

1 CALIFORNIA ENERGY COMMISSION
2 WORKSHOP ON THE DEVELOPMENT AND SCOPE OF
3 MARKET FACILITATION INITIATIVES
4 FOR THE ENERGY COMMISSION'S PROPOSED 2015-2017
5 TRIENNIAL INVESTMENT PLAN FOR THE
6 ELECTRIC PROGRAM INVESTMENT CHARGE PROGRAM

California Energy Commission

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Panel 1:

Blaine Collison, US Environmental Protection Agency

Ardie Dehghani, University of California Davis

Camron Gorguinpour, US Department of Defense

Winifred Kwofie, University of California San Francisco

Bob Raymer, California Building Industry Association

Christine Vance, Energy Coalition

Randy Walthers, Raley's

Panel 2:

Beverly Alexander, Energy Institute at Haas, UC Berkeley

George Crandell, Technikon

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A P P E A R A N C E S C O N T I N U E D

Jennifer Garson, EERE, US Department of Energy

Josh Gould, ARPA-E, US Department of Energy

Cole Hershkowitez, Chai Energy

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SACRAMENTO, CALIFORNIA, February 7, 2014

9:56 a.m.

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MS. DOUGHMAN: So we're going to get started. Welcome to the Workshop on the Scoping of the Second Proposed EPIC Investment Plan that the Energy Commission will be developing soon. Just to go over the emergency procedures, for those of you not familiar with this building, the closest restrooms are located behind this wall over in this side. There is a snack bar on the second floor under the white awning. Lastly, in the event of an emergency and the building is evacuated, please follow our employees to the appropriate exits. We will reconvene at Roosevelt Park located diagonally across the street from this building. Please proceed calmly and quickly, again, following the employees with whom you are meeting to safely exit the building. And I will just add as well, if it's not an emergency, please exit by the guard, otherwise an alarm will sound. Thank you.

So -- oh, the other thing is there are handouts for today's workshop on the table as you walk in, and there are blue cards. If you are planning to speak, please write your name on the blue cards and the topic

1 you plan to address. Also, for those who are speaking,
2 please be sure to give your business card to the court
3 reporter.

4 All right. Now, Laurie ten Hope will give some
5 welcoming remarks.

6 MS. TEN HOPE: Good morning. I just want to
7 welcome everyone to this workshop. I'm Laurie ten Hope.
8 I'm the deputy director for research at the Emergency
9 Commission. I want to thank our panelists. We're very
10 much looking forward to your input and to those of you
11 who have -- who have come today in person. Many of you
12 have been participating in the development of the
13 Electric Program Investment Charge Program, so you're
14 familiar with it. But I think some of you may be -- may
15 be new to this -- to this process. So I just want to
16 provide a short context and then you'll -- we'll hear
17 from our CPUC colleague who will go into a little bit
18 more detail. But the Electric Program Investment Charge
19 is, is a charge that provides funding for clean energy
20 technology development, and so it really provides us an
21 opportunity to develop technologies that will help us
22 fulfill our policy goals. The State of California is
23 embarking on a low carbon energy path that has a lot of
24 renewables, energy efficiency, combining power, electric
25 transportation, some really cutting edge technologies

1 that will provide customers with clean, affordable,
2 safe, and environmentally benign energy sources but that
3 future is -- brings with us some technology challenges
4 of how do we incorporate this in a way that works for
5 customers that is not too complicated on the grid,
6 that's still safe with two-way power flow. That's what
7 this funding is there for, is to bring innovative
8 technologies to bare that will provide these solutions
9 at the, the lowest costs, the lowest costs possible.

10 In developing this program, for those of you who
11 have been engaged, it's a little, maybe, confusing that
12 we are in a state right now where we're implementing our
13 first investment plan, and we're planning our second
14 investment plan. So just for a little bit of context,
15 we, along with the three investor owned utilities,
16 developed an investment plan for what our research would
17 be for a three-year period, and we're just launching
18 that right now. So there will be program opportunity
19 notices for researchers who are interested in doing
20 research or those of you who want to just follow with
21 what the new technology developments are. The Energy
22 Commission, along with the utilities, will be issuing
23 solation soon. We expect in February to start issuing
24 those solicitations. The ones that are planned for the
25 next few months are posted on our -- on our website.

1 So, you know, stay tuned for that.

2 This workshop is to kick off the planning for the
3 second triennial EPIC Investment Plan, which is the
4 investment plan for 2015, 16, and 17. And so we are --
5 we have, sort of, a two-prong process to kick off
6 soliciting ideas. One is a questionnaire that you'll
7 hear more about from Pam that's been circulated on our
8 list served, but if you didn't get it and you have ideas
9 for research initiatives, we really want to hear from
10 you before we develop our draft plan for 15, 16, and 17.
11 But today, what we're focusing on is one element of the
12 investment plan, which we call Market Facilitation, and
13 in that area, we're really interested in experience and
14 ideas for how do you accelerate that path to market.
15 And we developed a -- you know, we have a good
16 technology. We know it's good. Maybe the test site
17 knows that it's -- you know, that it works. But, you
18 know, how do organizations make decisions to widely
19 deploy these technologies. So our first panel is going
20 to provide us some insights about how we might
21 accelerate this path to market. What, what products,
22 tools, experience is needed to help make, you know, make
23 those decisions, and our second panel will help us with
24 some of the challenges of entrepreneurs in that last
25 valley of death. What kind of financial incentives

1 might be helpful or, you know, other kinds of strategies
2 that -- visibility strategies that help really
3 accelerate the path to market. We know we can get a
4 path to market, but can we do it faster and better and
5 get the higher quality technologies deployed. So that's
6 really our purpose. I'm really excited with the
7 panelists that are here, and I'm going turn it over to
8 Pam to introduce our speakers. Thank you

9 MS. DOUGHMAN: Thank you, Laurie.

10 The first speaker to today is Cem Turhal at the
11 California Public Utilities Commission.

12 MR. TURHAL: Thank you, Pam. Thank you,
13 Laurie. Hello, everyone. Thank you for joining. My
14 name is Cem Turhal, and I'm an analyst at the CPUC
15 currently responsible for the EPIC program. Before I
16 begin my introduction, I would like to thank the CEC for
17 all their hard work in starting to get the second
18 investment cycles and get the program going.

19 So with that, let's go to the second slide
20 please. Okay. So Laurie went over most of the slide
21 already, but from the CPUC's perspective, the EPIC
22 program is focused primarily on support of
23 pre-commercial efforts with some additional support for
24 more market facilitation activities, which we'll cover
25 in detail in the next slide. The support for the EPIC

1 program provides -- the support that the EPIC program
2 provides is largely intended to help fill the gaps in
3 finding that exist for technologies where we're forced
4 traditionally through, like, private capital. After its
5 deliberations, the CPUC determined that EPIC program
6 provided electric rate payers with benefits and promoted
7 greater liability, lowered costs, and increased safety.
8 This is an important finding, as all projects overseen
9 by the CPUC need to have some sort of the rate payer
10 benefit, and the CPUC did a great job in showing us that
11 in their investment plan. The finding for the project
12 will be primarily awarded through competitive
13 solicitations, but that does not preclude the PAs from
14 using noncompetitive awards as well. All of the awards
15 that will be made, will be made public in the PAs annual
16 reports, which they will file the next -- February.
17 Next slide, please.

18 So the next two slides will cover the initial
19 investment plan funding amounts that are not adjusted
20 for January 1st of 2015 for each of the funding areas.
21 In this slide, again, just for the initial investment
22 plan, and it's not adjusted for the January 1st, 2015
23 plan, the EPIC finding was around \$162 million. I
24 should note that in 2012, however, the program budget
25 was \$143 million based on the Commission's state

1 position of the EPIC proceeding with that amount
2 allocated across areas in the same proportions. The CEC
3 will have the lion's share of the budget in the second
4 program as well, and each of the categories, as you can
5 see, it's broken down the applied research, technology
6 demonstration and deployment, and market facilitation,
7 and again, these figures will be adjusted in January
8 15th to commiserate the average changing consumer price
9 index. And this is per the phase two decision, and the
10 language can be found in that as well. Next slide,
11 please.

12 Again, this table is also for the 2012, 2014
13 triennial investment plan, but this is a table that's
14 showing the EPIC funding for each program
15 administration, administrator from the November 14th of
16 2013 EPIC decision improving the program administrator's
17 proposed investment plan. As you can see, the total
18 amount towards the initial investment cycle was a total
19 of \$467 million. And there's only a year left -- less
20 than a year now -- to make all these allocations. Given
21 the shortened timeframe of initial investment plan cycle
22 and for the purpose of the initial investment plan
23 cycle, order in paragraph 39 of the latest EPIC decision
24 allows the Commission unencumbered funds that would,
25 under normal circumstances, be returned to rate payers

1 and require them to be rolled over if those funds were
2 encumbered and committed. The numbers, obviously, will
3 change again once the CPI adjustment is made in January,
4 but it would be somewhere in the ballpark of this
5 number. Next slide, please.

6 So as Laurie mentioned earlier, the EPIC program
7 is now live. So it started back in November of 2012
8 where the program administered -- submitted their
9 respective proposals for their investment plans, and the
10 CPUC deliberated on and approve on November 14th of 2013
11 a complete year for treatment. So now, moving forward,
12 there -- the -- each of the PAs will be holding
13 competitive solicitations and grant awards to specific
14 bidders, and they will file reports on these awards and
15 their amounts and who the award was made to per the
16 November 14th decision language. In the CPUC's ruling,
17 the whole thing will be to, to continue to provide
18 oversight to the EPIC program, and, and any kind of, you
19 know, go through second investment plan, and I think
20 November is the time that we, at CPUC, are thinking
21 about, you know, finalizing the deliberations and having
22 a decision on the second investment plan cycle. Next
23 slide, please.

24 The next steps for the EPIC program. The public
25 administrators will submit their second investment plan

1 application to the CPUC on May of 2014. This workshop
2 is a -- is a requirement that is a result of the base
3 year decision to have stakeholders come in, and I'm
4 really excited to hear the panelists speak on some of
5 the issues that we're facing. And after receiving the
6 second phase investment plan, the proposed investment
7 plan, the CPUC will begin it's deliberations again, have
8 a decision hopefully out by November of 2014 that will
9 make the second investment plan active by then.

10 So this is the EPIC program CPUC schedule. This
11 is something that was in the phase two decision of the
12 EPIC program. Again, this is specifically for the CPUC
13 schedule. So these may change depending on how, how we
14 see the stakeholders would like to see changes made or
15 if there are any concerns with something or there are
16 actually delays. These could be shifting around, but
17 this is -- was the base decision outlined and we are
18 going to try to stick to it as much as we can.

19 So as you can see, in the second investment plan,
20 development of the investment plan will be from January
21 through March, and May 1st of 2014 is when those plans
22 will be submitted to the CPUC. And the CPUC will begin
23 its deliberations in May and hopefully be concluded with
24 them in November to have an actual decision in December.
25 Next slide, please.

1 As mentioned earlier, each of the program
2 administrators will file annual reports starting on
3 February 28th. They filed one last year, which did not
4 contain anything since the programming was not launched.
5 And they're going to be filing another one this February
6 28th, and we're looking forward to that. And in 2016,
7 the CPUC will hire an independent evaluator to see where
8 and how the program is going and see if there's going to
9 be any changes that need to be made to the program.
10 Next slide, please.

11 So how can you get involved. We tried -- we just
12 recently updated all this. You can visit that link that
13 is before you, and this is the EPIC proceeding number.
14 This is the -- this is the application number for the
15 previous EPIC decision and rulemaking. So if you
16 subscribe to this service list, as soon as the
17 investment plans come in as applications, the CPUC will
18 open up a new docket and everyone that is subscribed to
19 it will be transferred on to the new proceeding. And
20 so -- you know, if you subscribe to this, you will be
21 automatically subscribed to the next service list as
22 well. This is where we're going to send out the emails
23 and any updated information about the next rulemaking
24 that the applications will start.

25 So you can see in this link, again, you can see

1 all of the previous CPUC information, investment plans
2 that were filed, comments to those investment plans,
3 reply comments, rulings that the ALJ has made, and the
4 decisions that the ALJ has made regarding the EPIC
5 program. Next slide, please.

6 I believe I -- I wanted to provide everybody with
7 all the EPIC web pages beginning with the CPUC, which
8 has all these -- all these links, hyperlinks, there so
9 you can easily access them through the CPUC's web page.
10 CEC's web page, they have done a great job since early
11 2012 to -- I mean, 2013 -- to get all of the information
12 they can on their website and they -- the three
13 facilities also have now launched their EPIC web pages
14 and the links are below. Next slide, please.

15 I, unfortunately, will be leaving the Energy
16 Commission Strategy Team, and so Damon Franz will be the
17 proper contact at this point, and he will assign the new
18 email list to the EPIC program, and I'll hopefully be
19 working with you guys, and I'm looking forward to seeing
20 where the program goes. So thank you, and I'll turn it
21 back to Laurie.

22 MS. DOUGHMAN: Thank you, Cem. I'm going to
23 give a few points going over the Energy Commission
24 process and schedule for the proposed 2015, 2017 EPIC
25 Investment Plan.

1 So this slide provides a rough idea of the
2 estimated start times for each panel and the afternoon
3 staff presentation. The first panel will begin shortly.
4 Each panel will be followed by a public comment period.
5 Also, there will be a public comment period after the
6 staff presentation.

7 Today's workshop on the Scope of the Market
8 Facilitation Program area of the Energy Commission's
9 Proposed Second Investment Plan is accompanied by a
10 questionnaire on all areas of the second EPIC
11 investment. Written comments and responses to the
12 questionnaire are due February 13th. The Energy
13 Commission is one of four administrators of the EPIC
14 program. Southern California Edison, San Diego Gas and
15 Electric, and Pacific Gas and Electric are the other
16 four -- or other three -- administrators. They plan to
17 hold a scoping webinar on February 21st for their second
18 EPIC investment plans. The Energy Commission plans to
19 host a draft proposed second EPIC investment plan in mid
20 march and hold a workshop on the plan at the Energy
21 Commission on March 17th. The March 17th workshop will
22 be held in coordination with the IOUs. This will be
23 repeated in southern California on March 21st. The
24 Energy Commission will post a proposed second investment
25 plan in mid to late April. The Energy Commission plans

1 to consider adopting the proposed plan at an Energy
2 Commission business meeting in late April. The Energy
3 Commission plans to submit the proposed plan to the CPUC
4 on May 1st. Investor own utilities, proposed EPIC
5 investment plans are also due on May 1st. As Cem
6 discussed, the CPUC will hold a proceeding to consider
7 the proposed plans from May through November. The
8 current schedule shows a CPUC decision modifying and/or
9 adopting the second EPIC investment plans in December.

10 This slide --

11 MAN ON TELEPHONE INTERCOM: Hi, Mike.

12 MS. DOUGHMAN: Sorry?

13 This slide summarizes opportunities for
14 stakeholder input on the scope of the Emergency
15 Commission Second EPIC Investment Plan. We encourage
16 written comments addressing -- addressing the questions
17 on the agenda. Also, interested parties are encouraged
18 to complete and submit the questionnaire for all areas
19 of the Energy Commission's EPIC program, including
20 applied research and development, technology
21 demonstration and deployment, and market facilitation.
22 Please submit written comments and the completed
23 questionnaire by email to docket@Energy.CA.GOV and
24 PRABSETHI@Energy.CA.GOV. Please indicate 12-EPIC-01 and
25 EPIC Second Investment Plan in the subject line. You

1 may also submit your comments and questionnaire by mail
2 at the address shown here. Comments and questionnaire
3 are due February 13th. For more information, please go
4 to the Energy Commission's EPIC web page.

5 Now, let's begin the first panel. Virginia Lew
6 will be the moderator.

7 MS. LEW: Good morning. Many facilities and
8 procurement managers face a lot of barriers to install
9 clean energy technology into our facilities. Today,
10 we'll hear from our panelists who will tell us about --
11 to give us their insights and experiences in that area
12 and possibly provide some additional input that we can
13 include in helping to facilitate our process.

14 So I'm going to ask each of the panel members to
15 give a brief introduction about themselves and about
16 their experiences in this areas, and we have about four
17 questions, and we're hoping to open it up for public
18 questions and answers about 12:00 o'clock. So let's
19 hear from Winifred.

20 MS. KWOFIE: Good morning. My name is
21 Winnie. Kwofie is the last name. I work for UCSF down
22 in San Francisco, and I came with Dave Colsome, our
23 expert on procurement. I work in the facilities
24 department, and one of the things that we have been
25 doing is working with Mike and trying to integrate some

1 of these technologies into our -- down at UCSF. It's
2 been an interesting challenge. We're always -- as on
3 every campus, we face changing old to new, and the
4 integration will always come as a challenge as to adopt
5 the old ability to these new systems. We continue to
6 work with the procurement, looking for new ways to make
7 this happen and look forward to my friends, here on the
8 panel, to learn how about what they're doing on their
9 side.

10 MS. LEW: Thank you.

11 Ardie?

12 MR. DEGHANI: Good morning. My name is
13 Ardie Deghani. I think you can hear me, but I'm with
14 the designer and construction management office at UC
15 Davis. I'm the director of the engineering and working
16 on the capitol side of the UC Davis facility. We -- our
17 office manages all construction projects for capitol
18 project, so we manage design and construction goes to a
19 bidding phase. All of our contracts are bid in
20 accordance with public contracting codes.

21 I thought maybe I'd give you just a rough idea
22 about our campus. Our campus is about a 53 hundred-acre
23 campus in Davis. It's got other facilities outside of
24 Davis, but the one in Davis is 53 hundred. We have
25 34,000 students, and it's estimated that we would have

1 5,000 by 2020. So we are in the growth mode. We have
2 roughly 11 hundred buildings, totalling approximately 12
3 million square feet facilities. It's interesting that a
4 lot of these facilities were built in 50s, 60s, and 70s,
5 and you all know the challenges with renovation inside
6 these facilities especially with building materials that
7 sort out cost to the mix.

8 UC Davis has it's own quality treatment plant.
9 We have our own detention basement called "R Freedom"
10 for store management. We have our own an underground
11 belts for domestic and landscape water system. We
12 purchase volt electricity and distribute it in our
13 campus by our own 12 KV distribution network. We have
14 massive underground 12 KV. Same as nastic gas. We
15 purchase both and distribute to our facility under UC
16 Davis facility's management leadership. We have a
17 heating, cooling central plant. We put in a five
18 million gallon storage tank thanks to CEC and CPUC about
19 a decade ago and really, truly have helped us shape --
20 our electricity is very low. Our purchased electricity
21 is low. Roughly, it's somewhere between six and half
22 cents and a seven and a half cents a kilowatt an hour.
23 No time of the use penalty attached to it, but we are a
24 sustainable campus, and we would like to pursue
25 sustainability to help our campus. Our peak is about 50

1 megawatt. Our off peak approximately 16. So we are a
2 24/7 research facility that use a lot of electricity
3 during off hours. We, currently, have one megawatt of
4 solar on our building, and we completed construction of
5 800 KW digester project, again, with the help of CEC
6 incentive program. That's in partnership with clean
7 ward. It takes our garbage and develop energy. We saw
8 a close in our landfill here pretty soon. We are in
9 process of procuring 14 megawatt solar farm on our
10 campus -- is going through a procurement process and,
11 hopefully, we'll have that executed within the next
12 month or so. We will complete construction by end of
13 2014. We have 14 lead accredited buildings, seven are
14 platinum. These are large facilities, the majority are
15 laboratory. So emerging technologies for energy have
16 played a significant role to make those possible.

17 UC Davis -- it's interesting, our electricity use
18 in 2012 is about the same as those in '93, although we
19 have added about three million square feet of facility
20 since. One of the main reasons we -- with CPUC
21 leadership and with the partnership at PG&E, we have a
22 state-wide energy partnership program under the same by
23 design. It's 2009, 2014 program. That program has
24 helped us reduce our electricity, so far, by 45 million
25 kilowatt an hour and 2.5 million terms.

1 So this gives you some idea about where we stand
2 with energy. It's really important to us, and we hope
3 that we will learn more from you all about things that
4 we could implement our campus. Thank you.

5 MS. LEW: Thanks. Thank you.

6 Christine.

7 MS. VANCE: Good morning. I'm Christine
8 Vance, and I'm a director at the Energy Coalition. And
9 thank you very much for the opportunity today to be a
10 part of this panel.

11 the Energy Coalition is nonprofit based in
12 California, and we have been a leader in energy
13 efficient policy and education and government programs,
14 energy efficiency programs for the last thirty years.
15 Prior to joining the Energy Coalition, I worked for
16 about -- more than 25 developing and implementing energy
17 efficiency programs in the public sector, a large part
18 of that in the city and county of San Francisco. And
19 the last about four or five years I was working at San
20 Francisco, we started to use, in particular, definite
21 quantity contacts that we -- that offered all kinds of
22 advantages to adapting, deploying -- not just energy
23 efficiency measures -- but all kinds especially advance
24 technology. So I'll be drawing from that experience.

25 And, more currently, I'm the program director

1 heading up the implementation of a public agency energy
2 services for the Southern Cal regional energy network.
3 And if you haven't -- most people here have probably
4 heard of the Rens but in the -- in the program cycle
5 for 2013, 2014, the CPUC made a decision to have some
6 funding go toward regional energy networks in order to
7 really leverage the collective action of local
8 governments, and, and kind of serve some more innovation
9 and support for the greater scaling of projects. And on
10 behalf of Los Angeles County, there -- the administer of
11 the Southern Cal Ren, the energy solution was hired to
12 develop a program, an innovative program, that provides
13 a set of turnkey services that are trying to address all
14 of the various barriers, not just for advance
15 technologies, but all for all technologies.

16 So we provide a whole suite of cradle-to-grave
17 technical services along with the project financing.
18 And the program is launching September. We have to-date
19 enrolled 27 agencies. We have initiated over a hundred
20 projects, and many of those underway, one already
21 completed in fact. So I think part of the -- part of
22 this regional energy network is trying to bring together
23 the collective, kind of, wisdom on the entire, you know,
24 contacting end, engineering community. We have 19
25 energy engineering firms on board that we draw from and

1 employ. We also have 14 contractors on board saying
2 that they're ready to send out the competitive bid
3 process through the national joint power alliance. And
4 what we have done is adapted this particular contract
5 investment specifically for energy efficiency where we
6 have developed construction price catalogs and basically
7 spent four months with the best in the field, energy
8 solutions on lighting and mechanical and other firms
9 weighing in to bring together. In that catalog, we have
10 all of the incentivized measures from -- along with
11 other kinds of advanced technology. So I'll be saying
12 more about that.

13 In terms of just, just a few high level thoughts
14 that I had, the kinds of -- the kind of barriers when
15 you're -- when you're a -- when you're a public agency,
16 especially, you know, my experience is more public
17 sector, you get a lot of different vendors coming and
18 trying to sell different things, and it becomes
19 difficult to, you know, what to believe. And, you know,
20 so there's a whole host of things that help that
21 situation. You really need some third party objective
22 advice I think. And so the first point is just that the
23 barriers that impact advance technologies are the
24 same -- some of them -- are the same barriers that
25 impact all energy efficiency, you know, lack of staff,

1 difficulty procuring quality engineering, and quality
2 construction, which are both key, lack funding,
3 financial analysis to help make the, the proposition
4 case for some technologies that may have a higher first
5 costs and so forth. But it's just that advance
6 technology, they have all those same barriers but they
7 have additional barriers, right, or emerging market.
8 And so there's a variety of things to help in that way,
9 and there's, there's different examples like, you know,
10 lighting, LED lighting, and so forth. Am I --

11 MS. LEW: Yeah, I think we need to move on,
12 and so we can cover your comments in some of the
13 questions later on.

14 MS. VANCE: Yeah, uh-huh.

15 MS. LEW: So Bob?

16 MR. RAYMER: Thank you, Virginia. I'm Bob
17 Raymer. I'm a senior engineer and technical director
18 with the California Building Industry Association. CBIA
19 currently has about three and a half thousand member
20 companies. On an annual basis, we produce about 90 to
21 95 percent of the new homes built in California each
22 year. By way of comparison, we used to have about 8,000
23 member companies going back about seven years, but then
24 the housing sector fell through the floor. The good
25 news is we're beginning to finally see a nice spike in

1 construction. And I suspect -- 2013 was the first real
2 uptick that we saw. 2014, we're expecting very similar
3 or better results, and so with that, sort of my job and
4 what I do for building industry, I have had this job for
5 the past 31, 32 years. I have been working with -- and
6 in some cases not necessarily with -- the CEC on a
7 variety of updates of the energy efficiency standards.
8 I have worked on the last ten of these updates. It
9 happens every three years, and part of the challenge
10 from my job is to try and see the mass application of
11 emerging technologies or emerging building systems. One
12 of the more recent is the emerging technology, of
13 course, rooftop solar. It's one thing to have a couple
14 of great examples here or there, but we're trying to get
15 this to where it's not only on ten or twenty buildings;
16 it's on hundreds of thousands of buildings. And so
17 there's challenges because you've got a workshop that
18 needs to understand, needs to be able to incorporate.
19 You need product purchasing that sort of comes up to the
20 challenge, and along with that, we're also very
21 interested in emerging building systems. And that's
22 become more of an issue in the past five to six years,
23 as you can imagine, as the CEC updates the standards
24 every three years, the standards get more stringent.
25 And now that we have had ten very clear, very rigorous

1 updates to those standards, a lot of the low-hanging
2 fruit is gone. In my opinion, pretty much all of it is
3 gone. There's still a lot more that can be done in
4 terms of energy efficiency. It's just getting a lot
5 harder and more expensive. And so we have to,
6 effectively, prepare tens of thousands of workers,
7 designers, subcontractors, contractors, product
8 purchasing agents, sales agents. There's an immense
9 number of individuals that's involved, and the
10 development, the design, the construction, and the
11 selling of these homes, they all need to get on board
12 with this. And so part of what I'll be looking at
13 through the EPIC funding and through a variety of other
14 CPUC and CEC funding opportunities is how to help
15 continue the role that solar is seeing, rooftop solar is
16 seeing right now. I'll get more into that, and also how
17 we can help do pilot projects and a variety of the other
18 things with these emerging building systems, and that
19 will be largely my comments in question number four. So
20 with, that --

21 MS. LEW: Thank you.

22 So let's hear from Randy.

23 MR. WALTHERS: Hello, everybody, and thanks,
24 Virginia. My name is Randy Walthers, and I'm the energy
25 utility manager for Raley's stores in Sacramento here.

1 It's kind of a unique company. We are a privately-owned
2 company with 129 stores in northern California and
3 northern Nevada. We are on a management team with
4 Raley's, which our owners are backing, very much in the
5 sustainability and energy efficiencies in our building.
6 When I took on as the energy manager ten years ago, our
7 average buildings were running about a 500 KW peak load
8 and we're down to under -- about 250 now with energy
9 efficiencies. A lot of these were backed with a lot of
10 money through the CPUC and different programs like EPIC.
11 UC Davis is very much in our back pocket here, a lot of
12 times helping us with a lot of different emerging energy
13 efficiencies. In fact, we're doing a couple of projects
14 right now with them that are on the -- more on the waste
15 side with digesters and we're going to convert all of
16 our digestibles in our stores into gas and/or
17 electricity.

18 But other than that, it's kind of a unique
19 company in that I'm kind of left alone. If I see
20 something that's new and exciting, I try it, and I will
21 try it at one or two stores. We have a store now that
22 is going to be fully controlled, which is part of the
23 CPUC guidelines, of electronic controls with lighting,
24 skylights with movers on the skylights to keep a
25 constant light level in the store, and we're probably

1 going from about a -- oh -- one and half -- or about 125
2 KW lighting load down to about a 45, which is the new
3 lighting technology with LEDs. So we're kind of unique,
4 and I'm here, basically, as an end user of what happens
5 here. I'd like to see when there's money being
6 broadcast, but I do, like Bob said here, wonder about
7 all the different people out there. You know, I get a
8 hundred calls a day selling solar. "Who are you?"
9 "What are you?" I usually go to end user and work on
10 that. You know, we have 1.5 megawatt solar system on
11 our DC right now that I don't think anybody even here
12 knows. We're kind of quiet that way. If it make sense,
13 we do it. You know, we don't really broadcast a lot
14 out. This is kind of unusual for Raley's to come out
15 and, you know, broadcast what we have done or what we're
16 doing. We are in the middle of another 1.5 megawatt on
17 that same warehouse, and we're doing 25 stores right now
18 on contracts. It's a little bit harder when we don't
19 own the store. We have to work on the, you know,
20 owners' side to get the, the leases, you know, right for
21 them if it's a long-term lease. Usually, you need 25 to
22 30 years to make solar work. And so we're in
23 negotiations for that. We are looking at fuel cells in
24 our stores, and that will take over the critical side of
25 our energy as far as keeping our frontline going and our

1 computer lines going. I've said the digester, and
2 basically that's about it.

3 I do utilize, though, and like Bob said,
4 different companies there. Grocery stores have a high,
5 high energy usage, and there's a lot of rebates out
6 there for lighting and that, and to get a hundred
7 different people calling on you, trying to sell you
8 something, or giving you this, I have been utilizing
9 what's called "PECI," it's energy smart grocers. They
10 handled all our PG&E site stores, and they will go in
11 and actually go in and moderate before and after we do a
12 project, and they handled all the paperwork, and they're
13 a God send.

14 MS. LEW: Okay. Thank you very much.

15 So we have a few speakers on the phone, and so
16 let's start with Blaine Collison from the US
17 Departmental Protection Agency. Blaine.

18 MR. COLLISON: Hey, thank you very much.
19 Good morning, everybody. My name is Blaine Collison. I
20 am the director of something that's called the Green
21 Power Partnership here at US EPA. I actually sit in
22 Washington, D.C., and the Green Power Partnership is one
23 of our national voluntary climate change programs. We
24 sit in the same piece of EPA as Energy Star, and our
25 mandate is to work with the demand side of the energy

1 equation, so commercial, industrial energy users and
2 help them source renewable energy, or green power, for
3 some or all of their US needs.

4 There's a really interesting mix of stakeholders
5 that is engaged in this marketplace. We have 15 hundred
6 and some odd partners from all shapes and sizes and
7 sectors of the US economy. We have several hundred
8 small businesses. We have the Fortune one, which is
9 Wal-Mart, a green power partner. Intel is the single
10 largest user of green power in the nation. We have
11 dozens of partners in California including a number of
12 our green power communities, particularly in Marin.

13 And I'm here today to talk a little bit about a
14 best practice for onsite solar deployment with
15 commercial and, particularly, institutional audiences
16 that we actually discovered, of course, and I think will
17 surprise no one there, in California. We happened upon
18 a multi-stakeholder PV collaborative procurement in
19 Silicon Valley. We got interested. It seemed like it
20 addressed a number of the barriers that our partners
21 reported all the time, including vender noise, that was
22 just mentioned, is a recurrent issue, technical
23 confusion, bandwidth procurement experience. Long story
24 short, we brought the California model here to the
25 eastern seaboard, and have been deploying it with some

1 stakeholders here and it -- it's striking, the extent to
2 which it seems to be a game changer for, particularly as
3 I say, institutional stakeholders with facility
4 portfolios, particularly large ones. So thinking about
5 cities, school systems, colleges and universities,
6 municipal facilities. Really, really interesting
7 mechanism available to absolutely and utterly transform
8 the scale of what gets pursued, reduce the risk of what
9 gets pursued, add order of magnitude of what moves
10 forward all under simplified procurement processes.
11 It's a -- it's a hard package to beat, and it slots in a
12 compellingly -- in this context, in part, because
13 there's some, some shifting of costs from the back end
14 to the front end, which, as I say, may speak well to
15 some state level of support to facilitate a dramatic
16 expansion of the steadily growing community industry
17 there in California.

18 So that's why I'm here to chat, and I appreciate
19 being invited and having a chance to share what we have
20 discovered in California.

21 MS. LEW: Thank you, Blaine.

22 So let's hear from Camron Gorguinpour from the US
23 Department of Defense.

24 MR. GORGUINPOUR: Hi, how's it going. This
25 is Camron Gorguinpour, here, it was mentioned, with DOD.

1 I actually run DOD's plug-in electric vehicle programs.
2 My job is to design and execute strategies, sell the
3 option of things, that are nontechnical fleet, but as
4 relates to this conversation, I'll focus, I think, a bit
5 more generally on Federal procurement challenges within
6 the Department of Defense.

7 I think that, just to start off, DOD operates on
8 some 30 installations in California alone. So we have
9 Marine Corps, Army, Navy, and Air Force assets all right
10 there, and we're, in large, across all of DOD, we're
11 very into green technologies, but you certainly see that
12 play out in California. Of course, the army's got the
13 new energy basis. You have something like 15, 16
14 megawatts of solar out at China Lake at the new weapons
15 station. As related to my project, Los Angeles Air
16 Force Base is on its way to be the first Federal
17 facility to replace its entire vehicle fleets with
18 selected vehicles. So we certainly have a lot of
19 interest as I have gone around California speaking with
20 station commanders and all service folks who are
21 interested and willing to pursue green technology. Of
22 course, it's also difficult given current budgetary
23 conditions. So I think, generally, what I would -- the
24 general advice I like to give everyone, particularly, I
25 think for small business is get them to use a schedule

1 for products because oftentimes, our facility will pop
2 up and use a schedule but more than that, GSA, itself,
3 operates and reaches out to thousands of Federal
4 facilities. So it's good to be involved with them.
5 Certainly, if there are small businesses working with
6 advance technologies, get certified as a small business
7 through a small association. If you can get an AA
8 designation, minority-owned small business, veteran-own
9 small business, things like that, that certainly helps
10 expedite the procurement process. And folks, again, who
11 work in small businesses should realize that each of the
12 military services is having an entire enterprise around
13 small business procurement. So definitely qualify for
14 that. You could reach out and make sure those folks
15 know who you are and what you're up to.

16 But beyond that, generally, you know, given the
17 serious budgetary constraints that we have had, you
18 know, at the DOD, we look at our different contracting
19 authority and bring in alternative energy. So power
20 purchase agreements, lease agreements, I think probably
21 are pretty good. I mean, to look at our EPIC, our
22 utility energy saving contacts, certainly, we have
23 energy saving performance contacts, so there are these
24 mechanisms that we have to leverage third party, bring
25 large scale energy efficiency projects onto our

1 facilities, and, of course, we're interested in working
2 with DOD developing, sort of, the baseline knowledge of
3 what the different contracts are, are -- is, is
4 absolutely something that other folks should consider.

5 And then I guess, probably lastly, this is a new
6 authority, may be relevant at some point, and our
7 lawyers are actually still trying to proffer exactly
8 what this mean, but Congress gave us authority last year
9 that DOD can enter into procurement partnerships with
10 State and local governments for installation services.
11 So anything really energy related and efficiency
12 related, we can enter into direct partnerships, either
13 providing services to or receiving services from State
14 and local governments. So, so there's some
15 opportunities there, you know, even though the budget is
16 what it is. There are definitely opportunities and a
17 lot of interest from DOD just to try to figure out to
18 make things happen. We just have to sort through our
19 perfectly reasonable options.

20 MS. LEW: Okay. Thank you very much, Camron
21 Gorguinpour.

22 So let's start with our first question. I know
23 many of you have already touched on some of the things
24 that you have done in your facilities, but perhaps, you
25 can elaborate in a little bit more detail on some of the

1 things that you have advance clean technologies in your
2 facilities.

3 And so, Winifred, would you like to start.

4 MS. KWOFIE: I think what we have done, and
5 my fellow panelists have already talked about it, we
6 have done a lot of lighting technology. We've done
7 lighting, lighting controls. We have done some HVAC
8 controls also in our facility. We continue to look
9 at -- and I want to go back to Randy's point, what makes
10 sense, and that is always a challenge for one
11 institution that is old and medical and patient care.

12 Some of the strategies that we have looked, in
13 terms of procurement, have been trying to find an
14 investor approach to looking at standards or looking at
15 how to use technologies across the campus. So lighting,
16 of course, is the easiest way to play. We started with,
17 initially, you know, we had all these bulbs, which are
18 no longer mentioned. We went the to T8s, and now the
19 new is the LED, and we're looking at and it's very, very
20 challenging, but we have a great procurement group that
21 is working with us to integrate it in a separate way.
22 Usually, when you have an overall change one time, it's
23 very difficult, because lighting is one of the things
24 that are very sensitive to people, and so we have to be
25 very careful how we integrate that. We have tried a

1 bunch of pilot programs working with the California
2 Technology Center on our parking lot. We tried
3 different controls in office spaces to see how people
4 react, and we take down those information, the feedback
5 we get from the staff. We go back to our procurement
6 group and, you know, we look at that information to see
7 what else we need to do to make it work.

8 So we continue to struggle along like everybody
9 else. I think, like Bob said, all these -- all those
10 low-hanging fruits are gone. We have gotten to a point
11 where we have to push the boundary a little bit harder
12 and get ready for a challenge that we face as a campus
13 and difficult because you cannot get into certain
14 spaces. The work of our station has been on the campus
15 side looking at classrooms, lecture rooms,
16 administrative offices, clinical or medical office
17 spaces and still struggling to find what technology will
18 actually work for the patient care rooms. So that is
19 our challenge right now.

20 MS. LEW: Thank you.

21 MR. DEHGHANI: Well, it's -- as it was
22 mentioned, I think as a public entity, that are number
23 of patrols that sometimes become problematic with
24 project. When we do a project, we have to go through a
25 preplanning effort. We have to go through a programming

1 effort. Once we go through that process, we have to go
2 through a budget approval, and that budget, of course,
3 has to be ranked with other priorities on campus. There
4 is a design team selection process. There is, of
5 course, a design phase, public contracting code to be
6 able to get the low bidder going through a bid and award
7 process, construction, itself, and, of course, the final
8 testing and commissioning and verification by a third
9 party. And then taking acceptance. So when we start a
10 project, although the project may be small, the process,
11 at least a two-year, for example, project. Sometimes,
12 we finish the building just in March 2013. The project
13 programming, it's large facility. It's 80,000 square
14 feet, three-story lab. From the start to finish, it was
15 seven year, so you, you look at emerging technology at
16 the time, and by the time you are completing
17 construction, the emerging technology have moved 90 step
18 ahead of you. So you're trying to figure out how you
19 incorporate some of those emerging technology as you
20 learn through the course of construction, and that, of
21 course, have its own hiccups and challenges with
22 changing and schedule impact and using all of the people
23 on board who want to enter and occupy the facility. So
24 some of those issues that most public entities go
25 through, we have experience as well. However, our

1 campus, we have evaluated a number of different phase
2 for procurement process. We have looked at design bid
3 build and it's traditional. It's -- you know, you hire
4 somebody to go to a better phase. We have looked at CM
5 address, where you contract with the construction
6 management team. They would take the risk. They would
7 be part of the design. They hire contractors with us at
8 the table. There are multi-prime contracting. There
9 are design bid, design build, which seem to be very --
10 more effective, at least, than -- especially the changes
11 that you go through in the construction phase. But the
12 one that we have, it's been really interesting for us on
13 the energy project, has been design build best value,
14 where we select contractors for constructors based on
15 dollars and quality and then various different versions
16 of design build best value modified, they procure
17 something ahead of time.

18 But one of the biggest for emerging technology
19 for us to -- has been that we -- if we have the right
20 people at the table, they are expert in areas and know
21 their stuff. It's been much more effective to make sure
22 that we apply the technology that we're not going to be
23 sorry about and apply the technology that would provide
24 what we looking for. We often do cost analysis to
25 identify if it makes sense. California Value Technology

1 Center on our campus has been extremely helpful with our
2 lighting initiative that started in 2010, and we hope to
3 reduce our lighting by 60 percent. That initiative has
4 been successful so far. We still have a while to go,
5 but it's been very effective working with those teams
6 that know their stuff. So that some way explaining.

7 MS. LEW: Thank you.

8 MS. VANCE: Hi. Christine Vance. In terms
9 of how -- the strategies both at City and County of San
10 Francisco and more recently on a much bigger scale with
11 regional energy network, there's a couple -- I would say
12 two -- primary, big things that we do, is we bring in
13 the expertise that really has the know-how and they --
14 and they're -- and they know the -- all the resources
15 that already exist for the third-party verification,
16 performance information, where it exists, and they are
17 able to, as you say, make those compelling arguments at
18 the right time with the right people, and they're
19 third-party neutral knowledgeable. So that's key, and
20 then we're marrying that with something called a
21 "definite commodity construction contract." So think of
22 it as needed construction. It's still competitive bid,
23 full, very robust construction task catalog with unit
24 pricing, which is more of a capped pricing. So you have
25 a very, you know, a lot of control on price, and

1 virtually, any kind of retrofit can be built up from
2 this catalog, and, again, as I was saying earlier, we
3 spent a lot of time looking at every available advance
4 technology and getting it into that book. And so what
5 they're -- because you're talking about as-needed
6 construction, it solves a lot of these issues. For one,
7 you've, kind of, done the bidding process up front, and
8 these task orders can move very, very quickly. It
9 allows you to do -- very easily -- do mockups before you
10 use a facility company on a much wider scale. The time
11 it takes to complete the project is much more
12 compressed, so it's easier to take advantage of all the
13 incentives and work through that process. It's
14 incredibly flexible even during construction. If a new
15 technology comes on board that is more applicable, you
16 can easily use that with any kind of price gauging
17 during the change over process. So it has a whole host
18 of advantages for utilizing advance technologies as well
19 as any technology. There's volume discounts included
20 and, and also, you're talking about minimum
21 qualifications to the contractors, so you can really
22 specify the level of experience these contractors will
23 have. So we're talking about contracts and catalogs
24 that are specifically adopted for energy efficiency.

25 And then I think through a regional energy

1 network setting, then we're making that all available at
2 a mass scale in a collaborative, coordinated fashion
3 with the utilities leveraging all they have to offer and
4 bringing in the financing as well, which is very
5 important because then you're putting the whole package
6 together. So just a few examples of projects right now
7 moving through the regional energy network both at
8 Pomona and Covina, we have identified street lighting
9 projects, lots of wireless technologies, advanced
10 lighting, things that are in compliance with full Title
11 24 coming on board, and we're doing these smart
12 chillers, very advanced, very efficient chillers in
13 Pomona, and we're bringing all those packages together.
14 We're bringing in the, kind of, "slam dunk," the high
15 return, the low return, into one finance package so that
16 we can take advantage of those advance controls that are
17 doing deep retrofits so that we can take advantage of
18 all that.

19 MS. LEW: Thank you

20 MR. RAYMER: All righty. Bob Raymer with
21 California Building Industry Association. I'll be
22 dealing with building system and advance techs in
23 question number four, but for right now, I'd like to
24 focus on rooftop solar. For the new residential market,
25 we're bringing in solar rooftop in one of two ways.

1 This is sort of a generalization, but the first way, and
2 certainly growing in popularity, is the use of Power
3 Purchase Agreements, PPAs. This is where a third party
4 entity goes ahead and finances the systems, puts it up
5 on the roof, establishes a contractual relationship with
6 the home owner. All of this, of course, is, obviously,
7 in conjunction with the builder, but the contractual
8 arrangement most commonly is for 20 years. Certainly,
9 there's variations, but it also provides electricity at
10 a rate around 20 percent less of a fee than what the
11 local utility would be charging. That's certainly one
12 of the ways, and that's also the one way that seems to
13 be growing right now. The other way, of course, is the
14 traditional, "here's the solar system on your rooftop."
15 It's purchased just like any portion of the building.
16 The home owner owns it. It's part of the thirty-year
17 mortgage primarily, and both of these are quite popular
18 right now. Procurement for this is usually part of a
19 large volume purchase arrangement and, of course, taking
20 advantage of economies of scales, and so as we used to
21 see solar in 2004, 2005 having a market penetration of
22 less than one percent, we have recently seen where we
23 now have rooftop solar for new residential construction,
24 has a market penetration, depending on the part of the
25 state that ranges from 10 to 15 percent, and I can tell

1 you from being familiar with building systems over the
2 years, that is a huge. That is a massive increase in
3 the application of the technology, and while, certainly,
4 the state has a goal of being zero net energy for all
5 new homes by 2020 and certainly 100 percent is a lot
6 bigger number than 10 or 15 percent, there's no
7 discounting the fact that the change that we have seen,
8 the very dynamic, the very fluid change that's happened
9 over the last five years is simply extraordinary. And
10 the basis for that happening, I would have to point to,
11 to the one singular item, and that is actually the CEC's
12 program, the new solar home partnership program, where a
13 relatively healthy incentive is provided for the
14 placement of usually about two to three kilowatts on
15 average on top of the roof. And we have got several of
16 our largest production builders in California that have
17 been taking advantage of that, and so by virtue of doing
18 large scale procurement up front, usually a year to two
19 years in advance of construction, sometimes even further
20 out, but putting the, the incentive money into that sort
21 of Trifecta of financing, we have actually seen sort of
22 a dynamic change where several of our largest builder
23 members are now putting solar on the roof as a standard
24 feature. They have made the switch to simply offering
25 it as a design option, and that's why it was at the one

1 or two percent level of penetration, to where now as a
2 standard feature, for example, KB Home is putting solar
3 on every roof of every southern California project as a
4 standard feature.

5 And so right now, we, you know, we're very
6 appreciative of the new solar home program. Sort of a
7 concern that we have is that right now, there's a
8 healthy balance in that account. My concern in looking
9 forward is that, at the current burn rate, we will
10 probably deplete that account somewhere in the middle of
11 2015. My biggest concern, of course, is that large
12 production builders and medium size builders are making
13 plans two and three years out. And so the question here
14 is the new solar home program will be sunseting in July
15 of 2016. The big question here is, will it have funding
16 between June of 2015 and July of 2016. And at the
17 current burn rate, will we have that funding. The
18 problem here, as I mentioned in my opening comments, is
19 we're experiencing -- in a very nice way -- we're
20 experiencing a huge uptick in residential construction.
21 2013 was the first year where we saw a significant spike
22 in construction. We, just last week, updated our
23 numbers. Instead of having 60,000 multi-family and
24 single-family units built in 2013, the final number is
25 83,000. That is a big uptick, and we anticipate seeing

1 a further increase in 2014 and 2015. So consequently,
2 assuming that you're going to have the current burn rate
3 for application of solar is probably not a good
4 assumption. We're going to have an increased burn rate,
5 and so there is a very good chance we're going to run
6 out of that funding. And, of course, these larger
7 companies that are looking to solar as a standard
8 feature are going to be wondering, will that financing,
9 that additional incentive money, be there about two
10 years down the road. If there's not, they've got
11 several choices. Well, can they find something else to
12 fill the gap; can they reduce the size of the system;
13 any number of things. But quite frankly, they're making
14 those decision today. So to the extent that somehow
15 there can be some sort of a certainty of the program
16 being available is one thing.

17 I realize that, of course, the CEC, in their
18 original EPIC investment plan, has suggested that a \$25
19 million allotment for 2013, 2014 be made. The PUC
20 rejected that and said that the CSI fund would be a more
21 appropriate place for that money to come from and that
22 they will consider that. The problem here is it's a far
23 cry from "consider" to budgeting, and so the question is
24 a real one. Will that money be around down the road,
25 and more importantly, will it be available to the small

1 and medium size builders. And so that's one of the
2 things we're seeking. Maybe EPIC is not the best place
3 to get that from, but we would prefer that we at least
4 have some level of certainty. Right now you've got a
5 huge solar snowball running down the mountain. It's
6 picking up steam and it's picking up size. If all of a
7 sudden that program is sort of yanked out a year ahead
8 of schedule, that kind of sends a red flag -- who are
9 procuring product and coming up with design. So we're
10 in this sort of emphases, and we're seeing a staggering
11 increase in the application of solar.

12 So with that, one of the things that we'll be
13 suggesting to the CEC formally is that as a backdrop
14 that they consider once again putting in a request for
15 funding. We'll certainly be promoting and supporting
16 CSI funding for this, but it might be nice to have EPIC
17 as a backdrop to that.

18 MS. LEW: So, Randy, do you have anything
19 else to add?

20 MR. WALTHERS: Well, I just hope Bob's
21 future is true on new homes, because with new homes, we
22 can build new stores. Basically, on the solar issue
23 with new stores, what we are doing is on our existing
24 stores, I agree with Bob. We do a PPA on most of our
25 stores because of the cost involved in it. It's, you

1 know, 25-year contact. What we use on our stores,
2 though, is, on our rate structure for commercial
3 building, we have peak loads and high peak loads.
4 Basically, we can only shave off in the high peak loads
5 in solar. It makes it very economical for commercial
6 accounts at a grocery store because we're 24/7 as far as
7 energy use. And so when we start shaving off that peak
8 load, our energy use, actually our energy cost is almost
9 one-third of what it would have been, and that's where
10 it's very beneficial to us.

11 We also -- if you know, a grocery store, it's
12 probably not a normal building envelope as energy usage.
13 55 percent of our energy is in the refrigeration system
14 in the store. You know, an average store, you know, you
15 look at it, it's about \$25,000 a month cost, and what we
16 have done through the years, is the energy efficiency in
17 refrigeration system, and that's where we have cut most
18 of our costs down, by energy efficiency motors, VFCs.
19 Our condenser on the roof, we went to oversize water
20 condenser. Well, in the last couple of years, we figure
21 that water is going to be a high commodity. We have
22 been switching over to a dual -- we invented a dual
23 condenser, where it takes water and air cooled. The
24 only thing with air cooled, during the summer time in
25 the Valley here, it's very high energy usage. So we

1 have to bring in the water to keep the cost down that
2 way. We are still moving forward with the dual
3 condenser, and then as far as energy efficiency on the
4 lighting, I mean, we're basically state of the art. I
5 hear people still trying to switch over from T12. I
6 mean, we have done that, you know, 15 years ago as most
7 of the industry. You know, we are fully web-based in
8 all our stores. From my phone, I can turn off or on any
9 store when have an alert from the Cal ISO, which we just
10 did last night again. And we can reduce our energy at
11 the source at any one time, and so that really helps us
12 out as far as getting payback from Cal ISO and demand
13 response programs to help pay for that but also help put
14 in the state of the art controls in our stores.

15 The other part is our 20 percent. That is the
16 other, and that's basically what runs our front end and
17 all of our computers, and that's the part where we're
18 looking at fuel cells. Right now we have to put
19 generation systems in to do a backup because of the
20 energy power concerns, and these fuel cells will take
21 and run 24/7, all time, on, right now, natural gas. And
22 they're -- the outcome is just water, you know, steam.
23 And we get a full hundred percent payback on our energy,
24 and it reduces our cost and overhead building of the
25 store or the gem set.

1 What Ardie said, though, of the other parts of
2 where we're saving money is on our waste and disposal,
3 we are looking at a new disposal system in our store. I
4 have a couple test sites that we're beginning on all our
5 response sites transported to clean world site over in
6 dispose site. They have, right now, a digester making
7 menthane gas for generation but also to fuel all their
8 trucks. And that's something that we're going to look
9 at in probably about another five years if we have
10 enough storage online that we'll have our own digester
11 system on our DC plants.

12 So that's all I have, and I'll be waiting for any
13 more questions.

14 MS. LEW: Thank you.

15 So, Blaine, or, Ardie -- sorry. Blaine or
16 Camron, do you have anything else you'd like to add?

17 If not, we can go on to the next question, and
18 the next question was touched by many of the panelists
19 here, where you get contacted by various companies about
20 new technologies and "Why don't you use our technology
21 in your facility? Try it out." You know, "We have
22 these savings and all these benefits." So how do you go
23 about, kind of, deciding which one of those technologies
24 are the ones that you want to choose? What sort of
25 information or assistance that you might need. I mean,

1 is having technical guides and specification, neutral
2 specifications, helpful? What are some of the things
3 that might be beneficial?

4 MS. KWOFIE: I'll try and answer and talk a
5 little bit about what we have done. Yes, we have looked
6 at the performance specifications and that's -- you
7 know, we're trying, I think, to move away from the
8 prescriptive specification to more of looking at
9 performance to setting up your energy goals for what you
10 want to achieve. And I think we touched on, in our
11 panel, different things, and I think one part that is
12 always critical for us, and I think Ardie talked about
13 it, in terms of when you have public institutions, is
14 the time that it takes when you are going through the
15 whole process of procurement. And so we have tried to,
16 kind of, leapfrog and talk to our sister companies to
17 find out what is being done. We have used the energy
18 center quite a bit to try to understand applications and
19 test some of them so that we can best understand them,
20 not listen to the vendor, get all these flyers, have
21 that time. We starting presentation but I haven't done
22 a real touch, you know, demonstration campus.

23 The challenge also that we see is most times, you
24 know, you'll bring in an application, and the people who
25 maintain the application also need to be involved in the

1 selection. So you put in an application and it might
2 work on the campus, it might work the whole process of
3 procurement and operations and training to make it work.
4 We might adopt it and might not work for us, and the
5 reason is because we just miss a step in that. So one
6 thing that a procurement team is doing now is looking
7 into more of a vendor relationship kind and going with
8 major distributors and, you know, open up a little bit
9 to give us that opportunity not to be only barred but
10 give us a more of customized approach to getting these
11 products integrated and, you know, try it out ourselves.

12 MS. LEW: So I was just wondering if, if
13 another UC Campus had done and installed a particular
14 technology and they were successful, can you use --
15 continue to use their contract to, kind of, get into
16 their services instead of doing your own independent
17 contracting?

18 MS. KWOFIE: I think, at the moment, it's
19 always been an independent contracting. Now, there is a
20 move toward a concerted contracting for products,
21 agreement for products to actually exploit method of
22 that buyer power, and, you know, I think a lot of the
23 panelists have talked about, you know, if you have that
24 volume, then you can influence the prices, you can get
25 value for the product and also you have more people I

1 think. The question is marketing situations, and for
2 the market to actually have that product, a lot of
3 people should have tried it and it should have worked
4 for them and it should be readily available and simple,
5 simple to -- and cost effective to maintain. And so
6 that's, I think, the new thinking about what a company
7 is trying to do is moving into that situation, and
8 hopefully, we'll see.

9 MS. LEW: Because it seems like if you could
10 do something like that, you can really reduce the amount
11 of time that it takes to get a project completed and
12 installed. I mean, it wouldn't be the seven-year cycle.

13 MR. RAYMER: And that's the business plan
14 propriety. A success story, basically, gets the ball
15 rolling, and instead of starting from Point A, you're
16 already, sort of, at the end of the line, "Well, we've
17 got something that works. Let's just go ahead and do it
18 again."

19 MS. LEW: Kind of like piggyback type of
20 contacts.

21 MR. RAYMER: Absolutely.

22 MR. DEGHANI: It's an interesting dilemma,
23 when we talk about, you know, we have an obligation
24 based on public contract codes to make sure that equally
25 talk about different products, and then you focus on a

1 specific product, although, it may be great, but there
2 are others that come through with a similar product that
3 we should consider. So sometimes, when you focus on
4 technology three years ago, today, we have to make
5 adjustment. As Christine mentioned, we also have
6 something called, job worthy contracts, that we use
7 campus -- UC wide -- that have the unit price that we
8 could -- we have tried to implement more of the energy
9 items in it, but one of the interesting parts for us is
10 no matter how we do our timeline, it becomes more
11 problematic than a typical private job. But knowing
12 this incentive and rebates have some certainty that
13 those are available, as Bob mentioned for solar, I think
14 it truly helps us that if we -- when we did our exterior
15 lighting project, there was a program available under
16 CEC, and if it was not for that program, we would not be
17 able to make the life cycle cost analysis work for us.
18 We implemented exterior lighting project based on
19 external financing that would utilize the energy saving
20 dollars that would pay off the loan, and it was a
21 15-year loan, and in order to make the interest work and
22 have adequate maintenance to be able to support those,
23 we have to be less than 1-year payback. And no matter
24 how we did, if it was not for EFA, we would not -- we
25 would not be able to implement our project. So some of

1 these incentives, it's really great to see this program,
2 at least, have a three-year life that you can at least
3 plan and be able to tap into it without sweating if
4 things not going to be available. So for us, it's
5 really important if there are more certain than -- so
6 thank you for making this program three years at least
7 so we have.

8 MS. LEW: Well --

9 MR. WALTHERS: On the retail side of it,
10 though, what we do is, in putting our resources
11 together, there's a company called Top Source. It's out
12 of the east coast, and it's where all of the independent
13 grocers that do not compete with each other go together,
14 and we just had a big meeting, and we put our resources
15 together on really new technologies, who's doing what,
16 where, and we can talk one-on-one without interfering
17 with our own area of what we're selling, and that helps
18 us out a lot, too. So as you're saying, there's other
19 companies out there like a Top Source for grocers, I'm
20 sure there's other industries that have the same type of
21 support out there. We can talk to HEB in Texas or Big
22 Wide back east and what they're doing. They're very
23 energy efficient grocers, and we can pull our ideas
24 together. That's how we, you know, we put in what's new
25 on the market, because they've either tried it or, you

1 know, failed with it, and then we can move forward with
2 it.

3 MS. LEW: So innovative technologies get
4 into the Top Source?

5 MR. WALTHERS: Very much so.

6 MS. LEW: So you have innovative grocers
7 that try new technologies and it works and then it gets
8 in there and then the world sees.

9 MR. WALTHERS: The suppliers come in -- like
10 right now, we're -- the biggest energy saving in grocery
11 stores of where we're moving to now is doors on all our
12 open cases, and, you know, the old produce departments
13 where you have your salad and you go and reach in, now,
14 we have doors on it. And it's saving about, you know,
15 40 percent on our energy right upfront, just putting
16 doors on our cases. Our merchandizers don't like it,
17 because everybody wants to touch everything and they
18 have to open a door now, but people are getting through
19 that, and we're finding that everybody is acceptable to
20 the doors on the cases. Fresh vegetables and meat, they
21 still want to pick up and play with a little bit and
22 stuff like that and the rest of it, and we're using it.
23 And on Top Source, that's where they come in. All the
24 companies would come into us, show us what they're
25 having, what their design is, what the savings is. They

1 would test it, we would all look at it, and then we
2 would all vote together and say, "We like this one."
3 Then we buy it for a year, and that really helps out.
4 So they really bring the top of the line to us, and we
5 have a one-year to two-year contract with whoever we're
6 going to buy with, with what's the energy efficient.

7 MS. LEW: So does Top Source -- also
8 provides pricing?

9 MR. WALTHERS: They help us with pricing,
10 yes.

11 MS. LEW: So you kind of know if you do go
12 out to bid, what the pricing --

13 MR. WALTHERS: Exactly what it's going to
14 be. And it helps us compete with Wal-Mart's and
15 everything else. You know, instead of a Raley's, you
16 know, 200 cases in a year, we're buying 25,000 cases
17 like the Wal-Mart is doing. And so all the companies
18 get together and we're buying cases, and so there's
19 incentive for them to do what we want and move forward
20 with it.

21 MS. LEW: That's good.

22 MS. VANCE: Christine Vance. So I actually,
23 kind of, pulled some of the consultants that we have on
24 the program about this. There's a lot here that you can
25 talk about, and what was really interesting is it became

1 very clear that in the area of lighting, there's a
2 whole, a whole variety of things that have occurred,
3 especially in the area of LEDs, and different sources
4 that address a lot of the concerns. There's a lot of
5 fees when you're talking about use of advance
6 technologies, such as -- like in the case of DOE
7 lighting, LED lighting program, for example, they had a
8 concerted effort of doing field demonstrations, truth in
9 advertising, and whole, whole sets of standards that
10 were adopted at a national level by utilities that
11 become work ethic incentives and standards. And so all,
12 kind of, third party verification, when it came to
13 mechanical, there wasn't as near as much of that to draw
14 on. So -- and a lot of the consultants really end up
15 going on their own experience, where has it been used
16 before, and as much as they can try to find performance
17 data that's third-party verified. But it occurred to me
18 that, that might been an area that the, the, the program
19 could look at is, kind of, filling that gap more on the
20 HVT side of things.

21 The other -- the other thing is listening to all
22 the panelists is there's kind of an interesting --
23 there's so many things that have to come together and it
24 needs to be customized, right, but we also talked about
25 simplified procurement, and so how do you blend those

1 things together? There's a gentleman from EPA that
2 talked about the Silicon Valley, and so I think part of
3 the solution is to really scale up, is some kind of
4 marrying of those two, where you have -- you're using a
5 lot more of these examples of coming together and
6 organizing to do cooperative, kind of, procurement of
7 one kind or another that's standards based and
8 transparent pricing and getting volume discounts, but
9 sometimes, simplified is not very customized, and as we
10 all know, advanced technology is all about the
11 application and it's terribly customized. So you need
12 Expertise to be really customized. So I think solutions
13 that can do both of those things together, I think, is
14 where, where we need to go. And I think the advantage
15 of something like these regional energy networks or any
16 way in which we can just come together and organize at
17 levels that we have never done and before that's in
18 accord with the challenges that we face, right, we have
19 to come together and organize leverage and have
20 synergies at a much greater scale than we have ever had
21 before to really meet our mission objective goals. And
22 I think that what the regional energy network can do is
23 it really becomes almost a learning community. You
24 know, we have a -- you know, 19 energy consulting firms
25 are all going to be learning from one another, and we're

1 going to be having more and more data basis of
2 technologies that get implemented and utilized and, and
3 then -- and so it's bringing together, you know, really
4 this feedback loop and all of the -- all the, the
5 contractors and the engineers learning together proper
6 application and how to commission, you know, and really
7 properly install of these measures. So all of those
8 things have to come together so that you're helping to
9 drive good decision-making by building owners with good
10 confidence that these measures are going to perform.

11 MS. LEW: Thank you.

12 MR. MAYER: Bob Raymer with CBIA. I'll
13 focus on new tech needs first, and then I'll get into
14 third party, and I'm going to fly through this, so I
15 will be submitting written comments.

16 MS. LEW: Good. Thank you.

17 MR. RAYMER: In terms of what we're looking
18 for, for new technology, obviously, a long-term
19 certainty, whether it's in a product or a program,
20 long-term certainty is very needed. A case in point on
21 how not to do it, back in the 1990s, there was a very
22 good, successful PG&E energy efficiency program. The
23 utilities, as most of you know, always have programs to
24 provide incentives to go beyond code. The higher above
25 code you go, the larger the incentive. So they had an

1 excellent program that was implemented. It was supposed
2 to last for about two years. It ran out of money after
3 about eight months. Unfortunately, all of the builders
4 in the area -- particularly in Fresno, Modesto, and
5 Sacramento area -- had made long-term purchase
6 agreements to bring in the products that were going to
7 be partly subsidized by this, and then the program ran
8 out of money. They were left with a couple of issues,
9 either eat the costs or simply revise the design, which
10 is very difficult to do after construction production
11 and housing has commenced. So long-term certainty is
12 the product of the system, clearly, cost-effective,
13 emphasis on "clearly." You have got to be able to
14 market this to the general home buyer, we don't like to
15 tell them that it's going to pay back in 29 to 30 years.
16 Although, that's sort of the cal that's used with the
17 development of the energy rate. The home buying public,
18 as with anybody, wants to know, 'are we going to get our
19 money back.'

20 System and component warranty, by State law, new
21 homes have a warranty of ten years. There are certain
22 aspects of the home where the warranty is shorter, but
23 at a minimum the product has to be operating very well
24 for a long period of time. Can the new product, the
25 technology, be incorporated into existing design, does

1 it require increased labor, or does it require the
2 imposition of labor having new or very specialized
3 skills, and I'll be getting into that under question
4 number four. Will it impact planning and land use
5 considerations. The layouts of the homes, certainly,
6 productive use of solar, will require some rather
7 extensive layouts, and unfortunately, a lot of projects,
8 at least the footprints of these lots, have been laid
9 out now that they're going to get built four or five
10 years down the road, and that presents sort of a
11 challenge.

12 Now, moving into the area of third party
13 independent technologies, testing protocols, best in
14 class, and all that, we do feel that there's a clear
15 need for this, but we also need to be cautious how we
16 incorporate this into the existing construction process.
17 New requirements for testing and certification can
18 certainly help improve quality control, but a process
19 that's implemented too quickly via mandates without an
20 appropriate level of education, training, and industry
21 ramp up can create a huge loss in the field, and we have
22 seen several examples recently of that.

23 In addition, and whenever possible, emphasis
24 should be placed on enhancing the existing, let's call
25 it, administrative process, as opposed to creating a

1 separate parallel process. Case in point, the State of
2 California right now has 500-plus jurisdictions, cities
3 and counties. Each one of them has either a building
4 department, you know, that does planning land use and,
5 of course, plan check and inspection, or they have their
6 contracting out to this. So to the extent that we can
7 do things that enhance the existing administrative
8 processes out there that can be very productive, it also
9 helps logistics. You're not necessarily looking at one
10 entity to handle fire safety, mechanical plumbing
11 design, and all that and then another entity to look at
12 green building and energy. It would be nice for, at a
13 minimum, to have them, sort of, intertwined. If there
14 are going to be specialties, they need to work in
15 concert with the building department builder, the very
16 established entity, that the state recognized
17 implementing and overseeing the application or state
18 building codes.

19 Now, one that -- I think for, for, for EPIC that,
20 that we would encourage, particularly, for new
21 technologies and enhanced building system is the
22 development of rather thorough and easy to understand
23 scope of work. As with all contracts with
24 subcontractors and contractors in general, the builder,
25 the company, enters into a contractual relationship with

1 subcontractors, and over the last ten years, we have
2 been working with the CEC, particularly, back in the
3 early 2000s, in the development of scope of works for a
4 variety of -- for example, the HVAC contractor,
5 particularly, on how you check duct systems for leakage,
6 et cetera. And so instead of just signing a contract
7 with a plumber, 'here's ten homes. Put in the plumbing,
8 and you get paid.' Okay. It's becoming a more detailed
9 and more itemized sort of listing of, what needs to
10 happen going above and beyond the minimum steps of the
11 building code, which everybody has to follow. What
12 exactly type of a layout -- where does that water
13 heater -- where is it supposed to go as opposed to where
14 did your grandfather and your father teach you to put
15 it. And so having all of this stuff laid out so that
16 the builder can have access to it to plug it into that
17 scope of work so that the subcontractor has a nice, sort
18 of, itemized listing of the things that have got to on,
19 above and beyond get the final permit check of the
20 building department, having these sub items in there can
21 be very helpful. And as we get into the stuff that
22 we'll be discussing under question four, this is going
23 to become absolutely imperative to make some of the new
24 building systems work. So with that --

25 MR. WALTHERS: I agree with you, Bob. As

1 far as full scope of work, as far as HVAC for
2 residential. In commercial, it's a little bit different
3 because we're under the AB32 guidelines of refrigerant,
4 and so all our technicians have to have, you know, full
5 education and certified to remove or dispose of or add
6 refrigerant to any systems. We just can't go into a
7 store and change a refrigeration system or something
8 like that and walk away. We have to, you know, monitor,
9 identify, and, kind of, repair when it happens right
10 there. So I can see where he has a big problem over the
11 whole industry of residential. There's no guidelines
12 right now or actually education.

13 As far as the education that I'm looking for when
14 I talk to people that are going to sell me or, you know,
15 are going to try to design something for my builders or
16 -- there's an association of energy engineers out there
17 that has a CEM, and that is the Certified Energy
18 Management license. That gives you a broadcast of
19 everything in the United States, you know, from boiler
20 systems in New York underground to everything else in
21 efficiencies. They also have a different one, which is
22 called the Certified Building Energy, and that's
23 basically for what we would want to use here, is you're
24 a certified energy management of the building and you
25 understand what's in your building before you go out and

1 buy it or procure it, and so you know if it's right or
2 wrong. So there's also a lighting company that's if
3 they don't have a CL license or a CLTC license, I won't
4 talk to the salesman, because all he is someone who took
5 a five-hour course and now he knows it all.

6 So there's certain things that you can look at,
7 you know, in 30 years with Raley's that I have had
8 everybody and their brother try to sell me something
9 around there and who actually took the time to sell you
10 the right product. You know, LEDs came by -- this was
11 15 years ago when I started working with the CLTC, with
12 LED case lightings. You know, we had T8s and T12s in
13 our case lightings, and we went to the first LEDs, and
14 it took us two years, the project working with them, to
15 get the right LED light patterns, the heat patterns, and
16 all that. So now we went from a, you know, 40 watt per
17 door down to a 14 watt, which the CEC want us to have
18 right now. So that's a huge energy savings that we're
19 seeing. So just things like that and understanding what
20 you're buying.

21 And actually, Bob, you have got so many different
22 people out there, it's hard. We're controlled, because
23 we have an inhouse refrigeration system. We're inhouse
24 on all our designs and learning on LEDs through CLTC.
25 You know, well, they build LEDs in a block 30 by 30.

1 Only the 12 by 12 inside part is utilized by the GEs and
2 the major corporations. All the rest of them are sold
3 to whoever, and that's where you find out that you have
4 degradation to your LEDs faster than normal, and they do
5 not hold up. So there's a lot to learn before you just
6 go out there, add money to who's selling it to you where
7 and -- you know, and education out there.

8 MS. LEW: Okay. Well, thank you.

9 I think we need to move on to question number
10 three.

11 Oh. Oh, so, Blaine or Camron, do you have
12 anything else you'd like to add to information that you
13 think -- information that would help get these
14 technologies out there?

15 MR. COLLISON: I'm all set. Thanks. Go
16 ahead.

17 MS. LEW: Okay.

18 MR. GORGUINPOUR: I was just going to
19 add that -- I'm sorry. Go ahead.

20 MS. LEW: Was that Camron, or was that
21 Blaine?

22 MR. GORGUINPOUR: This is Camron right now.

23 MS. LEW: Okay.

24 MR. GORGUINPOUR: The only thing I was going
25 to add is just that, again, with a lot of our general

1 budget cuts, it got more difficult for our facility
2 energy managers to go to conferences and things that we
3 had normally held to gather information on new
4 technology to bring back. So I definitely think that
5 there's a need for more information on products to get
6 out in an organized way to our -- to our facility
7 managers. So having independent assessments and things
8 like that, I think it would really help.

9 MS. LEW: Okay. Good. So let's move on to
10 question number three about innovative procurement
11 strategies that can help reduce the costs of some of
12 these technologies, and we talked about some of them
13 here, and I was going to see whether Blaine or Camron --
14 because I think your Federal agency talked about GSA,
15 maybe there's something innovative there that can be
16 helpful to others out there.

17 MR. GORGUINPOUR: Sure. This is Camron
18 again. I'll chime in. So, again, my emphasis is
19 largely on vehicles and not so much on the installation
20 of the building side, but in general, yeah. And I think
21 that these new contracting mechanisms for contracting
22 authorities gives us an opportunity to look at new
23 business models, you know, such as partnering with
24 state, local governments to do joint procurements could
25 help leverage some sort of volume. It could ease the

1 procurement process. Oftentimes, companies have a hard
2 time working directly with the Federal government
3 because they have, again, a set government partner,
4 state or local partner, managing that process. Actually
5 these allow smaller ones to participate. So those are
6 our things that we're definitely looking at. But, you
7 know, there's a classic models also like contracts and
8 so forth, but it would take some time. I actually saw a
9 slide today this morning from the Army that mapped out
10 their process for approving a power purchase agreement.
11 And it is -- it's at least a year long to get through
12 and funded, and then once that happens, probably another
13 year to two years to actually get the project
14 implemented. So there's definitely some focus on
15 figuring out the streamlining process.

16 MS. LEW: So, Blaine, do you have anything
17 you'd like to add?

18 MR. COLLISON: Yeah, I think do. This
19 question is pretty much my wheelhouse today, and so let
20 me say a couple words about the Silicon Valley Project
21 and then the DC area project that we have done here and
22 what the key take aways are there, and I will attempt to
23 be brief about it.

24 The key thing that happened in both places is
25 that instead of an institutional energy user being in

1 response mode when a solar vendor comes knocking on
2 their door -- and I think everyone in the here know that
3 that happens a lot -- and it is functionally deafening
4 for an institution energy manager or sustainability
5 manager facilities director to keep being told to
6 respond to that stream of inquiries and solicitations
7 and to manage it and to wrangle it into some kind of
8 order and deterministic basis for making decisions and
9 implementing a strategy. So the thing that the crew out
10 in Silicon Valley did, we hired a Mountain View based
11 solar consultant, who was, in fact, a technical provider
12 in Silicon Valley. We brought them out here. The thing
13 that we did with our stakeholders including the District
14 of Columbia government and the DC public school system
15 and regional governments throughout the area here was to
16 go to them and say, "Hi, why don't you tell us about
17 your portfolio of buildings and facilities. Take this
18 spreadsheet that has 15 fields of potential data that
19 we'd like to see. You guys are the world's greatest
20 experts on your own facilities. Blue sky it for us.
21 Just give as much data as you can, as quickly as you can
22 about any facility, any site within your portfolio that
23 you think might work for solar. Be -- error on the side
24 of inclusion here," right. We will then take that data,
25 and we're going to do a couple different passes of

1 triage on it. We're going to do an initial look, Google
2 Earth and shading concerns. We're looking at age of
3 rooftops. And we're going to take a site that has a
4 stand of old grove forest or a giant parking garage in
5 front of it, and chuck it immediately. And we're going
6 to take the facility that has a two-year-old rooftop on
7 it -- or excuse me -- probably a 17-year-old roof that's
8 going to be replaced in three years, and we're going to
9 chuck that immediately. And we can do that very, very
10 quickly. And then we're going to do some much more
11 detailed site studies, and after a couple of rounds,
12 we're actually going to wind up sending someone out with
13 a camera and a sun meter and a pencil and a clipboard,
14 and we're going to walk around the facilities that
15 really look good. The net result of all this is that
16 when we -- when we got folks through this process, what
17 they had was a package of sites that were, were
18 absolutely, completely ready for projects, right. And
19 so they headed for the RFP process, not with a sense of
20 possibilities that was based on vendors whispering
21 optimistic things in their ears but the result of some
22 top-flight technical analysis. They knew what was
23 possible. There have been some economic studies done.
24 They new what was sort of the ballpark set of
25 possibilities with some benchmarks there. Vendors are

1 able to come to this set of sites knowing that there's
2 no garbage in there they won't have to price risk into
3 their proposals to account for the possibility that
4 someone has been really, really sloppy, which we see a
5 lot and has thrown in some sites under a broad RFP that
6 are absolutely nonstarters. So folks are able to
7 approach this in a much better posture to offer best
8 price bids. The terms and conditions of the proposal
9 and the bids are standardized, right, so there are
10 apples to apples comparisons. They're available from
11 the get-go.

12 One of the -- you know, one of the anecdotes that
13 comes out that I love most and is perhaps as good as any
14 at capturing the set of issues here is I sat down with
15 the CFO of a community college in Maryland here a while
16 back. He had 25 years of corporate finance under his
17 belt. He's in a state with very favorable solar
18 policies. He had a supportive administration. His
19 institution wanted solar. He had a large,
20 uncomplicated, uncompromised, unshaded ground mount
21 opportunity across the road from his office. He had
22 site control, and he said, "you know, look," he showed
23 me the stack. He had a stack of proposals, unsolicited
24 solar proposals from vendors that had to be three, three
25 and a half inches thick. He said, "Look. I'm a finance

1 guy, and I don't quite understand what's in here.
2 They're all in different terms. They're not comparable.
3 It's going to take us a year to go through and, sort of,
4 get a handle on what's in here. We haven't seen
5 contracts like these before, so we've got to figure that
6 part out. By the time we get all that done, all the
7 numbers are going to be stale. So we're going to have
8 to go back to all these guys and have them refresh their
9 bids. Oh, by the way, I have got a ton of other things
10 on my plate to do. So I could tackle this piece, which
11 is looking like, frankly, a giant hairball, or I could
12 let it sit until I get around to it," and, in fact, it
13 was going to sit until he got around to it.

14 We hear this set of problems over and over again
15 and I -- what was amazing in this collaborative
16 procurement process was to see, see the actual shoulders
17 relax on facility energy managers that have been tasked
18 to go figure out a solar play when we came in and said,
19 "Hi. We're going to help you figure out a solution.
20 We're going to give you non-vendor access to topflight
21 technical and economic insight before you have to
22 interface with the supply side. We're going to get
23 you -- get you brought up-to-speed here on what's really
24 possible across your facility's portfolio and what you
25 can expect, what you're shooting for. This model has

1 found increased dissemination, a number of geographic
2 pockets across the US, because it is so potentially
3 transformative. It's -- there's some dramatic expansion
4 in a couple of pockets in California. The EPA region 9
5 office in San Francisco has taken this as a result of a
6 series of conversations that we have had together.
7 They're trying to help some of the Federal facilities in
8 San Francisco access this procurement pathway to get
9 something done there. The place where this interfaces
10 with the broader issue today is that there is,
11 obviously, upfront costs, right. We sent solar
12 engineers both at their desks to do Google Earth
13 analyses and then out to walk around parking garages in
14 Montgomery County, Maryland, right, to take
15 measurements. The costs are generally, ballpark, you
16 know, somewhere in the neighborhood of maybe \$2,000 per
17 site. It is absolutely, utterly transformative, and it
18 is money that's incredibly well spent. It's hard for a
19 facility manager to go up their chain and say, "Hi. I
20 need to spend a couple grand per site to find out if we
21 can do anything or what it is that we can do. And you
22 know, I don't know what answers we're going to get
23 back." Right. That's a much tougher internal sales
24 pitch, marketing pitch than, "Oh, yeah. We're going to
25 sign a PPA, and it will be great." But to get to a PPA,

1 in fact, to get more sites to better PPAs faster and
2 open at lower costs for end users and rate payers in
3 California, this approach has almost unbounded promise.

4 And I can stop there. I'm happy to talk to
5 folks subsequently, but I don't want to monopolize the
6 time here for other panelists.

7 MS. LEW: That's really good.

8 And so do any of our panelists have anything else
9 you'd like to add to it?

10 MS. KWOFIE: I was going to say, thank you,
11 Blaine, for sharing that, because that's some of the
12 issues that Dave and I have been working on at UCSF is,
13 is trying to go a route where it makes sense. So you're
14 talking about a school. In our facility, we have about
15 five million square foot, and we have a lot of
16 researchers very sensitive to research, very sensitive
17 to the air space. And one thing that I was telling Dave
18 right now was a couple of days ago is how do we make
19 procurement manageable for a researcher? There's a lot
20 of risk. There's a lot of risk going there and just
21 touching and realizing the HVAC. And so one approach
22 that we're looking at is trying to actually go and take
23 that burden off them, which is exactly that same process
24 that Blaine talked about, trying to go to them,
25 understand their needs, because if you understand their

1 needs, if you understand why they want certain lights
2 on, why they want certain air flows, the reason for --
3 you're able to bring your technical group together, to
4 the table, to analyze it because these people are
5 people -- they want data. They want you to draw it on
6 the table to explain to them clearly where you're going
7 to do and how that will not impact their process or it
8 wouldn't impact their research or, you know, those kind
9 of discussions.

10 And we had a lot of success in that sense where
11 they are now approaching us. We just got a solicitation
12 from a group that say, "We need to do this procurement
13 and how can you help us," and that never used to happen.
14 You know, we needed -- we always were going out to them,
15 became the vendors people didn't like, you know, trying
16 to say, you know, sustainability, and the tools that we
17 have to use and it's important. And they did not like
18 that story, but when we went in and tried to understand,
19 bring the technical people to them, let them do their
20 analysis and to show to them clearly, you know, what is
21 the -- what are the areas, why are they not doing it,
22 and understand it and work with them, you know, they
23 turned it around. And they are now calling us now to
24 help them. So I'm glad that, you know, you get to share
25 this with us, and I'm sure I'm one of the people who

1 will be following up with you to expand this.

2 MS. LEW: So I think we're going to move on
3 to the next question. And so what are some of the
4 potential activities that can help facilitate the
5 inclusion of emerging technologies into a subdivision,
6 design, or a building design, or part of a retrofit
7 renovation type process. Bob.

8 MR. RAYMER: Would love to understand that.
9 Bob Raymer, CBIA. You know, in general, there's sort of
10 three areas here of things that can be done, basic
11 research, pilot programs, you know, field application,
12 and, of course, one-on-one design systems. And the
13 one-on-one is not something that's -- it translates very
14 well in production housing and for most projects, you've
15 got five or six model options. You may have a rather
16 infinite number of design options. I can tweak those,
17 but in large part, you usually have got five to six
18 models, and so to the extent that one-on-one design
19 assistance can be provided is great. But as I'm looking
20 into specific areas of need here, having just gone
21 through the latest update of energy efficiency
22 standards, this is the stuff that will take effect in
23 July of this year, and looking forward to the next two
24 updates, the provisions that will take effect in January
25 of 2017 and January of 2020, there's a couple of new

1 construction systems that are going to be promoted
2 heavily by the CEC staff. I know this because they
3 attempted to get it in this series of the mandates, and
4 so we're already well aware that coming down the road,
5 particularly for 2017, they're going to be looking at
6 roof deck insulation, advance wall system assemblies,
7 further reductions in air infiltration, advance plumbing
8 system design for, for hot water supply, and so I'd like
9 to, kind of, take those on very quickly in a singular
10 fashion.

11 Advance wall system assemblies. Going back to
12 the late 1940s, residential construction is largely 2x4
13 wood construction with these studs 16 inch on center.
14 Now, to get a more -- a deeper cavity for, for wall
15 insulation, the Energy Commission would like us to move
16 to 2x6, 2x8, or a staggered system where we go 2x6 every
17 other stud or 2x4 so that you can have a rather deep
18 layer of insulation going into that, and quite frankly,
19 this can be done. Engineering wise, this can be done,
20 but once again, getting to my opening comments, we have
21 to take this from the drawing board, we have to take
22 this from the handful of examples that are going on out
23 there and mass produce this in a way so that the
24 subcontractors and the designers, in particular, can get
25 this on to the blueprint so the building officials can

1 understand that this is how the window is going to fit
2 into this new deeper wall cavity; this is how the door
3 is going to fit into this deeper wall cavity. There's a
4 lot that can be done. EPIC can help do basic research.
5 More importantly, EPIC can help with pilot programs and
6 help with one-on-one design.

7 In terms of roof deck insulation, this is not to
8 be confused with putting ceiling -- or putting
9 insulation, a layer of R30, over your ceiling. This is
10 where the roof deck itself, the sloped part of the roof,
11 has either insulation on the exterior of the plywood or
12 on the immediate interior between your roof deck studs
13 of the joints, and in particular, this has some problems
14 with it. We have to bring the manufacturers
15 up-to-speed, particularly the roof covering
16 manufacturers, so that they don't void their warranties.
17 As we were looking at the last go around of the
18 standards, Energy Commission was proposing putting
19 either, I believe, was R8 on the exterior of the roof
20 deck or R12 on the immediate interior of the roof deck.
21 Putting it on the interior creates some moisture issues.
22 These can be solved, but we have to figure out the best
23 way to do it and then mass apply it. We have had some
24 catastrophic failure on the east coast by trying to do
25 this on the under side, and then putting it on the

1 exterior of the roof deck, you end up having what looks
2 like an ice cream sandwich on the exterior of the roof.
3 It can be done, but we're going to have continual roof
4 penetrations, the vents, the openings for the whole
5 house fan, all of this needs to be understood from a
6 design perspective and from a mass application
7 perspective so that our contractors can get this done.
8 Another challenge that we don't really talk about much
9 here, but is certainly clear out in the field, over half
10 of our framing crews, our carpenters, do not have
11 English as their primary language, and when we were
12 producing fall protection guidebooks, whatever, about
13 ten years ago, we produced 10,000 in English and 10,000
14 in Spanish. The 10,000 in Spanish went very quickly. I
15 still got some of the English ones if you'd like that.
16 Get them out of my office.

17 But looking to some of the other things, further
18 reductions in air infiltration. That's a given, but
19 we've got to make sure that we're going to go below
20 where we are right now, which is already a very tight
21 envelope, are we creating an indoor air quality issue.
22 This is something that's a great concern to CBIA. It's
23 something that's a concern to the Air Resources Board,
24 and if we are not careful, we're going to set the stage
25 for mass class action suits down the road. So to the

1 extent that research can focus on that, would be great.

2 Advance plumbing system design for water supply.
3 There's a lot of good concepts out there. What we need
4 to do is come up with some, probably, a nice little
5 booklet of the application of this, so that the typical
6 plumber can understand, this is what you're doing now,
7 this is where you would like to go in the future. As
8 opposed to having an energy consultant try to tell the
9 plumber how to do his job. That's not going work in the
10 field. Plumbers, 'my dad taught me to do this. His
11 grandfather taught him how do that,' and the guy with
12 the calculator and the Ipad, that's just not going to
13 cut it with the plumber, and so we got to figure out a
14 tactful way to try to get them to alter how they have
15 been doing it for 40 years. Easier said than done.

16 A few last things in terms of the clean
17 technology. We, during the last update of the
18 standards, have finally brought compliance credit into
19 the regulations for the application of solar. In seven
20 of our climate zones, you can now get some type of
21 energy efficiency compliant credit for solar. It's a
22 very limited credit, and it doesn't apply across the
23 state. What we're looking for is very robust credit for
24 all sixteen climate zones, and if you put four kilowatts
25 on the roof, you should be getting twice the credit of

1 two kilowatt. Obviously, the benefit varies from
2 climate zone to climate zone, but there's research to
3 get that in, and that's where you're going to make the
4 change in the market for the small and medium size
5 builders who may not be able to take advantage of the
6 economy of scale procurement, but if they can find a
7 very productive way to bring this into compliance with
8 the energy efficiency standards, it's going to sell
9 itself.

10 And so anyway, like I said, I'll be turning in
11 written comments, but that's my comments for today.

12 MS. LEW: Okay. Thank you. So we just have
13 a couple more minutes before the open period. So our
14 panelists can make brief --

15 MS. VANCE: I just wanted to -- this is
16 Chris Vance with the Energy Coalition. I just wanted
17 to, kind of, piggyback on what Blaine was saying.
18 Everything he said, he had some really key points about
19 bringing the right with keys and through and doing the
20 cooperative procurement and just -- but that is so
21 powerful. And I think we need to apply energy
22 efficiency as well and not just to solar and really
23 doing the -- just removing that duplicative process that
24 all agencies or business may have to go through, and
25 just doing it once for everybody, that's very powerful.

1 And then a little bit back to question three, I
2 just wanted to mention that I think there's also
3 tremendous opportunity at reducing the pricing through
4 the buying power, of course. And we saw that, of
5 course, even at speck with just launching the program.
6 We don't really have the volume yet. We just got
7 started, but when we went back to some of the
8 manufacturers, for example, Kree, they said, "We think
9 this is going to be a big program." They reduced their
10 price on LED lights for student lighting by 48 percent.

11 So I think there's -- you know, as we move
12 forward I think, you know, I feel like the regional
13 energy networks are really trying to be that living,
14 kind of, laboratory in brining all those examples from
15 the Silicon Valley solar procurement into the energy
16 efficiency. So that's my --

17 MS. LEW: Any other quick comments?

18 MS. KWOFIE: I think one thing that I -- and
19 it may be it goes back to the same thing that Dave said
20 is proactive design guide plan, which is what I would
21 call it simplify, simplify, simplify. Make it easy for
22 training. Make it easy for bringing the people. Just
23 like Bob said, you also need people to understand,
24 because you can't change the way they done it that works
25 for them. So making it simple so that it's not

1 complicated controls with all these designs that they
2 cannot operate would be such a big deal especially for
3 institutions, public institutions.

4 MS. VANCE: And that portfolio approach as
5 well. Similar to what we're doing is we're providing a
6 whole portfolio market to service providers and they're
7 only responding to one RFP and they're being now, you
8 know, deferred to the market essentially efficiently.

9 MS. LEW: Okay. Okay. So let's move on to
10 the public portion of our workshop here, and so we're
11 going to open it up first to comments in the room, and
12 did any of you fill out a blue card, or if you'd like to
13 make a comment, you can provide us with your business
14 card and tell us what area that you would like to
15 discuss, and please come up to the podium here, because
16 everything is being recorded.

17 Okay. You can raise your hand if you'd like a
18 blue card.

19 Okay. So I have Mr. Walter Horsting from BDI for
20 terrestrial energy and light systems.

21 MR. HORSTING: Yes. Couple of quick
22 questions for Blaine at the EPA. Is there any program
23 going on in the country for flare gas recovery versus
24 flare gas being emitted directly into the atmosphere
25 either -- being burned or the methane being released. I

1 was hoping to get some direction on that.

2 Regarding the US Department of Defense, Camron, I
3 was wondering in you're global based deployment, are you
4 looking at molten salt reactors for base electrical
5 supply in terms of something very compact and mobile.

6 And for Raley's, I was wondering if your fleet is
7 going into a natural gas mode and whether it could be
8 looking at a source of fuel such as Naphtha to burn.

9 MR. WALTHERS: As far as Raley's, we had
10 natural gas trucks. Basically, a lot of our trucks go
11 over the mountains, and natural gas is not powerful
12 enough right now, the engines weren't, when we did this
13 five years ago. We are now looking at natural gas with
14 the digester system coming up. I know Atlas Waste
15 Disposal are using all natural gas now, and the new
16 trucks out are powerful enough to haul what they have to
17 haul. That's what we're looking at now.

18 MR. HORSTING: I might have something to
19 bring to you.

20 MR. WALTHERS: Okay.

21 MR. HORSTING: I'll sit for a response.

22 MS. LEW: Okay. Blaine or Camron.

23 MR. GORGUINPOUR: This is Camron. I'm
24 sorry. You know what, when you were asking the
25 question, the sound cut out right when you were talking

1 about asking what specific type of technology. What
2 were you asking about?

3 MS. LEW: It was molten salt storage.

4 MR. HORSTING: No, no, no. That was for
5 Blaine. I'm sorry. This is Walter Horsting. The
6 question was on flare gas recovery. There's around 6
7 trillion units of natural gas that are going into the
8 atmosphere globally yearly, and I was wondering if
9 there's any programs to -- funding for programs to be --
10 going after capture of that flare gas. I have a process
11 that I'm advocating for that.

12 MR. CAMRON: Yeah. I'm not aware of
13 anything specifically on that, though, it wouldn't
14 surprise me if, on our R&D front, we have projects. We
15 have funded a lot of different projects to look at just
16 about every way at capturing energy from anything. So
17 it wouldn't surprise me if we did have something, but
18 I'm not, offhand, familiar with anything specifically.

19 MR. HORSTING: I would --

20 MR. BLAINE: This is Blaine at EPA. Our
21 natural gas work is a little off my range. We do have a
22 natural gas startup program. We do have a methane
23 recovery program. I would encourage you to have a look
24 there and reach out to those staffers. They may be able
25 to direct you.

1 MR. HORSTING: Thank you.

2 MS. LEW: And so the other question had to
3 do with molten salt retractors for the US Department of
4 Defense, that was your other question, correct?

5 MR. GORGUINPOUR: Oh, okay. Yeah. I'm
6 sorry. This is Camron again. I'm not -- that's one I
7 haven't heard of, but if you want some information, I'd
8 be happy to pass it around to see if anybody knows it.

9 MS. LEW: Okay. So are there any other
10 questions in the audience?

11 If not, then we'll go to the phones.

12 Is there anybody on the phone?

13 So there's nobody else on the phone.

14 Any comments?

15 MR. RAYMER: I didn't want to monopolize the
16 time with the question four, but there were two other
17 issues. Plug load, innovation on plug load strategies.
18 The Energy Commission has been keeping rather good track
19 of our envelope energies related to heating air
20 conditioning and water heating, and they have estimated
21 that about 50, 55 percent of the energy used by the
22 average home right now, the new home, is plug-load
23 related. Either appliances that aren't directly related
24 by the -- or impacted by the energy efficiency standards
25 or all of this stuff that we're plugging in. And to the

1 extent that EPIC could help either do research or have
2 actual application pilot programs on how to get a handle
3 on this in a massive scale and that would be very good,
4 and it would be very helpful as we approach 2020. The
5 whole idea of getting the solar system that goes on your
6 roof that gets us to zero net energy, to keep that cost
7 down, you need it as small as possible obviously for
8 design consideration and economic considerations, and to
9 the extent that we can get a handle on that half of the
10 electricity used in the home, that's going to plug load,
11 that could be enormously helpful.

12 Lastly, marketable prescriptive packages. As
13 most of you are aware, the various packages that have
14 been developed for the climate zones for the last 30
15 years are, in large part, rarely used. That's where
16 computer performance analysis is based upon. Cal BO,
17 the Building Officials from the state and CBIA have,
18 sort of, renewed interest now in the development of
19 marketable prescriptive packages, one that includes
20 solar, one that doesn't include. So that particularly
21 small and medium size builders can have access to a
22 compliance approach that doesn't necessarily involve the
23 hiring of an energy consultant. And once, again, the
24 building officials would love that because all of a
25 sudden inspection and plan check becomes a lot easier.

1 So there's two other ideas that we'd like to bring.

2 Thank you.

3 MS. KWOFIE: And I think one, Bob, that I
4 wanted to -- is I think you had most working on the new
5 homes. I think there needs to be some sort of
6 development on the old homes, too, because that is a
7 concern that I would like to see a lot of research go in
8 trying to help in different ways, helping them also
9 through that.

10 MR. RAYMER: Yeah, this afternoon, I think
11 the third segment of today's -- on permitting and
12 that -- I'll be coming back for some comments on the
13 retrofit market and some issues we have run into, but
14 perhaps some ways that EPIC could help maybe make things
15 work a lot quicker and easier.

16 MS. LEW: Okay. That sounds very good.

17 MR. DEGHANI: I had just a couple of items.

18 MS. LEW: Sure. Sure.

19 MR. DEGHANI: Me, we love emerging
20 technology. We have many on our campus and -- that he
21 was talking about the heat recovery from fuel gas. We
22 have a large condenser project on our campus that
23 provides heating for 3,000 students for free. This was
24 recently finished in 2012. It would be great if any of
25 you wanted to see. We have a geo-therm solar PV chill

1 beam, underslung heating, cooling, radiant heating,
2 cooling. Multiple energy recovery systems, natural
3 ventilation. We have a group of folks called Energy
4 Efficiency Center on our campus. California Lighting
5 Technology Center, cooling energy, energy conservation
6 office, the student body sustainability office, campus
7 sustainability office. So we would love to hear from
8 you. If you have ideas that you think it would be
9 interesting for us to consider, we appreciate if you
10 give us a ring.

11 MS. LEW: Thanks.

12 MS. KWOFIE: May I add something. I think
13 the new president, Janet Napolitano, said that she's
14 done change to the institution to actually move
15 research, and she's looking at, looking at research in a
16 different way. Especially energy and in water. So I
17 think that this would be a nice place to start that
18 research and have you all visit so we can change the
19 world.

20 MS. LEW: Thank you.

21 So anybody, any other panelists would like to
22 have any other closing remarks?

23 Okay. Okay. Okay. If -- any last chance for
24 comments from either in the audience or online. Last
25 call.

1 So I'd like to thank all of our panelists for
2 participating in our workshop today. Really appreciate
3 you coming and sharing your insights with us, and I also
4 want to thank the audience and the participants on the
5 WebEx for also listening in and participating as well.
6 And so if you have any other comments that you think
7 about after this workshop is over, you still have a
8 chance to submit them in writing, Pam had -- and so that
9 information is on the handout and the PowerPoint that
10 Pam provided earlier.

11 And so if there's nothing else, I'd like to
12 conclude this workshop -- this panel -- the first panel
13 portion of this workshop. And we're going to be taking
14 a lunch break, and it's about 12:04 right now. We'll
15 probably start around --

16 MS. DOUGHMAN: We'll be back around 1:15.

17 MS. LEW: Thank you very much.

18

19 (Break taken.)

20

21 MS. DOUGHMAN: Okay. We'd like to get
22 started with our second panel. Eric Stokes will be the
23 moderator.

24 MR. STOKES: Okay. Thanks, Pam.

25 My name is Eric Stokes. I'll be the moderator

1 for the second half of the day's workshop, which will
2 focus on ways the Energy Commission through the EPIC
3 program can help facilitate the commercial success of
4 good energy technologies and the companies and
5 entrepreneurs developing them.

6 We have a great panel today. We're going to
7 share some of their insights, ideas, experience around
8 what they see is really needed to help accelerate the
9 path to market for clean energy technologies for clean
10 energy technologies.

11 Unfortunately, today, one of our panelists wasn't
12 able to make it. She had something come up last minute,
13 but it will be great to hear from the rest of the panel.
14 The format for this panel will be the same as this
15 morning. Each panelist will have up to five minutes to
16 make some opening comments, and then we'll dive into the
17 questions on the agenda, which will then be followed by
18 public comments and questions.

19 And so with that, we'll go ahead and get started.
20 First up is Beverly Alexander with the Energy Institute
21 at HAAS at UC Berkley.

22 MS. ALEXANDER: Thank you. Good morning --
23 or good afternoon. In the quick to market program, we
24 work with innovations coming out of the Department of
25 Energy labs, the California Energy Commission funding,

1 as well as a variety of different labs across UC Berkley
2 and startups outside of Berkley. And the biggest gap
3 that we have been focusing on is what we call the lab to
4 license gap, where you have some really some interesting
5 technologies, some interesting results in the lab, but
6 the researchers don't have the time, the funding, or
7 even the inclination or the background to do a really
8 solid market deep dive on the technology. So if you --
9 for those of you who happen to have the slides, you'll
10 look, most people talk about the valley of death, where
11 you don't have enough revenue to cover your costs when
12 you're already started, but we're seeing a pretty
13 significant valley of death long before that in terms of
14 even getting someone to license the technology coming
15 out of labs.

16 We see a second problem, which is a lot of people
17 working in clean tech are mission driven rather than
18 business driven, and so they want to participate in a
19 mission around an end state, you know, smart grid or
20 biofuel or something, and so they're thinking way down
21 the line often into these heavily occupied commodity
22 markets where people have been playing for a hundred
23 years. And so there isn't a sense of how you half find
24 your way into commercial success through those markets,
25 and it's almost never jumping straight to the ultimate

1 commodity market. You almost always have to take a
2 stepping stone path along the way. And so we find
3 that -- if we can -- if there's a predictable set of
4 mistakes that we can correct to our analysis and it
5 means being relentless about competitive value,
6 realistic about a product development cycle, and highly
7 selective in terms of your finding a winnable first
8 target market.

9 So the way that we assess this gap and these
10 tendencies to make these mistakes is that we have
11 leveraged the HAAS innovation curriculum. We're
12 entering our sixth year, so we have a five-year track
13 record that HAAS has put a stake in the ground around
14 innovation, and then we bring together teams of graduate
15 students from 20 different programs across UC Berkley
16 and we apply that curriculum to a 42-factor, business
17 factor, check list, where we just go very wide and then
18 very deep on what may be the most promising commercially
19 winnable target markets and then -- and then articulate
20 a path towards the ultimate market with a very rigorous
21 product to market fit analysis, and we have done this
22 across the entire carbon chain.

23 I think we're on to the next -- the following --
24 the next slide.

25 We've done this across the entire carbon cycle.

1 Lawrence Berkley Lab has put an issue in place called
2 Carbon Cycle Two that would not only change -- look at
3 what -- where all the different things we can do. It
4 would be low carbon on the demand side, the supply side,
5 high tech, low tech, and clean tech market to all of
6 these and apply this approach to all of these, and we
7 actually had about a 20 percent success rate, year over
8 year, regardless of domain and sector, using this kind
9 of approach around business rigger combined with
10 creativity and design thinking. So we think it's a
11 pretty useful approach.

12 And so we have -- if you can go to the next
13 slide -- we have had, what people are calling, a steady
14 stream of success with 20 percent incorporation, 15
15 million in investments, grants, awards, and revenue. 47
16 percent continuing RD&D but this time, in a more
17 commercially viable direction, and with that, we have
18 had about 20 million in funding, 12 percent licensing, 9
19 percent are still part of the Department of Energy
20 research hub, and 12 have actually redirected their
21 research finding that we found that there were fatal
22 flaws in that something was just simply never going to
23 become commercially viable in that direction that they
24 were able to tweak it, and now they have got a much
25 better direction that I can tell war stories on that.

1 Also, job creation. We've created 60 brand new
2 jobs and placed people in about a hundred existing jobs
3 that are focused and dedicated on energy technology.

4 So we're excited about both understanding these
5 gaps better and are finding really concrete ways to
6 address them.

7 MR. STOKES: Thanks, Beverley.

8 Our next panelist is George Crandall with
9 Technicon.

10 MR. CRANDALL: Thank you, Eric.

11 Technicon is a nonprofit company located in the
12 Sacramento area that has focused on renewable energy
13 over the last five years. We've created something
14 called the renewable energy testing center, and its goal
15 is to support emerging technologies on a little larger
16 scale than what Beverly's program is about. What we
17 really do is we have a program that allows people to put
18 pilot technologies of a fairly large scale at an
19 industrial location where they can have their equipment
20 demonstrated -- first, maybe developed -- then
21 demonstrated then tested and validated for performance.
22 This program has been funded by the US Army under a
23 program to transfer technologies to army bases. Due to
24 congressional issue in the last year that kind of fell
25 apart, we still have two technologies, two gas fire

1 companies, located at the Macullen site, which is close
2 to here, and we have had to relocate ourselves to a
3 smaller facility for testing. But we have -- we're
4 basically -- retained all the assets that allows us to
5 continue a program along like this. The, the really
6 core areas that we work on have been waste energy, waste
7 to fuel, biomass to fuels, algae production, gas
8 cleaning technologies. We have not got into -- or
9 geothermal. There's some things that each testing
10 center needs to have a focus on. We see ourselves as a
11 commercialization accelerator for these companies. We
12 have had a pretty good success rate -- and next slide,
13 Pam.

14 We've actually tested five gas -- five gasifiers
15 at -- three of them at our facility to offsite. We made
16 liquid fuel, diesel fuel in our site and tested other
17 technologies offsite. During that five years, we've
18 operated -- we managed to help companies get \$35 million
19 in grants, mostly federal, some state. Of the 11
20 companies using our services, some of them right now are
21 selling equipment. Wouldn't call it completely
22 commercial but they're attempting to sell equipment.
23 Some of them have -- most of them have sold equipment,
24 though. Examples of those, Pacific Renewable Fuels got
25 a grant under REII from the Federal Government, built a

1 \$19 million facility in Toledo, Ohio based on the
2 results from the testing that we did on our shop on
3 their pilot system. They have now split up and formed
4 two companies, one with the Toledo base for biomass to
5 power, and the second one they're calling Gray Rock, and
6 that's focused on natural gas and diesel fuel. So
7 they're off and running. They have got big players,
8 like Exxon, investing in them right now. So that has
9 been a big success. Sierra Energy is a small gas fire
10 company out in Davis. They have got an Army contract
11 that they got through our registry. Waste at about 20
12 tons per day to power. We have to Cha Corporation still
13 at our facility. They're doing gas cleaning
14 technologies, and they have contracts with Boeing and
15 the Air Force. Advanced Plasma Power, interesting
16 company located in UK. Actually got to take a whole
17 crew over for a week. That was tough duty. They're
18 selling units for a 300 ton per day for MSW power. Peat
19 International is focusing on medical waste. They're
20 successfully selling units, and we have a couple
21 pyrelysis that are selling units presently, mostly at
22 the 40 ton per day rate.

23 So the program really is about bringing people
24 through the valley of death in a foggers state and
25 Beverly's curve there, they have got the business plan

1 together, they have got the people. They need -- they
2 just are looking for a site to demonstrate the
3 equipment. The process that we go through will take
4 some refinement under the EPIC program if we get that
5 far, but essentially, we make the companies supply their
6 own equipment at their own expense. The testing
7 facility, the people, the development are all covered by
8 the program. It gets them to the point that investors
9 can come in, kick the tires, see what's going on, and
10 it's really a unique steppingstone that all these
11 companies in this space really need.

12 So that's my comments. Thank you.

13 MR. STOKES: Thanks, George.

14 Our next panelist is Jen Garson with the US
15 Department of Energy.

16 MS. GARSON: Hi, thank you for having me
17 today. So my name is Jennifer Garson. I work from --
18 at the Office of Energy Efficiency and Renewable Energy,
19 Text Market within the US Department of Energy. Over
20 the last two years, a lot of our focus has been on early
21 stage commercialization, and we have launched several
22 programs focusing on this areas. Our first largest one,
23 with the \$5 million program we launched called the
24 Innovation Ecosystems Initiative. This was really
25 focused on creating regional partnership to incentivize

1 service to commercialize their technology. We funded
2 five different regions across the county, including one
3 in California through the University of California San
4 Diego, and we have seen some really great returns on
5 that initial program. A lot of their programs were
6 focused on tech demonstration and validation and
7 supporting entrepreneurs and creating mentorship
8 networks. Our organizations have worked with about 160
9 different startups with a followup on funding that's
10 \$110 million over the last three years so creating about
11 a twenty to one return on investment for us.

12 Additionally, I manage our National Clean Energy
13 Business Plan Competition. This was a program we set up
14 through the Obama Administration startup America
15 initiative focusing on creating opportunities for
16 student entrepreneurs to commercialize clean energy
17 technology. We have had about 600 teams apply over the
18 last two years. We're heading into our third year.
19 This has been an opportunity really for students to have
20 an opportunity to bring their technology concepts and
21 apply business acumen to really come up with a business
22 proposition and that can, kind of -- several levels of
23 judging. And out of that, we have also seen some great
24 successes about startups and with about a \$25 million in
25 model one funding.

1 Additionally, I worked within business networks
2 on the on state screen challenge program. This was an
3 initiative lunch with the US Department of Commerce, the
4 US Environmental Protection Agency, and the US
5 Department of Energy, among others, and this is really
6 looking at proof of concept centers source. So
7 developing testing centers across the country where we
8 could focus on commercial clean energy technology. And
9 most recently, we actually put out a request for
10 information this past fall where we really looked at
11 trying to adjust the gap that actually, I suggest a
12 little bit earlier, where we're having some off take
13 research technology and create a business from it. So
14 this is pre-deployment innovation stage, and a lot of
15 what we heard from was the need for technical assistance
16 and technical demonstration, mentorship and support
17 incubators. So we just recently announced an incubator
18 initiative for upward funding where we're going to fund
19 three to five individual incubators across the country.
20 It's a national organization to help support the
21 coordination of clean energy incubators across the
22 country. So a lot of our work really focuses on how do
23 we take all of the really great technology ideas and IT
24 that's been developed at both our national labs and
25 universities and help facilitate it then into the

1 market. So I'm looking forward to today's conversation
2 and for any questions that you might have.

3 MR. STOKES: Okay. Thanks, Jen.

4 Our next panelist is Josh Gould with RPE at the
5 US Department of Energy.

6 MR. GOULD: Great. Thanks, Eric. Thanks
7 for you and the whole California Energy Commission for
8 having us here today.

9 So RPE is the early stage applied research arm of
10 the Department of Energy. We fund high impact energy
11 technologies that are too early for private sector
12 investment. So more specifically, we fund applied
13 research across the energy, the spectrum as long as it
14 can have a transformational impact in one of three
15 areas, so that's reducing energy related emissions,
16 improving energy security, or improving energy
17 efficiency. So in addition to our mission, RPE is a
18 little bit unique in that it actually has a
19 congressional mandate to prepare technologies for an
20 eventual transfer from the lab to the market. It's
21 actually with Congress has asked us to it in setting up
22 our agency. So we spend a lot of time and dedicate a
23 lot of resources to assist RPE or these, what we call,
24 reformers, here, in doing that transition from lab to
25 the market. One of those resources that we provide is,

1 what we call, a technology to market team here at RPE of
2 which I'm a part. And so, you know, because we have
3 such a diversity of technologies and teams who come
4 from -- everywhere from national labs to universities to
5 even R&D groups of large companies. We also realize
6 that every project team that we work with has its own
7 vision for how to reach commercialization. So whether
8 that means sending out a company, raising venture money
9 and licensing technology, you know, working within the
10 context of a large company, we're entirely okay with
11 that. We're agnostic as to the approach to how folks
12 commercialize. We don't endorse a single strategy, and
13 so what we try to do is help teams in constructing and
14 carrying out their plans. In particular, try to provide
15 them the knowledge and skills to carry out their
16 objectives, you know, which also helps our agency carry
17 out our own congressional mandates to make sure that
18 these things get commercialized.

19 Just a fitting topic for RPE, because that's what
20 I spent every day thinking about, sometimes on the
21 weekends too and thinking about what helps energy
22 entrepreneurs to bring these products to market. Also
23 want to mention that we have a memorandum of
24 understanding with the CEC, our agency does. So that's
25 also intended to help both of our organizations achieve

1 our shared objective of bringing over funding to market.
2 So look forward to the conversation this afternoon.

3 MR. STOKES: Okay. Thanks, Josh.

4 Our last panelist today is Cole Hershkowitez with
5 Chai Energy.

6 MR. HERSHKOWITEZ: Can you guys hear me all
7 right?

8 MR. STOKES: Yeah, we can hear you fine.

9 MR. HERSHKOWITEZ: Yeah. Awesome. All
10 right. Cool. I wasn't sure. No, but yeah, so I'm Cole
11 Hershkowitez. Thank you guys, and thank you, Eric and
12 Pamela, for putting this on. I run a small startup
13 company down here in southern California called Chai
14 Energy. We're a pre-revenue company, and what we do is
15 we take smart meter data from the 40 billion smart
16 meters across the country, and we kind of crunch those
17 numbers and figure out exactly where homeowners can save
18 on their utility bill and what's going on in their home.
19 So my perspective is very much through the lens of a low
20 capital, direct-to-consumer, low sales force; it's more
21 of a marketing play. And we have, kind of -- through
22 our inception -- about a year and a half ago, we have
23 gotten a lot of support through programs that things
24 like EPIC would support in particular the western region
25 called flow of the DOE clean energy business plan

1 competition, which Jennifer mentioned and also the Los
2 Angeles -- so I'm not going to talk about pre-valley of
3 death and what gets people and students and graduate
4 students excited about and interested in starting
5 companies in the clean energy states. So I think we
6 have already talked about how you coddle and help, and
7 once they get into that space, how do you get more smart
8 people to want to start companies? And I think it
9 really comes down to three or four things.

10 So the first of the three things is motivation.
11 You need to motivate people. You need to show them that
12 there's something to do here. The second is
13 inspiration. Inspire people with stories of successful
14 clean energy ventures is a great way to get
15 entrepreneurs excited about what they're doing. I think
16 it's one of the three or four core things you need in
17 someone's job is passion and inspiration. And the last
18 is community, which provides you a number of things but
19 including, kind of, advice, mentorship, guidance, and
20 knowledge around starting companies.

21 So -- let's see. So I think -- I talked about
22 community first. You need to really create communities
23 within schools and outside of schools, because founders
24 need to meet each other. Founders need to meet buyers
25 and mentors to provide them, kind of, the knowledge and

1 insight they need and the connections they need to
2 succeed in things like the Energy Commission and other
3 organizations in California.

4 Motivation. People aren't going to do things
5 unless they really have a reason to do it. So how do
6 you motivate people. Well, through our own devices. If
7 you don't ever see successful stories or stories of
8 successful clean energy companies, I think we would all
9 just work at big companies. So showing people what a
10 startup can become is very important and that kind of
11 goes to communication as well.

12 And lastly is inspiration. People need ideas.
13 There needs to be a cross pollination between
14 disciplines of ideas so you can borrow things from the
15 financing industry to start something like the solar or
16 borrow ideas from battery technology in order to start
17 something else.

18 And then the fourth thing, which isn't part of
19 the first three, but it's the next part of the puzzle of
20 getting entrepreneurs excited, is creating a knowledge
21 base around startups. I think, in particular, the tech
22 industry, which I followed for a while has done a really
23 good job of doing this; the clean has not.
24 Particularly, there are websites online with tons of
25 knowledge and information about starting technology

1 companies. So there are millions of, like, clean
2 energy -- that, kind of, core knowledge base that's
3 publicly available online.

4 And then we're going to talk a little bit about
5 how we got that in our growth in the past. So we
6 participated in the clean energy business plan
7 competition out west here called Flow, and that really
8 inspired students through speakers and events, just
9 telling their stories. It provides motivation for
10 people. So \$100,000 first prize motivated, I think,
11 well over 50 student teams to apply. It created an
12 ongoing community of relationships through various
13 events they would hold, and lastly, through advisors,
14 they provided knowledge to the students who didn't
15 really know anything about startups. And the second
16 thing is the incubator they were part of, the Los Angeles
17 clean tech incubator, which provides an even more tight
18 knit community of advisors that are willing to help you
19 through and give you advice from their experience at
20 whim and that, kind of, leads to the knowledge as well.
21 So yeah, that's what I had to say on it.

22 MR. STOKES: Okay. Thanks, Cole.

23 I think we'll start with the questions, and the
24 first question is what key services such as testing
25 centers, independent validation are needed to help clean

1 energy entrepreneurs successfully commercialize good
2 innovations. The second piece of this question is what
3 technology development stages are these key services
4 needed and how should the Energy Commission -- how
5 should the Energy Commission prioritize the top two --
6 top few technical areas that companies should receive
7 services. And I think we'll start with the panelists in
8 the room and then go to the those participating
9 remotely.

10 MS. ALEXANDER: Yeah, and I know that a
11 couple of people have more knowledge than I do about
12 this but I have had -- we have had about 40 projects go
13 through our program, and from watching them, what's
14 really struck me, it's very hard to predict what kind of
15 testing equipment they will need. So for example, one
16 of our first startups was a printable battery, and they
17 needed the best printing equipment ever. We never would
18 have predicted that, starting that program, equipment
19 would be so critical to their success. So the
20 philosophy that the CEC can do to promote a really wide
21 range of user agreements for a huge range of
22 technologies -- you'll never be able to design a tech
23 space that has all the equipment. By definition,
24 innovation is about breaking new ground, so you're never
25 going to be able to forecast exactly what testing

1 equipment they'll need but if a wide variety of
2 equipment is made available on -- whether it's nights or
3 weekends or something, private, public, any of the
4 public equipment -- I think that would be really helpful
5 for the space. So that's just from observing what our
6 people have needed. They have needed wildly different
7 kinds of equipment and you can't -- you really can't
8 predict when there's an advance. So --

9 MR. CRANDALL: Well, what we found is
10 that -- this is George Crandall -- was that people would
11 come to us nationwide looking for support on putting a
12 technology at some location that was really heavily
13 industrial. They could get them a permit in California,
14 and that's one of our standard models is we permit every
15 technology we bring in before they actually run so that
16 the ability to have a testing site that, like Beverly
17 said, has a variety of equipment that they would
18 otherwise have to purchase if they built their own
19 facility was a major attraction. I mean, a complete
20 laboratory with GCs, best specks, synthesis gas
21 emission, measurement technology for exhaust gases. All
22 that equipment, all those services at one location
23 really brings these companies a relief in the amount of
24 money they have to spend. It gets them a kick start
25 having a whole, complete machine shop, air compressors,

1 power, all these things that you would otherwise have to
2 put together for you own individual test site. Being in
3 one location reduces the cost hopefully for the
4 Government as well as for the developer, entrepreneurs.
5 So that's one thing we see on the key services area.

6 I'll pass on that.

7 MR. STOKES: Okay. Jen or Josh, do you guys
8 have anything to add to this question?

9 MR. GOULD: Yeah, this is Josh from RPE.
10 You know, I think one thing we can see from the
11 responses is that, you know, one, the type and stage and
12 funding amount necessary for testing and validation is
13 going to be very depending on the industry that the
14 technology is trying to but, two, in almost every case,
15 particularly if you're doing, you know, really
16 innovative, early stage, technical work, you are, at
17 some point, going to need to address testing and
18 validation and have the resources available to do that
19 if you're serious about getting whatever you're working
20 on in the market. And so one of the ways that we try to
21 address this at RPE is we ask folks to write up a
22 technology department plan, which is essentially what is
23 your approach for getting this technology to market and
24 as one of the components of that plan, we ask them to
25 think about exactly what they're going to need for

1 testing and validation and, you know, think about what
2 roughly it's going to cost, and related to that, how,
3 how you're going to be able to obtain those resources.
4 So we ask -- and that's something we ask for as they
5 begin a project with us, and we've found it's helpful to
6 start thinking about that after the beginning because of
7 the difficulty in obtaining the resources necessary to
8 do that. And so, you know, we think it's -- I -- you
9 know, the appropriate strategies for folks to think
10 about it early and often but I think, you know, as an
11 agency, we're aware of being overly prescriptive as
12 whatever the resources needed for testing the validation
13 are going to be highly industry and technology driven.
14 And so, you know, one way to look at or think about this
15 between industries is to ask folks, you know, to think
16 about what the testing facility would typically cost and
17 how much choice there is in testing the validation
18 providers, you know, who are trusted by the industry
19 because that's another important component, and in doing
20 that, you know, it doesn't mandate that a federal or a
21 state agency necessarily be the expert on all things
22 testing the validation but rather to have teams who are
23 innovating in this space begin to gain the knowledge and
24 skills and resources necessary to understand exactly
25 what's necessary to get technology to market in terms of

1 testing and validation. So I think -- I think it's good
2 that we're talking about this and thinking about this,
3 but I think it's going to be highly industry dependent,
4 and I think having teams who are working with the CEC or
5 working with other agencies to bear some of the burden
6 and at least think about it not necessarily having the
7 resources but at least thinking about it early, that's
8 been beneficial for us.

9 MR. STOKES: Thanks, Josh.

10 MS. GARSON: This is Jennifer Garson. I
11 agree with Josh. I mean, you know, one of the things I
12 wanted to say here is that having a demonstration is
13 obviously a really important component for the risk
14 technologies before they can be potentially investment
15 ready. So, you know, we've worked with contract labs
16 and with our national labs on doing some sort of
17 testing. For example, we've worked with the Farm Hopper
18 Institute in Massachusetts, and they've worked with
19 startups on doing testing and valuation to provide, sort
20 of, a third-party validation that the technology
21 proposition that they have -- they proposed really is
22 confirmable and outside of the labs but one of the
23 important things that you need to couple with this
24 testing and validation is marked validation. You know,
25 if we just contain it to validate, the technical

1 capabilities of the technology, sometimes, some of these
2 entrepreneurs may lose track of who their end customer
3 is. So when setting up testing and demonstration sites,
4 there really needs to be buy in as well from industry
5 players saying, you know, 'this is something that we
6 would actually like to purchase at the end.' So -- and
7 it's really important for entrepreneurs to begin
8 engaging with customers at the beginning point as well,
9 making sure that what they're trying to validate is
10 actually going to be picked by an industry.

11 MR. STOKES: Okay. Cole, do you have
12 anything else to add to this question?

13 Okay. We'll move on to the next question.
14 Second question, what activities, tools, or information
15 are needed by the financial community to help facilitate
16 investments in the early stage of clean energy
17 technology. What role can the Energy Commission play in
18 facilitating this through the market facilitation
19 program.

20 MS. ALEXANDER: So one of the reasons we
21 structure our analysis the way we do is that the
22 investors we talk to absolutely need to see a winnable
23 first market. They have got to see that you can get
24 revenue coming in as soon as possible, that you're going
25 to beat the competition, and that you can actually get

1 revenue coming in over costs at some point. But that's
2 not enough. They have got to see growth markets, and so
3 that sense of a winnable first, a growth market where
4 you're going to get the revenue and the customers in
5 very, very large numbers, and then some path between
6 those. So they can't be disconnected. They don't have
7 to be identical. They can be different as long as
8 there's a logical next step and a logical path, and so
9 that's why we structure our analysis the way we do and
10 why we talk so much about paths to market. And, and
11 like I said, with these commodity markets, you're --
12 often we're working with -- just to give you an example
13 an electric window. Beautiful technology and they were
14 discouraged because the price point wasn't even close to
15 a commercial building, but that was their ultimate
16 market. And then we helped them find interim markets
17 such as satellites and greenhouses and other things
18 where they could still develop the same technology but
19 they would be using -- producing smaller volumes at
20 higher price points to actually just get a beach head
21 somewhere. And so we have always noted that oftentimes
22 that can be in the military. We had one year where
23 virtually every project we had was -- the first market
24 was looking like a military application. So we joked
25 that we were clean tech to military that year. But I

1 think that, you know, we have seen that a lot of these
2 small volume, high price markets do often end up being
3 military markets. So I just think investors have to see
4 that, and I know you may be thinking of other kinds of
5 tools from their own end, but I wanted to lay that out
6 as a first perspective.

7 MR. CRANDALL: I think the groups that we're
8 dealing with are always at risk because the data the
9 investment is looking for, the readiness levels six,
10 seven, eight, and most of those are in the middle were
11 they do not know if this technology will scale. They
12 really do not know the total environmental impact, and
13 so what Beverly's program does, we really don't try to
14 do, but we see the problem. A lot of them come in with
15 no real economic sense of where they're at. They know
16 their technology will do this to that, and it's the
17 greatest technology in the world, and that's where they
18 get hung up. So testing and validation and incubation
19 is important to work through those issues before state
20 and Federal money is expended on a great scientific
21 experiment and not really a reality of being an
22 investment grade technology.

23 What the Energy Commission can do is try to
24 figure out a method of sorting through these
25 technologies that they wish to invest in and putting

1 them through programs like we're talking about in an
2 orderly manner to promote success. We're not, at the
3 stage we were at, capable of doing complete market
4 analysis of these technologies. Truthfully, we were
5 getting Federal money. We were looking at the end
6 market being the military. We knew what they wanted.
7 We really didn't care if it would be an investment that
8 the utilities companies would be interested or fuel
9 companies would be interested. The military's economics
10 are different, but to move into the commercial stage, we
11 need a priority system developed.

12 MR. STOKES: Okay. And anyone online like
13 to weigh in on this question?

14 MR. GOULD: Josh, RD. You know, I think we
15 can probably broadly generalize investors, kind of, look
16 at three things when you're investing in a company or a
17 technology is broadly grouped into team market and
18 product. And I think the Commission can have a positive
19 impact in each of them. You know, as it relates to
20 team, we at RD, do our best to try to provide
21 performers, many of whom often tend to be really
22 technical, with some basic coaching and knowledge on how
23 business folks and investors view the world. So, you
24 know, it's -- a lot of it, frankly, is just asking
25 questions, which would -- you know, to give you a couple

1 of examples, be things like, why is talking to potential
2 customers important, why is that important in the
3 beginning of a technical effort versus towards the end,
4 you know, how can you quantify or create a cost
5 performance model that describes your valued
6 proposition. Do you understand what the competition is
7 in the market and how you're doing any different -- what
8 you're doing is any different or better than what's out
9 there. And then based on the answers to all those
10 questions, you know, how might you try to help a team
11 fill in any gaps in their knowledge or experience. And,
12 you know, and I think those, those gaps reveal
13 themselves when we ask questions like that.

14 You know, as it relates to the market, I think
15 the Commission has a very relevant mission in terms of
16 trying to solve big problems and trying to do -- trying
17 to take on issues and challenges, which could be
18 transformational and, you know, oftentimes, not always
19 but certainly that can lead to transformational returns
20 for an investor if you're talking about a big, difficult
21 sticky market. So there's, there's, there's some work
22 that can be done there but, you know, it also helps to
23 do when we -- at least at RD, when we pitch a program or
24 pitch an area, and I think the commission does this to
25 some extent as well, that itself requires some deep

1 market insight and some, some market research. So
2 sharing that with our performers after we have done it
3 really can give folks a head start on understanding a
4 market.

5 And then, you know, the idea that Beverly
6 mentioned around product market fit, I think is always
7 really relevant and a lot of that is, frankly, just
8 going out and talking to the customers. We see with
9 early stage technologies that oftentimes there are a
10 variety of different first markets, like Beverly
11 mentioned, and it's really understand, Okay. What
12 components of your products do you really need to
13 optimize for that need to be ground-breaking or best in
14 class, and which other ones might just be what, in poker
15 terminology, you could call table stakes or good enough,
16 and that is a really ambiguous, difficult process that
17 you really only get by going out and trying to talk to
18 customers.

19 And so I think in wrapping all this together, we
20 have a summit or a get together in late February where
21 we showcase all our technologies, and so an event like
22 this that we're all talking about right now, you know,
23 the discussion that we're having right now, I think it's
24 a good start, and it might be worth the Commission
25 thinking about, you know, how they can convene a group

1 of like minded folks and investors together to look at
2 technologies, that's the plan of our summit and trying
3 to equip our performers with the skills and experiences
4 necessary that once they actually get to that event, you
5 know, that they can make something of it. So, you know,
6 in addition to those resources and in addition to
7 thinking about how, how we help performers address those
8 three categories I think also just the -- one of the
9 stages of government is the power of convening, and I
10 think having the Commission think about how it might use
11 the power of convening folks to the advantage of its
12 performers is a worthwhile exercise as well.

13 MS. GARSON: This is Jennifer. I understand
14 what he's saying but there are -- there are a lot of
15 different mechanisms that we have seen that help de-risk
16 companies before talking to investors, and one of them
17 is going through customer identification such as the
18 national science foundation, ISOR model or of the
19 launchpad model or going through business competitions
20 where they have actually -- the teams, themselves, have
21 been vetted and have a better understanding of their
22 market and it's -- it, sort of -- it de-risks this for
23 the companies to customers in a more informal setting
24 before they actually have to go out and do their races.
25 It allows them to have a better understanding of what

1 their market is.

2 Additionally, like what our RD said at their
3 summit, one of the things that I have heard a lot from
4 utilities and energy companies is that they feel there
5 aren't as many opportunities for them to really have an
6 opportunity to engage with startups at summit or at, you
7 know, competitions, and they really wish there were more
8 formalized settings where they can actually meet
9 companies that potentially could fit their technology
10 needs, and one of the ways that you could even craft
11 those kinds of meetings is to create a consortium of
12 energy companies, utilities and other customers to talk
13 about what are their areas of need and serve as
14 matchmaking between, say, startups that are working in
15 incubators and accelerators across the state and help
16 to, kind of, play that, facilitating matchmaking role.

17 Additionally, in terms in financial incentives,
18 another thing that we heard a lot recently is the
19 whole -- so how do you create an incentive for energy
20 companies and utilities to adopt early stage technology.
21 A lot of those want to make sure that they're in
22 compliance with all of the regulations and not breaking
23 but what kind of an incentive could you set up to make
24 these large customers, like utilities, really want to
25 adopt at this early stage technology once they have been

1 through some tech demonstration and validation. You
2 know, a lot of stages, it talks this, but there really
3 hasn't been a good model of that out there, and I think
4 that it can really be a good opportunity for this
5 commission.

6 MR. STOKES: Okay. Any followup?

7 MR. HERSHKOWITEZ: This is Cole here. I
8 wanted to really agree with what Josh was saying about
9 giving startups the information, knowledge they need.
10 There's, kind of, low tech solution there, which is
11 making available free online but this also connecting to
12 startups and mentors who can answer more specific
13 questions.

14 And in building on that -- actually, not building
15 on that, completely separate, helping startups pilot
16 their technology and programs but not in a subsidized
17 way. So helping startups by, perhaps, paying for the
18 research that goes around a pilot that then helps the
19 startup show numbers and metrics and, kind of, product
20 market fit that they need to show investors. Because if
21 you show investors that the government just pays for
22 what they did -- a pilot well -- it doesn't bode well
23 unless they actually have a customer while they're into
24 that who's willing, excited, and happy about paying for
25 it, paying for the product because of that.

1 MR. STOKES: Okay. So I think with that,
2 we'll go on to the third question. What role can
3 innovative strategies such as design gaming, social
4 gaming, and other in reference to adoption and emerging
5 energy technology and strategies, what technology or
6 strategies would be best suited for these approaches.
7 Is there a current funding gap not adequately covered by
8 the private sector.

9 Beverly.

10 MS. ALEXANDER: I'd like to talk about one
11 version. I know there are many kinds of design
12 thinking, so one is the Apple where you make it so cool
13 that people want to buy it, but there's another kind of
14 design thinking that is taught at Haas, which is that
15 you stand back and take all your blinders off and get
16 very clear and very factual about what actually it
17 exactly is that you have in your hand, and then get
18 creative in thinking about what the uses of that might
19 be. And so we have used that a lot in finding these
20 first markets, creative first markets. And so for
21 example, fuel cells, Lawrence Berkley Labs has spent 15
22 years developing a variety of fuel cells, and the
23 company was torn to try to use this in cook stove
24 applications, charge cellphones and develop -- so it's a
25 very cool market. Very cool idea. They were funded by

1 very reputable investors, some of the best in Silicon
2 Valley, and it turns out, that market was turning out to
3 be a hard market to get revenues over cost very quickly,
4 and so they came to us to ask us to apply this, kind of,
5 design thinking to what might it be developed for to go
6 to market. And so that team, they stood back. They
7 looked very, very objectively at every feature of this
8 thing, and they spent months and about six weeks of just
9 wracking their brains about what might work for this,
10 and the very features that made it useful for cook
11 stoves made it potentially applicable in national gas
12 fraction sites that are way off grid and can't use the
13 electric schematics to track emissions, and so this was
14 something that wasn't even remotely on the radar screen
15 for the company, and they found out that it had the
16 potential to be a double bottom line investment where
17 you could provide additional process and significantly
18 either reduce or eliminate future emission from tracking
19 sites. So that kind of design thinking is just really
20 taking the blinders off and going very, very wide and
21 very, very creative, but we have found that thought
22 process, because the teams struggle with it for a while
23 and the companies struggle with it, because it's working
24 way outside their preconceptions, but it has helped us
25 in, I would say, 60 percent of our projects find really

1 interesting target markets that nobody had thought of or
2 come up with before, but again, I know there's a lot
3 more, so I just wanted to take comments on it.

4 MR. CRANDALL: This is George. When we see
5 our people, they really have a fixed idea of what their
6 market is. It may be wrong -- I just talked about but
7 the one -- the one thing that's problematic with a lot
8 of these technologies really is customer adoption like
9 this talks about because there's not enough support
10 either environmentally or public relations wise about
11 those kind of technologies, and this also gets in my
12 backyard area where we need to engage the public more in
13 the advantages of these technologies and why they should
14 adopt them in their neighbors areas, et cetera. So
15 that's my comment.

16 MR. STOKES: Okay. Anyone on line want to
17 weigh in?

18 MR. GOULD: This is Josh. Just one quick
19 tidbit that we raised is we engaged some crowd sourcing,
20 you know, some professional kind of crowd sourcing
21 entities, and we found that to be effective but only
22 effective in certain use cases specifically where you
23 got a challenge that's really well defined, you know, "I
24 need an electro light like this," "I need an energy
25 disk," even more narrowly defined than that. And, you

1 know, we have worked with groups that have done a very
2 good job of sending out a technical, a very specific
3 technical challenge to do their networks, and have been
4 pleasantly surprise at the results. So I'm not sure to
5 what extent that's relevant to the commission. It may
6 be more relevant to the funding that utilities
7 distribute, but we have found crowd sourcing mechanisms
8 to be very effective when what you're sourcing is very
9 well defined.

10 MR. STOKES: Thanks, Josh. Anyone else want
11 to follow up with that?

12 MS. GARSON: This is Jennifer. We received
13 a lot of this integration of design thinking in social
14 gaming primarily in the software platform for engaging
15 consumers and it's how you -- you not only, you know,
16 make consumers use technology but make them want to. So
17 it goes along with what was said earlier, the Apple
18 thing. The reason why, say, you know net has been so
19 successful for some consumers is that they want
20 something that looks pretty, but, you know, secondarily,
21 there's been a trend toward bringing in social sciences
22 when trying to do a large housing plan that you have
23 more of a customer adoption side of technology plan not
24 just technological milestones but understanding what
25 makes people want to adopt technologies, you know, how

1 the Clean Energy Commission could utilize that, and
2 maybe it means bringing on more essential sciences in
3 looking at all of these matters and -- but it's a
4 complicated space. But, you know, it's -- we have
5 definitely seen this emergence of trying to make
6 platforms that consumers engage with more user friendly
7 and something that makes them want to engage, which is
8 quite a lot of the gamers have been brought on recently
9 with software platform designers.

10 MR. HERSHKOWITZ: Cole here. I was just
11 quickly going to say that, you know, in Chai Energy, we
12 deeply believe in an idea of social gaming and design
13 thinking and building products for customers, but I
14 think Jennifer's right in that a lot of these ideas come
15 into play in software programs or software technologies,
16 which means there's not really a funding gap energy
17 proposed but rather perhaps the knowledge, understanding
18 an age gap, because the people that we try to sell to,
19 at least in part, are utility companies, who are, kind
20 of, used to deploying new infrastructure, new product,
21 new energy sources on a flying cost to year time cycle,
22 and they just don't understand the fundamental idea of
23 the AT&T U-Verse is constantly being referenced to
24 customers feedback, and there's a big disconnect in the
25 utility companies really being an infrastructure company

1 that builds forty-plus year infrastructure and their
2 customers wanting things from every year, like a new
3 Iphone, you know, your new computer, and this mismatch
4 and kind of time crisis that I think is the real problem
5 not a funding problem.

6 MR. STOKES: Beverly, go ahead.

7 MS. ALEXANDER: I just wanted to really
8 agree wholeheartedly with what Jennifer said about the
9 social science move into energy or more energy people
10 are bringing in social sciences because if you think of
11 the traditional grid, it was largely all behind the
12 scenes. You know, all you had to do was flip the switch
13 and turn the knob, and whatever, energy just showed up
14 magically, and it was all wholesale, behind the scenes.
15 So as we move to a more distributed model of energy
16 where it is more of a retail encounter, you're actually
17 planning where that solar cell goes or you're thinking
18 about your energy efficiency project that we have to --
19 energy people need to bring in all the tools that
20 retailers have always brought in. I mean, it's nothing
21 new. In the retail market, bringing in all these social
22 science people. It's just new in energy, right, because
23 it used to be a wholesale thing. So I just think that
24 that's a hugely positive move, and I think that the more
25 you can do it in areas that are going to become

1 distributed in areas that are going to be centralized.

2 MR. STOKES: Any followup for this question?

3 Okay. So we'll move to the fourth question.

4 What technologies or strategies, such as zero net
5 buildings, could potentially benefit from innovative
6 business models or finance mechanisms the way rooftop PB
7 has been benefited from third party leasing. What
8 funding levels would be needed to pilot these potential
9 business models or strategies.

10 MS. ALEXANDER: I would strongly encourage
11 you to stay open that all different areas are going to
12 be benefit from innovative business models. We've seen
13 that across the board. I think you're going to have to
14 probably design funding around a case-by-case basis. I
15 don't know that you can generally answer that question,
16 but as I have mention before, we have worked across the
17 entire market innovative business models, have come up
18 in every single one of them, so I'd hate to rule
19 anything out.

20 MR. STOKES: George.

21 MR. CRANDALL: This is George. I think
22 making long-term building upgrades is part of an
23 investment in the facility and not part of home
24 ownership, loans, individual loans, and I know there's a
25 program in the state going on trying to do that. I

1 think that's a big benefit to bringing other
2 technologies to the market.

3 In Europe, there's a big effort, of five
4 countries come together for solid oxide fuel cell
5 adaption at the home level for natural gas to
6 electricity and also heat and hot water. They're
7 financing 1,000 units at about -- from five or six
8 companies in various countries, each of them picking
9 target markets usually trying to support some company in
10 their own country, but a program like that is financed
11 by the state, in this case, would make sense to advance
12 these kind of technologies.

13 MR. STOKES: Thanks, George.

14 Anyone on line want to address this question?

15 MR. GOULD: Um, you know, the -- I think --
16 I think it's a question best addressed maybe by a policy
17 expert but I do think there are certain signs that, that
18 one can see that, that indicate a public or indicate of
19 some kind that's relevant, so, you know, for instance,
20 an energy efficiency, of course, we all know that the
21 investments in energy efficient technologies tend to be
22 very strong, but the paybacks can oftentimes, from most
23 advance technologies at least, be relatively long. And
24 so where there's that kind of market failure, where the
25 public, as a whole, you know, would benefit from a given

1 investment but, you know, a particular individual may
2 not have that incentive because he or she may not stay
3 in that residence for long enough, may not own or use
4 that piece of equipment for long enough, you know,
5 those, those are definitely telltale signs that there's
6 a public interest in stepping in to address that market
7 failure or that mixed alignment of incentives and where
8 that action could benefit the public of as a whole,
9 that's where it seems to make market sense, but I think
10 the particular mechanisms and the funding the level are
11 going to differ depending on the circumstances.

12 MS. GARSON: This is Jennifer. I mean, I
13 think, again, all the print ups of that whole idea is,
14 of course, for incentives, a lot of market adoption of
15 energy technology is driven primarily by policy
16 particularly at the deployment level. We have seen,
17 through federal incentives, whether it's been through
18 federal tax policy or through the Recovery Act Policy,
19 that when the policy signals are there, the market will
20 oftentimes move on. So, so, you know, whether it's
21 through energy efficiency tax credit for building
22 owners, whether it's, you know, incentives for energy
23 producers. I mean, I know that the State of California
24 already does a lot of these policy including incentives
25 for and mandates for energy storage among others, but,

1 you know, looking into other -- kind of, through the
2 policy is always a good idea if you're trying to
3 incentivize for the deployment. I think there's also,
4 you know, obviously, room to talk with utilities about
5 their own rate design and how you can create better
6 incentives for -- and to adopt more efficient
7 technologies. Obviously, there have been certain
8 utilities that have moved on this across the country
9 including looking at the whole fit fuel idea. I think
10 there's a lot of -- there's a lot of thinking right now,
11 though, new business models whether it's utilization of
12 craft funding through equity states like mosaics or just
13 craft funding for philanthropic reasons. I will --
14 actually, Beverly said it, that you don't want to cycle
15 anything of these things either, because I think there
16 are a lot of great ideas out there for business model
17 redesign in the energy sector.

18 MR. STOKES: Thanks, Jennifer.

19 Anyone else want to add anything?

20 Okay. So we'll go on to the last question. To
21 what extent do existing clean energy business
22 incubators, business plan competitions, innovation
23 clusters support companies in scaling up to commercial
24 production? What critical need would be addressed if
25 EPIC funds were available to help startup companies gain

1 access to these services. How can the Energy Commission
2 through EPIC address critical needs related to
3 facilitating partnerships to bring innovator clean
4 energy technologies to market?

5 MS. ALEXANDER: I think we all reinforced
6 the notion that you can have a great technology but if
7 there's not business vision or not business skills or
8 business partners, you're never going to get there.
9 Technology alone just isn't going to walk in the market,
10 and so the more you can do the -- I mean -- doing a
11 great job of working in the space, the more you can
12 partner in that space. I think -- at the state level, I
13 think that would be fantastic. I would just encourage
14 you, from what we have seen, there's definitely some of
15 these programs that seem to start at the business plan
16 and go forward, and we have seen there's this rich,
17 fertile soil pre-business plan, where teams aren't even
18 because they're not getting that business thinking
19 driven back far enough. And so I would encourage you to
20 look at the whole space even including pre-business
21 plan, but that I think state involvement there can be
22 very positive. There's a lot of different models of
23 success. So -- probably too numerous to talk about here
24 but things where -- that we have heard already, the
25 inspiration, the matching of business and technical

1 people, the mixers between startups and large corporate
2 strategics, the use of these user agreements to use
3 state equipment so that they can have -- they don't have
4 to spend the capital to get involved. There's many,
5 many different ways you can support this phase. So it's
6 constantly looking at best practices and gaps and then
7 putting the money there and having some kind of a
8 partnership hopefully with the feds.

9 MR. CRANDALL: This is George. One thing
10 I've noted is there is a lot of these incubator programs
11 that are State funded sometimes, university funded
12 sometimes. Some of them are independent companies that
13 fund these with investor organizations behind them.
14 There's no really central program to tie these all
15 together that, you know -- so what happens down in San
16 Diego is not reflected in what happens in the Bay Area.
17 And so something that would let everybody know about
18 these programs and have some sense of an overarching
19 organization to publicize them would be helpful.

20 MR. GOULD: You know, broadly, when we're
21 talking about resources, one of the things that we do at
22 RPE is all performers, when they're awarded funding,
23 they dedicate five percent of it. Sometimes, it can be
24 more. They need a waiver to have less, but they
25 dedicate at least, typically, five percent to technology

1 to market activities. And so we allow performers to --
2 with our input and monitoring and judgement -- we allow
3 those performers to spend those funds as they best see
4 fit, and so that could be one way. You know, they
5 sometimes use that to enter a business plan
6 competitions. You know, Beverly talked about
7 partnership with the feds. You know, in her business
8 plan competition, we have had a couple RPE awardees. So
9 I think there's lots of room for collaboration and
10 partnership. I don't necessarily think duplicating
11 existing activities is the best use. And we have taken
12 the approach of they provide people the resources and
13 coaching and let them make good, informed adult
14 decisions about how to use that. And, you know, we have
15 seen that work pretty well as it relates to the
16 incubators. I think where the public sector makes sense
17 is for -- at least in our case -- that early stage
18 technical development, because while I think all of us
19 are very supportive of the business knowledge and
20 business expertise that these incubators can give and
21 it's critical, you know, there also needs to be,
22 typically, a public sector actor to do that really early
23 stage technical development where it's such high risk
24 that it, frankly, make sense for the private sector to
25 get involved. So I just want to make sure that piece

1 isn't lost, and I think it also, you know, makes sense
2 to not think about duplicating but still providing folks
3 the resources, making sure that they're awake of and
4 working with, where it's relevant, incubators. I think
5 that would be a useful approach for the Commission.

6 MS. GARSON: This is Jennifer. I want to go
7 back to something that Cole said earlier, too and that's
8 impact of information. I mean, one of the things that
9 we see a lot of with entrepreneurs that we work with is
10 that there's not a whole lot of information about which
11 pathways they should be taking in terms of their go-to
12 market strategy. So -- may have a technology but they
13 don't even know what accelerators or incubators may be
14 in their region unless they happen to be connected up
15 with them. So a real concerted effort to map out the
16 different resources within the State of California, the
17 existing capabilities, the different accelerators and
18 incubator and universities may have, you know, where
19 entrepreneurs should be looking for partnerships and
20 mentors, just a really strong mentor network is
21 critically important for early stage companies as they
22 try to figure out how they commercialize their product.
23 And I think that, you know, the Energy Commission can
24 certainly address a lot of this. So I hope they, again,
25 would be the convening power for all these different

1 organizations to really map out what the different
2 resources are within the State of California. And then
3 also, I mean, you know, providing support for these
4 different, you know, incubators or work competitions.
5 You know, we have seen that through research. I think
6 it's 85 percent of incubators receive some sort of
7 public support, whether it's at the state, local, or
8 federal level. A lot of these incubators are
9 nonprofit. They don't take equity stakes, but they
10 serve a really important role for helping transition
11 technology to market. So, you know, there's always
12 direct support, but then also looking at best practices.
13 So what have been the supported services that have
14 worked best for California since startup. You know,
15 what are the services that should be expanded upon. You
16 know, I think there's a lot of opportunity to do good
17 research and analysis on what the type of the services
18 for the different markets in the clean energy sector
19 could really be a big step in the right direction.

20 MR. GOULD: Just one quick thing to tack
21 onto what Jennifer said in terms of just giving folks
22 information, I think that's actually a really, to use a
23 colloquial terms, I think that's potentially a quick win
24 for the Commission. You know, there are a lot of
25 resources online. We have a section of our website that

1 we call a resource map where it's just a Google map, and
2 there's little flags all over the country where there's
3 resources, and you can imagine creating, consolidating
4 something like that, obviously, probably more California
5 focused for the commission, and that's not a ton of
6 effort. You know, it's, essentially, linking people to
7 publically available sources of, you know, LA clean tech
8 incubator, you know, the Berkley clean tech to market
9 program, things like that that doesn't necessarily have
10 to be a huge effort or costly but is a good way to give
11 performers the information that they need.

12 MR. HERSHKOWITZ: I wanted to agree with
13 what Beverly and George said earlier about knowledge and
14 information being very important. I think you can't
15 really -- to provide that to be useful you really need
16 to motivate and inspire people to want to get that
17 information, to want to use it, because if you don't
18 have people out there that are excited about starting
19 companies and going out in the universe and building new
20 things, it's just going to sit there and sit there and
21 sit there. And I think the way -- one way you can use
22 business plan competitions and incubators to do this is
23 we applied to both years of the Flow business plan
24 competition, and the first year we applied, we didn't do
25 so well. We didn't fail at the beginning, but we didn't

1 get to the end. And just being there, and seeing that,
2 talking to the other startups. They're talking to the
3 startups that won, you could really see that they aren't
4 much different from you as students. And it shows
5 people a clear path from step one, being a student to
6 step five or ten, which is actually owning a company and
7 being on your own. And I think illuminating that path
8 for people and showing people that there are steps and
9 having people meet other startups and entrepreneurs who
10 are anywhere between step zero and ten, makes it very
11 obvious and very clear, there's doable, tangible real
12 thing, and I think, kind of, building that community in
13 these areas and showing people that there is a step zero
14 to step ten is equally as important as knowledge because
15 that's what motivates people to pursue the knowledge and
16 find the knowledge on their own.

17 MR. STOKES: Beverly.

18 MS. ALEXANDER: Yeah, just building on some
19 of these comments, we wondered if there -- we might be
20 able to create a California wide energy mentorship
21 network, because clean tech open has a great network.
22 We have got about a thousand person mentorship network,
23 so some, some possibility of -- I like this idea of
24 linking these mentorship networks and maybe cataloging
25 by subject and sector or whatever and also linking the

1 library resources. So one of the advantages is that we
2 have is our students have access to all of the Berkley
3 libraries, and so things that would cost people four or
4 \$5,000, to get it outside the university, they can get
5 access to inside. And I'm wondering if the State can
6 play a role with access to library resources or help
7 with subscriptions services. There's some amazing
8 market resources out there, but they're too expensive
9 for a startup, especially young and really cash
10 strapped. So all of those thinking and labeling and
11 reminding people of and making available all those kinds
12 of resources would be great.

13 MR. STOKES: Any followup on line?

14 Okay. With that, I think we'll move to the
15 public comment questions. We'll start with those in the
16 room. If you have a question or comment, come up to the
17 podium and, for the court reporter, please state your
18 name and organization.

19 MR. HORSTING: Walter Horsting, Business
20 Development International representing a national gas to
21 liquid fuels breakthrough technology and also a Canadian
22 firm building molten salt reactors that I wanted to
23 address.

24 For Josh, I was wondering if there was any
25 research of funds out there for mitigating flare gas

1 emissions. There's roughly six trillion units yearly
2 being emitted into the atmosphere, and I'm representing
3 a process that could be very helpful on orphan well
4 site, well dead sites for that.

5 The second issue I wanted to bring up is that
6 green energy requires a massive amount of rare earth
7 polymers. Lithium for batteries Magnesium for magnets,
8 and various rare earth elements for solar panels.
9 There's a vast wasteland of, of a toxic leftover
10 including thorium being left behind in this mining. The
11 unique aspect and the DOD -- I mean, DOE has actually
12 allowed China to be working on the thorium molten salt
13 reactor using Oak Ridge National Labs information -- is
14 that we can take the thorium that's being literally
15 tossed into tailing ponds and have hundreds of years of
16 absolutely clean emission free energy, and I would like
17 to suggest that we look at a thorium and rare earth
18 federally chartered development bank to allow the private
19 sector to develop useful, useful local stream of rare
20 earth elements not have a monopoly forcing all advanced
21 green energy to China for manufacture for sourcing of
22 the rare earth elements, which is currently the case, to
23 bring industry back to the United States and California.

24 I'm, right now, being asked to look at fifty-year
25 franchises for nuclear power dissemination plans. I'm

1 going to have to go to Canada for supply and to the
2 Middle East for partners to make that happen when that
3 could be being done in the Port of Oakland or Port of
4 Long Beach and ship locally and also help with our
5 current drought situation.

6 So I would just like to advocate thinking about
7 thorium rare earth development bank to get the
8 environmental impact off of the mining. We don't have
9 to mine for any more energy, because it's just sitting
10 in tailing ponds. Literally, thorium is everywhere, and
11 we might as well use it cleanly. Thank you.

12 MR. STOKES: Any more questions?

13 Okay. So Tom Jensen from Enterprise Futures
14 Network.

15 MR. JENSEN: Hi. Enterprise Futures Network
16 is a nonprofit that was founded in 2003, and it's a
17 mentor based network that works with a group of us
18 throughout the country including NYU and Duke and
19 Michigan and others, and so what we do is we draw on
20 volunteer experiments in terms of a business community
21 who volunteer largely in entrepreneurial classes and
22 business plan competitions, and I'd like to echo what
23 people have been saying about the role that the CEC can
24 play in terms of them pulling together a process and
25 framework and resources and in one place. It's not just

1 PFs or linked but actually kind of a -- you know, it's
2 about commercialization or about, you know, getting
3 funding or whatever. Again, there's a process
4 associated with that, so I think you can do a good job,
5 kind of, laying out something maybe in an interactive
6 website that can do that.

7 And then, you know, entrepreneurs or inventors
8 even pre-company, they can learn a lot from mentors, and
9 they can also learn a lot from themselves. You know, I
10 think one of the most valuable things in these business
11 planning competition organization in terms of -- is if
12 you can get them together and sectors, different
13 sectors, for two, three days where they can all, you
14 know, learn from each other and particularly over the
15 web, you might be able to find a cofounder or someone
16 who wants to collaborate with you. So I think there's a
17 lot of things you can do.

18 MR. STOKES: Thanks, Tom.

19 Any more public comments or questions in the
20 room?

21 Oh, we have one more.

22 MS. TEN HOPE: This is Laurie ten Hope from
23 the Energy Commission, and I'm just interested in your
24 thoughts on how you prioritize the companies that you
25 help. Not all ideas or teams are equal, and if we get

1 attached to all of them -- if we're working with them --
2 but any thoughts you have on really focusing on the
3 cream of the crop.

4 MS. ALEXANDER: So even -- we run two
5 selections communities when we're picking our process.
6 We want some on an internal one and an external one.
7 The internal one is folks who have worked in transfer
8 across different energy labs and universities and inside
9 people who have experience commercializing universities
10 and Department of Energy and other types of technical
11 fields really fundamental research work. So that's our
12 first screen is a more technical screen, and then our
13 outside screen is more investment oriented where we
14 bring in all different kinds of investors whether
15 they're large corporations or venture capitalists or
16 family funds, which are becoming increasingly important
17 right now for patient capital. And so we do an
18 investment screening and we -- out of that, we pick our
19 winners. And we try to be -- we think that a smaller
20 program that has a higher yield is probably better than
21 some huge program that's more buckshot, but that's just
22 our philosophy, so there are different ways. But we do
23 think the screening is important but -- and we screen on
24 a lot of different factors on how breakthrough is --
25 engineering what -- how -- what are these markets

1 looking like, what is the impact on carbon, so there's,
2 kind of, a special benefit screen, lots of different
3 screening functions, but those are probably our main
4 ones. And then how accessible are the inventors and are
5 they really going to work with the team that's actually
6 going to commercialize this.

7 MR. CRANDALL: This is George.

8 MR. STOKES: Laurie -- oh, go ahead. Sorry.
9 Go ahead.

10 MR. CRANDALL: With the RETC what we really
11 had, as Beverly said, is we had internal screening
12 process, and we could sort those down. Since we were
13 dealing with pretty large equipment type companies and
14 technologies weren't usually breakdown technologies,
15 refined technologies, so the data that we work with was
16 pretty understandable. We would then pass it on to
17 funding source -- which, in our case, was the Army;
18 sometimes it was grain sources -- and get their approval
19 on the process and have an application for their uses.
20 But it is complicated when you're talking about state
21 money to fund another or another efficient tool process,
22 and it's going to have to develop into a clearer
23 definition or matrix that makes this technology worthy.

24 MR. STOKES: Okay. Josh, I think you were
25 going to weigh in on that.

1 MR. GOULD: Yeah. So I think Laurie has a
2 good point. All of us, whether public or private, have
3 limited resources, so I think how to spend one's time
4 and resources is a really relevant question. For us, we
5 try to focus on a team specific's needs, which sounds
6 really generic, but let me just give you a few examples.
7 So for teams that already have the skills and experience
8 and, and, you know, sort of, fully based competency to
9 do a startup or get a technology to market by their own
10 assessment and ours -- oftentimes, our role is more
11 strictly focused on the convening authority, thinking of
12 it as almost, you know, helping folks with their
13 business development, making introduction where it's
14 necessary but, you know, probably a little bit less
15 direct engagement, a little bit less time because, you
16 know, I think a lot of those people have the folks that
17 have the network and competence to be able to accomplish
18 it, and I think a larger category of these are those
19 that are willing and able to want to learn more, may not
20 have the skills as it is today or the set of experiences
21 or the team as it is today, to be able to execute on
22 their objectives, and that's where we feel like we get a
23 very good return on the time that we spend with that
24 group of teams. You know, folks who may not be -- may
25 not have it all figured out today, but at least are open

1 and honest about it and willing to improve and learn
2 and, you know, that's where we really have a high touch
3 and can dig in and, you know, help to inspire those
4 people but also help to coach and teach those folks. I
5 think one advantage that, that we have -- it may not be
6 as relevant to the commission -- is where and when we
7 find a project that is not performing or a team is not
8 going to have the impact that they intended either
9 because they gave their best efforts and it particularly
10 isn't going to work out because they're doing something
11 difficult or, you know, maybe they have made some
12 mistakes of their own volition, we can -- we can
13 eliminate them. And so we try not to use that stick, so
14 to speak, where it isn't relevant but it is helpful in
15 terms of making sure that we're spending our time where
16 we have an impact. So, again, just adopting that
17 approach based on what a specific team's needs are. I
18 think being flexible has been really helpful to us.

19 And then just to that first -- that gentleman's
20 first question, just two quick responses. First, you
21 know, flaring is definitely a large problem. We, in
22 general, can't talk about potential future programs,
23 because it would give someone a benefit, so I can't
24 really speak to whether we will or will not run a
25 program around that, but it is an emissions problem and

1 then as it relates to rare earth, we actually have an
2 entire program 35 to \$40 million of investments around
3 finding rare earth replacements for materials where is
4 needed. You know, there's applications in consumer
5 electronics, of course, magnetics, motors, et cetera.
6 So we're running a program around that problem to
7 address it, but again, as it relates to Laurie's
8 comment, I think being flexible and trying to spend
9 time, you know, eliminating teams that, that -- who --
10 whose participation is not going to benefit them or the
11 commission and then being able to work with teams where
12 they may not be fully -- but at least they're open and
13 willing to learn and inspire to learn, that's where we
14 find that highest return on our own time and effort.

15 MR STOKES: Any more comments?

16 MS. GARSON: Yeah. This is Jennifer Garson.
17 I just wanted to, kind of, give my perspective because a
18 lot of the programs that we run, we fund other
19 organizations basically to find good teams and good
20 companies, and a lot of what we rely on from, from our
21 organizations is really making sure that the teams that
22 they work with are actually committed to really
23 developing their technology, and lot of times it's based
24 on personal relationships. And so a real commitment
25 from teams over a couple of months if they really want

1 to be involved in the process. But, you know, we
2 also -- we rely on network to basically help do the
3 vetting for us. If I try vetting every single
4 technology that went through the business plan
5 competition I wouldn't have, you know, any time to
6 execute anything else. So we rely on our really good
7 partners that we wanted to help carry out these
8 activities, but in terms of characteristics that we have
9 seen in companies that have been done well either
10 through the innovations ecosystems initiative or through
11 the business plan competition, a lot of it really does
12 come down to the team itself. Some of the people we
13 have seen that, you know, won national prizes or have,
14 you know, done good phases are people who are okay with
15 not getting ranked the first time. In fact, you know,
16 our national, one of our competitors this year has gone
17 through computations the previous year hasn't done
18 anything, came back and really were committed to
19 developing this technology, which I think is indicative
20 of a good entrepreneur regardless of whether or not they
21 win competitions. So really making sure that the team
22 is very committed to carrying through their technology
23 and being committed even when there may be, you know, a
24 potential failure is really important.

25 MR. STOKES: Okay. Any other comments?

1 I'm guessing with that, we'll go to those online
2 that wish to have comments or questions.

3 Okay. So Kevin Wolf.

4 There, Kevin? No.

5 Okay. I think that is it.

6 Any closing remarks from the panelist that they'd
7 like to make?

8 MS. ALEXANDER: I think this has been a
9 very --

10 MR. GOULD: I'd just like to say I think
11 that the commission is engaging in this process. I
12 think listening to one's constituents is always good.
13 It's something we try to do at RB, and I want to say,
14 thanks, for hosting this, and I think you're absolutely
15 doing the right thing in terms of how to invest your
16 time and effort in funding going forward, so well done.

17 MS. ALEXANDER: Just echo, we're very
18 excited to see you getting engaged in this space. I
19 think it will be very positive.

20 MR. CRANDALL: And I hope that the success
21 rate of projects will increase through these programs.
22 I think that's something that has not been a terrible
23 success rate at the agency, and I think these
24 methodologies will improve the use of the money for
25 these programs.

1 I want to thank CEC for having us today.

2 MS. GARSON: Yeah, I'd also like to thank
3 the commission for convening everybody to talk about
4 these issues and for -- from the energy standpoint, I
5 mean, the issue of trying to address the gap of bringing
6 tech to market particularly in this early stage of
7 commercialization is a really important area, and I'm
8 thrilled to see that you guys are really taking an
9 initiative on trying to tackle some really tough issues,
10 but the great thing is that you have a lot of great
11 actors and great players within your state that are
12 really trying to focus in on that area. So the more
13 that you tap into the current knowledge that you have
14 within your stakeholder, I think the better, but I
15 really want to thank you for inviting us to participate.

16 MR. HERSHKOWITZ: Thank you guys for
17 hosting this. Thank you guys for reaching out to the
18 community, and I think there's a lot to learn about what
19 everyone said here, and I look forward to continuing to
20 learn from everyone in the clean energy community in
21 California.

22 MR. STOKES: Great. Well, I just want to
23 thank all our panelists for participating today.

24 It's 2:45. We'll take a 15-minutes break, and
25 we'll start the last topic of the day at 3:00 o'clock,

1 which will be a staff presentation followed by public
2 comments.

3

4 (Break taken.)

5

6 MS. DOUGHMAN: We're going to get started
7 again, so if everyone can take their seats.

8 MS. NEIDICH: Thanks, Pam. My name is
9 Sherrill Neidich and I work in the Energy Research and
10 Development position and I also -- well, I work in the
11 energy deployment and market facilitation office. I'll
12 be providing an update on the local regulatory and
13 permitting challenges. I'll be providing an overview of
14 the local regulatory and permitting initiatives in the
15 first EPIC investment plan that was the 2002 -- or 2012
16 to 2014, other clean energy regulatory and permitting
17 efforts I did for the second EPIC investment plan and,
18 then I'll have some planning and permitting questions.

19 These are the initiatives that were outlined in
20 our investment plan under the objective 16. These are
21 the permitting and planning initiatives for the 2012 to
22 2014. 16-1 was to conduct pilot demonstrations of
23 localized energy resource markets in each IOU territory,
24 and these pilot programs will illustrate best practices
25 for coordinated planning and will help achieve high

1 penetrations of local energy resources. 16-2 is to
2 provide planning grants to cities and counties to
3 incorporate clean energy technology and permitting
4 progresses into local government land use planning, and
5 the grants will provide funding to cities and counties
6 in the IOU territory, the upgrade their comprehensive
7 plans, regulations and codes to promote deployment of
8 clean energy technologies and balance development
9 impacts. And 16-3 was to conduct a local government
10 needs assessment study that identified regulatory gaps
11 within local planning and zoning processes, and this
12 will be a review and will be consisting of existing
13 planning and zoning documents in assessing needs or
14 gaps. And four, 16-4, was collaborate with local
15 jurisdictions and industry stakeholders to create model
16 ordinances for emerging clean energy technologies and
17 this will assist the local governments with establishing
18 appropriate ordinances in advance of new technologies --
19 of advance of new technologies becoming fully deployable
20 in markets. And 16-5 is to provide funding to assist in
21 the implementation of the general plan guidelines and
22 through a competitive bid process, a contractor will be
23 selected to work with OPR, Office of Planning and
24 Research to ensure local governments have the tools to
25 implement the tools to implement clean energy aspects of

1 the guidelines in the IOU territory. And six, 16-6, is
2 develop consensus based educational materials for local
3 officials interested in facilitating clean energy market
4 growth, and we will develop and disseminate clean energy
5 planning and permitting information for local
6 governments in IOU service areas.

7 There's also some other clean energy regulatory
8 and permitting efforts going on right now. The
9 Governor's office of planning and research general plan
10 guidelines will be out shortly -- will be released this
11 year. And after they're released, there will be a
12 voluntary sixty-day public review period. The general
13 plan guidelines provide cities and counties information
14 that they will use to prepare and update their plans.
15 The web page link noted on this slide will take you to
16 the general plan guidelines web page where you can find
17 additional information and sign up for the general plan
18 guidelines elist.

19 And then there's information for the Desert
20 Renewable Energy Conservation Plan. You can go to that
21 web page to find information about the DRECP, Renewable
22 Energy Conservation Planning Grants Assembly Bill X1-13
23 added public resources code section 25619 -- excuse me.
24 And connected the Energy Commission to provide up to \$7
25 million in grants to 15 qualified counties for the

1 development of revision of roles and policies. And
2 there have been -- the one solicitation went out. It
3 was released in 2013, and the first solicitation, five
4 counties received awards totally approximately \$3.3
5 million and for threes counties -- excuse me -- that
6 receive the funds were Imperial, Los Angeles, San
7 Bernardino, and San Luis Obispo. A second solicitation
8 was released on January 17th, 2014 with a deadline to
9 submit applications on March 24th, 2014, and that
10 solicitation will provide up to \$2.5 million in grants
11 for the develop or revision of rules and policies and
12 there was ten qualifying counties for that solicitation
13 and for those counties, I mean, those ten qualifying
14 counties were Fresno, Kern, Kings, Madera, Riverside,
15 San Diego, San Joaquin, Stanislaus, and Tulare. And a
16 third solicitation will be posted soon. You can find
17 out more information about this on the web page link
18 noted on this slide where you can sign up for the
19 renewable and the commission grant manager for this
20 solicitation is Pablo Gutierrez, who works here at the
21 Energy Commission in the Renewable Energy division.

22 And then we have also Assembly Bill 327, which is
23 distribution resources plans. Assembly 327 requires
24 each IOU to prepare a distribution resources plan to
25 identify optimal locations for distributed renewable

1 generation resources, energy efficiency, energy storage,
2 electric vehicles, and demand response technologies
3 consistent with the goal of yielding net benefits to
4 rate payers. The plans are due to the CPUC no later
5 than July 1st, 2015, and you can read the entire bill at
6 the web page link noted on the slide.

7 And staff is seeking ideas for the second EPIC
8 investment plan. That's the second one for the 2015,
9 2017. We have had some preliminary areas for planning
10 and permitting. And these are listed here. The
11 programmatic environmental impact report, the biomass,
12 the environmental impacts report should focus on
13 streamlining the environmental review process for Senate
14 Bill 1122 type projects. There's also clean energy
15 technologies and infrastructure to improve local energy
16 reliability during anticipated and emergency conditions
17 like, fire, drought, flood, heat waves, et cetera.
18 We're also looking at exploring process innovations to
19 better coordinate IOU planning and local government
20 permitting for the next generation of clean energy
21 deployment, also, regional planning about clean
22 facilities such as mitigation banking and other
23 conservation strategies and, of course, any other ideas.

24 And then here's some questions we'd like to pose,
25 and these, once again, will be for the 2015, 2017

1 investment plan. One, should EPIC provide funding --
2 we're already programmatic -- environmental impact
3 report for biomass? How should this be structured to
4 best capture benefits for IOU electric rate payers? And
5 also, how can EPIC address, planning/permitting barriers
6 to fast track deployment of technologies that can
7 improve local reliability? Three, how can EPIC funds
8 build on work underway to identify preferred areas for
9 distributed generations. What critical needs for
10 planning and permitting on this topic remain
11 unaddressed? Four, what types of tools would be most
12 useful to regional, local planners to facilitate
13 planning, permitting, and, and implementation of clean
14 energy facilities and technology. And five, what are
15 the next generation of permitting and regulatory
16 challenges that the state may face to achieve goals for
17 energy storage, micro grids, and other clean energy
18 policy objectives?

19 And next steps, we would encourage everybody to
20 complete the questionnaire that was sent out with the
21 notice, and the link on this page is for that
22 questionnaire. So if you haven't seen it already,
23 please check it out. We also have a notice for
24 instructions to submit comments. This is the link for
25 that notice, so you find the location where to send any

1 comments, and we encourage everybody to sign up -- if
2 you haven't done so already -- for the Energy
3 Commission's EPIC list server, and that link there is
4 for the web page for EPIC. And once again, our written
5 comments and the questionnaire are due February 13th,
6 2014, and I guess we're going to open up for questions,
7 and, of course, if anyone has any more information about
8 the EPIC program administered by the Energy Commission,
9 you can contact the staff noted on this slide.

10 So I guess first, we'll see if there's any
11 questions out in the audience. Bob.

12 MR. RAYMER: Thank, you Sherrill. This is
13 Bob Raymer, senior engineer and technical director with
14 the California Building Industry Association, and my
15 comments today on this would follow under other ideas,
16 sort of, micro permitting if you will. The first
17 problem that's popped up -- and both of these relate
18 significantly to the existing housing stock and existing
19 commercial stock, the first one for existing housing
20 stock. For about the past six to eight years, the
21 Energy Commission has required duct testing if you're
22 going to put in a new air-conditioning or heater. And
23 what we have found is, of course -- that, of course,
24 makes a lot of sense. We were very supportive of that
25 during the development, the regulations. For those of

1 you that are unfamiliar, before you can put an air
2 conditioner on to an old -- put a new air conditioner on
3 to an old house, you have got to check the duct system
4 to make sure that duct system isn't leaking, and if it's
5 an old house, it is leaking and it's usually leaking
6 very badly, in the range of the about 30 to 60 percent
7 leakage rate. That being the case, it takes all the
8 sense to require that not only to do testing but if you
9 find a leakage rate over a certain level, I believe it's
10 nine percent, you have got to fix it.

11 Unfortunately, this had the inadvertent, sort of,
12 effect of significantly increasing the cost of fixing
13 the air conditioner. Case in point, it's not uncommon
14 to find HVAC change out jobs that if you fix the duct
15 system or look at, it cost about five grand. If you do
16 fix the duct system and do the testing, it will cost ten
17 grand. So what's happened here, I'll use LA as an
18 example, over 90 percent of the HVAC change outs in the
19 county of LA are currently being done underground.
20 Whether or not this is by a licensed contractor or an
21 non-licensed contractor, number one, they're not pulling
22 the permits. They're -- of course, they're not checking
23 the duct system. They're not fixing the duct system.
24 The home buyer, may or may not be aware of this. I
25 would suspect in most cases, they're not aware of the

1 state requirement, so consequently they may have an
2 excellent 14 year or 15 year air conditioner of which
3 they're only maybe getting half of the cool air into the
4 rooms.

5 So with that being said, there -- for the last
6 couple of years, there's been a desire to try to fix
7 this at the local permitting stage and at higher levels.
8 And in looking at a number of initiatives that have,
9 sort of, been bounced around, number one, of course,
10 CSLB has a sting operations, and they have been working
11 off and on with the Energy Commission to help provide
12 technical background support. But to the extent that a
13 more elaborate, and I would say state level and
14 localized level, of education to the public in general,
15 to get this word out could be very helpful. There
16 should also be some type of interaction between the CEC
17 and CSLB with regards to the contractor license board's
18 testing. In essence, HVAC contractors, there should be
19 serious requirements as you take your test, as you do
20 your training, or whatever, that you have got to show an
21 understanding of the state's regulations, because these
22 things evolve before somebody actually goes into the
23 business and isn't pulling permits or whatever, they
24 should fully understand that you can't just simply slap
25 a new air conditioner onto a very leaky duct system.

1 But more importantly, I would say there needs to be some
2 type of, I would say, pilot program done where we
3 investigate the ability to provide a paper trail from
4 the manufacturer to the retailer to the installer to the
5 home. So in essence, we can actually find why, out of
6 the 10,000 air conditioners sold, only 400 had permits
7 pulled, that we have only got a slight idea of where
8 those 400 went. The others, they went somewhere in LA,
9 we just don't know. So with that, that would be one
10 area where it's certainly the peak load of some of these
11 major metropolitan areas could be helped. If there was
12 some focus attention to that. We may have to have
13 statute to go along with some type of the paper trail.
14 I know that labor CBIA and a few other groups are very
15 supportive of that, but it's going to take a lot of work
16 on the part of the Energy Commission to the extent that
17 EPIC would be used to help underwrite some of those
18 initiatives. It would be very useful.

19 The last item I wanted to bring to your attention
20 was something that we have, sort of, being working on
21 with staff for about the last six months, and it's just
22 starting to, kind of, gear up here, and that is, of
23 course, California has its home energy rate service,
24 sort of a way to compare apples to apples among existing
25 housing stock and new housing stock and even newer

1 housing stock, but you should be aware that the national
2 herds and the California herds are very different, and I
3 would say in California, I would say probably the top 10
4 to top 15 production builders are doing business outside
5 the State of California along with your California
6 market, and so with that, they're finding great
7 difficulty. To use an example, KB Home has a number of
8 the projects in the southern part of Nevada and then
9 right across the border into southern California, and
10 they can find that the home in California gets a much
11 worse score on the national home energy rating service
12 because a lot of the things that we do in California,
13 that are clearly energy efficient, do not get credit at
14 the national score, and so there has to be some kind of
15 a crosswalk from California to the national program. We
16 have been working with Commissioner McAllister. He's
17 very aware of this issues, and unfortunately, we -- it's
18 a lot worse than what we originally anticipated. We
19 thought that, you know, it's not a huge scale. You
20 effectively got a hundred, couple hundred points or
21 whatever to work within. The same house done -- a
22 minimum client's house in California is actually getting
23 a 22-point difference from other homes built in Nevada
24 when they should be effectively the same. There's a
25 negative 22 points for the home in Nevada or California

1 gets. That's not good, and so to the extent that we can
2 somehow create a consistent system where, not only at
3 the national level, you can compare apples to apples but
4 somehow so California can effectively get the credit
5 that it's due.

6 So I realize that may be sort of a little
7 advanced from what EPIC would normally be doing, but it
8 could be immensely helpful, particularly, as we move
9 further into the existing housing stock. And for a
10 number crunching, we have got 13 and a half million
11 units that are out there, apartments and condominiums,
12 and single-family homes. Two-thirds of them were built
13 before the first set of energy rates took effect, and so
14 there's a huge market of what you might call energy hogs
15 out there, and we'd like to help work on it. Thank you.

16 MS. DOUGHMAN: Any other comments in the
17 room?

18 Any comment online?

19 Okay. So that ends our discussion for planning
20 and permitting, and I would like to remind everyone to
21 provide written comments on the questions we discussed
22 today by February 13th. Also, please submit a completed
23 questionnaire on ideas for the second EPIC investment
24 plan by February 13th. The email address to submit both
25 items is posted here. Please indicate 12 EPIC 01 and

1 EPIC Second Investment Plan in the subject line. And
2 with that, we'll adjourn. Thank you, everyone.

3

4 (Whereupon the proceedings ended at 3:18 p.m.)

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1 I, Brittany Flores, a Certified Shorthand Reporter of
2 the State of California, duly authorized to administer
3 oaths, do hereby certify:

4 That the foregoing proceedings were taken before me
5 at the time and place herein set forth; that any
6 witnesses in the foregoing proceedings, prior to
7 testifying, were duly sworn; that a record of the
8 proceedings was made by me using machine shorthand which
9 was thereafter transcribed under my direction; that the
10 foregoing transcript is a true record of the testimony
11 given.

12 Further, that if the foregoing pertains to the
13 original transcript of a deposition in a Federal Case,
14 before completion of the proceedings, review of the
15 transcript () was () was not requested.

16 I further certify I am neither financially interested
17 in the action nor a relative or employee of any attorney
18 of party to this action.

19 IN WITNESS WHEREOF, I have this date subscribed my
20 name.

21

22 Dated:

23

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25

Brittany Flores CSR 13460