 Ecological Technology. Next slide, please.

17           We designed this so there would end up being  
18 information from four different levels, I guess. The  
19 first is academic programs, which incorporates  
20 Bachelor's degrees, Associate degrees, PhDs, Masters,  
21 what have you, as well as career training which is  
22 everything from apprenticeships to various other  
23 methods of getting career training. Specializations  
24 which really work for energy business, energy  
25 efficiencies, sustainable design and construction,

1 those type of things, and then we added grant-funded  
2 programs also at the request of the Mass. Clean Energy  
3 Center, again the issue with them is the fact that  
4 they are funded for a limited amount of time. Next  
5 slide.

6           And we had come up with a structure for this  
7 was meeting the needs, we hoped to had meet the needs  
8 of the people who had requested the information and  
9 that was to give them an overview of the site and how  
10 it best worked, provide them with maps so they could  
11 see where the training is located, other resources,  
12 which has turned out to be a listing of various  
13 resources from around the country as well as in New  
14 England and Massachusetts specifically. Advanced  
15 search capabilities where they can submit a listing, a  
16 place where they can provide feedback as well as  
17 subscribe to a feed to be able to see all of the new  
18 information.

19           This is a screenshot of the site, just for  
20 quick information so you can see what it looks like.  
21 Next slide, please.

22           The site has been in operation for 49 days  
23 and I just want to give you some idea as to the usage  
24 of this, we've been very pleased with this because in  
25 those 49 days we've gotten 3,900 visitors who come to

1 the site 5,700 times, which is very good. What was  
2 kinda surprising, we thought they'd be looking at a  
3 lot of the career training issues but they were really  
4 looking at a lot of the academics, Bachelors, Masters,  
5 certificates. And we are first in Google search for  
6 clean energy training in Massachusetts. The one thing  
7 this is not, it is not a clearinghouse. It is not a  
8 one-stop shopping for job information for job seekers.  
9 It is not a place where they can go and get  
10 information on how to get into the clean energy  
11 industry or finding career advice or career pathways.  
12 Next slide.

13 And, lastly, we are working now with the  
14 Northeast Green Labor Market Information Consortium to  
15 put together a proposal for the remainder of New  
16 England. They're looking for us to end up doing the  
17 exact same thing we did for Massachusetts, for  
18 Vermont, New Hampshire, Maine, Connecticut and Rhode  
19 Island. And because of the volume of educational  
20 providers in those states, we're working now with the  
21 New England Board of Higher Education to pull this  
22 information together. So, hopefully, we will end up  
23 having a directory, a training and education directory  
24 for clean energy for all of New England.

25 And, there is my contact information. I

1 appreciate you giving me a few minutes to talk about  
2 what we have done in Massachusetts. And, I appreciate.  
3 Thank you.

4 MS. GRAILLAT: Thank you, Ed. Commissioners,  
5 do you have questions?

6 COMMISSIONER WIESENMILLER: I'd like to thank  
7 you for your presentation and, I think -

8 COMMISSIONER FEIST: Sorry, thanks very much  
9 Ed. This is Paul Feist from the Energy Commission. Can  
10 you tell us--or do you find employers using this site  
11 as well to locate a pipeline of workers? Or is it  
12 mainly people seeking training and education  
13 opportunities?

14 MS. GRAILLAT: Ed, did you hear the question?  
15 He's off the phone. I guess we had some---- he's  
16 coming back. We'll give him a minute.

17 MR. LONDERGAN: Hello?

18 MS. GRAILLAT: Ed?

19 MR. LONDERGAN: Yes. I was just disconnected.

20 MS. GRAILLAT: You're coming in very clear  
21 now.

22 MR. LONDERGAN: Oh, that's good. I don't  
23 know. Technology is a wonderful thing when it works.

24 COMMISSIONER FEIST: Hi Ed, this is Paul Feist  
25 from the Energy Commission. Can you tell us, in the

1 brief history of the website, do you find if employers  
2 are coming to this website as well to locate pipeline  
3 of trained workers? Or is it mainly supply side?

4 MR. LONDERGAN: It's mainly on the supply  
5 side. Though, we have had some calls from employers  
6 indicating they'd seen the site and are interested in  
7 it. And our—and have raised the issue of whether if  
8 this could be modified to include more career and  
9 employment information. We've had brief discussions  
10 with the Mass. Clean Energy Center about doing that.  
11 And again, that's just in the discussion phase. It was  
12 very recent. But, yes, employers are coming to this,  
13 not a great deal but again, it's only been out for 49  
14 days.

15 COMMISSIONER FEIST: Thanks very much.

16 MR. LONDERGAN: Alright, thank you.

17 MS. ALLEN: This is Eileen Allen. I wondered  
18 how it looks for the partnership to be able to keep  
19 going, post-era stimulus funding?

20 MR. LONDERGAN: We would be able to do this.  
21 This—the funding for this particular project came from  
22 the Mass. Clean Energy Center and it was not ARRA  
23 funds. It was state funds, non-ARRA state funds. So,  
24 the ability to go forward with this shouldn't be an  
25 issue. And again, the New England, the Northeast Green

1 Labor Market Information Consortium, does have ARRA  
2 money that they will be using for us to develop the  
3 directory for them. However, they do have until the  
4 end of the year to be able to get that done. So that  
5 shouldn't be a concern. The only issue with this  
6 entire process, having a database like this, a  
7 directory like this, is the ongoing maintenance and  
8 updating. That is something that is vitally important  
9 because you could have the best website in the world  
10 but if it's not updated than it really doesn't have a  
11 great deal of use to it. And that is something we are  
12 addressing. But again with Massachusetts, it's not a  
13 problem. With the New England Green LMI, it could be  
14 an issue because again their funds run out at the end  
15 of the year so we're working on how to best to be able  
16 to fund the ongoing operation and updating of the  
17 site.

18 MS. ALLEN: Thank you.

19 MR. LONDERGAN: You're welcome.

20 MS. GRAILLAT: OK. Thanks very much. Our next  
21 speaker is Kevin Doyle of Green Economy and the New  
22 England Clean Energy Council. He's right here.

23 MR. DOYLE: Morning everyone. I think I  
24 actually have a very loud voice so you might have to  
25 ask me to speak a little bit more quietly. Thank you,

1 Commissioners for inviting us here. As you just heard  
2 from Ed, the New England Clean Energy Council is a  
3 partner with the Northeast Energy Efficiency  
4 Partnership on the project you just heard about. I'm  
5 here to talk to you about an issue that I think is  
6 going to be essential for any kind of National Center  
7 for the Clean Energy Workforce. And that is how it  
8 interacts with the employers that the workforce is  
9 designed to eventually be employed by. And that's what  
10 I'm here to talk about today.

11           The New England Clean Energy Council is an  
12 organization of some 200 or more clean energy  
13 employers in many different kind of—aspects of the  
14 clean energy economy. We work in wind and solar, both  
15 thermal and photovoltaics and all forms of energy  
16 efficiency in geo-thermal, bio-fuels, some bio-mass  
17 and smart grid as well as batteries and other energy  
18 storage. Next slide, please.

19           So, one of the things we really enjoyed when  
20 we read the study that was done, the scoping study, is  
21 we loved the idea that you envisioned in California, a  
22 National Center, and that you thought that the  
23 National Center should involve some regional clusters  
24 and regional involvement and not too put too fine a  
25 point on it but even regional offices, and I think if

1 you look at the clean energy state leadership  
2 scorecard you'll see that it is not only New England  
3 that is very interested in this. There are similar  
4 councils in places like New York, and New Jersey, in  
5 Maryland, in Washington state and all throughout the  
6 Pacific Northwest, in Illinois and Texas and Iowa, so  
7 even you have only New England here today, I think  
8 that there are many other regional clusters that would  
9 be thrilled to learn about the idea of a National  
10 Center and want to help from their own employer basis  
11 to make that happen. Next slide.

12           So these are just—I'm going to go through  
13 these very, very quickly. Just four or five of the  
14 companies that are part of the New England Clean  
15 Energy Council—just to give you an idea of the kind of  
16 workforce we imagine, which although, there has to be  
17 a lot of focus on residential and other forms of  
18 energy efficiency and solar installation the clean  
19 energy economy and our workforce needs go well beyond  
20 energy efficiency and installation, to include the  
21 design and invention and innovation and manufacturing  
22 of truly new ways to fuel our clean energy economy.  
23 A123 Systems is a battery maker. Next slide.

24           We also have EnerNOC in New England, a  
25 demand side management firm. Next slide.

1 QTEROS is one of our major biomass, excuse  
2 me, bio-fuel companies and we have a growing bio-fuels  
3 industry throughout the nation that I think needs a  
4 lot of attention and I'm going to talk about it a  
5 little bit in the workforce needs of the bio-fuels  
6 industry. Next slide.

7 FloDesign wind turbines makes turbine  
8 technology in New England. As you probably all know,  
9 there is a huge need on our side of the country for  
10 offshore wind and we're doing our best to see if we  
11 can't build that part of the clean energy industry.  
12 Next slide.

13 Aspen Aerogels makes advanced installation  
14 and there's a large and growing industry throughout  
15 the country on improving not only how we install  
16 installation but even what it is that we're  
17 installing. Next slide.

18 So this is just one slide about the New  
19 England Clean Energy Council. We support a wide  
20 variety of different projects and you can see the blue  
21 box in the middle there about education and that is  
22 where the workforce development group that I am the  
23 co-chair of, my co-chair is the Chief Financial  
24 Officer of a firm called Conservation Services Group,  
25 a national firm that is located in Massachusetts and

1 her name is Wanda Reindorf. Wanda couldn't be here  
2 today so I'm here on behalf of both of us. Next slide.

3           So, what is the issue we decided to take up  
4 in these short minutes that the Clean Energy Council  
5 could speak of all of you. The issue was one that you  
6 had heard about in Carol's presentation and the study  
7 that helped the scoping for the possible National  
8 Center. And that's how can the workforce development  
9 community, which is education and training and labor  
10 unions and activists, how can you work more creatively  
11 together with the employers. Employers often feel  
12 we're either A) ignored, until at the last minute we  
13 hear about a bunch of people have been meeting to  
14 design a workforce needs for our industry or just the  
15 opposite, we're inundated with dozens and dozens of  
16 surveys and survey fatigue, you know creeps in very  
17 quickly. So the idea of some kind of coordinated body  
18 at a national level that also included the awareness  
19 of regional differences was really something that  
20 we're very interested in. Next, slide.

21           So. What did we learn? We began to say, OK,  
22 look. Obviously there's a huge desire, maybe it was  
23 fueled by ARRA, maybe it was fueled by a green jobs  
24 activist movement, maybe it was fueled by just the  
25 growing number of jobs. But whatever it was fueled by,

1 there's a lot people that have an interest in  
2 creating, training and education initiatives for our  
3 industry. And we got a lot of these phone calls. So we  
4 did a little research to learn: What do you want from  
5 us? What do you want from the clean energy employers?

6 Basically, three things came up. One of them  
7 was they wanted venues for meeting together with us.  
8 For building relationships, for sharing information,  
9 for meeting the people who are going to have to meet a  
10 payroll and hire people. Who are those people? They  
11 wanted to meet the hiring people and as many different  
12 venues as possible. The second thing, and there's no  
13 need to go into it in great detail, cause you've heard  
14 about it and you're gonna hear more about it. There's  
15 a huge need and desire for labor market information.  
16 How many people are you hiring? What are the company  
17 names? How do we reach them? What kind of people are  
18 you looking for? And what kind of training needs do  
19 they have? If there are certifications, what kind of  
20 certifications do you want? You guys are the  
21 employers; so talk to us. Tell us detailed  
22 information. And then finally, people want us to  
23 participate as employers in their programs. And you  
24 can see that the very last thing, obviously, that  
25 people want they want us to hire their graduates. If

1 there are no jobs in the end all of the rest of this  
2 is interesting and valuable but is not the game. The  
3 game is hiring. So we began to launch efforts to do  
4 all of those things at a regional level in New  
5 England. This is just one example of the green labor  
6 market work that people at the staff of the—and  
7 contractors of the Clean Energy Council have worked  
8 on. We began to get inquiries when ARRA money started  
9 to flow for residential energy efficiency, asking us  
10 how many people our industry would need. So we did a  
11 comprehensive survey of all of the companies that were  
12 participating in the program. We found out what the  
13 structure of that industry was. We built a pretty  
14 complex and vibrant model that went down into if you  
15 installed this many windows, if you had this many  
16 audits, if you did this many installation jobs, if you  
17 shifted out this many boilers. How many people would  
18 you need? And we came up with these figures which  
19 we're updating right now. The funding for this came  
20 directly from our utility companies, from national  
21 grid and ENSTAR and other companies that are fueling  
22 this work. And so one of the things that I think we  
23 want to leave all of you with and the Commissioners  
24 and everyone, is that there are other forces and  
25 sources of funding beyond government that are

1 interested in making a National Center happen. And  
2 part of that funding is likely to come directly from  
3 the industry companies themselves. We're interested in  
4 talking to all of you about how government and  
5 philanthropy and the industry itself can help make  
6 this happen. Next slide.

7           So, you heard about this project just now.  
8 This was the New England Clean Energy Council  
9 collaborated with Ed Londergans' organization on the  
10 project that you just heard about. And one of the  
11 things we want to leave with you is that we are very  
12 interested in keeping this going over time. Like  
13 collaborating with philanthropists and government and  
14 others, we think that having these websites that are  
15 available and Paul, you asked about whether employers  
16 are participating, the answer is definitely yes, they  
17 are. In fact, our member companies are visiting this  
18 site to learn about where they can get the trained  
19 individuals and educated individuals that they need. I  
20 just want to make a comment about—Carol, a comment  
21 that you made about middle skill people. We definitely  
22 need them but most of our employers, right now, tend  
23 to be focused at the higher end. The post-doctorial,  
24 the Doctorial, the Masters and the more technically  
25 inclined Bachelors students. We desperately need

1 engineers. We desperately need IT people. We need  
2 people who can innovate. We need people who come from  
3 that STEM of science, technology, engineering and math  
4 background. And we want to help fuel it at the K-12  
5 level so that those people will be there when we need  
6 to hire them and we'd like to participate in a  
7 national effort to make that happen. Next slide.

8           And then finally, we do some of our own  
9 programs at the Clean Energy Council and I believe  
10 it's probably true of most of the other clusters. I  
11 know in the Pacific Northwest and in other places, our  
12 colleagues in the clean energy industry are  
13 collaborating with universities and community  
14 colleges. This is just one that we're doing. It offers  
15 executives from other industries a chance to learn  
16 about our industry so that they can start businesses  
17 in the clean energy industry, by bringing their  
18 understandings from either IT, biotech, or healthcare  
19 to our industry. Next slide.

20           So, we're building partnerships. One of  
21 things that you saw on one of the previous slides is  
22 that people want venues to talk to our industry, and  
23 talk to the people who hire, so we collaborated with  
24 the state government and with philanthropists and with  
25 the University of Massachusetts system to hold a

1 series of round table meetings and we've attracted  
2 over 500 people, mainly, employers but also members of  
3 the workforce development community. And these have  
4 built up a whole bunch of opportunities that we are  
5 following up on in New England. And we love the idea  
6 of a national venue to do similar round table  
7 meetings. Next slide.

8           And, I think that's the end. I hope I stayed  
9 within my ten minutes. Please feel free to call on us.  
10 We're at CleanEnergyCouncil.org. And we collaborate  
11 with a lot of people here in California. Thank you.

12           MS. GRAILLAT: Thank you very much.

13           COMMISSIONER DOUGLAS: Well, thank you for  
14 that presentation. It's really great to hear your  
15 perspective. And we always like to hear from  
16 employers. And I think we do, sometimes, feel like we  
17 might feel guilty of inundating them. But, yes, I'd  
18 like to ask you a bit more about your collaborations  
19 in California and how long you've been working with  
20 people in California, what benefits you've gotten out  
21 of these kinds of collaborations.

22           MR. DOYLE: Well, there's several things. One  
23 of the things is the Clean Energy Council has a large  
24 sub-group of its membership are venture capitalists.  
25 And you can imagine whether those venture capitalists

1 are located in Silicon Valley or whether they're  
2 located in Massachusetts, they're looking at national  
3 ventures that they can invest in. And so, our venture  
4 capital community in New England, and especially in  
5 Massachusetts and New York, is in daily collaboration  
6 with venture capitalists out here in California to  
7 find the best and innovation things to invest in.

8 Another thing, is that many of the  
9 companies, whether they're located here in California,  
10 especially solar companies, are collaborating with and  
11 in some cases purchasing, those companies that are in  
12 New England and it works the other way around as well.  
13 We like the idea of the local green and go green in  
14 the local area, but the fact of the matter is the  
15 clean energy industry is likely to follow most other  
16 technological industries in that it's going to  
17 collaborate and there's going to be purchases and  
18 there's going to be mergers. And we believe that the  
19 Cambridge/Silicon Valley nexus is a big part of that.  
20 So we cannot do our work in New England without  
21 collaborating all the time with people here in  
22 California.

23 COMMISSIONER DOUGLAS: Thank you. Thank you,  
24 that was very helpful. I don't see other questions  
25 from the dais, so we thank you.

1 MS. GRAILLAT: Given that there is a caller  
2 who cannot participate in the public comment section  
3 at the end and would like to ask his question now. Is  
4 that OK? Mark, go ahead. Hello? Mark? Hello?

5 MR. KINDELBERGER: Hello?

6 MS. GRAILLAT: You're on speaker and please  
7 ask your questions. Is this Mark? Mark, go ahead. OK,  
8 I think we're having technical difficulties again. I  
9 think we'll move on to the next speaker.

10 Our next speaker is Phil Jordon of Green  
11 LMI.

12 MR. JORDON: Thank you. Good morning,  
13 Commissioners. Can you all hear me OK in the room?  
14 Great, thank you.

15 Thank you very much to the Commissioners for  
16 inviting me to be here today. My name is Phil Jordon.  
17 I'm the Principle of Green LMI Consulting, which is a  
18 labor market information consulting firm. And through  
19 a strategic partnership with BW Research Partnership  
20 we have offices outside of Boston, Massachusetts as  
21 well as in Carlsbad, California.

22 I'm here to talk to you a little bit today.  
23 I have a lot of slides and a lot of material that I  
24 can't get through but I wanted to make sure it was  
25 available for people to see. I am going to talk a

1 little bit about the data that has emerged nationally  
2 and locally, but I really wanted to make four major  
3 points and because I want to be smart about my time  
4 and make sure that I don't go over, I'm going to make  
5 the four points first and then allow you to decide if  
6 you want to listen of the rest of my presentation.

7           The first is as has been mentioned here  
8 before, the research component of this is so  
9 critically important. And I think that's really great  
10 that it came in really first in the feasibility study  
11 that was done because without understanding what's  
12 really needed in the workplace, none of the other  
13 policies really matter a whole lot. Because at the end  
14 of the day, if employers aren't finding the people  
15 that they want to hire, there will be no job creation  
16 or job growth.

17           I that think that the second point is is  
18 that research is enhanced dramatically when you have a  
19 committed and coordinated employer base with whom to  
20 speak. So that's in the beginning of the process in  
21 order to do your quality control to make sure you're  
22 asking the right questions. But it's also so that you  
23 can ensure that when you go out to talk to employers,  
24 you're talking to them about things that make sense.  
25 And you have a kinda advisory group that can help

1 understand and really know the industry in ways that  
2 often times researchers don't know. So, having that  
3 collaboration, having a National Center that can do  
4 that coordination is critically important.

5           The third piece that speaks to that as well  
6 is that the clean and green is a very broad term and  
7 policymakers love to think of things that way. But  
8 employers tend not to. They think of themselves as  
9 energy companies or they think of themselves as  
10 construction firms, right. So they may do this work  
11 but they may not see any more connection to a  
12 wastewater treatment facility than a hospital, right.  
13 So I think it's important in a National Center that  
14 can coordinate and understand that can provide a  
15 significant value, I think, in terms of saving people  
16 time and efficiencies.

17           And then the fourth piece I'm going to make  
18 that I'll touch on briefly, and that Kevin talked  
19 about just a moment before, is this—we're hearing so  
20 much about innovation and so I'm going to share a  
21 little bit of information about innovation so that we  
22 can understand how different innovation is in terms of  
23 workforce perspective than some of our more  
24 traditional industry activities that we're talking  
25 about. So, I do want to make those four points as I

1 start out here and I will be running through these but  
2 I'm sure they will be made available to anyone who  
3 would like to see the full presentation.

4 So, I am going to do an overview of studies. The  
5 first study I'm going to look at is the Solar  
6 Foundation 2010 Job Census that came out this fall. It  
7 was released at Solar Power International in Los  
8 Angeles. And I'm just going to go through some very  
9 basic information here, the information I think is  
10 nice but it's mainly to look at the type of  
11 information that you can get if you do good research  
12 with good engagement from employers.

13 So, here's the first kinda big news in the  
14 solar industry across the entire spectrum of firms,  
15 the majority of firms are expecting to increase their  
16 workforce. Very few are looking to decrease and, as  
17 you can see here, it's rather dramatic increase over  
18 the years. OK, so solar industry employment is growing  
19 dramatically. Now as you can see, a 100,000—slightly  
20 more than 100,000 jobs this is not going to eliminate,  
21 you know, shave five points off our unemployment rate.  
22 However, I think, just looking at the staggering  
23 growth percentages is extremely valuable for this one  
24 small subset of the clean energy industry.

25 As we look at the value chain, we can see

1 here, it's kinda typical value chain. You see your  
2 manufacturing and it increases as you go up through  
3 installation. And, growth across all sectors. So  
4 really important to see here, a lot of people and I  
5 would just note the manufacturing piece here, although  
6 a lot of folks think we don't make anything in this  
7 country anymore, and that is not the case. And in  
8 fact, manufacturing was the fastest of all sectors in  
9 terms of reported growth in the solar industry in  
10 2010. So I think that is an important takeaway despite  
11 some highly publicized information to the contrary.

12 So, I mean, this slide here is one reason you can  
13 see why California makes sense as the place to have  
14 the National Center. When we look just at installation  
15 firms, over a third of all installation companies are  
16 located here in California. And, I think that this  
17 slide also indicates why, if there's going to be  
18 regional centers throughout the country, that would  
19 kinda collaborate with this National Center, that the  
20 northeast does make a lot of sense, northeast, mid-  
21 Atlantic makes a lot of sense as being a satellite  
22 location because there are two obviously kind of major  
23 hubs obviously, with the West being the largest.

24 I would also say in terms of California and  
25 reasons why it makes sense to have the National Center

1 here, is that the public workforce system here  
2 operates very well. That the local workforce  
3 investment boards are really committed to doing not  
4 only high quality research but also training that's  
5 connected to that research. So I think that California  
6 would have a very natural partner through its public  
7 workforce system. And I'm going to talk a little bit  
8 about some of the studies that are being done but in  
9 addition to kinda the entire statewide operation that  
10 there are local organizations like the San Diego  
11 Workforce Partnership, NOVA, Work to Future in Silicon  
12 Valley, that really are doing some phenomenal work  
13 and, I think, willing partners here if there were such  
14 a center.

15 I'm going to talk very quickly about the  
16 NREL solar and solar studies. This again was conducted  
17 in 2010. Again this is really not to look so much as  
18 what's there but at what's possible in terms of  
19 getting the information. This study looked just at  
20 solar installers in the U.S. but went a lot more deep  
21 in terms of the types of information to find out about  
22 workforce and credentialing.

23 So first of all, as I was mentioning before,  
24 even within the solar space, there's lots of different  
25 technologies. And the workers that you need for solar,

1 for installing water heating or pool heating  
2 technologies as opposed to photovoltaic could be very  
3 different. I think it's important for us to recognize  
4 there's difference even among smaller sub-sectors of  
5 energy.

6           There are a lot of jobs here in this space,  
7 so I think that's important, there's about 44,000  
8 installation jobs across the country. And, as you can  
9 see here, I think this is really kinda an interesting  
10 slide and I'm going to go through it very quickly.  
11 These are certainly decent wages. They all have very  
12 strong growth percentage rates over a 12 month period.  
13 And look at the difficulty hiring numbers. I think we  
14 talked, you know there was some talk before about  
15 what's really needed, and high unemployment, who knows  
16 how to do what. Employers are reporting difficulty  
17 finding qualified, quality workers across the  
18 spectrum. Now to Kevin's point earlier, that  
19 difficulty increases dramatically as you kinda go up  
20 the tiers of education. We can ask about workforce  
21 challenges, so these are recruitment and retention  
22 questions. This is the area where we're seeing kinda  
23 generally less difficulty finding general questions  
24 when you get into specifics of when you really hear  
25 about the strong difficulties and then training

1 preferences. These are the types of questions they're  
2 going change sub-sector to sub-sector but the types of  
3 questions I think will be valuable that a center like  
4 this could provide some national information and  
5 regional information for its partners.

6           Again, we got very deep into some of the  
7 knowledge skills and abilities as well as  
8 certifications. This is specific to photovoltaic  
9 workers. So you can see here, there is important  
10 information that can help you understand what are the  
11 kind of training requirements but also where are the  
12 pools of folks that we should be recruiting into these  
13 programs, who are the people who would have the most  
14 success. So you can see when you have high-level of  
15 interest and very important for general construction  
16 experience and knowledge of the national electrical  
17 code. Obviously you know you can start with someone  
18 who has that understanding already in a much further  
19 place down the line in terms of training. So you could  
20 be much more efficient in terms of the training you're  
21 providing.

22           We asked the same question of solar thermal.  
23 Not going to spend a lot of time there, but you can  
24 ask obviously occupation by occupation.

25           And then we did a regional breakdown. So

1 again you can see California and Hawaii, just enormous  
2 in terms of the overall number of firms and the  
3 growth. So, we're looking at lots, lots of new jobs  
4 here and heavy growth and a huge center of activity.

5 I'm going to go very quickly through this  
6 slide. There's a report coming from Work to Future in  
7 Silicon Valley on emerging green employers, and the  
8 only reason I've included this is to talk a little bit  
9 about innovation.

10 Everybody in the world wants to be the next  
11 Silicon Valley; they say we're going to be the Silicon  
12 Valley of Green. Our research indicates that the  
13 Silicon Valley of Green is likely going to be Silicon  
14 Valley. It's important that to note, and like I said  
15 I'm going to run through these, but as we think about  
16 innovation what we found in talking to emerging green  
17 firms, which means firms that were either receiving  
18 venture capital or other types of pre-market funding  
19 and were growing at a very fast pace, so that's how we  
20 defined it. Nearly all of the jobs were in the top  
21 tier. So I'm going to show you this slide here. We saw  
22 again very similar percentage growth, much better  
23 growth in these emerging green firms. We saw lots of  
24 change in the workforce for emerging green firms. We  
25 saw that smart grid energy efficiency and solar were

1 very, very important to these emerging green firms and  
2 other green employers. Again, here's some more of some  
3 green employers here. We're looking at strong  
4 employment growth.

5           This is the slide that I kinda want to point  
6 to. Tier 1 occupations, you have your management, your  
7 professional and science. Tier 2 you have sales,  
8 administrative and production. Typically we're talking  
9 about Masters and PhD in Tier 1. Bachelors or  
10 Associates degree in Tier 2. And Tier 3 is really  
11 kinda your support. And if you look at the emerging  
12 green workforce, compared to California's workforce  
13 and Silicon Valley's workforce, you can see that these  
14 emerging green firms, and you can see that these are  
15 by definition the innovators, they're not producing a  
16 whole lot yet. They're still in the early stage  
17 funding often times but when we talk about innovation  
18 and how important innovation is, and that innovation  
19 is driving the growth, we need to remember that it  
20 takes times for those innovations to move their way  
21 through the value chain to where they start producing  
22 large numbers of jobs and large numbers of jobs for  
23 lower skilled workers. Here you can see, clearly, 61  
24 percent are in the Tier 1 occupations.

25           So again, we have these occupations of

1 interest. We can see you can take your time to look at  
2 these. I did put together some very brief conclusions  
3 to leave you with, and I know I'm just about outta  
4 time. So I will go through them very quickly.

5           First of all, take away very strong growth.  
6 Across all these studies and all the work we've done  
7 nationally and locally, very strong growth. Over half  
8 of employers in all these studies expect to grow over  
9 the next 12 months. And usually between two to five  
10 percent expect a decrease.

11          Again, we have this challenge with innovation,  
12 right. We have to play that with the more traditional  
13 occupational opportunities that are out there.

14          We're looking at a lot of change in the  
15 workforce. Even among existing workers. And here again  
16 we have lots of venture capital flow, lots of  
17 employment growth focused around smart grid energy  
18 efficiency and then solar and other clean energy  
19 technologies. And then, I did throw together a couple  
20 of recommendations to think about. First of all,  
21 continuing feedback from employers is extremely  
22 important, particularly, around the innovation side of  
23 things. Technologies, certifications, all of these  
24 change very rapidly. They change much faster than the  
25 pace, often times of our systems, to keep up with

1 them.

2 Experience is absolutely key. So the new training  
3 models that you do develop. Make sure that there are  
4 opportunities for industry experience. This is over,  
5 and over, and over again we hear this. How important  
6 experience is to these models.

7 And then, finally, the needs are diverse, so  
8 the workforce needs are diverse. They're not the same  
9 in the wind industry as in the solar industry as in  
10 the retrofit industry. So make sure, that when we pull  
11 these training program together that we do them  
12 specialized enough for cohorts that are the right size  
13 with the right skills for the industry we're  
14 targeting. So, that's all that I had for today. I hope  
15 I didn't go over too much. And I'd be happy to take  
16 any questions that you may have.

17 COMMISSIONER WEISENMILLER: Thanks a lot. I  
18 had one question on your slide on Estimated U.S. Solar  
19 Industry Employment.

20 MR. JORDAN: Yes?

21 COMMISSIONER WEISENMILLER: How much of that  
22 is real data and how much of those are forecasts or  
23 estimates?

24 MR. JORDAN: 2010, so I should mention, and  
25 I'll go back to the slide if I can figure out how to

1 do that, here we go. So 2006, 2007, 2008 and 2009 are  
2 economic models that created that and those were  
3 provided by the Solar Energy Industry Association.  
4 2010 was from the direct census. So that was asking  
5 employers, their current employment. And 2011 was  
6 asking employers their projected increase over the  
7 next 12 months. So, 2011 is project. 2010 was actual  
8 reporting.

9 COMMISSIONER WEISENMILLER: Thanks.

10 COMMISSIONER FEIST: How deeply involved do  
11 you think a National Center should become in labor  
12 market information research, doing it directly or  
13 gathering up these employer surveys, to kinda make up  
14 for the inadequacies of the public labor market  
15 information, the BLS. We don't even have codes that  
16 accurately describe what a green job is yet.

17 MR. JORDAN: I think that the first thing to  
18 do would be, as people have used the word often, is to  
19 be a clearinghouse of information. This type of  
20 research, doing survey research on a national basis,  
21 is quite expensive. So it really doesn't make a lot of  
22 sense for anybody to do a national solar job census  
23 after the solar foundation spent a lot of money to do  
24 a very good one, I think. So I think the first thing  
25 to do would be to provide a clearinghouse for people

1 to see what already exists, cause that could save a  
2 lot of money, I think for other organizations or other  
3 entities that were looking to do the other kind of  
4 work. I think it's important that the center also have  
5 a check on quality control. So there's lots of  
6 different studies that can be produced with very  
7 different methodology, so I think kinda somebody who  
8 can review the information that's out there and  
9 provide some feedback would be very important. In  
10 addition, if there is funding to do the research out  
11 of the center, than you also reduce the needs of  
12 redundancies for the public workforce system, for  
13 individual organizations. I could think of the  
14 community colleges could have a huge stake in this.  
15 The public workforce system, to kinda leverage some of  
16 those funds so that you can do a more efficient study  
17 once instead of doing it 10 or 15 different times in a  
18 state or across the country, would be hugely  
19 important.

20           So I think there's three different models.  
21 One would be go off to get funding to do that research  
22 and disseminate it to the public. Second would be to  
23 collect what's out there. Do some, maybe, some peer  
24 review and then publish it. And the third would maybe  
25 to act as a mechanism for pooling funds so that there

1 could be a more comprehensive study or series of  
2 studies done that would provide a lot of information  
3 for people at the highest efficiency.

4 COMMISSIONER WEISENMILLER: Thank you.

5 MS. GRAILLAT: Thank you very much. The final  
6 speaker on this panel is Tim Rainey, who is the  
7 Director of Workforce and Economic Development for the  
8 California Labor Federation.

9 MR. RAINEY: Thank you Commissioners. I'll be  
10 real quick. I've got a lot of scattered thoughts now  
11 that I've listened to everybody speak so I'm gonna try  
12 to make sense of all these notes I scribbled  
13 everywhere.

14 Just real quick. Our affiliates for the  
15 California Labor Federation include 1,300 unions  
16 represented over 200—rather 2 million workers in the  
17 State of California. In every core industry in the  
18 state, especially those most impacted by this green  
19 revolution, I think, we're going through this green  
20 transition, manufacturing, construction, transit, all  
21 these energy all these things that we talk about here.

22 I'm going to try to zero in on job training, if I  
23 can. We, from some recent experience, we have a grant  
24 under CEWTP, in collaboration with the Energy  
25 Commission, with Employment Training Panel, to train,

1 actually, we've had it for a couple years now - to  
2 train and up skill construction workers in green  
3 skills, across the state, focused on journey level  
4 workers and all crafts in the construction industry.  
5 It's been very successful so far. What we found,  
6 before we started the training was, the need for  
7 contractors to have the skills—our signatory  
8 contractors to go after green contracts out there.  
9 What we found—similarly, I'll just mentioned, we now  
10 have a partnership, another partnership, with Energy  
11 Commission with AB 118 funds to do training in the  
12 transit agencies with three of the biggest agencies in  
13 the State of California - LA, San Jose and Sacramento,  
14 for upgrade skills in green for clean field bosses  
15 adoption of that new technology and expanded transit.  
16 And both of those are training about 5,000 workers. In  
17 the transit especially, one of the great opportunities  
18 is, as they face retirement, I think it's between 50-  
19 80 percent of mechanics retiring in the transit  
20 industry in the next five years, so kind of a crisis  
21 in the making here. The training that we're providing  
22 is moving people, who aren't mechanics, up to become  
23 mechanic's helpers and in some cases then become  
24 mechanics and moving the career ladder within there,  
25 providing new opportunities for new hires at each of

1 these agencies. So it's very exciting, this work we're  
2 doing.

3       What we learned in our collaboration with the  
4 Energy Commission, is that I think that very generally  
5 the Department of Labor and its programs that it funds  
6 across the country aren't experts in energy efficiency  
7 and renewables, generally speaking. The same is true  
8 probably that, the opposite is true, rather, about the  
9 energy commission and the Department of Energy. Not  
10 necessarily experts in skills training, although with  
11 some exceptions, I think Ben Goldstein in fact may  
12 have come from DLS, so I think he's cheating. I know  
13 he's working at the energy commission.

14       With all that experience over the last  
15 couple of years, I think what I'd say about this  
16 report, and we are in favor of the National Center for  
17 Clean Energy Workforce, we think it's really  
18 important. And one of the great opportunities, I  
19 think, is helping to align and integrate government  
20 goals for energy efficiency and renewable with  
21 industry and industry demands or standards. For  
22 example, green building standards which aren't  
23 necessarily the same as skills standards. And then  
24 aligning both those with skills training programs;  
25 both labor management training programs like joint

1 apprenticeship training councils and other labor  
2 energy partnerships in community colleges and  
3 workforce boards in the K-12 system. So, I think if we  
4 had that entity at the national level, with very smart  
5 people working on this stuff, we could accelerate the  
6 integration of these worlds so we could move much  
7 faster, not just in California but I think across the  
8 country.

9       And, just one point I think about the governance  
10 association of such an entity. We feel strongly that  
11 the best training is high road training, through high  
12 road partnerships, as Carol pointed out. She had a  
13 great definition of it. There was one piece that I  
14 would add to that. The secret sauce in a high road  
15 training partnership is that workers are actually at  
16 the table in planning and implementation of a training  
17 program, all the way throughout. And we could capture  
18 this kind of thing in a National Center like this  
19 through maybe a tri-part type governing committee or  
20 advisory committee maybe modeled after the State of  
21 Washington's Workforce Investment Board, where it's a  
22 third labor, a third business and a third government.  
23 And that body could help reflect the broad partnership  
24 we need to engage around this stuff. That's it for me,  
25 thanks.

1                   COMMISSIONER WIESNMILLER: Thanks for your  
2 participation today.

3                   MR. RAINEY: My pleasure.

4                   MS. GRAILLAT: Any questions?

5                   COMMISSIONER DOUGLAS: No questions, thank  
6 you.

7                   MS. GRAILLAT: Well, thank you very much to  
8 our panel speakers. All of the panel presenters,  
9 except Mr. Goldstein will be available at the public  
10 comment period, if others have questions to ask. We're  
11 going to move onto the next panel, which is Industry  
12 and Education Perspectives and we'll take just a few  
13 minutes to get set up here.

14                   OK, I think we're all. As I mentioned this  
15 panel is Industry and Education Perspectives. And I'd  
16 like to introduce the speakers. First, we have Van  
17 Ton-Quinlivan, who's the director of Workforce  
18 Development for PG&E, Pacific Gas and Electric and the  
19 co-chair of the Energy and Utility Workforce  
20 Consortium. Our speaker from Tesla, Diarmuid  
21 O'Connell, has cancelled due to illness. Our next  
22 speaker is Kia Walker, who is the Director of Talent  
23 Acquisition for SolarCity. We also have Tiger Adolf,  
24 who's the Western Regional Director for the Building  
25 Performance Institute. Elizabeth Ambos, who's the

1 Assistant Vice Chancellor for Research Initiatives and  
2 Partnerships at the California State University  
3 Chancellor's Office. Emir Macari, who's the Dean of  
4 Engineer and Computer Science at California State  
5 University Sacramento, Leticia Barajas, who's the Dean  
6 of Academic Affairs at Los Angeles Trade Technical  
7 College and Karen Shores, the program consultant for  
8 the partnership's academies at the California  
9 Department of Education. And we'll start off with Van  
10 Ton-Quinlivan.

11 MS. TON-QUINLIVAN: Good morning,  
12 Commissioners. Thank you for having me here. I'm Van  
13 Ton-Quinlivan. I oversee Workforce Development for  
14 Pacific Gas and Electric's 20,000 men and women. And  
15 in addition to my role as co-chair of the California  
16 Energy and Utility Workforce Consortium. Our company  
17 was one of the five corporate leaders selected by the  
18 White House for a partnership in the Skills for  
19 America Initiative. And in the comments I make today,  
20 I hope will spell out our journey in order to have the  
21 right people, the right skills at the right time. And  
22 as I spell out that journey, it will elucidate the  
23 value of this national center, not only in terms of  
24 advancing national interests but how California will  
25 benefit.

1           Some national context, according to the  
2 national study by the National Commission on Energy  
3 Policy, what it anticipates is that the U.S. is facing  
4 a critical shortage of skilled operations workers and  
5 trained professionals to maintain the existing  
6 electrical system, but also to design, build and  
7 operate the future electric power system; including  
8 the clean energy system.

9           Then, overlay what is happening in the  
10 energy sector with an observation shared by HR Policy  
11 Association, which comprises of the global 300  
12 companies and this group has been around for roughly  
13 20 years. So in the last 20 years, only in the last  
14 year-and-a-half, have the members begun to comment on  
15 the fact that they're having workforce issues. And in  
16 a white paper that they wrote, neither education or  
17 educational institutions in the U.S. seem to fully  
18 appreciate the contact increase in the acceleration of  
19 change of work that is done and the skilled workers  
20 needed to do that work. There needs to be greater  
21 alignment between educational curricula and academic  
22 institutions with the needs of employees. So, I lay  
23 these two quotes as context because I believe we're at  
24 the precipice of a convergence of a series of trends;  
25 not only relevant in the energy industry but other

1 industries are likely to follow which means that the  
2 challenges in term of workforce will be a greater  
3 challenge in the future years.

4           So, our company began pre-thinking some of  
5 these workforce dilemmas when we launched a Power  
6 Pathway Strategy in 2008. And again, it was focused on  
7 how do we ensure that we have the right people with  
8 the right skills, at the right time. There's a  
9 comment, "You can post and pray, right? You can post  
10 and pray or you can assure that there's adequate  
11 talent pools out there instead of talent puddles." And  
12 so, but our focus and the angle that we took was  
13 really of cultivating career pathways and, in doing  
14 so, building California's capacity to produce skilled  
15 workers, not only by our company but by the energy and  
16 utility industry; because we recognize that as one  
17 ecosystem.

18           And, I would also put out there because of  
19 the progressive policies that we have, in terms of  
20 energy, the state that is going to feel workforce  
21 pains first will be California. So, in terms of the  
22 levels—the types of activities that we've been engaged  
23 in and how we've come to conclude some of these  
24 learnings that we're going to share later. First we  
25 started off by enlarging the talent pool for our own

1 company, working with community colleges.

2           Then we realized that there were joint  
3 challenges that multiple utilities, munis, even the  
4 water sector had and why wouldn't we come together to  
5 jointly address those issues. And so, that's the  
6 second strand here: preparing for retirement and  
7 diversity trends but also a carbon constrained future.  
8 So that's where the Energy and Utility Workforce  
9 Consortium comes in.

10           The third strand, actually, ties to  
11 Commission Douglas' point about high school academies.  
12 Which is the question of what should we be doing with  
13 the K-12 sector. And we realized that a lot of these  
14 occupations, although initially they may be entry-  
15 level, they require more STEM preparation, more  
16 science, technology, engineering and math preparation.  
17 So we've also launched, with Karen Shores, five new  
18 energy high school academies. And I will allude to  
19 them later. And then we also supported the greening of  
20 communities with all the stimulus money that came  
21 through.

22           The areas that we concentrated in are the  
23 areas of growth and the same areas that would be of  
24 concern to the national center. If you see the top  
25 left, we see growth areas in the skilled craft, a lot

1 of our apprenticeships. On the far right, it's  
2 engineering and Smart Grid. On the bottom, is energy  
3 efficiency and renewable. And the bottom left is the  
4 clean tech vehicle training network. So there's four  
5 sets of training networks and these are all areas of  
6 where we expect growth and we have collaborations with  
7 various institutions to address this issue.

8           Just to give you an example of why  
9 California would precede the country, for example. Let  
10 me give you an example from our bottom left, the clean  
11 tech vehicle pathway training network. With the  
12 adoption of greenhouse gas legislation, one of the  
13 things that we did was pursued cleaning of our fleet,  
14 right.

15           So what are the practical implication issues  
16 with workforce when you begin to do this. Well, what  
17 about the up scaling of our incumbent workers. So what  
18 the dilemma we had was, we had the first electric—all  
19 electric bucket truck. We brought in all of these—a  
20 fleet of hybrid vehicles. Well it turns out if your  
21 mechanics are not certified to maintain those  
22 vehicles, and they're entirely different technology  
23 than combustion engines, that it voids the  
24 manufacturer's warranty. And the manufacturers, Ford  
25 and GM, were rolling out these vehicles so fast they

1 cannot keep up with the training needs. So this is a  
2 dilemma. So what we did was we worked with a  
3 manufacturer to take their curriculum and we worked  
4 with seven community colleges, whom our master  
5 mechanic trained, and then those seven community  
6 colleges then went on to train our 225 mechanics  
7 across our eight mother garages.

8           And the value of that was then, the  
9 community colleges and the local community, then built  
10 up the capacity to deliver that training in their own  
11 community. So that's an example of a dilemma that,  
12 from a workforce side, that a company would face in  
13 adopting some of these public policies.

14           Now, at the national level, I'd like to  
15 introduce the Energy Competency Model. So our  
16 industry, the Center of Energy for Workforce  
17 Development, worked with the Department of Labor to  
18 come up this model. And it's the model of credentials  
19 in order to bridge the language between industry and  
20 education. And it raises the question of whenever you  
21 creating stackable credentials, what level are you  
22 playing at.

23           So in Tiers one, two and three, they're  
24 general career readiness skills. For example,  
25 motivation, reading, writing, teamwork. And then when

1 you get to much more industry-specific industry wide  
2 skills or occupations specific skills, then you're  
3 dealing with the upper layers of the competency model.

4           So, here's an examples of a national  
5 credential that's being created right now that the  
6 Consortium is working with Karen Shores to introduce  
7 at the high school level through the partnerships  
8 academies.

9           Nationally, coming up with an energy  
10 fundamentals curriculum, which is a menu to introduce  
11 students to the wide array of energy careers. And it  
12 focuses on Tiers one, two and three in terms of levels  
13 of competency. And our industry will is creating right  
14 now, it should be available at the end of summer, a  
15 national credential called Energy Fundamentals, that  
16 students coming out can test against and show that  
17 they have mastery.

18           That's at the entry-level to facilitate  
19 students coming in and having them prepared to go  
20 into—from there they can go on to CTE programs at  
21 community college or they can go on to four-year  
22 programs.

23           Here's an example, thanks to Paul, Paul and  
24 the—Paul [inaudible] and the Green Innovation Grant.  
25 Here's a stackable credential that was created thanks

1 to the Green Innovation money with the CSU East Bay.  
2 What happened here is that California is advancing in  
3 terms of the needs of its workforce in energy  
4 efficiency. In the days where we used to have, you  
5 know, the solar community just no solar. The demand  
6 reduction, just no demand reduction. The renewable,  
7 just renewable. Current market requires, and it's  
8 happening within our own company, but also outside,  
9 that somebody now, who's a pre-sales engineer or post-  
10 sales engineer, needs to know across the board all of  
11 those functions and be able to integrate it into  
12 energy solutions for the buyer, the client. And that  
13 is challenging our own workforce, in terms of breadth  
14 and depth of knowledge, as well as third-party  
15 contractors whom we're working with. So what we've  
16 done is gathered up our own internal hiring managers,  
17 as well as the contractors and asked what do you need.  
18 And so, we came up with a four course stackable  
19 credential, called Integrated Energy Solutions, which  
20 is launching the end of this month, in March. And it  
21 readies somebody to become a pre-sales engineer in the  
22 area of integrated energy.

23           So what would happen here is an example of  
24 what the National Center could help us do. So, if you  
25 took a look at where the number one is, CSU East Bay

1 has created this integrated energy solution four  
2 course stackable certificate. What we'd like to do, in  
3 order to create a post-sales engineer, is stack that  
4 certificate with something that they already have  
5 called Engineering Project Management, which ties to  
6 the project management institute's national  
7 credential. So someone who wants to be a pre-sale  
8 engineer takes the first stack, if they want to become  
9 a post-sales engineer, they take the first stack and  
10 the second stack. And if they want to finish up the  
11 masters, they take two more courses. Two-and-a-half  
12 stacks equals a Masters. And that's the kind of work  
13 in articulation that helps workers become, not only  
14 get the skills to be relevant today, but also to be  
15 able to stack and be relevant for tomorrow. So they  
16 continue to build their skills. They have portable  
17 skills for their future. And this is what is going to  
18 be demanded of workers for the industry as we're  
19 trying to respond to new technologies, new evolutions  
20 and what's going to come out.

21           So this is the challenge and the opportunity  
22 for the National Center. How do we build a system of  
23 coherent credentials and degrees to meet workforce  
24 needs of the future, not only to train new workers but  
25 to up skill current workers. And so here, I would

1 challenge are the four areas that we had the most  
2 pain, that the National Center could create the  
3 greatest value.

4           First, accelerate the identification and  
5 creation of national credentials that don't exist. So,  
6 for this integrated energy solutions certificate that  
7 we laid out that all these employers have informed,  
8 there's no national credential that maps to it. And  
9 we'd like the National Center to do that work, to  
10 figure out what should be in that credential and then  
11 to have some national body hold that credential and  
12 award that credential.

13           Second, the curriculum development process.  
14 What can we do to accelerate it? Right. How fast can  
15 we get this curriculum out to market? Cause I know  
16 that that one curriculum we talked about, is also  
17 needed in Central Valley. So, how do we accelerate the  
18 curriculum development time and funnel all employer  
19 participation and education communication, labor  
20 communication, etc. to one group and accelerate that  
21 lead time that it takes to get that curriculum ready.

22           The third area is to figure out a system of  
23 awarding college credit so that workers can continue  
24 to build skills and stay relevant. So that these  
25 credits need to be recognized between colleges,

1 between community colleges, for example, between  
2 apprenticeships going into colleges and then between  
3 system of higher education, between the community  
4 colleges, the Cal State system, the UC system. So  
5 these are very complex systems to navigate and it is  
6 more than what one employer can do. It is the policy  
7 work that would be very meaningful to our workers so  
8 that they can move around to different geographies and  
9 not have to start from scratch; move around with  
10 employers and not have to start from scratch.

11           And then lastly, what we discovered is no  
12 matter how capable or motivated our partners are,  
13 there's always been an issue in terms of instructional  
14 capacity in order to actually teach the content. So,  
15 for this first course with the CSU East Bay, nine out  
16 of the ten courses will be taught by a variety of  
17 industry players because the topic is so new. So we've  
18 got to think about who produces the faculty to teach  
19 and to make it relevant and especially as you push  
20 policies forward, there's less and less people who  
21 know that content. So we need to figure out how to  
22 build the state's capacity with regards to  
23 instructional talent.

24           So those are the four ideas we have to offer  
25 that would be greatly valuable if the National Center

1 could step in. Thank you.

2 COMMISSIONER WEISENMILLER: Hi. We've got a  
3 couple questions for you. First, would you cover a  
4 little more of the K-12 and career tech education  
5 opportunities that PG&E is pursuing?

6 MS. TON-QUINLIVAN: So, let me go—we have a  
7 variety of things we're doing from a philanthropic  
8 point of view but for this audience, I think we want  
9 to focus on the work with Karen Shores, the New Energy  
10 High School Academy, and then what we'd like to see is  
11 a systems approach in terms of student movement.

12 So, if students—What we'd like to do is to  
13 introduce this curriculum that's being developed at  
14 the national level to introduce students to a variety  
15 of careers in energy and a variety of competencies in  
16 energy. If the students could master this curriculum  
17 and test and earn that credential, then that's going  
18 to be very meaningful to them personally, to be able  
19 to obtain a national credential. What we're trying to  
20 do is motivate them to complete and go on to any level  
21 of post-secondary education. One of our colleges  
22 already who we work with, the Community College of San  
23 Mateo, has already agreed to recognize that curriculum  
24 for community college credits. That way, you can get  
25 concurrent enrollment while you're still in high

1 school—I'm sorry, concurrent enrollment of community  
2 college credits while you're still in high school  
3 because you're doing a curriculum that is recognized  
4 at the community college level. So I think our primary  
5 worry at the high school level is that students are  
6 not completing, first of all, and secondly, we'd like  
7 for them to stay in school, and especially make sure  
8 that they have the Tiers one, two and three skill and  
9 then go on to build, especially, STEM skills, so  
10 computers, math. Those are the fundamentals of a  
11 variety of jobs. Did that help?

12           COMMISSIONER WEISENMILLER: That does. The  
13 other question is does PG&E have remedial programs for  
14 its employees on STEM issues?

15           MS. TON-QUINLIVAN: From a policy point of  
16 view, what we want to avoid is having—we have a lot of  
17 apprenticeship programs, so 30 apprenticeship programs  
18 at the entry-level someone can be hired into. What you  
19 want to avoid from a policy is for us to have to  
20 downscale those programs. We want to keep the standard  
21 of those programs the same, however, the challenge is  
22 that we need to work with the education system to  
23 ensure that students who compete have at least Tiers  
24 one, two and three when they come in and complete our  
25 pre-employment test. So, for our initial programs that

1 we launched in year one, when we were piloting, we  
2 normally have a 30 percent pass rate on our pre-  
3 employment test and those ferret out math and reading  
4 and in diverse communities, we often experience much  
5 worse, which is very consistent with other companies.  
6 And so, in our year one when we piloted working with  
7 the community college system and the workforce system,  
8 each of us doing what we do best, which is we as an  
9 employer articulate what we need to hire the skills  
10 and requirements. The workforce system does a better  
11 job of outreach and case management of candidates. So  
12 screening, outreach and case management. And then  
13 community colleges creating curriculum that is better  
14 mapped to what we need. When we did that system we  
15 were able to raise in the first pilot the pass rate to  
16 55 percent, the second pilot to 73 percent and the  
17 third pilot to 100 percent; and consistently over the  
18 year, we've maintained a diversity level in the 57-58  
19 percent. So, that approach of working with the three  
20 system has allowed us to create a reliable pool that  
21 we can go to.

22 COMMISSIONER WEISENMILLER: And my last  
23 question was if there were a National Center, at least  
24 in theory, would PG&E consider contributing to that  
25 venture?

1 MS. TON-QUINLIVAN: In terms of—

2 COMMISSIONER WEISENMILLER: Financial

3 support.

4 MS. TON-QUINLIVAN: I probably would not be  
5 the one to answer that question but we certainly have  
6 a lot of experience in—and we've been a catalyst for a  
7 lot of this work, where we're working together with  
8 the education community, with the industry community.  
9 I think there's a lot of galvanizing and catalyzing we  
10 can do to help advance the center.

11 COMMISSIONER WEISENMILLER: Ok. Thank you.

12 MS. GRAILLAT: Thank you very much. As I  
13 mentioned earlier, our next speaker Diarmuid O'Connell  
14 will not be able to participate due to illness. Kia  
15 Walker then will be our next speaker. She's the  
16 Director of Talent Acquisition for SolarCity and she's  
17 participating via WebEx.

18 Kia, are you on the line?

19 MS. WALKER: Hello. Can you hear me?

20 MS. GRAILLAT: Yes. I think you need to speak  
21 as loudly as you can.

22 MS. WALKER: OK. Good afternoon. I wanted to  
23 just speak briefly about SolarCity. We are a five-year  
24 old company and we've been growing rapidly. And we've  
25 been focused on solar installation, residential and

1 commercial. And within the last 10 months, we've  
2 started expanding on energy efficiency as an  
3 additional offering for residential homeowners who  
4 don't qualify for solar or who also want to make their  
5 home more efficient.

6           So, the key areas that we hire in, that  
7 we're continually looking for talent are really  
8 fourfold - solar PV installers, and those are hourly  
9 boots on roots type of employees, all SolarCity  
10 employees do get stock and our full-time employees,  
11 and we have been hiring in California about 10 a month  
12 consistently. Which really, there really isn't  
13 certification that's available that's nationally  
14 recognized NABCEP, and I echo the request to think  
15 about how do we make consumers more aware of these  
16 national certifications so that they're aware that if  
17 you hire SolarCity and they have NABCEP-certified  
18 installers, you're getting a standard of quality, a  
19 standard of excellent. We reward people, once they  
20 join SolarCity, if any installer takes the second  
21 level of NABCEP certification, we will actually give  
22 them an addition three-dollars more per hour to  
23 recognize that achievement and level of knowledge. The  
24 challenge is getting people to actually take the  
25 certification because they have to do it at night or

1 when they're not working. And so, we're a little  
2 disappointed that more people aren't participating in  
3 that. And that's another opportunity, is it something  
4 that we, as an employer, could become a NABCEP-  
5 certified employer—or in addition to the community  
6 colleges offering this certification.

7           The second area that we frequently hire in  
8 is energy efficiency technicians because this is a  
9 growing area for our business. So we're not hiring as  
10 much as rapidly yet but I anticipate that changing in  
11 the near future, and these are people who have HVAC  
12 skills, knowledge of basic wiring and are EE, or  
13 energy efficiency, techs. We prefer people to have a  
14 NATE certification and then for more advanced level  
15 positions in the field, the BPI certifications we  
16 really value.

17           On our—in our home office or headquarter  
18 location, which is based in San Mateo, California, the  
19 two areas that we hire for the most frequently are  
20 designers - once a customer orders a solar system we  
21 need the design to design the system for their  
22 particular home and then we have an AutoCAD drafter  
23 create the model. So, for our engineering designers,  
24 we typically hire people that are typically just a  
25 couple of years out of school with civil engineering

1 or mechanical engineering degrees. And we hire them  
2 out of top tier, four year engineering schools. So an  
3 ask we have for this panel, is to think—or the center,  
4 is to also think about developing course work at the  
5 four year university level around solar design, energy  
6 efficiency design as part of their engineering  
7 coursework.

8           And then the fourth area, because of course  
9 we have to sell the systems, is sales. So we hire  
10 inside and outside sales consultants. And we will  
11 train them, we don't require experience in renewable  
12 energies but it's certainly preferred because it's a  
13 very complex, technical sales cycle. And I just  
14 noticed that NABCEP is testing sales certification. I  
15 think the first exam is this coming Saturday, or this  
16 coming week. So that's something we'll be taking a  
17 look at and who are the names that are posted on that  
18 site as a possible recruiting source.

19           So far, we've been very fortunate because of  
20 the slowdown in the construction business finding  
21 qualified candidates who we can then train in OSHA and  
22 safety in actual details of solar installation,  
23 haven't been as challenging but I expect that'll  
24 change and so getting ahead of that participated trend  
25 to develop qualified candidates would really be of

1 interest to us.

2           The national certifications increasing  
3 awareness among consumers is also a plus because if  
4 our consumers ask for it, we as a company will  
5 obviously have incentive to certify our employee base  
6 and develop that brand or that recognized standard of  
7 quality.

8           So, just in closing, I just want to thank  
9 the Commission and everyone participating today  
10 because just going forth, staying in close contact  
11 with people like myself and others in private  
12 industry, that understand on a continual basis what's  
13 important, what are the needs, I think, that are  
14 paramount to the center's success because as one  
15 gentlemen said, there's no one size fits all solution.  
16 So, thank you for the time.

17           MS. GRAILLAT: Thank you.

18           MR. WEISENMILLER: Yeah. Thank you for your  
19 presentation. Do you have any questions? Paul.

20           MR. FEIST: I just had one question. Are you  
21 experiencing any workforce gap in marketing and sales?  
22 I've heard of others in this field that are having  
23 trouble filling those positions that create demand.

24           MS. WALKER: Frankly speaking, for marketing,  
25 we don't require people to have a background in

1 renewable energy so we tend to hire from the Valley  
2 and then we're competing against tech companies. So  
3 our challenge there is being competitively in  
4 compensation because we're labeled as a construction  
5 company and we tend to be lower on the pay scale as a  
6 late stage start-up, pre-IPO than some of the larger,  
7 you know, the Googles, the Yahoos, the Intuits of the  
8 world. So that's our challenge on the marketing and  
9 finance side.

10 MR. FEIST: Thank you.

11 MS. GRAILLAT: Any other questions? Ok. Thank  
12 you very much. Our next speaker is Tiger Adolf, who's  
13 the Western Regional Director for the Building  
14 Performance Institute.

15 MS. ADOLF: Thank you. I'm going to get where  
16 I can see the Commission.

17 Commission, staff, guests: thank you very  
18 much for having us participate today. Building  
19 Performance Institute is a national standards setting  
20 organization for the existing building market. We  
21 deliver certifications for retrofitting of existing  
22 homes. We have more than 240 training organizations  
23 that are affiliates including more than 40 community  
24 colleges nationwide. We prepare those certifications  
25 in accordance with national standards and it's an open

1 consensus-based system. We are ANSI accredited to do  
2 that, 17024 and working on standards for personal  
3 certification in alignment with the DOE guidelines, we  
4 heard from Benjamin earlier.

5           And there's a lot of work out there. Of  
6 course, we all know about two-thirds of the existing  
7 homes need energy efficiency work so it's not a matter  
8 of the market not existing; so much as the market that  
9 is out there no knowing it exists. Of course, retrofit  
10 in existing buildings is very much in keeping with  
11 achieving California's goals.

12           Home performance provides a lot of solutions  
13 for the market, and this is where I think the center  
14 could first come into a serious resource for consumers  
15 and homeowners that are looking for comfort, health,  
16 and safety issues as well as addressing their energy  
17 bills. Of course, it goes toward climate change and  
18 energy independence as well.

19           So we all know that energy audits are a  
20 waste of energy and money if they don't get converted  
21 to work. Doing an audit that doesn't become a job in  
22 retrofit doesn't save anybody any energy and it  
23 doesn't improve the home at all.

24           And I think that it's kind of—this way we  
25 know there are energy audits, we know that the jobs

1 perform and then we know there is a miracle in the  
2 middle; and that miracle is home performance  
3 contracting.

4           When a miracle occurs, then you actually  
5 save energy and you help people's home put money back  
6 in people's pockets.

7           So what the center could do to better align  
8 job training with real-time emerging needs are to  
9 acknowledge the rest of the human capital, aside from  
10 the contractors. There is a huge, huge need for  
11 technical training. But there is also need for a  
12 conduit to other career paths in the residential  
13 energy efficiency system. There is a need to align  
14 skills with quality, to provide those high performing  
15 jobs that are supposed to be low cost. They can't  
16 always be low cost, but making that a portable,  
17 nationally recognized credential that people can take  
18 anywhere or bring to California is very important. And  
19 developing uniform messaging to help consumers recognize  
20 that their needs can be met with verifiable skill sets  
21 that is key to what I think the center could do, not  
22 only for California but for the nation.

23           So there are a lot of occupations and whole  
24 house contracting. It's not just about the person  
25 crawling in the attic or the crawlspace, or about the

1 person doing the energy audit. But all the support  
2 staff that they need that need to understand what the  
3 industry is. And that's where the center could also  
4 help with aligning and being that clearinghouse for  
5 other training for the support staff, for the quality  
6 assurance people, for the suppliers that need to know  
7 what's going on in energy industries, and how the  
8 policies are changing so they need to align their  
9 products.

10 Marketing program administrators,  
11 implementers, all of those are there. The Center could  
12 be a good clearinghouse for helping develop those  
13 apprenticeships that don't exist now. There are no job  
14 classifications for energy auditors or many of the  
15 energy efficiency technical skills. That would be a  
16 good place for the Center to work.

17 Definitely help with the marketing is  
18 something that all of these workforces need. They need  
19 help with customer service to be able to find out what  
20 the customers are really looking for and address those  
21 needs. They need help with sometimes very basic  
22 accounting and reporting skills, especially in  
23 programs like the [inaudible] Hearst two programs that  
24 require the contractors to report back. They need some  
25 basic training skills in computer use and how they

1 work with the databases and how they deal with those  
2 things.

3 Payroll of course and human resources are  
4 basic skills to most businesses but the construction  
5 industry has been a little slow in residential to move  
6 that direction. So those are other good alignments  
7 that the center could provide.

8 Standard setting is a scientific process and  
9 it's a very important process. You have to know what  
10 your standard is to know if the work you're doing is  
11 compliant with the standard. It's really important,  
12 and this is a real picture, this is quality assurance.  
13 You can't smell your own stink so you have to have  
14 someone who can help you with that. And that's where  
15 standards come into play, developing those standards  
16 on a nationally credentialed basis. As ANSI lays out  
17 that process, engaging not only the experts in the  
18 industry but the employers and the manufacturers and  
19 all of those in developing the standards, that is also  
20 essential.

21 Building the stackable credentials is huge.  
22 From entry level workers to seasoned veterans, you  
23 have to be able to cross those skill sets. We have  
24 been working with DOE's guidelines and have already  
25 developed the guidelines in accordance with ANSI and

1 ANSI approved certifications for insulation and air  
2 ceiling installers.

3 BPI started the standard work specification  
4 project, invested \$50,000 in developing that air  
5 ceiling standard and donated that effort to DOE. So,  
6 that's where that started. And they have built on that  
7 tremendously.

8 We will continue to work with that and  
9 currently have, in process, the energy auditor  
10 installer crew chief and quality assurance inspection  
11 certifications. We are ANSI accredited and will  
12 continue developing the standards and professional  
13 certifications along those lines.

14 So, what is the market. You might be a  
15 little surprised when you look at who is coming to  
16 this industry. Energy efficiency is not necessarily  
17 all about people graduating from high school or  
18 college. There are growing businesses that need new  
19 hires, of course, and helping those businesses be  
20 successful will help create wealth. Improving homes,  
21 improves health. Very often you can improve indoor air  
22 quality significantly, reduce people's medical costs,  
23 reduce the operating costs and put that money back  
24 into the homeowner's pockets. So it's good that way.

25 But this is what your workforce looks like.

1 I'll give you a caveat. I'm not gonna take you through  
2 the whole survey. We did this survey with an MIT PhD  
3 candidate and the whole survey follows my contact  
4 information in the presentation so you can see it in-  
5 depth. But we wanted to find out what the baseline was  
6 for who was getting BPI certified. We want to create a  
7 system that dynamically monitors that change. So  
8 there's a survey that comes up at the end of every  
9 written BPI exam now, that asks them questions about  
10 what they are doing, why they are taking the training,  
11 what they intend to do with that training. It provides  
12 really good insight into their motives. So what you  
13 might not realize is that 50 percent of the people  
14 taking this already have an advanced degree. They're  
15 seeking BPI certification to raise that bar in their  
16 industry, to give them marketing distinction. Forty-  
17 two percent already hold another certification, like a  
18 [inaudible] certification or a LEED certification,  
19 they might be a [inaudible] rater. They're already  
20 certified but looking for BPI, again, to raise that  
21 bar. Twenty-five percent are already general  
22 contractors. Over half are over 47 years old or older.  
23 You have an aging demographic. They're not in high  
24 school anymore; they've been out and in the industry.  
25 Seventy-two percent of those are already employed in

1 residential energy efficiency. They will continue to  
2 do that; the other 25 are seeking jobs in residential  
3 energy efficiency. And three percent, never had one  
4 and never intend to have one, it's personal interest.

5           So that's my contact information. And after  
6 that, again, follows the entire survey.

7           MS. GRAILLAT: Thank you.

8           COMMISSIONER WEISENMILLER: Thanks. Any  
9 questions? No questions. Thank you again.

10           MS. GRAILLAT: Our next speakers are  
11 Elizabeth Ambos, who's the Assistant Vice Chancellor  
12 for Research Initiatives and Partnerships for the CSU  
13 Chancellors Office, and Emir Macari, who's the Dean of  
14 Engineering and Computer Science at Sacramento State  
15 University.

16           MS. AMBOS: Thank you very much. And because  
17 Dr. Macari and I are doing a talk tag team  
18 presentation, we're going to sit here and queue the  
19 slides. We're very appreciative of your assistance.

20           First of all, thank you very much for the  
21 opportunity to speak with you today concerning CSU's  
22 contributions to a potential NCCEW and some of the  
23 interest we have in this exciting new endeavor and  
24 concept. As mentioned earlier, my portfolio includes  
25 the research and partnerships arm of the CSU, which

1 encompasses a lot of our workforce development  
2 programs and I think that's emblematic of a lot of the  
3 comments have made thus far, is that we're trying to  
4 couple an innovation agenda with a workforce agenda,  
5 and I think this is a good fit both for the CSU a  
6 partner in this ecosystem and to the state's needs at  
7 this time.

8           What I will do is an overview and Dr.  
9 Macari, Dean of the School of Engineering at CSU  
10 Sacramento, will represent some of the faculty and  
11 deans across the system, particularly in his  
12 university that are leading the way in that  
13 combination of research service professional  
14 development and workforce development.

15           So, I'll begin with an overview of what  
16 we're doing already to support the economy and how we  
17 might support and be supported by the NCCEW. And I  
18 think for the takeaway points is the innovation  
19 agenda, the workforce development combined with that  
20 and, particularly, connect, connect, connect and  
21 partner, partner, partner. And I think all of the  
22 people that have spoken before have made that point  
23 but I think that's very true for the CSU. And we are  
24 the largest and most diverse senior degree granting  
25 institution in the country, if not the world, serving

1 more than 430,000 students, so almost half a million  
2 students yearly. And we're graduating more than 90,000  
3 Bachelors, Masters and Certificated Professionals each  
4 year. So we have over 2,500,000 alumni and yes, most  
5 of them live and contribute to the economy of  
6 California.

7 Not only that, but we've talked about the  
8 underrepresented of the segment of the workforce,  
9 which is often is in socio economic and ethnic racial  
10 categories and we are very proud of the fact that we  
11 are graduating more African American, Hispanic and  
12 American Indian students than all other public and  
13 private institutions in the state combined.

14 Not only that, we are what we call upstream  
15 and downstream; we are very proud recipients of the  
16 transfer students from the California community  
17 college system, over 70 percent of those transfers go  
18 to a CSU. And we're also very proud of our  
19 partnerships with University of California and private  
20 research universities, with whom we do a number of  
21 partnerships and increasingly, frankly, send many of  
22 our students on to their PhD programs. And about 25  
23 percent of our faculty are UC degree recipients, a  
24 fact that is maybe not as well as it could be.

25 So, we are a major education ladder,

1 particularly with the community colleges. And we are  
2 very interested, did not put on this slide, but we are  
3 keenly interested, of course, in the K-12 environment  
4 particularly because of our teacher preparation.

5           So on to the NCCEW, the three points of this  
6 pyramid are renewable energy, energy efficiency and  
7 clean energy vehicles. And at the bachelors and  
8 masters level, you consider, when you consider that  
9 CSU has close to 50 percent of the professionals in  
10 areas such as agriculture, business, life sciences,  
11 including bio technology / bio-fuels, engineering,  
12 it's a very strategic partnering opportunity. We feel  
13 that we have a high leverage environment. We also are  
14 growing our services in a particularly green niche  
15 called the Professional Science Masters; this is a new  
16 decade long Masters program that combines internships,  
17 business and technical preparation. We are about 10  
18 percent of a nation's and about 80 percent of the  
19 state's programs, I'd say in the last two-three years  
20 the major growth we've seen is coming online in the  
21 energy sector for these particular programs. They  
22 include an industry internship and always have an  
23 industry advisory board, so it's that close coupling  
24 with the employment sector. And, as I said before, the  
25 little graph on the right is how closely our graduates

1 mirror California's diversity. So, next slide please.

2           So in terms of the disciplines that are  
3 likely to form the core of the clean energy economy,  
4 we see that we are educating that sector of the  
5 ecosystem in Bachelors and Masters degrees, we have  
6 abundant degree offerings already, some of them are  
7 very well integrated with community college offerings  
8 and high school academies; some are not. We also have  
9 a number of applied research endeavors that really are  
10 closely partnered with our educational programs and  
11 with industry sponsors, it's very common to have that  
12 cross fertilization. We have partnerships with SBDTs,  
13 not shown on this slide because it was too recent to  
14 put on so we've also been approached recently by the  
15 Manufacturing Association Council because they're very  
16 interested in the laddering concept from their OJT  
17 community college into four-year programs. A couple  
18 issues at the ethos core of the green economy is  
19 walking the walk, not just talking the talk. And so in  
20 our physical plant, and this is I think a distinctive  
21 aspect of our culture, we actually have a commitment  
22 very strongly aligned with AB-32 to bring all of our  
23 campuses into a much more energy efficient operation,  
24 but we actually have our faculty and staff often  
25 studying the effects of that, so it's tightened that

1 loop in preparation. So when we conceive of the NCCEW,  
2 as a major connector of industry training needs with  
3 education providers, whether these be our system that  
4 community colleges, UC or privates receive this is a  
5 critical need. And, another need, we see that can be  
6 facilitated by NCCEW is this career ladder concept.  
7 The concept that people will always need more  
8 education or maybe move laterally to get into a  
9 slightly different aspect and that we need to have a  
10 clearinghouse to help connect all those efforts. Next  
11 slide, please.

12           So these are going to go very, very quickly  
13 because you have them in your packet. They're just  
14 examples, doing a tour around our system of what we're  
15 doing to educate the clean energy workforce. So, I  
16 won't highlight any of these in particular. I'll allow  
17 you to read them at your convenience. But we have  
18 smart grid education efforts, which Dr. Macari will  
19 speak to; we have hydrogen fuels facility at both  
20 Humboldt State and Cal State LA. Next slide, please.

21           We have efforts, as already noted, at CSU  
22 East Bay and again, these are very regional efforts  
23 that really get at tightening that loop between what  
24 the workforce needs are, what our students want to do,  
25 where the jobs are and the research needs of the

1 surrounding communities. So, both CSU East Bay and San  
2 Francisco State have centers that work very closely  
3 with industry partners on very applied problems that  
4 need to be solved and they involve their students in  
5 this activity so that there's a very tight loop  
6 between the education and the discovery process. So,  
7 next slide please.

8           Last, but not least, we are able to deploy  
9 on a system wide basis in a number of areas, and one  
10 example is our CSU programs for education research and  
11 biotechnology. We've initiated a bio-fuels initiative,  
12 so essentially we can organize a SWAT team for our 23  
13 campuses. We can find the people who have interests in  
14 this area, get them to work together; what comes out  
15 of that is some joint research but also new education  
16 programs. And we are finding that those tend to  
17 coalesce more quickly than if we don't set up these  
18 counter communication linkages. So, I'll turn it over  
19 to Dr. Macari right now and he'll start with the  
20 partners and go on to Sac State.

21           DR. MACARI: Thank you very much, Beth. Good  
22 afternoon. I see that Panama wished us a Happy  
23 Daylight Savings Day. I'm going to wish you a Happy Pi  
24 Day, 3/14. And my daughter, as we were leaving this  
25 morning, she said that in five years, it will truly be

1 Pi Day - 3-14-16. So we got some geeks in my family, I  
2 think.

3           This is just a little of an overview of how  
4 we have been partnering with different utilities  
5 across California in order to be able to reach the  
6 goal of bringing smart grid to California. And really,  
7 to the entire nation. So different universities of the  
8 CSU have been partnering with a broad group. And,  
9 we've created a coalition throughout the state in  
10 order to help us bridge the gap between the employers  
11 and us in the workforce development or the education  
12 area that needs to be bridged as several speakers have  
13 said before me. Next, please.

14           Two years ago, we began this California  
15 Smart Grid Center at Sacramento State. It's been a  
16 great collaboration with a wide range of stakeholders,  
17 including utilities, broad energy industry,  
18 educational institutions, and workforce organizations,  
19 local, state and federal agencies that deal in energy  
20 as well as a variety of non-profit organizations. I'm  
21 happy to say that folks here at the California Energy  
22 Commission have been very supportive, specifically  
23 we've been working very closely with Mike Gravely and  
24 Pedro Gomez. They both have been great mentors for our  
25 efforts.

1           Part of the work that we're doing, in  
2 addition to the research and support of industry in  
3 California, to bring smart grid is also to help  
4 develop the new workforce that is needed for this new  
5 approach to electricity and one that combines the  
6 power grid has always been around and we have a very  
7 strong power engineering program at Sacramento State.  
8 And now bringing in the telecommunications to match  
9 in. So we need to recertify or update or upgrade a lot  
10 of the industry folks that are already out there and  
11 be able to teach the IT professionals the importance  
12 of the electric grid and power engineering, as well as  
13 the power engineers the importance of  
14 telecommunications, cyber security, databases and all  
15 those things. Next, please.

16           This is just a list of a wide range of  
17 courses we offer as part of our certificate programs.  
18 We receive accreditation and Ben Goldstein from DOE  
19 mentioned accreditations this morning; but we need to  
20 have an accreditation with meat that brings close  
21 relation between industry and academia. Currently,  
22 engineering programs get accredited by ABET, the  
23 Accreditation Board for Engineering and Technology,  
24 but bureaucracies are created and employers need to  
25 be---are often take a backseat so we need to have

1 employers really be in the front seat with these  
2 accreditations. Next, please.

3           This is one that we've been working very  
4 closely with PG&E and the Energy Pathways Program that  
5 Van Ton-Quinlivan presented earlier. It is a group of  
6 courses that we are offering for certificates. We  
7 already have two of the courses online, coming online  
8 this summer. We will have the rest of them pretty  
9 soon. And what we want to do is service the industry,  
10 to create apprenticeships and internships, for the  
11 students to be able to have multiple options. And  
12 these ideas that Van presented earlier with  
13 credentials and certificates that can eventually lead  
14 not only to the Associates degrees but count toward  
15 the Bachelors degree and Masters degrees. And we know  
16 that accreditation agencies need to be on board for  
17 this. Next, please.

18           This is just a little example of the need to  
19 be inclusive in California. If we look at our census  
20 this year, the 2010 census, we notice that California  
21 now is as diverse as any other place in the planet,  
22 basically. We have a population of 40 percent Anglo  
23 Americans, 40 percent Latino Americans, 12 percent  
24 Asian Americans, 6 percent African Americans so we  
25 need to develop a diverse and talented workforce, and

1 I believe what CSU is doing and this is just a little  
2 example of that. We need to develop it with hands on  
3 education in support of this economic development.  
4 Next, please.

5           This graph shows an effort that we're  
6 working with PG&E and also Jim Caldwell from the  
7 Workforce Incubator in the Bay Area where we are  
8 trying to build the consortium of universities, energy  
9 providers, industry and government entities in order  
10 to be able to bring about economic development. States  
11 are competing with each other even harder than a lot  
12 of times we see the United States competing with other  
13 states—with other countries. So somehow, this National  
14 Center is gonna have to be able to bridge the gaps,  
15 the competitive gaps, that we already have because a  
16 lot of states are hurting and I think California is  
17 the best example of that. We need to bring economic  
18 development to our region. As we are developing this  
19 workforce group, I think what was presented earlier  
20 and as the examples in Massachusetts, we need to  
21 consider start-up companies, small businesses, and  
22 bring them all to the table because those are the wave  
23 of the future. Thank you very much.

24           MS. GRAILLAT: Thank you. Any questions?

25           COMMISSIONER WESIENMILLER: Any questions?

1 No. Thanks again for the presentation. I think one of  
2 my first votes as a Commissioner was for the Sac State  
3 Smart Grid initiative so it's always good to see it  
4 thriving.

5 DR. MACARI: Thank you very much,  
6 Commissioner.

7 MS. GRAILLAT: Dr. Ambos and Dr. Macari will  
8 not be available for the public comment section of the  
9 workshop---

10 DR. MACARI: We will be, we will be--

11 MS. GRAILLAT: Oh, I'm sorry. They will. So  
12 save your questions until the public comment period.  
13 Our next speaker is Leticia Barajas, who's the Dean of  
14 Academic Affairs at Los Angeles Trade Technical  
15 College.

16 MS. BARAJAS: Greetings Commissioners. And,  
17 it's great to be back. For some of you, I was here in  
18 July to tell you our experience as a CEWTP grantee.  
19 You know, some of the challenges but some of the  
20 opportunities that we have. And today, I'm primarily  
21 going to focus at the question at hand which is how  
22 can a community college benefit, if so, from a  
23 National Center of Clean Energy Workforce. And so I'll  
24 be focusing my presentation today not so much on Trade  
25 Technical College but on how we see the role and the

1 importance and some of the recommendations we have  
2 also. But, of course, before I begin you have to kind  
3 of understand the context that I'm coming from. And,  
4 as you all know, Trade Technical College has had over  
5 85 years of experience in workforce development. We  
6 consider ourselves a leader, especially in the  
7 Southern California region in clean energy and  
8 transportation and education. We are a direct CEWTP  
9 grantee for clean energy and we are also now, luckily,  
10 we were able to leverage that so we thank you, to  
11 become a CSD and a US Department of Energy Official  
12 Weatherization Training Center. And as you can see  
13 from the slides, we have some other really exciting  
14 components. We are the primary training for both the  
15 City of Los Angeles and the County of Los Angeles as  
16 CEWTP grantees. But, I think, what's really important  
17 is the experience I speak to you today and the  
18 questions and the roles are really focused on the work  
19 that we've engaged and our actual hands on experience  
20 that we've done in this work- in this field of clean  
21 energy, especially over the last 5-6 years. So we've  
22 learned, so we have some lessons learned. We have some  
23 future recommendations. And most importantly, we have  
24 the experience and the background in working with  
25 community-based organizations, industry partners, K-

1 12s and in particular K-12s, since I know that you  
2 have focused a lot of questions on that, we don't  
3 believe K-12s start at the high school academies. Our  
4 approach is really at the middle school level,  
5 starting at the sixth, seventh and eighth grade. And  
6 just to give you a little bit of background, we  
7 concurrently enroll 1,600 who are somehow enrolled in  
8 either LAUSD or community charter schools with  
9 approximate 700 of them coming from sixth, seventh and  
10 eighth grade. So we believe in granting college credit  
11 early on and that's the way you really do the  
12 pipeline. And also, you've known of our work with some  
13 of our community partners but most importantly the  
14 non-profits, especially the advocacy groups where we  
15 get a lot of lessons learned and use a lot of their  
16 information.

17 I think a lot of individuals forget what the  
18 role of the community college is and I think it's  
19 because partly, it's our fault for maybe not some time  
20 maybe we weren't really listening to industry. But I  
21 always like to refresh everyone's memory in terms of  
22 what is part of our core mission—our core mission is  
23 really to do workforce development. So I know Carol,  
24 earlier in her conversation or in her discussion, she  
25 brought up that most of the jobs that we're going to

1 have are really middle-of-the-road jobs. Those are the  
2 jobs that we are currently training for or a lot of  
3 colleges, like trade tech, are preparing to train for.  
4 So I want to make sure that you know that that's  
5 something we're focused on, there's new intensity and  
6 we have a new understanding about how important this  
7 role of becoming the primary workforce trainers in the  
8 state.

9           Earlier, I think Cal State mentioned that  
10 over 70 percent of their students come from the  
11 community colleges and that is true. We have roughly-  
12 for people of color especially, this is becoming a  
13 more and more diverse state. Over 70 percent, as  
14 [inaudible] mentioned, 70 percent of their students  
15 come from community college. We based on some of the  
16 post-secondary studies, that's roughly 70,000  
17 students. So, we are the portal. The community  
18 colleges are anyone with over 18 years of age and also  
19 anyone who wants to come in to do workforce training,  
20 but we are the career ladder to two of the Cal States  
21 and to the UCs. So while other systems may focus on  
22 the research, we do the hands-on and we do the  
23 research, we do the research as well but we also do  
24 the hands on workforce training.

25           One of the components that you've heard a

1 lot about, so I'm just gonna gloss over, is really the  
2 importance of middle-of-road post-secondary education  
3 and training. At trade tech, for example, which is  
4 what I can speak to; basically we host several  
5 apprenticeship programs with some of our local power  
6 providers. We take very seriously, with our non-profit  
7 partners and some of our labor partners as well, pre-  
8 apprenticeship training. So we do quite a bit of  
9 training for IBEW and others. But, most importantly,  
10 we see our role in terms of helping and advancing  
11 people into industry and career ladders. It's  
12 important to know that we do not want to train people  
13 to become weatherization installers. Our role to  
14 become a weatherization training center was a very  
15 strategic one in that we use that as a portal  
16 occupation to really take students up that career  
17 ladder and for them to understand what other  
18 opportunities are; so we can fill and insure we have  
19 met the industry's workforce needs. Some of the  
20 programs you'll see that we have, as you're aware, is  
21 aside from solar we are doing quite a bit of work in  
22 solar thermal and other areas. But most importantly,  
23 because of the challenges of putting some of our  
24 candidates in some of our CEWTP grantee trainees to  
25 work, we started developing the entrepreneurship model

1 and we actually have focused and partnered with our  
2 district, who is a small business—they have a small  
3 business dream center, it's really a development  
4 center. But that whole notion is to build  
5 entrepreneurship into—with our clean energy students  
6 and get them into providing those—inventing  
7 opportunities for themselves so they can actually  
8 become better employed and they can become their own  
9 employers so we're very much focused on that.

10           Most importantly is the last bullet I placed  
11 here, is that we are very, very committed in making  
12 sure that the workforce that actually does—performs  
13 work in these homes and in these companies, they  
14 actually mirror the diversity of our population. So,  
15 we started off with the retrofits and we've become  
16 very engaged with Benjamin Goldstein's work. We've  
17 actually gone on in terms of the energy efficiency  
18 work and with our HVAC technicians. It's important  
19 that our students and our community members understand  
20 that they can get trained in this and who better than  
21 a community college to really offer that opportunity.

22           You know some of the challenges; you've  
23 heard them quite a bit today. You know the lack of  
24 industry recognized credentials. Where there are some  
25 industry recognized credentials or certifications, we

1 are happy to actually conform to them or actually  
2 exceed them. We're very happy, as I mentioned to  
3 Tiger, we're one of the 40 over 40 of the BPI  
4 affiliates now as a community college, so we're very  
5 proud of that because we do not consider either  
6 weatherization or energy efficiency to be very  
7 workforce related; we consider it to be a building  
8 science. And that's the same approached we used for  
9 HVAC technicians with the NATE certification and our  
10 solar work with NABCEP certification and so forth.  
11 Again, as a community college we have to accept  
12 everyone so we have the committed experience of really  
13 training people who lack the basic skills both in Math  
14 and English. And again, these experiences are really  
15 what we're hoping that a National Center could really  
16 focus on because what we get on and on as a college,  
17 given that we're a public institution, we get several  
18 requests for sharing curriculum, sharing model,  
19 touring our site, accessing our faculty, learning how  
20 to do that, we really focus on trying to minimize the  
21 tours to once or twice a week. But we get several  
22 national, regional, state and even international  
23 visits really trying to figure out how is it or what  
24 is our strategy in really preparing students or  
25 participants or community members and put them to

1 work, especially if they have some challenges; which  
2 can include, and I know you asked a little earlier  
3 about remedial education, quite frankly, with our  
4 utility partners one of the biggest challenges was  
5 that they weren't passing the entrance exam. So we  
6 know that they have to more robust in that training  
7 and that they have to fit that certification and those  
8 minimal qualifications. So, with that, again we see  
9 the role to really enable clean energy businesses to  
10 compete and thrive. We really do appreciate it has to  
11 be both from the supply and demand side. And we are  
12 very—while a lot of the discussion today has been  
13 focused on the renewable and the clean energy side, we  
14 take our role as being a regional leader in  
15 transportation and a statewide leader in  
16 transportation, in particular the transit training.  
17 So, we really do want to focus on the highroad, middle  
18 skill, clean energy and transportation occupations.

19           So, some more gaps that the National Center  
20 can fill. We really see the role important to serve as  
21 an intermediary and to be very quick to adapt to  
22 change. And, I think, one of the things I would urge  
23 you is to be careful not to focus so much on the  
24 research side or even on the hands-on practitioner  
25 side, but really look at making sure there's a way—

1 there's a conduit—a component where people can access  
2 information right away, finding out the how-to and not  
3 the we can actually set up a model and all that, no.  
4 They need to learn how to do this tomorrow. When we  
5 get asked by our community college partners and other  
6 colleges throughout the state and throughout the  
7 country for help, it's basically: It's great that  
8 you're giving me curriculum but I need advice, how do  
9 you do it, what are some of the challenges and so  
10 forth. So it's important to yes, have a web presence,  
11 but it's really important also to have that physical  
12 or technical assistance that's really critical. And  
13 that was very apparent because the AACC just recently  
14 launched a workforce development institute in Newport  
15 Beach a couple of months ago. So there it was very  
16 apparent that at the national level this is needed. We  
17 were able to do a workforce training component and we  
18 got several inquiries and we had the attendance was  
19 well over 100 individuals representing colleges  
20 throughout the country.

21           These are some more gaps. But one of the  
22 things is remember the work and remember who is  
23 getting involved in this work. So I wanted to end with  
24 that but I wanted to make sure that however you have  
25 the structure, please take into account although we

1 want to have a National Center, it's critical that you  
2 understand also the regional differences and I know  
3 you do already. We've had a very strong Northern  
4 Californian presence and we field that we work very  
5 closely with our industry partners in the Southern  
6 Californian region, which has very different dynamics  
7 and it has multiple industry partners; both from the  
8 utility side to the transportation sector side given  
9 the number of transit agencies and all the other  
10 utility partners, both from the municipalities and  
11 investor-owned utilities. So, again, that ends my  
12 conversation and my discussion and I don't know if you  
13 have any questions for me.

14 COMMISSIONER WEISENMILLER: Thanks again. I  
15 don't think we have any questions, do we Paul?

16 COMMISSIONER DOUGLAS: I don't have a  
17 question, I wanted to say that I was here over the  
18 summer; it really helps us when you come here and  
19 share your experiences and perspectives, so I  
20 appreciate you being here again.

21 MS. BARAJAS: Sure.

22 MS. GRAILLAT: Thank you. Our final panel  
23 speaker is Karen Shores, who's the Program Consultant  
24 for the Partnership Academies at California Department  
25 of Education and, so you can prepare ahead, Karen will

1 not be able to participate in the public comment  
2 section so we will take some questions following her  
3 presentation from the general public.

4 MS. SHORE: So nice to be last. Thank you for  
5 allowing me to come and speak with you. My role for  
6 the past five years at the California Department of  
7 Education has been to manage the California  
8 Partnerships Academies programs; there is a brochure  
9 out there on our latest data on California Partnership  
10 Academies if you're interest. As of last week, I am  
11 now also the industry sector lead for energy and  
12 utilities. So I am here in that role today.

13 Could the Center play a significant role in  
14 curriculum development of career technical education  
15 programs in K-12 and post-secondary? Yes.

16 First, these are the areas in which we have  
17 found needs. First to give you some background  
18 California Partnership Academies are schools within  
19 schools for students in grades 10-12 who want to  
20 pursue a particular career area. The students stay  
21 with the same teachers over a period of the three  
22 years, it's about 200 students in an academy. They  
23 have three academic and one career tech ed class at  
24 each grade level and are prepared for post-secondary  
25 education and they're prepared for the workforce. Not

1 all academies perform at the same level of efficiency  
2 or excellence but for the most part they follow a  
3 model that is legislated in education code, if you  
4 like reading education code, 54690 to 54697.

5           We have a project currently with Van Ton-  
6 Quinlivan and Pacific Gas and Electric. They are  
7 working with five California Partnership Academies to  
8 provide the industry partnerships that are required.  
9 They are also helping us with curriculum and helping  
10 us with finances. And it's a wonderful partnership  
11 that we have enjoyed. But there are needs and  
12 curriculum is a major need.

13           In career technical education, students  
14 frequently take a sequence of courses. There is a  
15 foundation course, there is a concentrator course and  
16 there is a capstone course. In the foundation course,  
17 you learn about all aspects of an industry and you  
18 learn about career options and you pretty much 'try  
19 on' what you want to be when you grow up. In grade 11,  
20 you start to focus on the skills and knowledge needed  
21 for a particular employment opportunity. And in grade  
22 12, you continue with your preparation for that  
23 opportunity but you also go out on a work experience  
24 internship. Now the internship can be in a  
25 concentrator course or it can be in a capstone course.

1 In an academy it must be either during the senior year  
2 or the summer between the junior and senior year. But  
3 that's primarily the way career technical education  
4 proceeds at the secondary level.

5 In 2007-8, we were fortunate that AB519 was  
6 passed which appropriated \$12 million from the public  
7 interest research development and demonstration fund  
8 to create 58 California Partnership Academies. They  
9 were to focus on energy and water conservation,  
10 renewable energy, pollution reduction or other  
11 technologies that improve the environment in  
12 furthering of state and environmental laws. We had  
13 applications from just about every industry sector and  
14 we currently have career technical education at the  
15 secondary level in California is divided into 15  
16 industry sectors and we've developed standards for  
17 each of those industry sectors. So, when you consider  
18 we had academies apply, there were 23 in energy and  
19 utilities but there were also 14 in engineering, 2 in  
20 hospitality. So they were all over the place so far as  
21 everybody thought and had made a plan for making their  
22 industry green.

23 We didn't have curriculum however, and that  
24 was the biggest need. What do we teach? We know we can  
25 do this. We have ideas for inserting green

1 applications into the curriculum but we don't really  
2 have whole courses. So we contracted with the Advanced  
3 Transportation Technology and Energy Initiative that  
4 is a part of the California community colleges system,  
5 Peter Davis is the person we worked with. And they  
6 developed a sequence of four courses for us; excellent  
7 courses. They're available to anyone who wants to go  
8 online and look for them. We had them written at the  
9 level that, if you didn't know a whole lot about your  
10 subject matter you could still teach the course. So  
11 everything you need to know, all the resources, all  
12 the links, there's exams; there's videos that train  
13 the trainer, so you can watch the video. It's  
14 excellent curriculum. But the sequence of courses goes  
15 from intro to energy, to energy auditing, to green  
16 construction, introduction to alternative fuels. We  
17 also went to NCCER, that's the National Center for  
18 Construction, Education and Research. It's a national  
19 organization that creates curriculum, based on  
20 research, and it is primarily focused in construction  
21 but it has also delved into green construction, solar  
22 photovoltaic, solar thermal, wind, water. So it's  
23 going into the green because they cross over so much.  
24 And, last summer they worked a lot on creating that  
25 curriculum. The beauty of that curriculum is that with

1 each module, you get and earn national certification  
2 and they keep a bank of certifications that each  
3 student earns. So a student can go from California to  
4 Maryland and still be recognized as having those  
5 skills. So we've been working with them.

6           Other resources that we use to find  
7 curriculum, actually what we used these resources for  
8 here are to find a sequence of courses. Finding the  
9 curriculum is the difficult part. You can find names  
10 of courses, you can find course outlines but finding  
11 the curriculum that teachers can use to teach is the  
12 difficult part and that's why I made that our priority  
13 in working with a national center.

14           Here's an example of course sequences in the  
15 energy and utility sector. If you're looking at green  
16 energy the first column there is the ATTEI four energy  
17 courses - Intro to Energy, Energy Auditing,  
18 Alternative Fuels and Green Construction. If you're  
19 looking in electronics, you can use the NCCER  
20 curriculum. You're enrolled in the green environment  
21 and they have green labs so that you're looking at,  
22 first of all, why are you going into green electronics  
23 and that gives you your answer. Then you need a  
24 background in electronics so you would take  
25 Electronics one and two. And then you might go into

1 Power Industry Fundamentals.

2           Now we need curriculum. We need to research,  
3 access and develop. And in education we say BBS - beg,  
4 borrow and steal, so that you can find the curriculum  
5 if it's available. We have worked with other  
6 organizations to purchase curriculum but it's so  
7 difficult to find curriculum that is complete and  
8 geared towards secondary education in this area, make  
9 it available online and searchable, provide teacher  
10 training on the curriculum and then consider the  
11 things that have to go along with the curriculum,  
12 especially in energy and utilities. It's materials,  
13 supply and equipment needy. So what are the materials  
14 and supplies that a teacher would need? And what might  
15 be sources of getting that?

16           Connect to industry certifications. I  
17 already mentioned NCCER, there are community college  
18 certificates and degrees that we dual credit courses  
19 with. There are apprenticeships; hopefully, we can  
20 hook up with apprenticeship programs maybe through a  
21 pre-apprenticeship. There's a synergy for energy and  
22 workforce development with their stackable  
23 credentials. And we're looking to work with PG&E and  
24 the PG&E Power Pathways; we're hoping to work with  
25 them also. But there's a lot more that I've heard

1 about today and you may get calls.

2 Teachers. Curriculum is first but where are  
3 we going to get the teachers in secondary education  
4 that know how to teach this stuff? And that's where  
5 we're stuck right now in our partnership with Pacific  
6 Gas and Electric because we've got wonderful  
7 curriculum now, who's going to teach it? Currently we  
8 have science teachers teaching the foundation courses  
9 because they understand green energy. And so the all  
10 aspects of the industry, when you're delving into  
11 skills, that's OK to have a science teacher, teach.  
12 And several of them have backgrounds in engineering.  
13 One of them is in nuclear engineering. So they've good  
14 background. But when you get to the skills part, what  
15 are they gonna—how are they gonna be able to teach  
16 that.

17 The current career technical education in  
18 California is primarily offered through regional  
19 occupation centers and programs. There are 74 of those  
20 throughout California. California Partnership  
21 Academies, which uses a combination of academic  
22 teachers, of career technical education teachers,  
23 community college teachers, we go for teachers  
24 wherever we can find them. But we have currently 470  
25 soon to be 520 and possibly another 89, if SBX11

1 passes. And then California community colleges we work  
2 with for dual credit courses.

3 But where do we get the teachers? The Center  
4 could be a great resource in helping us to recruit  
5 teachers from the industry. To be a teacher in a high  
6 school, you need to have credentialing but it's not  
7 hard to get that credential.

8 I'm a nurse. I got my career tech ed  
9 credential in the summer going to Cal Poly Pomona. I  
10 went to summer school two years in a row and earned my  
11 career tech ed credential, got an emergency credential  
12 immediately and was able to teach immediately. So,  
13 it's not difficult to get that.

14 And if industry people knew this and we  
15 provided that training during the summer, perhaps more  
16 industry people would get involved in education. It  
17 doesn't have to be full-time. Come teach two and three  
18 days a week under the umbrella of the regular teacher  
19 so you don't have to deal with classroom management,  
20 but come and help us teach the students. So we could  
21 develop that cadre of visiting educators and provide  
22 the summer training and then create a roster of  
23 qualified teachers and a list of training programs so  
24 that we can match the two.

25 Training? Yes, we need that too. Identify

1 existing providers of career technical education to  
2 determine the gaps in career technical education and  
3 identify strategies for supporting career technical  
4 education.

5           We need information. When we had the first  
6 bill AB519 and we knew we were going to be starting  
7 green economies, I did research. I created 24 pages in  
8 the front of the request for applications, the grant  
9 application, to try to explain to educators what is  
10 green and it was like the blind leading the blind; I  
11 didn't know what green was - so research. I went to  
12 things like California's Green Economy, the U.S.  
13 Department of Labor, Many Shades of Green. These are  
14 all documents that are out there now but it required a  
15 lot of research. If that research was in one place and  
16 it was available and searchable, that would be so much  
17 help.

18           Advocacy. I mention to you the providers of  
19 career technical education at the secondary level and  
20 the community colleges, obviously, are not secondary  
21 but they help us. However, regional occupation centers  
22 and programs are in Tier three flexibility and have  
23 been for about four years now. That means that the  
24 funding for these centers and programs can be used for  
25 other purposes. And as the money for education

1 diminishes, that money is being used for other  
2 purposes and our programs are diminishing in size or  
3 disappearing completely. Our teachers are going and  
4 finding jobs in the industry, we'll never get them  
5 back. This is something—we need advocacy with the  
6 legislature. California Partnership Academies are  
7 strong right now but that doesn't mean that that money  
8 won't be looked at in the future by the legislature as  
9 another source for funding education.

10           So how could the center help develop  
11 strategies for high road green economy, one that  
12 values quality, good wages and career pathways? The  
13 research, the trends in the industries, the model  
14 education programs, recommendations for new directions  
15 reclaim the need for career technical education in our  
16 high schools and our colleges. That needs to be a  
17 priority with our community, with our parents, with  
18 our legislature.

19           Thank you.

20           COMMISSIONER WEISENMILLER: Thank you for  
21 your presentation. Thanks for coming here today. Any  
22 questions? OK. Thanks again.

23           MS. GRAILLAT: Are there any questions from  
24 the general public?

25           Oh, we do have one. Hello. Do you have a

1 question for Karen Shores? OK.

2 Thank you very much to all our panel presenters  
3 this morning. We had some very wonderful and  
4 information presentations.

5 MS. KOROSEC: Alright. We went a bit late on  
6 our panel so I would suggest that we convene for an  
7 hour for lunch and try to be back here at 2 o'clock.  
8 Thank you everybody.

9 [Session break. Group resumes at 2:05 p.m.]

10 COMMISSIONER WEISENMILLER: OK. We're ready  
11 to start this afternoon.

12 MS. KOROSEC: OK. If everyone will take your  
13 seats please, we'll go ahead and get started. We'll  
14 now move to the part of the agenda where we talk about  
15 an action plan to implement all of the good  
16 information that we heard from this morning and will  
17 begin with Dr. Chris Benner.

18 DR. BENNER: First, I just want to echo Carol  
19 Zabin's appreciation to the Commissioners and the  
20 Commission for having us involved in this study and  
21 for all of you for coming and hearing us present in  
22 person some of what we did.

23 One of the sets of questions we asked all of  
24 our 100 plus informants was would they support the  
25 foundation of a National Center of the Clean Energy

1 Workforce and if so, how should it be structured and  
2 what kind of governance structure and process should  
3 be part of that. And, as you can imagine, with 120  
4 plus people all over the country, coming from both  
5 economic development, private sector, government,  
6 workforce development, there was not much consensus  
7 about what they should look like. But, there were a  
8 few areas of consensus that I really wanted to  
9 emphasize.

10           One is really the importance in this  
11 institution of not being just another green economy or  
12 green workforce institution. There was some concern  
13 about duplication of effort that's out there, that it  
14 really has to be value added in a way that helps  
15 coordinate and disseminate some of the best practices  
16 and some of the research and work we've heard talked  
17 about this morning. And that essential in doing that  
18 is really its ability to build these cross  
19 constituency partnerships, and I really can't  
20 emphasize this enough. That the private sector, who  
21 are working and building the green energy economy,  
22 have a very different set of concerns and interest  
23 than education and training providers and workforce  
24 development practitioners, which are working from a  
25 very different context and that's a different world

1 than the policymakers who are trying to understand all  
2 of this. And having an institution that can really and  
3 truly bridge those different worlds would be a  
4 tremendous value add. And that was emphasized to us  
5 many times. And that includes some of the key players  
6 we list there - government, industry, unions in those  
7 sectors, whether a strong union presence need to be at  
8 the table, to have their voice and the voice of  
9 workers there, education training providers, the  
10 certifiers themselves who we've heard a bit from today  
11 as well as some of the research community that are  
12 researching not just the issues of the job demand and  
13 skills demand but also to really look at the impact of  
14 certifications because not all certifications are  
15 equivalent in what they're trying to measure and their  
16 effectiveness and really trying to get a sense of  
17 what's being widely accepted and what kind of impact  
18 these different kinds of certifications have on the  
19 kinds of high road pathways we'd like to pursue of  
20 investing in quality and innovation and skills  
21 development over time, so that was some of the  
22 research as well.

23           So, as part of really building that cross  
24 constituency partnership we really had emphasized to  
25 us the importance of the center really being able to

1 bridge those different constituencies and not to be  
2 based in a single existing institution. That was  
3 concern that was expressed to us about it being  
4 captured by any one institution player and that could  
5 be a specific institution or a specific category of  
6 institution, so it wouldn't be just education and  
7 training providers but has to have strong private  
8 sector and industry governance input as well, and I  
9 think that quote from Rick McGahey from the Ford  
10 Foundation captures it very well, avoid capture by any  
11 one institutional player. The players need enough  
12 self-interest to stay engaged but without capturing  
13 workforce development as a fragmented world and the  
14 same could be said of economic development, no player  
15 has all the pieces that she wants.

16           And so part of our thought about that is  
17 that you also don't want an unwieldy governance board  
18 that includes hundreds of different players, right.  
19 You need some tight governing board that can really  
20 provide meaningful substantive feedback engagement to  
21 staff actually working in the center. And so our  
22 recommendation on this, that was pretty widely  
23 accepted, was that there should be some small decision  
24 making board representative of the diversity of  
25 interests and then another larger advisory board that

1 could provide the appropriate input and feedback at  
2 strategic points of the center.

3           And finally, when we talk about a Center we  
4 should be thinking not just about a physical location  
5 but really thinking about a virtual Center, a  
6 networked structure that might have multiple sites,  
7 both located throughout California and in other parts  
8 of the country. And each of those sites might develop  
9 expertise in a particular area but network together in  
10 a way that the whole is greater than the sum of the  
11 parts, ideally.

12           We had a fair amount of discussion with  
13 people about this question that's come up today, about  
14 whether it should be a California Center or national  
15 focus. The arguments for the California Center  
16 centered around the issue of California's a big state,  
17 a lot of work going on here and there's certainly  
18 plenty of enough of a need to focus on those issues in  
19 California. But there was a real concern expressed  
20 that the kinds of solutions to the issues people are  
21 talking about, which isn't just about-it really isn't  
22 about developing the strong workforce development  
23 programs, it's about disseminating best practices,  
24 it's about looking at certification programs that are  
25 accepted by industry as whole. And to do that, you

1 have to have a national focus, right, because the  
2 industry is working all of the country and, indeed,  
3 globally. And that if you're going to have an industry  
4 recognized standard and certification, doing that just  
5 in California didn't make a lot of sense so there has  
6 to be some kind of network and connection with the  
7 rest of the country in doing that.

8           In addition to, of course, the potential for  
9 leveraging other support, financial support, federal  
10 agencies but some of it is also the ability to work  
11 with the significant capacity and experience that  
12 we've heard about today reflected across the country -  
13 that California is a leader in many elements of  
14 promoting a green economy but there's a lot of great  
15 work happening in other states around the country that  
16 we could learn a lot from as well. And so if  
17 California could be a leader in helping to establish  
18 this Center, in a networked national framework, it  
19 could be a real contribution.

20           The downside, of course, of a National  
21 Center is that it would take more time to establish  
22 potentially, a lot more consultation, there's some  
23 more complex politics, so the California politics are  
24 complex enough, but working across the country. And so  
25 one of the suggestions we had as a possible path

1 forward, and we'll put this out there as a point of  
2 discussion and happy to take any questions or feedback  
3 from it, but one possibility would be to launch as  
4 quickly as possible with a California headquarters and  
5 a small D.C. office that could focus on the  
6 communications and clearinghouse function, both  
7 liaising with federal agencies and working to expand  
8 to other states in collaboration with appropriate  
9 state funding agencies from those other states in  
10 years two and three. And one advantage of launching  
11 within an existing organization is that you'd have a  
12 contracting agency that you could contract with to  
13 provide funding to and move ahead immediately. But  
14 with the goal, in order to meet that goal of not being  
15 captured by a single entity, of establishing itself as  
16 a new center within this space of two to three years.

17           There would have to be a certain set of  
18 criteria about what that host organization would be in  
19 terms of establishing the Center. And part of that  
20 would be a commitment to helping to incubate the new  
21 Center over time. And listed here is a set of criteria  
22 that came back to us in the interviews and in our own  
23 discussions, so one is clearly demonstrated expertise  
24 and trust with both the private sector and education  
25 and training sector communities; the energy industry

1 and the workforce development practitioners. And the  
2 energy industry, of course, includes a lot of public  
3 sector entities as well. That is could work in all  
4 three subsectors: renewable energy, energy efficiency  
5 and we haven't talked a lot today about the clean  
6 energy transportation sector but we've heard a bit  
7 about it and it's an important part, particularly  
8 going forward. And that the entity should have some  
9 sort of demonstrated experience in convening these  
10 kinds of partnerships that bring together private  
11 sector labor organizations, education providers with  
12 the public sector in designing and implementing  
13 workforce development and training programs, and a  
14 demonstrated record in working with those students and  
15 workers from low income communities, which is an  
16 important part of the goal of expanding the green  
17 economy workforce. And then of course, it must have  
18 strong relationships with all those ethnicities that  
19 we mention above, not just in California but of course  
20 nationally as well.

21           And this is one possibly organizational  
22 structure we discussed and came about and gave  
23 feedback to the Energy Commission on, which would be  
24 to have this California headquarters directed by an  
25 executive director overseeing staff that would be

1 working in those three separate substantive energy  
2 areas, renewable energy, energy efficiency and clean  
3 energy transportation. And within each of those  
4 substantive areas, you'd have some research component  
5 which would be about researching the labor demands,  
6 skill demands, needs, etc. looking at the  
7 certification in each of those subsectors but then  
8 also having dedicated staff that were responsible for  
9 liaising with private industry and the energy  
10 community more generally about their needs, the skill  
11 needs and the best practices that are emerging from  
12 that sector as well as a dedicated staff working with  
13 workforce development community but able to integrate  
14 within that single organization. And then of course  
15 the headquarters link to D.C. communication office and  
16 then as other state offices get established in a  
17 network type structure, being able to liaise with them  
18 in this virtual National Center. So, again that was  
19 one of the ideas that came up in our research. And  
20 again, just to emphasize this point, the initial  
21 governing board of that entity and ultimately the body  
22 that would be providing really substantive feedback to  
23 the executive director and staff, should be relatively  
24 small and manageable, and we didn't come up with a  
25 specific number of what that should look like but a

1 working committee, not hundreds of people that  
2 represent both very strongly the private sector and  
3 public sector clean energy community and the workforce  
4 development community as well. But then could create a  
5 broad stakeholder advisory committee out of that. And  
6 that initial board of directors could be developed in  
7 two stages: one is the sort of first establishment  
8 stage because there's clearly a need to roll such a  
9 center out as soon as possible to really catch up to a  
10 lot of the work that is going on around the country  
11 but then as it moves toward building an independent  
12 identity, then a full, somewhat larger governing board  
13 could be established out of that.

14           So those are the recommendations that came  
15 out of our work and I'd be happy to answer questions,  
16 and I know Mike Gravely has some suggestions as well.

17           COMMISSION WEISENMILLER: Questions or  
18 comments? Thank you.

19           MR. GRAVELY: So thank you all. I'm Mike  
20 Gravely and my office was the public interest and  
21 research program that sponsored this particular  
22 research to answer some of these questions. And, being  
23 the last speaker today will open it up to questions,  
24 certainly for my discussion for the next steps, as  
25 well as all the speakers that are still here for

1 specific questions. So those online and those in here,  
2 when we're done with this discussion we'll open it up  
3 for comments or questions on any of the presentations.

4           So, obviously, one of the questions that was  
5 begged from today's discussion is what's next for the  
6 center and what's next steps. So, in general the  
7 Commission has been involved through the ARRA process  
8 with quite a bit of workload, I think the ARRA process  
9 showed a lot about what was all going on and about  
10 what wasn't going on and so that generated the  
11 research questions that came out of this section. So  
12 what I want to do today is just briefly cover these  
13 items here again, the benefits to California and I  
14 will talk a little more specifically about an  
15 organizational structure that we considered because we  
16 are ultimately, our goal is to put together a proposal  
17 to submit for—I happen to have a long history in  
18 government contracting and understanding what we can  
19 do, and one of the questions here in general a lot of  
20 the proposals we've talked about, a lot of the work  
21 that you've learned has come from advertisement from  
22 the government department, labor department, energy  
23 where they have asked for proposals. No one is asking  
24 for this proposal, this information was learned I'd  
25 say from the bottom up. As we did more of the other

1 things, we began to realize that there's something  
2 missing and so one way of approaching that is putting  
3 together a proposal back to the federal government to  
4 do something smart, that's what we've learned and  
5 that's kinda our approach.

6           So we'll talk a little about the functions  
7 of the Center and we'll talk a little about the  
8 structure and the next steps as we go forward. And I  
9 want to point out a little bit of additional  
10 information that makes the center important to us as I  
11 discuss what we're learning in our research. As we  
12 mentioned before, the functions of the Center and the  
13 function for California in particular, California is  
14 recognized, I know we saw earlier today as the Green  
15 State it's also my business the smart grid and the  
16 transmission side, and California's clearly recognized  
17 in this nation and the world as a leader in smart grid  
18 development, smart grid implementation. Both because  
19 of our policies, both because of our industry and both  
20 because of our work. We, in my office, personally  
21 speak with international visitors all the time about  
22 what we're doing. And a lot of people want to see what  
23 we're going in California as they go forward. So one  
24 of the big issues for us, one of the big opportunities  
25 here, is of course information sharing and also

1 looking ahead. We talked about the value of the  
2 center, I want to mention a couple of key activities  
3 in California that makes California very unique for  
4 this - we have a Senate Bill 17 where the large  
5 industrially-owned utilities are putting together a  
6 smart grid deployment plan for their future. In other  
7 words, one way of looking at that is as a work load  
8 flow plan they'll be producing. And the public  
9 utilities will be doing theirs by next July, so the  
10 IOUs have to publish their plan by July 1 of this year  
11 and the private utilities will do that by July 1 next  
12 year.

13           We have Assembly Bill 2514 where California  
14 will be looking at the needs of energy storage and if  
15 you haven't heard in most cases in the smart grid  
16 arena and the renewable integration arena, the belief  
17 is that energy storage, it was mentioned earlier  
18 today, that energy storage is one of the areas where  
19 we see a lot of opportunity. This particular bill will  
20 end up developing some projections and some  
21 procurement plans for the future, again, that can be  
22 related directly go long-term opportunities beyond the  
23 next year or so. In the peer program we've been doing--  
24 are doing roadmaps for the smart grid of 2020 so we'll  
25 have a 10 year look ahead of what's happening as you

1 put these things together, something like a Center  
2 here would have this view of what's happening both now  
3 and in the future. And the belief is, as we've learned  
4 from everybody else, is that California will pave the  
5 way and a lot of other states will follow. And so the  
6 opportunity in California is very strong to set the  
7 pace and to build the market that will grow nationally  
8 and internationally. And then, the last thing I'll  
9 just point out is again we learned from research, we  
10 talked about a transportation sector, 25 percent of  
11 all electric vehicles that are purchased in the  
12 country are purchased in California. The three largest  
13 selling dealers in electric vehicles are in Northern  
14 California. So as we get to the electrification of the  
15 transportation sector in the U.S., California will  
16 have by far the largest number and the biggest  
17 challenges. As we address those challenges for  
18 infrastructure, those challenges for maintenance and  
19 service, those are going to create needs that are  
20 going to first start in California and expand  
21 throughout the country. The other benefits to  
22 California if, of course, as a result of our—there are  
23 quite a few workforce opportunities that are coming,  
24 some of those will end when our funds end. Some of  
25 that work doesn't need to end and we need to figure

1 out how best to provide that, having a central voice  
2 in California could help do that. The other one we run  
3 into a lot in smart grid is the question of training  
4 people for technology but the job market hasn't  
5 reached there yet. So being able to match up, as we  
6 look at these projections of where the jobs are gonna  
7 be, and put that together with where the jobs itself  
8 no one wants to go through specialized training and  
9 walk out the door and wait two years for a job or  
10 whatever, so hopefully, we can match those up while  
11 they're still in training and focus them on training  
12 that has the opportunity.

13           As I mentioned, when it come to leveraging  
14 federal funds this is intended to be considered  
15 initially as a federally funded opportunity. And also,  
16 as we mentioned before, the ARRA fundings are actually  
17 starting to—the workforce stuff is starting to come to  
18 a close but the implantation stuff, the shovel in the  
19 ground work, say for example smart grid which my  
20 office works, we have \$1.3 billion smart grid upgrade  
21 projects that are just now starting to get to the  
22 actual work phase. And over the next three to four  
23 years, there will be a huge growth; and then we'll  
24 want to see what's happening beyond that. So we see  
25 what's coming and we want to see what's beyond the

1 horizon. And we want to share, as we said earlier, as  
2 Panama said, we want to share what we know and we want  
3 to learn from other people too. There are certain  
4 areas of the sectors that are ahead of us in certain  
5 elements but not the whole picture, so we can do that  
6 also. So the center provides us a vehicle that doesn't  
7 exist anywhere else and probably will not exist  
8 without being foreign.

9           The functions of the Center, we've talked  
10 quite a bit about it, they're summarized here today.  
11 The reason I bring it up is if we put together an  
12 actual proposal, as we tend to do, we will have to  
13 define those functions at some sense and see as we go  
14 forward.

15           Also, from an organizational structure, you  
16 heard one from Chris here a little bit; this is again  
17 from a perspective of moving forward, part of the  
18 question is how fast we'd like the center to be  
19 functional. We can do things, I mentioned a little  
20 structure here where you have in the contracting  
21 business you can have an implementation contractor  
22 that can start things up fairly quick and then form a  
23 small governing board and then that governing board  
24 would basically grow itself until eventually that  
25 implementing contractor would go away, and that

1 governing board would manage the system, whether it  
2 does it as a separate non-profit, whether it does it  
3 as a public benefits corporation, whether it does it  
4 under some other vehicle or if it does it under an  
5 existing organization - those are questions that  
6 haven't been answered but they have to be answered to  
7 be able to go forward and actually implement it. So  
8 what we show here, is just a concept that we would  
9 envision starting with a small governing board, maybe  
10 somewhere in the range of four to six organizations  
11 and then we see key partners, more in the range of 20-  
12 40 key partners to be part of this and then we  
13 mentioned certain functions that would be happening.  
14 So we'll have a staff in some area to be able to  
15 handle this to do the work. So this just gives you an  
16 idea. So going forward with the proposal, we have to  
17 make these decisions and actually put together  
18 projected work and project cost so the proposal can be  
19 considered and awarded as a contract.

20           The other thing of course here today is we  
21 have heard this morning from the Northeast and what  
22 they're doing in there, again, from the perspective  
23 this is considered a regional National Center with  
24 California leading the way but not California being  
25 the only Center, so we've considered, for example, in

1 our initial discussions four to six Centers and so  
2 that there'd be interest in the other organizations,  
3 the feedback we've received from individuals in  
4 Washington we talked with is that they'd like to see a  
5 multi-state proposal not a single-state proposal so  
6 we'll need partnerships. We've talked about how a  
7 Regional Center could be the regions around California  
8 are the Regional Center for the first proposal could  
9 be California with the next four regions being part of  
10 the team so those new regions start up and form the  
11 next Regional Center as things form up. So there's  
12 options on how we move forward and understanding that  
13 we'll just have to do our best based on the  
14 discussions we have and the comments we receive to  
15 represent both California and a national organization  
16 as is best possible. This is intended to be a growing  
17 organization, I think we'll learn as we go further and  
18 we'll do more as we can understand it. We don't expect  
19 to be so foresightful that we can pick it all upfront.  
20 We want to build an organization that will learn from  
21 itself and form an organization that's long term and  
22 eventually, we believe, an opportunity for internal  
23 funding may be there and not just federal funding but  
24 initially federal funding is going to be required to  
25 get the first center up and running.

1           So for purposes of going forward, I would be  
2 very interested in individual organizations that are  
3 interested in participating in the development of a  
4 proposal and organizations that feel they want to  
5 provide some insight as to who the different governing  
6 board members should be for both in state and  
7 regional, who the key members should be so they're  
8 represented properly and also those that are  
9 interested in participating in other states and how  
10 they would be for other states. So we anticipate a two  
11 to three month process for putting all this together  
12 and going forward with it. The Commission, because of  
13 our results in the past and our involvement, have been  
14 willing to play a leadership role to bring this  
15 together because I think, as we'll discuss here,  
16 without somebody stepping up, it's just going to be a  
17 discussion and we're beginning to move forward. Our  
18 goal is to do the best we can to both service  
19 California and the region. And with that, I'll answer  
20 any questions that I can. Sir?

21           MR. WEISENMILLER: Thanks, Mike. Any  
22 questions? Any questions from the audience?

23           MR. GRAVELY: Come up to the mic. I will  
24 mention that, as you mentioned earlier, there is  
25 actual docket information on the announcement. So

1 anybody that has comments, questions, recommendations  
2 please send those to the docket and they'll come to me  
3 and we'll consolidate them all together, if you want  
4 to be involved if you want to be informed, please send  
5 that information directly. With that, go ahead.

6 MR. DOYLE: So, thank again for having us  
7 here from New England. We just want to say that if  
8 you're looking for possible team members to talk and  
9 think about what a proposal might look like, we're  
10 definitely here to volunteer that. And in our  
11 discussions about looking over the proposal and  
12 thinking about it, a few things came up for us as the  
13 kinds of things that were likely to come up in any  
14 discussion. One of them is that the organizations that  
15 are already seriously involved, especially in  
16 credentialing and so forth, BPI, NABCEP, IREC, etc.,  
17 they're doing a fantastic job. And so one of the  
18 questions we imagine a governing body having is how to  
19 be a National Center that actually support their work  
20 as opposed to judging it or reviews it, but just says  
21 "Yeah, you're doing a fine job and it sounds like  
22 you've got the right group of people" and that also  
23 then goes to the issue of how much of the clean energy  
24 industry is already dividing up into its subsectors,  
25 pretty directly and pretty quickly, so that solar

1 energy and that even solar photovoltaics is forming  
2 its own organizations and its own sense of self as an  
3 industry. And so the same question would come up for  
4 that, how a National Center would give them their due  
5 and allow them to be the subsector organizations that  
6 they are rapidly becoming and basically asking them  
7 what we can do to support you, what can we do to  
8 support your efforts and make them better. So those  
9 are some of things that we imagined that are coming up  
10 in New England that we imagine being a clean energy  
11 council as opposed to allowing everybody to divide up  
12 into their various sectors. But we're here, we're  
13 ready and we're very interested in being part of the  
14 next steps.

15 MR. GRAVELY: OK. So that's very much for  
16 volunteering for that. And we'll definitely contact  
17 you as we go forward. Just to share for the group, we  
18 have had some of these discussions internal. And, for  
19 example, in general the believe is that the National  
20 Center has to provide functions to the members and to  
21 the states to create a more effective operation, to do  
22 things at a lower price, to help people get things  
23 easily that they can get easy now, to avoid  
24 duplication, to constitute sharing. And ultimately,  
25 it's got to help create more jobs, I mean when it

1 comes down to it, helping people focus where they're  
2 going, where the job opportunities are, and looking at  
3 both state, regional and national so there's elements  
4 that are being done today but not all of those. And so  
5 part of the governing board, part of the key partners,  
6 would be to determine and evolve the functions that  
7 are beneficial but not duplicative and certainly not,  
8 I haven't heard a discussion of actual approval  
9 authority, so this case has been more of a  
10 coordinating authority, so it would be—if that ever  
11 happened it would be an evolutionary thing over time  
12 that the members thought that was the right thing to  
13 do. But so the focus is as we have seen it has been  
14 mostly a sharing of knowledge, helping and an  
15 opportunity to avoid—to share as fast. Again,  
16 California is seeing a lot of these things and the  
17 needs in California are faster than other states and  
18 other areas and so what we're learning that people in  
19 other areas won't have to follow the same thing. And  
20 in California—obviously California is the biggest  
21 state and we got the most money for the ARRA in this  
22 area, and so that money will eventually go away and  
23 those organizations that have done good things need to  
24 be sure that the function that they're performing  
25 don't go away. So we have talked about those. Go

1 ahead.

2 DR. MACARI: Several people spoke about  
3 including businesses as part of the Center. I wanted  
4 to refer back to Field of Dreams, if you build it,  
5 they will come. I think that it is very important that  
6 we involve venture capitalists and startups and small  
7 businesses as part of this because it shouldn't just  
8 be a workforce development center but a workforce and  
9 job creations center because a lot of times when we  
10 think of workforce it is we're going to education and  
11 we're going to create all these things, and will those  
12 jobs be available out there, and will the people have  
13 the same skills that are needed for that. So I think  
14 it really needs to be a center that links economic  
15 development with workforce development.

16 MR. GRAVELY: Thank you. That's the same  
17 feedback we've been getting in other areas so I would  
18 agree with that.

19 Anyone else? Come up to the mic. Just  
20 identify yourself because the people online will hear  
21 your voice and just don't know what you're background  
22 is. And we'll take the people online as soon as the  
23 room is through asking questions.

24 MR. STOCKTON: Thank you very much. My name  
25 is Ed Stockton. I'm the President and CEO of Hydrogen

1 Technologies, Incorporated and I'm reiterating and  
2 just supporting. We're a licensing company on a brand  
3 new technology, as you're aware of Mike, it's a  
4 hydrogen steam boiler that requires no air permit.  
5 We've been endorsed by the San Joaquin Unified Air  
6 Pollution Control District and we've also been  
7 supported and intensely support by the United  
8 Association of Plumbers and Pipefitters and the  
9 International Brotherhood of Electrical Workers. We  
10 have a working unit in Modesto and we are working with  
11 some wind develops on doing some time shifting of  
12 their energy from night to do.

13           And so, we're encouraged by this opportunity  
14 and we'd like to participate, whether it be directly  
15 from either hydrogen technologies or the vendors that  
16 we have or the unions themselves. Thanks you very  
17 much.

18           MR. GRAVELY: Again, just if you would, for  
19 purposes of being sure, be sure to send that remark  
20 in. It'll be recorded here but if you send information  
21 in to the docket it would be sure that you won't get-

22           MR. STOCKTON: No, I definitely will.

23           MR. GRAVES: What we'll probably do is have  
24 some Webex discussion like this, a web discussion as  
25 we get down to the next steps and start to format the

1 concept. And those that apply will be invited to that  
2 WebEx.

3 MR. STOCKTON: Well yeah, because one of the  
4 important parts of the puzzle is—the reason why we  
5 teamed with them is because this technology is  
6 innovative, to say the least, but it ties together all  
7 the different—whether you're solar or wind or you're  
8 water movement—hydrogen ties all of them together and  
9 forms this inter-grid opportunity. With the UA and IBW  
10 having training centers all across the United States  
11 and Canada and that's where we've put one of our units  
12 in for initial training. And I know they would be very  
13 interested in the opportunity to participate, so thank  
14 you very much.

15 MR. GRAVELY: Anyone else?

16 MR. EMBLEM: Hi. I'm Erik Emblem and I'm here  
17 representing the Western States Council of Sheet Metal  
18 Workers today. That's California, Nevada, Arizona and  
19 Hawaii. We have 26 training centers located in those  
20 states, 20 of them here in California—15 of them here  
21 in California, I mean.

22 I'm here in support of setting up this  
23 Center and I agree with a lot of the concepts and the  
24 work that's gone on behind putting this forth. I just  
25 wanted to say in our industry, which is primarily HPC

1 and mechanical industry in end-use heating and air  
2 conditioning in buildings, that we started a National  
3 Energy Management Institute in 1981 in Sacramento with  
4 the former Brown Administration and Carter  
5 Administration to do this, to start training and  
6 educating people to do energy evaluation in buildings.  
7 And we have continued, in fact I was the National  
8 Executive Director for the National Energy Management  
9 Institute for seven years in Washington D.C., and what  
10 we found and what you've touched on here, is a real  
11 need to have industry as a part of this. And that we  
12 bring people here that are going to be end users of  
13 whatever we're doing. And they should be in board  
14 positions because they're actually going to be the  
15 users of whatever comes out of this center. So, I  
16 highly recommend that. That's something we didn't  
17 transition to throughout the years.

18           The other thing I'd like to bring up is to  
19 not lose site, when it comes up to the construction  
20 crafts, is the value of the apprenticeship.  
21 Apprenticeship training has shown for hundreds of  
22 years that it's a valued way of bring people and  
23 documenting their progress as they go along into their  
24 trades and their crafts. And that certifications are  
25 good but you've gotta back that up with a good

1 training background before you get to the  
2 certification level. So I want to emphasize that. We  
3 commit to work with you at the energy commission and  
4 with the National Center in setting it up any way we  
5 can.

6 MR. GRAVELY: Thank you. Go ahead. Come up to  
7 the mic if you want.

8 MR. COOPER: Commissioners, I'm Peter Cooper  
9 with the California Labor Federations Workforce  
10 Program. And I just wanted to reiterate some of the  
11 points that have come up because I do think that  
12 they're important.

13 First of all, we are supportive of the idea  
14 of the center and support the proposals in the scoping  
15 plan. We really hope you do go down the strategy of  
16 looking to a program that promotes the high road  
17 skills, wages and quality. One part of the scoping  
18 plan talks about the bulk of the skill upgrades needs  
19 to come in the middle skills areas, and largely from  
20 the traditional trades. And we just feel like that  
21 calls for governance to include labor, to include  
22 labor apprenticeship programs. Thanks.

23 MR. SMITH: Thank you Commissioners. Jeremy  
24 Smith here, on behalf of the State Building and  
25 Construction Trades Council following along in my—in

1 the footsteps of the previous speakers, I'm just here  
2 to reiterate for you the importance of the  
3 apprenticeship system in this state. As you've heard  
4 from two of the previous speakers, there's a  
5 significant footprint of training facilities in this  
6 state for much of the work that will go into what the-  
7 into what we're talking about today. All of those are  
8 joint labor management programs so labor and  
9 management get together and determine, not only the  
10 workforce needs of an area which is part of the  
11 process you're going to be undertaking here, but also  
12 trains workers to do the work to fill the needs that  
13 they have analyzed are needed. Probably the best part  
14 of the apprenticeship program system is that workers  
15 are being trained to do jobs and getting paid to do  
16 those jobs at the same time through the apprenticeship  
17 program until they become a journeyman. So they're  
18 earning-middle class sustaining wages, you know the  
19 usual benefits and all those things that a lot of us  
20 in this room take for granted to be very important. So  
21 we would echo the comments of the immediate speaker,  
22 previous speaker, Peter Cooper, regarding the  
23 governance of this should certainly be employers,  
24 management obviously but there should also be a  
25 significant place at the table for labor, the guys and

1 the gals or the representatives of the guys and ladies  
2 and gentlemen who will be doing the work moving  
3 forward. Thank you.

4 MR. GRAVELY: Thank you. Any other questions  
5 for the room her?

6 MR. EHLERS: I'm Brian Ehlers with the  
7 California Environmental Protection Agency. I'm  
8 Assistant Secretary for Education Quality Programs and  
9 I just wanted to pick up on some comments that  
10 Commissioner Douglas made early on in today's  
11 proceedings and that is regarding the state's existing  
12 education infrastructure and, I think it follows on  
13 some of what Karen Shores said from the perspective of  
14 the Department of Education, we are CALEPA in  
15 partnership with CDE embarked on a journey to create  
16 what became known as the Education and Environment  
17 Initiative some six years ago with legislation that  
18 was authorized by Assemblywoman Pavley and just last  
19 year completed that process. The curriculum, which is  
20 K12, covers history, social science but also a great  
21 number of science standards, was approved by the State  
22 Board and to our knowledge is the first of its kind in  
23 the nation to use existing standards, mesh them with  
24 environmental principles and concepts, the energy  
25 theme being one of them and to be approved by a

1 governing body, such as a State Board of Education.  
2 And so we are currently in the process of implementing  
3 this statewide and unfortunately it comes at a time  
4 when there is very little funding for this type of  
5 activity. And furthermore, we are in the midst of a  
6 state textbook moratorium. I'm not sure that everyone  
7 in the room may be aware but in 2009 the budget could  
8 no longer support textbook adoption and so for a five  
9 year period children are not getting new textbooks.  
10 Pluto's still a planet; George W. Bush is still  
11 President. The EEI curriculum is one of the only new  
12 instructional materials available at this point in  
13 time and in the foreseeable future. And what I wanted  
14 to kinda echo, based on Commissioner Douglas'  
15 comments, is that it presents an opportunity if the  
16 K12 is kinda the pipeline, if you will, at least up  
17 until grade 10 where we're looking to prepare students  
18 for joining the workforce, particularly the green  
19 workforce. I think that the center could provide a  
20 wonderful opportunity to assist in developing that  
21 curriculum. Some of the previous commenters have  
22 alluded to in a partnership with industry so that the  
23 curriculum is training students for the jobs that  
24 actually exist. And I just want to offer EEI as the  
25 place where there would be a natural dovetailing, I

1 think, of the interests of a national center, the  
2 interests of the clean energy industry and where it  
3 makes sense to kinda meet with the existing priorities  
4 of the state. And so, we would welcome an opportunity  
5 to have that conversation as this moves forward and  
6 for anyone who would like to learn more about our  
7 curriculum you can visit CaliforniaEEI.org and learn  
8 more about it. And I'm happy to answer any questions  
9 if you'd like.

10 COMMISSIONER WEISENMILLER: Thank you. I  
11 don't think we have any questions—go ahead, Paul.

12 MR. FEIST: For Mike, are there any existing  
13 centers for excellence around a different industry  
14 area that you studied? Is this a typical path of  
15 evolution that we're looking at here? Is there  
16 anything comparable?

17 MR. GRAVELY: Well, my personal experience,  
18 both prior to coming to the Commission and in the  
19 commission, we have in the PIER program we use Centers  
20 of Excellence for a limited number but we have about  
21 10 Centers of Excellence—maybe 10 or 11 Centers of  
22 Excellence that we work with because they provide a  
23 very unique function and most of those are discoverent  
24 state agencies, most of those are universities but not  
25 all of them. So we actually have learned a lot, and I

1 personally, have learned a lot about the  
2 organizational structure to do that. So one of the  
3 reasons I brought up what I did before was the—it's my  
4 believe that the National Center will evolve into an  
5 independent organization. But to start an independent  
6 organization from scratch with legal issues and  
7 charters and challenges is more difficult than  
8 awarding a contract to establish something that over  
9 the years that becomes independent. So, I think the  
10 reason I had the structure I had was based on my  
11 personal experience in the federal government prior to  
12 coming to the Commission and our experience with  
13 centers that have been successful. And some of those  
14 centers have successfully gone on to become primarily  
15 self-funded and so we used that model to start with.  
16 But the ultimate goal being, however we start this  
17 organization, if we choose this way, that starting  
18 organization will go away and a National Center  
19 governance will evolve, so that's the structure. The  
20 other reason for doing that is timing. You can do one  
21 of these in six months to a year. It could take three  
22 to five years to do something if you're starting it  
23 from the bottom up, like this. So the value is past  
24 history and speed that we're trying to approach.

25 MS. GORDON: Good afternoon, Commissioners.

1 My name is Emily Gordon. I work at Green For All,  
2 we're a national non-profit organization and our  
3 focus—our mission is to build an inclusive green  
4 economy strong enough to lift people out of poverty.  
5 So we really focus on looking at [inaudible]  
6 communities and communities of color and where there's  
7 opportunities for job access, quality job access, for  
8 those communities. And we work in collaboration with a  
9 lot of the stakeholders we've talked about today -  
10 business, government, labor and community  
11 organizations on the ground.

12 I just wanted to talk about for a minute the  
13 project, a few projects, that we've been working on  
14 that I think are good examples of where a National  
15 Center could help lift up as one of its roles. We've  
16 done a lot in cities across the country to help  
17 develop a high roads approach, to use some of the  
18 language that Carol and some of the others have used,  
19 to energy efficiency retrofit programs that include  
20 enforceable workforce and job training standards,  
21 among other things. One of our most successful  
22 projects has been up in the Northwest in Portland,  
23 called the Clean Energy Works Portland Program which  
24 is one of the first large scale citywide energy  
25 efficiency programs that has workforce and job

1 training standards and including targeted hiring and  
2 other elements as well. And in terms of training and  
3 workforce, the program requires that participating  
4 contractors hire new and true-level workers from  
5 designated training programs and labor unions and  
6 training providers in the city are contributing their  
7 training infrastructure to reference what some of the  
8 labor federation speakers said earlier, there's  
9 incredible training infrastructure and apprenticeship  
10 opportunities that we used and took advantage of in  
11 this program through working with labor. The training  
12 programs also partnered with community-based pre-  
13 apprenticeship programs to ensure that a majority of  
14 the trainees are coming in are women, people of color,  
15 residents of low income communities. And this approach  
16 has really helped ensure that we have a highly skilled  
17 workforce as well as access for jobs for local  
18 community members. And we're working with the City of  
19 Seattle and other cities across the country to  
20 replicate this. Just want to raise these examples as,  
21 as I said, the ability of a National Center to lift up  
22 local models and also, as others have said, to  
23 initiate the kind of cross-constituency partnerships  
24 that we have seen in these programs that have really  
25 helped make them successful when we bring together

1 labor, business, government, community groups at the  
2 same table to share information and come up with a  
3 program that works for everyone has really proved, in  
4 our experience, to be quite successful. And we  
5 strongly as an organization would support the creation  
6 of a National Center as we've discussed today. We'd be  
7 happy to share more information about our experience  
8 on the ground working with different stakeholders to  
9 create and implement programs aimed at building both a  
10 skilled workforce and also making sure we're investing  
11 in economic development in our communities. Thank you.

12 MR. GRAVELY: So, what I'd like to do, is  
13 we've kinda evolved into the general comment session  
14 to but I'd like to know for online, if there's anybody  
15 that has specific questions for me in the last  
16 presentation. If not, I'll turn it over to Suzanne and  
17 she'll run the rest of the public question and answer  
18 session. So, if anybody online has any specific  
19 question for me, please come up. It takes a second to  
20 take through.

21 OK. Can you hear us? Louise, can you speak  
22 up?

23 MS. AUERHAHN: Ah, yes. This is Louise  
24 Auerhahn. I actually had a general comment.

25 MR. GRAVELY: OK. Go ahead, you're on the

1 mic. Take it.

2 MS. AUERHAHN: OK. Thank you. I'm with  
3 Working Partnerships USA. We are a non-profit based in  
4 San Jose, California focused on developing policies  
5 and programs for issues effecting working families;  
6 one of those areas being green jobs. And we support  
7 and excited by the proposal for the national center.  
8 And would very strongly support the recommendation  
9 that was option three in the paper which was to focus  
10 on both labor demand and labor supply. And really  
11 bringing together all the various constituencies to  
12 build a highroad economic development strategy. And we  
13 see that as really the need in the sector of where the  
14 center could add the most value. There are an enormous  
15 and quickly growing number of organizations in the  
16 green economy sector that are focused on one sector,  
17 one constituency, one element but there really is that  
18 need for a larger broker that can be recognized as a  
19 sort of neutral party by all the constituencies that  
20 is really committed to building this center on a  
21 statewide and national scale. We would really support  
22 that role for the center.

23 With regards to the governance, we think  
24 that the way that it's initially developed will be  
25 extremely important in whether or not the center

1 succeeds at reaching those goals. We would support the  
2 idea of small initial board that really has  
3 representation from all the key sectors, including  
4 labor, including business, including workforce  
5 development education. And at the same time, a very  
6 careful to adhere to that point that was brought up  
7 early on which is that it should not be captured or  
8 give the appearance of promoting the interests of one  
9 sector only, be that sector's certifiers, be that  
10 sector's business, be it labor; it needs to find a way  
11 to balance supporting all of those sectors while not  
12 appearing to be controlled by one because in that case  
13 it would really lose a lot of its value. And with that  
14 said, we think it's a great idea and we look forward  
15 to giving further comment as its implementation plan  
16 is developed. Thank you.

17 MS. KOROSSEC: OK. Thank you very much,  
18 Louise. We are kinda segueing into a more general  
19 public comment period but I also want to give anybody  
20 in the room to ask questions that may have come up  
21 into your minds in the earlier panels. If there's  
22 anybody here who has questions for any of our  
23 presenters that are still here.

24 Alright, I see we do have one from online, a  
25 gentleman who got kicked off the phone earlier this

1 morning. Mark Kindleberger. His question is: No sane  
2 individual would argue against centralizing standards,  
3 training and certifications, whether national or  
4 statewide; however, new and retrofit residential and  
5 commercial buildings are most often built by low  
6 bidder. This is dominated by problems, including  
7 enforcement as described in the low road pathway  
8 mentioned by Carol Zabin. How do the members of this  
9 meeting propose to move this industry from the low to  
10 the high road?

11 I'm not sure who's the most appropriate  
12 person to answer that. Chris?

13 MS. ADOLF: This is Tiger Adolf, with  
14 Building Performance Institute. I think that moving  
15 from the low road to the high road, one of the things  
16 that needs to be addressed is enforcement of code  
17 standards that already exist. That could partially be  
18 done by the creation of a building performance  
19 contractor license. And I will make more formal  
20 comments on that later, but if that's something that  
21 can encourage the contractors to encompass the whole  
22 building when they're doing repairs that will much  
23 easier move the industry forward, it will also set the  
24 stage for contractors to make those bids in the first  
25 place to do the job right the first time when they're

1 constructing the building, not just in a retrofit  
2 situation.

3 MS. KOROSSEC: Great, thank you Tiger.

4 Alright, I don't believe we have any other  
5 questions online. This is a last opportunity for you  
6 in the room that would like to make any comments.  
7 Carol?

8 MS. ZABIN: I'm a little bit abusing my  
9 privileges as the person who wrote the study but I  
10 just wanted to make sure that—to reiterate what Tiger  
11 said and to make a couple points that I think, or that  
12 I fear, might have gotten lost.

13 One is things don't work well in the middle  
14 skill area in terms of the investments in training,  
15 creating a return for both employers and workers. They  
16 do in the professional fields and I think that is  
17 really important that part of this center address  
18 professional occupations but for the highroad, it's  
19 that middle skill job category that is problematic.  
20 And the only sector that I've seen where currently it  
21 is not problematic is in the apprenticeship programs  
22 because there is a tie-in between skill acquisition  
23 and increase in wages. In the residential sector there  
24 are efforts to insert certification have the chance of  
25 doing that but it's not guaranteed. And so, I think,

1 it's our best bet but we should really recognize that  
2 we have a labor market and it's gotten worse after  
3 this recession where there's a huge chunk of low wage  
4 jobs and we don't have very many mechanisms to push  
5 those up. Certification, again, may be a mechanism if  
6 the market works but it's gonna take a lot more. It's  
7 gonna take the building code enforcement. It's gonna  
8 take interventions into the market that energy  
9 agencies actually have a lot of control over so  
10 building the high road, we can't just count on  
11 certifications we have to tie those to better wages  
12 and we have to tie those supports for the part of the  
13 market that is really trying to get to quality, and  
14 trying to compete on quality rather than cutting  
15 costs. And I just wanted to reiterate that and I hope  
16 that I'm not abusing my privileges as one of the  
17 writers of the report.

18 MR. GALICER: I'm Harold Galicer from the  
19 California Smart Grid Center and I'd just like to add  
20 on to a few comments from my colleague Emir Macari on  
21 the national center. As you all well know, the Smart  
22 Grid Center has embarked on a statewide effort for  
23 workforce development for smart grid. And at the same  
24 time has a pretty wide ranging center of excellence  
25 trying to accelerate the deployment of smart grid

1 technologies.

2           One of the things that we've really learned,  
3 besides the real key element in getting industry  
4 involvement and moving forward in the green economy,  
5 is the need to develop learning organizations that, I  
6 hope, this new center will be to overcome traditional  
7 ways at looking at doing things. And we very much work  
8 in and live in a technology-driven society nowadays  
9 that really requires more of an integrated approach  
10 and taking a, what I would say, is an overview to get  
11 beyond our traditional silos as we look at the green  
12 economy. What that's going to require is a structure  
13 that enables the organizations not to necessarily look  
14 at energy efficiency or power and delivery or  
15 transmission or distribution as standalone  
16 opportunities for employment but rather we need to  
17 give people a skill set as was explained before that's  
18 a pathway where we recognize that people are going to  
19 be moving from one type of a job and one skill set to  
20 the next and they can progress and move forward. So,  
21 I'd really encourage everyone that's working on the  
22 center to take a different approach and not look at  
23 things in terms of a segment or approach, high road,  
24 low road, one technology or the next but integrate  
25 technologies and be real faceted to work with a wide

1 range of stakeholders to make the center a success.

2 MR. STOCKTON: Ed Stockton, Hydrogen

3 Technologies and I thank you for letting me come up  
4 one last time. I think the whole issue between the low  
5 road and the high road is a matter of leadership and  
6 that is where hydrogen technologies is taking a step  
7 in our licensing, is we're requiring those people that  
8 obtain a license to operate our equipment will have  
9 these certified technicians. And right now, those  
10 certified technicians are UAE and IBEW. So from a  
11 leadership standpoint, those companies that you  
12 support and you go forward with, if they take the same  
13 leadership role and model, and take the high road, I  
14 think the standard of excellence can be driven simply  
15 by leadership. So, thank you.

16 MS. ADOLF: Tiger Adolf, BPI. I'd like to  
17 follow up on what Mr. Stockton said about leadership.  
18 It is important that the leadership be there and  
19 certainly the unions have had their place in that. But  
20 if you want a high road economy for this particular  
21 industry, you want these contractors to be able to be  
22 profitable. You get a high road, you get high wages,  
23 you get high quality by having profitable businesses.  
24 They need that support to move forward to be able to  
25 achieve a high road. Low cost, no cost, quick in and

1 out, super easy for the consumer. Those all sound very  
2 appealing but the bottom line is that those aren't  
3 effective. Those aren't best quality and those aren't  
4 the jobs that will create the best wages. Contractors  
5 must be profitable, whether it's the commercial, the  
6 manufacturer, or the residential sector in order for  
7 them to create the high road jobs.

8 MS. KOROSK: Alright.

9 MR. MCNAMEE: Good afternoon, everyone. My  
10 name is Jim McNamee. I'm with the Carpenter's Training  
11 Committee for Northern California, representing the  
12 carpenters of Northern California. In talking about  
13 the high road and low road jobs, we've determined  
14 through our apprenticeship programs, which have been  
15 well established since the 1950s, that our employer  
16 base—we have about a 1,200 member employer base with  
17 our Joint Labor Management Association of Northern  
18 California. One of the things about our employers,  
19 they're basically commercial engineering and general  
20 building contractors. And one of the enigmas that is  
21 with us right now, talking about these clean energy  
22 jobs, is our contractors aren't really interested in  
23 bidding a lot of residential work. You might think  
24 that's pretty interesting coming from carpenters,  
25 housing and stuff like that. But that seems to be the

1 case. The housing industry, the way it exists now in  
2 California, is extremely unregulated and kinda in a  
3 quandary about how to go about bidding in a non-  
4 structured environment that exists with the housing  
5 industry the way it is right now. Our contractors have  
6 told us, with this emerging clean energy jobs, we  
7 realize there are opportunities in the residential  
8 industry but our contractors don't know about how to  
9 go cracking into the industry. So that's probably  
10 something that the Commission needs to understand. And  
11 that's something that we're all going to have to deal  
12 with as we move into the future. Those are entry-level  
13 jobs, to a large extent. We have a lot of  
14 apprenticeship program—our apprenticeship program  
15 basically takes a broad view of the industry. We have  
16 stuff that's basically developed towards green  
17 technologies of the carbon curriculums but we train  
18 carpenters in general so they have a broader based  
19 opportunity in the field to survive, aside from just  
20 the green energy sectors. And we have an expanding  
21 vision of that but we provide like a lot of other  
22 apprenticeship programs, a broader base approach to  
23 our trainees for basic economic survivability. But the  
24 residential industry is problematic. Thank you very  
25 much.

1 MS. KOROSEC: Thank you.

2 MS. LYNCH-MCMAHON: Thank you for letting me  
3 speak to you all today, Commissioners. My name is  
4 Kelly Lynch-McMahon and I'm with the Green Science  
5 Academy from Oakland. And the one question that I have  
6 is in looking at the presentations that have been  
7 presented today, we're talking about high road and low  
8 road and we're talking about labor. One of the other  
9 members that presented the reports, both very  
10 eloquently about professional services, and you know  
11 they are the crux to what makes the end job. And so,  
12 my goal in what we do at Green science Academy is we  
13 look at the gap that is being created equally in the  
14 workforce of the professional services sector as it is  
15 being created in the labor market. And so,  
16 understanding that, most of your design engineers and  
17 architects who are seasoned professionals are not  
18 necessarily up to speed on what all the new trends in  
19 technology and innovation are. And so there needs to  
20 be a push to also bring them on board as part of this  
21 team and education them. Because when they understand  
22 what the requirements are for being designers, they  
23 can also implement best practices for the standards  
24 that are implemented actually on the job site, which  
25 then affects your labor market. So, I wanted to ask

1 that you all look very closely at addressing that with  
2 the same fervor that you're addressing the labor force  
3 because they are equal partners in making this a  
4 successful programs. And so, with that, I ask that you  
5 guys work with the professional associations and work  
6 the colleges to recruit and commit younger people to  
7 get into the maths and sciences because that's where  
8 your innovation and your technology will occur. That's  
9 where your design innovations, post-graduated into  
10 industry will occur. And as the professional services  
11 groups age, we have to replenish those talents as  
12 well. There was done in 2009, that said most-based on  
13 the Association of Society for Mechanical Engineers  
14 and Society of Civil Engineers, anywhere from 40-60  
15 percent of all your seasoned engineers, that have more  
16 than 20 years experience, will retire in the next five  
17 years. What does that say? That means our  
18 infrastructure from a national security perspective as  
19 well as a public safety perspective is being  
20 jeopardized because you have the brain power and  
21 talent that will no longer be in the system. And so we  
22 have to look at addressing that. Thank you.

23 MS. KOROSSEC: Thank you. Alright. Anyone  
24 else?

25 With that, I will close this up. Just want

1 to remind everybody, we do want to see written  
2 comments from you if you have them by March 31.

3 And we are adjourned. Thank you very much.

4 [Meeting is adjourned at 3:04 p.m.]

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